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LEVERAGED BUYOUTS: BENEFICIAL TO WHOM?!

Is private equity really a swarm of hungry locusts or there's more than meets the eye?!

ACKNOLEDGEMENTS

To my parents,

for all the support they've given me throughout my entire life

To my supervisor and professor Paolo Vitale,

for the interest he has taken in my work and the patience he has shown me

To my friends and classmates,

for all the laughter and disappointments this far and the many more yet to come

To all my professors,

for all the knowledge they've handed out to us and the love for Economics they have aroused in me

I THANK YOU ALL

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"What this all comes down to is simply withdrawing the warm blood of equity and replacing it with the cold water of debt."

Fred Hartley, CEO of Unocal

THE CHARACTERISTICS OF A LEVERAGED BUYOUT

"Why did these people care so much about what came out of their computers and so little about what came out of their factories? Why they were so intent in breaking up instead of building up? And last: what did this all have to do with doing business?"

Closing quote of Barbarians at the gate

The first wave of LBOs stormed through the American economy during the '80s, playing havoc with the established financial rules and culminating in the controversial acquisition of RJR Nabisco by the investment fund KKR. LBOs and private equity firms came into being as a response to the corporate structure that developed in the 1960s: at that time, businesses embarked in a diversification mission mostly driven by stringent rules overseeing horizontal mergers, gobbling up players from all sorts of unrelated industries. Conglomerates were born. Two decades later, firms started refocusing on their core capabilities and all previous acquisitions were eventually divested. Buyout specialists seize the opportunity and stepped in. By exploiting the common financial knowledge that conglomerates are often underpriced[1], private equity firms acquired some of them and profited handsomely through the sale of assets.

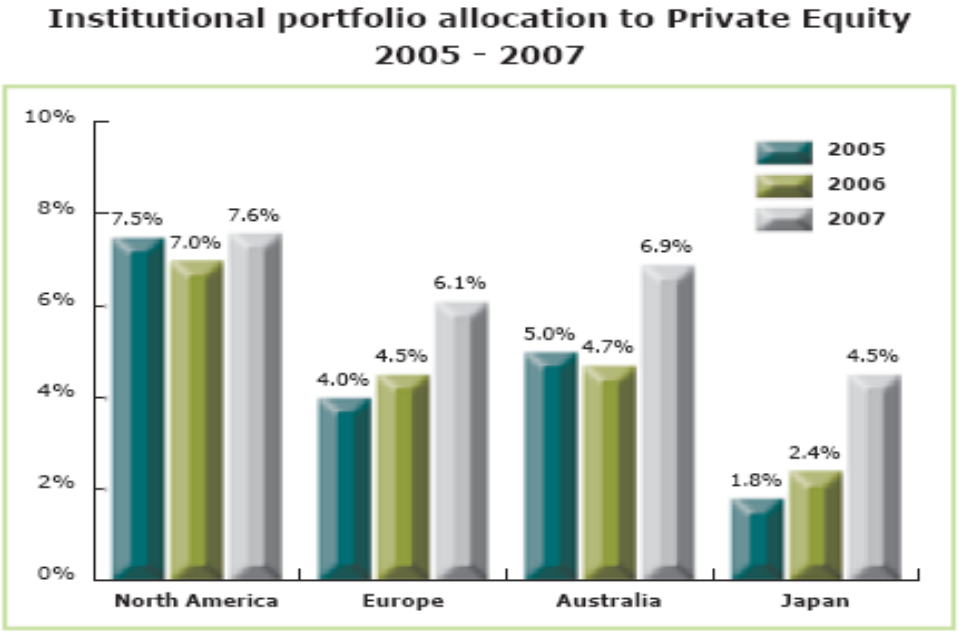
In a common LBO, the buyout group borrows a huge amount of debt to finance its acquisition and uses the target's cash flows and assets as collateral. The remaining liquidity is provided by institutional investors, pension funds or wealthy individual. As a matter of fact, the common private equity company is organized as a limited partnership. We feature

- Limited partners = They are the ones who commit the bulk of capital. Although they may introduce some covenants that restrict certain behaviors, they have little saying in how the fund is managed.
- General partners = They are the ones who manage the funds, collecting capital from investors and pooling it in a closed-end, fixed-life fund (usually ten years). They usually profit handsomely from these transactions, being reward in various ways[2]: with a share of the total equity committed to the fund, with a sizeable chunk of the profits made (usually 20%), by

[1] The sum of the single business units is greater than the value of the conglomerate as a whole

[2] In the relevant literature, rewards as a whole go by the name of management fees

charging companies for monitoring efforts. When the GP exhausts a substantial portion of a fund's committed capital, he attempts to obtain commitments for a subsequent one.



Source: *2005-2006 Russel Survey on Alternative Investing – current and forecast mean strategic allocations to Alternative Investments (2007 forecast)*

LBOs were such a mighty financial force during the late 1980's that Jensen[3] went as far as claiming that LBOs would eventually uproot and replace the normal public corporation. Economic literature has long recognized that public corporations are hampered by agency costs, with an external takeover standing as the ultimate sanction against lousy management. Mechanisms enacted in the aftermath of private equity ownership aim to correct these shortcomings and fall in two broad categories: the first three relate to operating strategies, while the latter two focus on incentive mechanisms

- **Debt-bonding:** highly levered capital structures prompt managers to generate enough cash flows in order to service interests' and principals' repayment, as well as curtailing unwarranted and lavish expenses. The looming threat of default and the reduced room for slack creates a leaner and more efficient management team. On top of that, as the Modigliani&Miller theorem explains, debt acts as a tax shield, eventually increasing the proceeds for capital providers. An iterative analysis of debt and equity ratios to attain the lowest feasible WACC is

[3] His seminal paper is "Eclipse of the public corporation", *Harvard Business Review*, 1989

advisable. Many executives in large corporations tend to give cold feet to a eventual hike in the debt ratio. According to them, higher leverage will downgrade the company's credit rating which, in turn, will make borrowing more costly. The end result would be a dramatic blow to the stock's attractiveness. In reality, as evidence shows, the increase in borrowing costs for lower credit ratings has been modest overtime.

- **Minimum levels of cash:** in most companies, cash hoarding is justified as a safety cushion for harsh times and as a mean to internally finance appealing projects or acquisitions. However, there's not a clear-cut, optimal level of liquidity and, if anything, large deposits can entice managers to set out in ill-conceived transactions. The alternative to storing excess cash is to return it to shareholders, via dividends or share buybacks. A buyback makes sense only if the company's shares are currently undervalued by the market, while an increase in cash dividends was found to be a much more reliable way[4]. Companies that raise dividends on average outperform the market by 4% on the year they were increased. The potential inflexibility of dividends can also act as a disciplining mechanism for executives: having shareholders to agree to a lower-than-before dividend is problematic, hence putting additional pressure on management's performance
- **Accurate operating plans:** making long term improvements doesn't stem from cost cutting or financial reengineering activities, but instead profit growth flows from focused investments, quick and precise changes and the benefits of shared incentives among investors and management. The private equity group executes flawlessly value-creating plans and, were the company to fall behind schedule, it would act resolutely. Professionals scan the market for acquisitions that could consolidate the firm's position or foster economies of scale, while the sale of non-core businesses is perceived as a way to ameliorate operating performance and pour investment into the acquired companies. What's more, insulation from stock market's obsession with quarterly earnings and the industry's knowledge provided by private equity groups can contribute to the LBO's growth.
- **Financial incentives:** private equity firms constantly apply a performance-based managerial compensation. With PE companies, the equity stakes of managers are far greater than those of

[4] In addition to that, dividends are now taxed at the same, lower rate of capital gains

the common public corporation, representing the ultimate form on incentives' realignment. Moreover, such incentives are offered to a much narrower circle of executives, those who are found to be the proven drivers of firm's performance. Directors are granted stock options with an exercise price equal to the ongoing market value of the company: if the business fares well, managers can cash on that. Despite some managers have reaped huge profits on account of the sharp rise in the overall stock market, rather than their superior performance, it's of utmost importance to maintain compensation tied to performance.

- **Monitoring:** in stark contrast with the average public corporation, the LBO's governance structure is characterized by effective monitoring by the board and active outside investors. Boards tend to be smaller and with a higher percentage of insiders. Furthermore, buyout funds recruit directors with a proven operational background in their portfolio companies. The time devoted over company's matters far exceeds the efforts in public corporations. The higher stakes and the unlimited upside potential for both directors and the private equity fund result in tighter-run ships and closer, more painstaking monitoring.

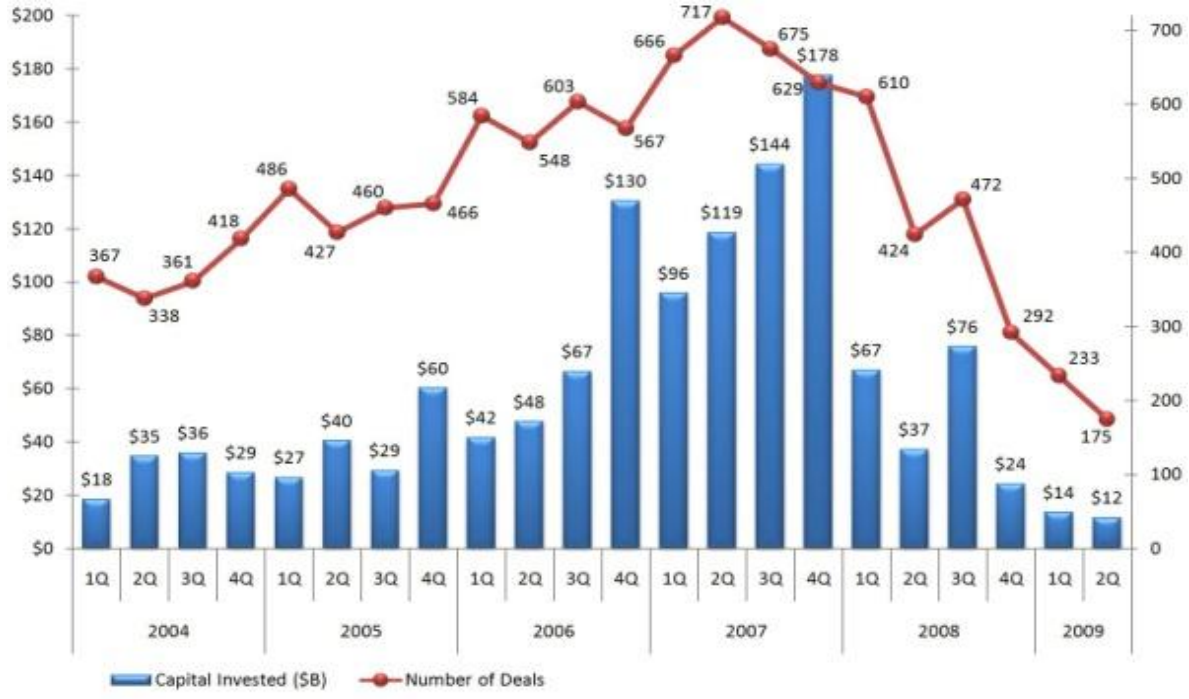
Time eventually proved Jensen wrong and nonetheless there remain competing economic predictions about LBOs. Those who reckon that his opinions were way too far-fetched support the following: concentrated ownership and high leverage make it difficult for firms to achieve the desired flexibility; increased managerial ownership could decrease firm performance due to manager's risk aversion; effective control by executives can nullify those control mechanisms such as market for corporate control and managerial labor; likely conflicts of interest between shareholders and debt holders can lead managers to choose suboptimal project; shifts in economic conditions and the demand for capital and risk sharing call for public ownership.

* 2009 figures represent 11 months ended November.
Source: Thomson Reuters

Undoubtedly, one of the distinguishing features of all private equity groups is their consistency in targeting firms with separable assets and businesses. Theory and evidence suggest that such conglomerates underperform, in particular if the assets in play are not complementary. The ensuing restructuring process initiated by the buyout specialists leaves them open for the accusations of "buy it, strip it, flip it" behavior. As a matter of fact, many fret that de-merging an enterprise only destroys jobs in order to increase the short-term value of the firm in a subsequent IPO, while also hampering the firm's future competitiveness. Additional criticism puts forth that private equity houses benefit from overpriced IPOs, collusive deals and excessive leverage, as well as exploiting asymmetric information.

Since its inception, the private equity market has come a long way. In the 1980s it was just blossoming, encompassing few firms and a greater reliance on debt financing. Leverage ratios of 90% were not unheard of, often resorting to junk bond financing, those bonds rated BB or lower. Specialists generated substantial abnormal profits around the clock, also boosted by the general market buoyancy of the late 1980s. The buyout activity eventually collapsed in the very early 1990s due to a wide range of motives, namely the increased prices paid for transactions, the excessive leverage, the accelerated principal repayments and the closing of the high-yield junk bond market. Many deals ended up distressed and eventually filed for bankruptcy protection, being unable to meet the covenants as laid down in the debt contracts.

However, out of the blue and completely unexpected, in the wake of the collapse of the dot-com bubble of the early 2000s, a new "Golden Age" of private equity dawned. The combination of falling interest rates, loosening lending standards and regulatory changes for publicly traded companies led the way for an LBO resurgence. The credit market boasted an explosion of liquidity that lasted until June 2007, the onset of the enduring financial crisis, and the favorable debt conditions favored an unprecedented supply of leverage. Buyout activity topped unprecedented sizes and private equity firms achieved new levels of scale and institutionalization, highlighted by the IPO of the Blackstone Group in 2007. Dollarama, Toys "R" Us, The Hertz Corporation, Metro-Goldwyn-Mayer, SunGard, Chrysler, Hilton Hotels Corporation, Burger King, Equity Office Properties, Hospital Corporation of America, Bell Canada: believe it or not, all of these firms experienced the tight grip of private equity at some point in the current decade.

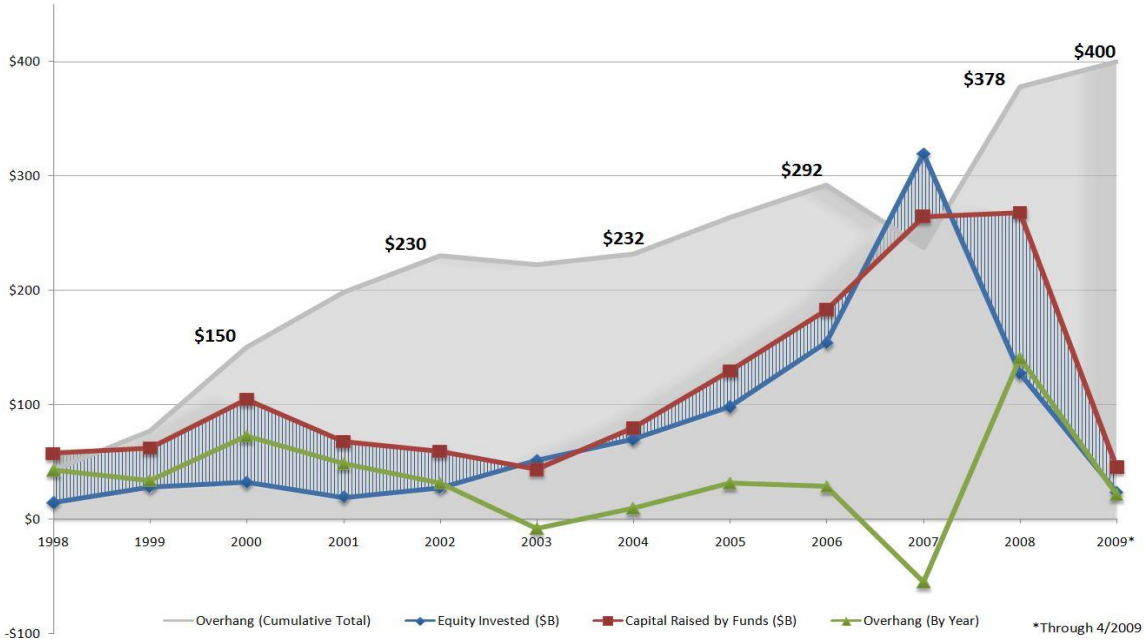


As USA Today put in retrospectively in 2006,

> *"The firms say this time it's completely different. Instead of buying companies and dismantling them, as was their rap in the '80s, private equity firms… squeeze more profit out of underperforming companies. But whether today's private equity firms are simply a regurgitation of their counterparts in the 1980s… or a kinder, gentler version, one thing*

remains clear: private equity is now enjoying a "Golden Age." And with returns that triple the S&P 500, it's no wonder they are challenging the public markets for supremacy."

As we can evince, the industry nowadays is profoundly different from its early days: it is far larger, it comprises way many more players and capital under management has role sharply. Throughout the year 2007, it's estimated that the value of the assets under private equity management is 1,2 trillion $, which far exceeds the size of the subprime mortgage market. Moreover, the private equity frenzy has spread to other corners of the world, and it has now become prominent in Europe as well. To be true, returns have deteriorated as a consequence of the increased competition for transactions, forcing general partners to pay higher premiums and threatening them with the indirect cost of dry holes, that is the inability to deploy the invested capital due to a shortage of opportunities.[5] However, larger and more renowned firms (TPG, The Carlyle Group, Kohlberg Kravis Roberts, Bain Capital, The Blackstone Group etc) repeatedly show outperformance and beat the market benchmark. One peculiarity of their investments is their tendency to focus on precise industries, a choice driven by the General Partners' expertise and inclinations. Most scholars also wonder whether the ability of management has kept up with the dazzling pace of capital: most likely, the ratio of expertise to capital has dropped dramatically.



[5] As the graph illustrates, idle equity committed is also a straightforward example of the firepower of private equity groups

LBOs show a cyclicality that follows the debt term conditions of the general market. As a matter of fact, what are the main driving forces of leverage? There appears to be no single firm-specific characteristics that determine such value; instead the key determinant is the real interest rate on loans. The negative correlation is especially significant when debt is measured as a multiple of EBITDA[6]. For public firms, debt seems to be sensitive to variables such as R&D spending, measures of operating risk and profitability In addition to that, pricing is significantly negative correlated to the level of real interest rates. Although it's common assumed that more recent LBO encompass a more conservative structure, the debt ratio of recent transactions (2004-2006) is 73%, not very different from the 77% for the 1985-1989 period.

The steamrolling surge of private equity deals have also raised some concerns, especially when it comes to debt security. Compared to the late 1980's buyout wave, which relied heavily on junk bonds, the recent boom in the private equity market was fostered by the availability of syndicated bank debt. A chunk of it is then packaged into collateralized loans obligations and sold in secondary markets. Although risk sharing is beneficial on average, it' s almost unwarranted in a world plagued by incentive and information problems. The sale of debt by banks to private investors (mainly hedge funds and other investment groups) creates incentives' misalignment and coordination problems in the case of default. On top of that, recently issued bonds are associated with lighter covenants[7]. This opaque debt distribution and the weak covenants that go with it undoubtedly reduce bankers' incentives to engage in effective monitoring. By merely looking at its sheer size, which far outweighs the size of the mortgage loan sector, a small shock to the LBO markets has the potential to cause repercussions in the global financial world. And now that ownership is debt is dispersed, working out a plan for private restructuring seems troublesome.

[6] EBITDA/Debt is also known as the coverage ratio, pointing out to the firm's to pay down its obligations

[7] Covenant-light loans decrease the likelihood of default, which occurs only for insolvency, not for violations of covenants

THE RETURNS ACCRUING TO CAPITAL PROVIDERS

Practitioner: "Things are really tough because the banks are only lending 4 times cash flow, when they used to lend 6 times cash flow. We can't make our deals profitable anymore."

Academic: "Why do you care if banks will not lend you as much as they used to? If you are unable to lever up as much as before, your limited partners will receive lower expected returns on any given deal, but the risk to them will have gone down proportionately."

Practitioner: "Ah yes, the Modigliani-Miller theorem. I learned about that in business school. We don't think that way at our firm. Our philosophy is to lever our deals as much as we can, to give the highest returns to our limited partners."[8]

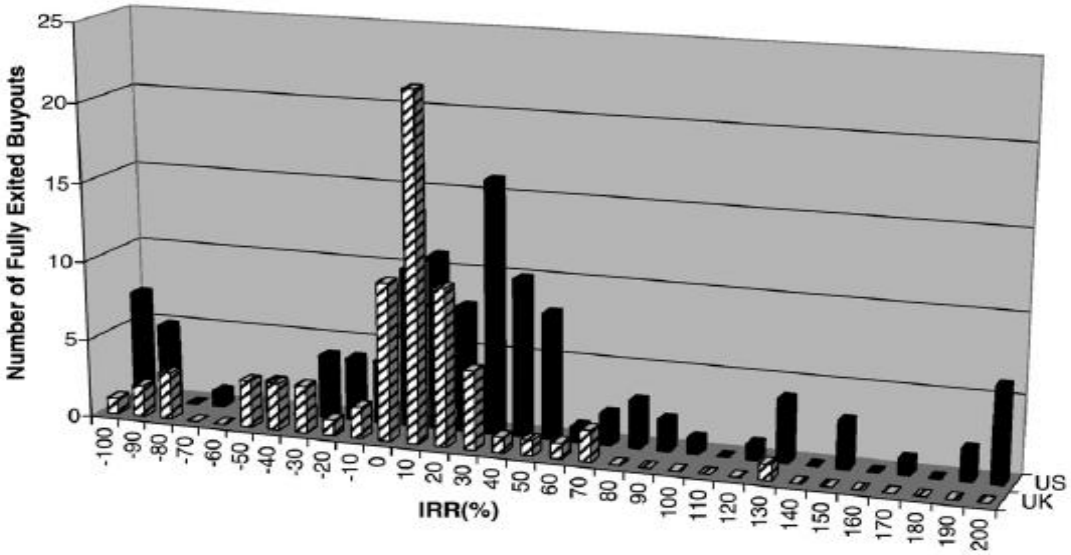


Fig. 1. Returns to buyouts in the U.S. and U.K. Notes: This figure presents a histogram of returns to buyout investments in the U.K. and the U.S. The data span 259 buyouts in the 1984–2001 U.S. and U.K. Source: derived from Cumming and Walz (2004).

The general literature on the risk-return proper to private equity houses can be divided into two general branches. The first, most comprehensive set, documents the gross-of-fees performance of individual investments by general partners; the second is centered on the cash flow streams from (to) the private equity firm to (from) limited partners, including fee payments. The most commonly used parameters in evaluating performance are the IRR, computed using the fund's cash flows, and the PI[9] (or alternatively PME).

[8] *"Why are buyouts leveraged? The financial structure of private equity firms"*, Axelson, Stromberg and Weisbach, Feb '07

[9] The present value of cash inflows divided by the present value of cash outflows; a PI greater than 1 indicates outperformance

However, offering a balanced assessment of the exact returns to such an industry is no piece of cake, mainly for the nature of the investments. As a matter of fact, private equity houses are not subject to the stringent rules governing the disclosure of accounting data in place for publicly-traded companies. Once they are taken over by buyout funds, companies are indeed privately-owned businesses with no obligation to abide to disclosure rules. Accounting for all this, it's straightforward the difficulties that arise when striving to gather relevant data.

Certain funds may have not liquidated all their investments at the time of the analysis. This leaves scholars with the harsh task to come up with a sound way to evaluate the residuals, that is all the capital sitting idle in the fund or not yet returned to limited partners. Non-exited investments are hence another thorny issue to deal with and in most cases researchers have to rely on the accounting values reported by them. Moreover, the whole liquidation process might be an "unfair" one. Kaplan and Schoar proposed to focus entirely on liquidated funds, but by no means we can dismiss the possibility that the liquidation decision, as a matter of fact, could be endogenous. This would create noticeable bias toward more profitable funds. In addition to that, in most cases buyouts involve only divisions or branches of larger companies. Studies that focus on larger deals that encompass public-to-private transactions and the reliance on public finance may indeed tip the balance in favor of an unfair estimation. Even more important is the amount of risk taken over in any single deal: the relevant levered β can hugely affect any educated guess concerning returns. The weighing methodologies employed can also create some problems.

Once a company enters the private equity's portfolio, the group puts in place radical governance practices aimed at shaping and enhancing the performance of the newly-acquired firm: the buyout specialists make early management turnover in order to replace inefficient executives and hire others who can carry out the value creation plan swiftly; it provides focused incentives using equity stakes for top management, also requiring co-investment; General Partners invest significant time upfront, both in the due diligence process and in the first 100 days, and interact with CEOs and CFOs; last but not least, private equity groups use all sorts of external support to correct a company's weak spots.

In their seminal paper, Kaplan and Schoar have demonstrated that returns to capital providers over the last two decades come short of the S&P 500 benchmark (net of fees). However, along with that, a strong, persistent outperformance by more renowned funds shows up. An interesting pattern also

emerges for private equity returns: as time went by and the industry swell, profit margins became slimmer by the day. The early deals on the late 1980's were fostered by a cozy environment with little or no competition. One interesting study analyzes the link between the actual financial returns accruing to limited partners and the operational efficiencies stemming from a private equity acquisition. Surprisingly, the authors find that hefty profits are not much by equivalent improvements in operations. Underlying heterogeneity in the skills of general partners could lead to differences in performance and relatively high persistence. First, better funds might be able to target better investments. Second, buyout specialists provide management and advisory inputs along with capital. Third, some groups might be able to negotiate better deal terms.

Macro economic factors like past industry performance, overall economic outlook as well as changes in the capital gains tax or ERISA provisions are related to increased capital flows to private equity. The degree of competition in the venture capital industry also seems to bear an influence on the capital committed.

Private equity performance: returns, persistence and capital[10]

The authors employ the Venture Economics dataset, in which both private equity houses and their limited partners report the financial performance of funds. Given the voluntary nature of disclosures, it's hard to rule out entirely an upward bias on the regressed results. The sample covers the years from 1980 to 2001 and the returns are reported net of fees and carried interests. The 746 funds included in the sample are largely liquidated funds, in order to have measurement based on actual cash flows to LPs rather than subjective estimates by general partners. Roughly 78% of the funds are venture capital funds while the remaining 22% are buyout funds. As far as capital is concerned, the sample encompasses 88% and 49% of the equity handed to venture capital and buyout funds respectively.

Private equity returns: cash flow based

Equal Weighted Peformance Measures

Sample:	*All Funds*	*VC Funds*	*Buyout Funds*
IRR_{VE}	0.12 0.17 (0.32) [0.04;0.20]	0.11 0.17 (0.34) [0.03;0.19]	0.13 0.19 (0.27) [0.06;0.24]
IRR_{CF}	0.12 0.17 (0.31) [0.03;0.22]	0.11 0.17 (0.30) [0.03;0.22]	0.13 0.18 (0.22) [0.05;0.22]
PME	0.74 0.96 (0.81) [0.45;1.14]	0.66 0.96 (0.69) [0.43;1.13]	0.80 0.97 (0.52) [0.62;1.12]
N of Observations	746	580	166

Size Weighted Peformance Measures

IRR_{VE}	0.14 0.18 (0.19) [0.08;0.22]	0.14 0.18 (0.19) [0.05;0.22]	0.15 0.19 (0.19) [0.09;0.23]
IRR_{CF}	0.12 0.18 (0.26) [0.04;0.23]	0.13 0.17 (0.31) [0.03;0.23]	0.13 0.18 (0.26) [0.06;0.20]
PME	0.82 1.05 (0.70) [0.67;1.11]	0.92 1.21 (0.74) [0.55;1.40]	0.83 0.93 (0.65) [0.72;1.03]
N of Observations	746	580	166

[10] Steven Kaplan and Antoinette Schoar, November 2003

Beware that if a fund has a beta greater than one, the PME will overstate its true risk-adjusted return. The authors, anyhow, deem the practice of benchmarking cash flows with the S&P500 the only feasible practice.

As we can see from the table above, equal-weighted median and average IRRs over the sample period are 12% and 17%. Returns to buyouts tend to be slightly higher compared to those on venture funds. The table also indicates that the median and average funds have PMEs of 0,74 and 0,96. The PMEs of venture and buyout funds are roughly equivalent, standing at 0,96 and 0,97 respectively. The large difference between mean and median hints to a large variation in returns. The value weighted performance is markedly better: while IRR crawl upwards by a couple of percentage points, the PME increases to a median of 0,82 and an average of 1,05. Venture funds have an average PME of 1,21 compared to 0,93 for buyout funds. This comes down to the poor performance of private equity funds in the late 1990s and the astonishing results obtained by venture capitalists in the same years (as the industry grew overtime, later funds inevitably compose the majority of the represented capital). Anyhow, it's worth pointing out that average returns net of fees of 0,96 and 1,05 suggest that gross returns undoubtedly outpace the S&P500 ones. The TVPI[11], another additional measure, indicates that private equity funds return roughly twice the capital committed to them.

To account for the possibility that returns correlate with partnerships and funds' characteristics, the authors come up with the following equation:

$$PME_{it} = \alpha_t + \beta(Fundsize_{it}) + \lambda\,(Sequence_{it}) + \gamma_{VC} + \varepsilon_{it}$$

where $Fundsize_{it}$ is the logarithm of the capital committed to the fund, $Sequence_{it}$ is the logartithm of the sequence number of the fund (later funds of the same firm) and γ_{VC} is a dummy equal to one if the partnership is a venture capital firm. The first column of the following table shows that the coefficients on both log(Size) and log(Sequence) are positive and statistically significant.

[11] Computed as (distributed cash flows + residual)/ paid-in capital

Fund performance and fund characteristics

Dependent Variable: PME (Public Market Equivalent)

	Full Sample					*VC only*		*Buyout only*	
log(Size)	0.08	0.53	0.09	-0.14	0.30	0.46	-0.14	0.08	-0.11
	(0.03)	(0.11)	(0.03)	(0.06)	(0.20)	(0.17)	(0.08)	(0.06)	(0.21)
log(Size)^2		-0.05			-0.05	-0.04		-0.01	
		(0.01)			(0.03)	(0.02)		(0.10)	
log(Sequence)	0.14	0.03		-0.37	-0.43	0.02	-0.18	0.19	-0.26
	(0.06)	(0.01)		(0.25)	(0.28)	(0.18)	(0.32)	(0.20)	(0.39)
log(Sequence)^2		0.07			0.07	0.09		-0.06	
		(0.09)			(0.12)	(0.11)		(0.11)	
First Dummy			-0.10						
			(0.04)						
VC Dummy	0.24	0.20	0.28	0.05	0.03				
	(0.09)	(0.09)	(0.09)	(0.24)	(0.23)				
Firm F.E.	No	No	No	Yes	Yes	No	Yes	No	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.17	0.18	0.18	0.29	0.30	0.25	0.16	0.13	0.01
N of Observations	746	746	746	398	398	577	577	169	169

[a]The dependent variable is realized PME (Public Market Equivalent). PME is calculated by discounting the actual cash outflows and cash inflows that the fund received with the returns on the *S&P 500* over the same time period and forming the ratio of the discounted cash inflows over the discounted outflows. Since we only include funds for which the majority of the cash flows have been realized, on average this restricts the sample to funds that were started before 1996. All the data is obtained from Venture Economics. Size is the amount of capital a fund has under management. Sequence is the sequence number of a fund. VC Dummy is equal to one if the fund is a venture capital fund and zero for buyout, LBO and mezzanine funds. First is a dummy equal to one if the fund is a first time fund. Standard errors are in parenthesis and are adjusted for serial correlation and heteroskedasticity.

Moreover, the coefficient on the VC dummy (0,24) reveals that one average these funds beat buyout ones. Once squared terms for both control variables are included in order to analyze the functional form of the relation, the point estimate of log(Size) increases significantly (from 0,08 to 0,53) and the coefficient on the squared parameter is negative and significant. This hints a concave relation between fund size and performance. On the other hand, the relationship between fund performance and sequence number is convex, but statistically not different from zero. In column 3, a dummy variable "First dummy" is included: apparently first time funds have a statistically significant -0,1% loss for each percentage point. Columns 4 and 5 include GPs' fixed effects. The results for log(Size) and log(Sequence), respectively -0,14 and -0,37, indicate that, while larger or higher sequence number funds have better returns in the cross-section, when a given GP raises a larger or subsequent funds these profits tend to decline (only the size independent variable is significant though).

To test persistence more directly, the researchers include lagged PMEs of the first, second and third previous funds raised by the GP. There's indeed evidence of strong persistence in fund returns for the same partnership. The coefficient on the lagged PME is positive and strongly significant, estimated at 0,54. It's possible however that the current funds and the previous fund of a particular GP have some

shared investments. Controlling for that, there's no evidence of persistence stemming from investment or time period overlaps. In coefficients are estimated separately for buyout and venture capital funds, the former type of private equity tends to enjoy lower persistence's influences.

Persistence of fund performance

Dependent Variable: PME (Public Market Equivalent)

	Full Sample					*VC only*		*Buyout only*	
PME_{t-1}	0.54	0.49			0.46	0.69	0.62	0.17	0.19
	(0.17)	(0.21)			(0.21)	(0.21)	(0.25)	(0.08)	(0.06)
PME_{t-2}		0.28	0.39		0.28		0.48		0.07
		(0.13)	(0.14)		(0.13)		(0.26)		(0.05)
PME_{t-3}				0.32					
				(0.24)					
log(Size)					0.09				
					(0.05)				
log(Sequence)					0.20				
					(0.20)				
VC Dummy	0.41	0.51	0.46	0.49	0.60				
	(0.12)	(0.16)	(0.14)	(0.20)	(0.17)				
Firm F.E.	No	No	No	No	No	No	No	No	No
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.19	0.21	0.20	0.25	0.27	0.12	0.12	0.23	0.10
N of Observations	398	225	225	128	225	323	184	76	41

The same economically and qualitatively results are obtained if we use IRR as dependent variable, if we adjust for average market risk using the returns on the S&P500, if private equity funds are separated according to their stage and maturity or if we construct a framework for industry focus. Of particular relevance is the possibility that differences in total risk might affect our results. This can be done by looking at the dispersion in fund returns conditional on having been in the top, medium or bottom tercile. We could expect that, if outstanding funds' performance is driven by the risks taken, returns would show more dispersion in follow-on funds. Anyhow, after controlling for size and fixed year effects, the residual PME doesn't show any increase in dispersion (if anything, we see a consolidation of results).

As far as reporting bias is concerned, there can be an upward predisposition if funds initially report good performance, but subsequently stop reporting as soon as reports deteriorate. However, a regression denotes that funds do not experience abnormal variations in performance in the quarter prior to which they stopped disclosing info. A different concern regards partnership that hide the

performance of follow-on funds after a particularly successful or catastrophic one. Evidence shows otherwise. If regression are estimated using the data publicized strictly by limited partners, persistence is even stronger. The table below shows the likelihood that funds have to move up and down the performance terciles (as we can see, subgroups tend to be very stiff).

Transition probabilities: fund performance

Panel A: PME	Lower Tercile	Medium Tercile	Upper Tercile
Lower Tercile	44%	37%	19%
Medium Tercile	24%	34%	42%
Upper Tercile	11%	34%	55%

Panel B: IRR_{VES}	Lower Tercile	Medium Tercile	Upper Tercile
Lower Tercile	49%	31%	20%
Medium Tercile	30%	38%	32%
Upper Tercile	21%	31%	48%

An additional topic for discussion is how fund performance affects the flow of capital to subsequent funds. As can be inferred from the table below, the logarithm of fund size is positively and significantly related to the behavior of the previous fund. Fund size also increases with sequence number controlling for performance. The same results are found if we include also the second previous fund. But what is the exact relation between size and past performance? Squared terms indicate that it's nonetheless positive but concave. This entails that top performing funds grow less than proportionally with an increase in performance than do worse performers. By doing so, they're able to avoid regions of diminishing returns. The motives behind this move are pretty straightforward: it's possible that the amount of good deals in finite or private equity funds face constraints in terms on GPs' skills and expertise.

By the same token, the authors find that more partnerships decide to start up after a period in which the industry fared well, but also that GPs are more likely to raise larger funds under favorable auspices.

Probability of raising a follow-on fund

Dependent Variable: Does Fund Raise a Follow-on Fund?									
$Nasdaq_t$	-0.26	-0.15	-0.16						
	(0.03)	(0.04)	(0.09)						
$Nasdaq_{t-1}$	-0.12	-0.06	-0.03						
	(0.04)	(0.04)	(0.09)						
$Nasdaq_{t+3}$		0.10	0.12						
		(0.04)	(0.05)						
$S\&P_t$				-0.30	-0.23	-0.24			
				(0.05)	(0.05)	(0.11)			
$S\&P_{t-1}$				-0.44	-0.25	-0.31			
				(0.05)	(0.06)	(0.11)			
$S\&P_{t+3}$					0.15	0.17			
					(0.05)	(0.10)			
VC $Returns_t$							0.04	0.01	0.01
							(0.00)	(0.01)	(0.01)
VC $Returns_{t-1}$							-0.04	-0.01	-0.01
							(0.00)	(0.00)	(0.01)
VC $Returns_{t+3}$								0.00	0.02
								(0.00)	(0.00)
log(Sequence)	0.09	0.07		0.09	0.07		0.09	0.07	
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
log(Size)	-0.01	-0.01	-0.01	-0.01	-0.02	-0.00	0.00	0.00	0.04
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.02)
Adjusted R^2	0.07	0.04	0.03	0.07	0.04	0.01	0.06	0.02	0.03
N of Observations	2789	2467	751	2831	2503	756	1608	1147	481

The previous findings show that the ability to raise a subsequent fund is a synonym of good performance. A dummy variable is then set in place to be equal to one if a partnership manages to put together an additional fund. By regressing it on measures of overall market performance, it appears that funds raised during boom times are less likely to raise a follow-on fund. That is, such funds are more prone to poor performance. However, if market conditions are benevolent three years after the initial fund was created[12], the chances of setting up a subsequent fund increase.

Lastly, the authors consider the effects of entry of new partnerships in boom times on overall industry performance. The correlation between fund returns and the logarithm of the number of new entrants is negative at -0,14 and statistically insignificant. However, if an interaction term between the entry variable and the logarithm of the sequence number of the fund in included, the coefficient on the direct effect of entry is now negative and statistically significant. These results put forth that in periods of increased entry, much of the negative effect is borne by younger funds, leaving older, more

[12] partnership on average call for equity every three years or so

established funds unscathed. If the regression is repeated for both venture capital and buyout fund, we spot that returns for this latter type seem to be more diluted by the inflow of new funds.

The performance of private equity funds[13]

This later study collides with the previous findings of Kaplan and Schoar, criticizing them on several grounds. Their work is said to be affected by sample selection bias, lack of aggregation of cash flows across all funds when estimating performance, mismanagement of residual values (all such corrections end up being statistically significant). This study tries to improve their previous findings. The authors analyze an overall sample of 983 liquidated or quasi-liquidated buyout funds set up in the years 1980 through 1996, representing around one third of the total private equity raised in those years. The results found for the sample at large are similar to those reported by Kaplan and Schoar: the average value-weight IRR is 16,24% and the PI amounts to 1,05. Note that weighting conventions play a paramount role in this estimations, which present nonetheless wide heterogeneity and ample skewness in favor of larger, renowned groups.

Fund performance

This table reports performance statistics of quasi-liquidated PE funds raised between 1980 and 1996. We report performance for the group of quasi-liquidated funds. The performance measure used is the profitability index (PI) based on actual cash flows and residual values as of December 2003. These residual values are treated as a cash distribution of the same amount in December 2003. Cash flows are discounted with the S&P 500 Index when computing profitability indices (present value of cash distributed by the fund divided by the present value of cash called by the fund). We report performance percentiles (25th, 50th, and 75th) as well as the value-weighted (VW) and equally-weighted (EW) performance measures. When value-weighting, we use the capital committed to the fund as weight.

	PI			IRR		
	All	Venture	Buyout	All	Venture	Buyout
25th-Percentile	0.42	0.37	0.51	0.47	0.21	1.29
50th-Percentile	0.68	0.64	0.81	7.07	6.34	9.60
75th-Percentile	1.02	0.99	1.09	15.92	14.95	18.31
EW-Average	0.90	0.88	0.95	12.19	11.31	14.46
VW-Average	1.05	1.15	0.99	16.24	16.62	15.98

The scenario is turned upside-down if we correct for selection bias. The sample is enlarged further and eventually split into in/out of sample categories. This latter one includes 1391 additional funds which are not included in the previous computations. Determining their performance is of utmost importance. We see that the median fund in the sample has exited 30% of its investments via an IPO

[13] Ludovic Philippaou and Maurizio Zollo, 2005

whereas the median out-of-sample fund has exited only 22%. As floatation on the stock exchange is largely seen as a striking example of brilliant performance in the private equity literature, we notice that the funds picked for the sample are biased. Results show that such negligence is statistically significant and the expected value-weighted PI of out-of-sample funds is 0,88. Just correcting for this, the overall PI drops from 1,05 for the 983 quasi-liquidated funds to 0,95 for the overall 2374 funds. IRR slips to 13,54%.

Estimation of selection bias

This table reports the results of a Heckit estimation. The first step consists in estimating via Probit the selection equation. The dependant variable is a dummy variable that takes the value 1 if the fund is in the sample and 0 otherwise. The independent variables are fund characteristics: proportion of investment exits through IPO (% IPOs) and bankruptcy (% Bankrupt), proportion of investments still active, proportion of non-US investments, proportion of venture-capital investments, the natural logarithm of the total amount invested, and the natural logarithm of the sequence number of the fund in his private equity firm family (sequence). Results when the estimation is done by OLS are also reported. A constant is included but not reported in both regressions. From the first step, "lambda" (i.e. the inverse of Mill's ratio) is computed for each fund and an OLS regression of fund profitability indices on fund lambda is operated for the in-sample funds. From this estimation, the expected performance for in-sample and out-of-sample funds can be deducted and is reported at the foot of Panel A. In Panel B, we report the median and mean of each fund characteristic for both in-sample and out-of-sample funds.

Panel A: Model for Inclusion in the Quasi-liquidated Sample

	Dependent variable: $1_{(\text{if in sample})}$	
	OLS	Probit
% IPOs	0.06	0.20
	1.53	*1.63*
% Bankrupt	-0.09	-0.36
	-1.80	*-2.03*
% Active	-0.22	-0.70
	-5.32	*-5.31*
% non-US	-0.06	-0.22
	-1.50	*-1.52*
% Venture	0.16	0.53
	4.23	*4.31*
Invested (ln)	0.04	0.12
	4.86	*4.92*
Experience (ln)	0.01	0.02
	0.57	*0.58*
N° obs.	1 933	1 933

Performance model: $PI_i = 0.24 + 1.33\ lambda_i + u_i$ (1.15) (3.46)

Expected $PI_{in\text{-}sample} = 0.92$

Expected $PI_{out\text{-}sample} = 0.88$

An additional refinement of previous literature encompasses aggregating the cash-flow streams across all funds and then subsequently calculate IRR and PI. This methodology is probably more accurate for two reasons: the average PI(IRR) of N cash-flows is rarely equal to the PI(IRR) of the sum

of the N cash flows and the weighing rules employed are closer to the present value of the capital invested. Merging all cash-flows across funds and using the S&P 500 as the discount rate yields that the NPV of such flows is -39 billion $ as of December 2003. As a consequence, an investors who has invested all his wealth in the market portfolio would then be better off compared to one who has contrarily placed his bids on the private equity industry. The ensuing IRR is 15,08%, that is 1,16% lower than that of individual performances, and PI of 0,94. If we look at the performance obtained by funds for each vintage year, we see that this tend to be higher in recent years, especially if capital committed is equally weighted. It's primarily for this reason that the average PI hints that quasi-liquidated funds outperform the S&P500 whereas the NPV computed over the aggregated cash-flow stream says otherwise (beware that the better performance of funds raised in the mid 90s is in part driven by residual values).

Panel A: Funds Raised between 1980 and 1996

			Wealth at date *t* as a function of the proportion of the private equity portfolio held				
Initial wealth:		**10 000**					
Date *t*	Cash-flow	Ret. S&P	0	0.25	0.5	0.75	1
Jan-80	-7.5	0.0614	10 614.1	10 612.23	10 610.35	10 608.48	10 606.6
...	...	...	...	...	...	...	...
Sept-03	41.7	-0.0107	199 521.7	190 837.5	182 153.2	173 469.0	164 784.8
...	...	...	...	...	...	...	...
Dec-03	**29.3**	**0.0518**	**223 578.5**	**213 854.6**	**204 130.6**	**194 406.6**	**184 682.6**
Res. value	27 227		223 578.5-184 682.6 = 38 895.9				

Residual values are an additional thorny issue. For 524 out of the 983 quasi-liquidated funds, the residual value stands at more than 50% of the total amount invested. A radical approach to the treatment of residual values is to write them off altogether, entailing a drastic reduction in the performance of funds raised in recent years. All vintage years would feature underperformance except for 1980,1985,1990 and 1995. Instead of writing them off completely, residual values could be addressed according to the age of the fund itself. We can discern among those officially liquidated and those raised before 1993 which have not shown any sign of activity for the last four years (labeled "living-deads"). The underperformance of the funds is statistically significant and we are left with an average PI of 0,94.

Panel B: Performance of Funds Aggregated at the Vintage Level

Year	RV	Taken	Dist.	Agg PI with RV	Agg IRR with RV	Agg PI no RV	Agg IRR no RV
1980	45	22 084	26 678	1.30	21.2	1.30	21.2
1981	62	12 823	9 351	0.72	11.7	0.71	11.6
1982	105	14 395	6 515	0.44	5.4	0.43	4.9
1983	204	33 890	27 481	0.79	12.3	0.78	12.1
1984	586	38 494	36 429	0.96	15.3	0.94	15.1
1985	227	25 871	33 961	1.39	23.6	1.38	23.5
1986	595	25 284	21 443	0.85	12.3	0.82	11.9
1987	1 015	39 271	33 131	0.81	10.7	0.78	10.0
1988	1 199	45 138	40 703	0.91	13.3	0.87	12.7
1989	1 653	32 778	29 578	0.94	13.6	0.88	12.6
1990	1 732	24 727	24 516	1.09	18.0	0.99	16.8
1991	2 756	14 999	12 368	1.01	16.7	0.75	12.9
1992	1 303	11 197	9 799	0.99	18.5	0.85	16.2
1993	3 356	11 380	8 271	**1.03**	**17.0**	**0.63**	**10.2**
1994	4 388	15 221	8 447	**0.82**	**12.2**	**0.48**	**-02.0**
1995	3 214	6 583	7 062	**1.81**	**36.5**	**1.10**	**29.6**
1996	4 786	8 293	7 810	**1.60**	**28.3**	**0.93**	**19.7**
Total	27 227	382 428	343 542				
EW-Mean				1.03	16.9	0.86	14.0
VW-Mean				1.05	17.0	0.85	13.6

Even if we deal just with the 459-strong subsample of closed funds, we see that when their cash flows are combined, IRR slides to 15,6% and PI to 0,94: even those funds who are assumed to be best fall short of the market benchmark. The relationship between residual values and later cash flows strongly depends on those fund's characteristics such as size, venture capital focused and time since the last distribution. Given all of the above, we come up with a far gloomier picture for the newly-raised funds, as our previous assumptions on residual values' treatment are proven to be extremely conservative.

Performance after corrections

Performance as of December 2003	IRR	PI
Size - weighted	16.24	1.05
Deflated size - weighted	15.90	1.04
Present value of investments - weighted	14.35	0.97
Aggregation	14.08	0.88
Correcting for sample selection bias	13.54	0.94
Halve subjective residual values (+ Aggregation)	14.47	0.86
Correcting for sample selection bias (+ Aggregation)	13.42	0.82

Correcting for sample selection biases (+ Aggregation + Halve residual values)	12.44	0.73

Average yearly performance (1980-2003) of:	
S&P 500	15.25
US stock-market portfolio	14.48
AAA – Corporate bonds	9.06

On top of that, if we compare more recent funds with their more mature counterparts, we can spot similar patterns of in terms of investments but less when we tackle divestments: while they invest at a similar pace, younger funds have been much more reticent in returning the capital back to limited partners. For all vintage years, funds called in 1999 have returned only 22% of their endowment. If we include those funds raised in the 1997-2001 5-year time span, the average performance of the group would fall even further, settling at the same 9,5% IRR of a AAA- rated corporate bond over the same period.

Cash flows are also treated as having the same risk of the S&P 500. Research shows that cash outflows (from the investors' perspective) have a beta close to zero and should therefore be discounted at the risk free rate. On the other hand, cash inflows (to investors) are expected to command a beta greater than one due to the highly-levered nature of the investment. When we combine these figures, we obtain an appalling result: private equity funds destroy more than two thirds of the capital allocated to them. Bear in mind a handful of other downgrading factors, namely the extra premium demanded by the riskiness of the investment, the illiquidity of private equity's stakes or the additional expenses faced by limited partners.

All in all, the authors obtain an average IRR of12,44% and a PI of 0,73 for the overall private equity portfolio, trailing by 3,3% the yearly on the S&P benchmark. outperformance compared to the S&P 500. Were we to resort to further discount rates such as the Nasdaq index or an industry matched portfolio, performance would not budge that much, as funds would still be topped by their benchmarks

This puzzling underperformance might be explained by learning effects. The buyout industry is relatively young and the overall behavior that we observe might be tampered by young firms. However, there's no clear-cut evidence of an upward trend in the time series of fund-performance. A

further potential explanation for these poor results could be that limited partners' objective is not to maximize returns, but instead establish commercial ties with general partners, ranging from consulting work to underwriting securities or issue of new equity. It's worth noticing also that pension funds and national governments heavily invest in private equity as a tool to stimulate the local economy. Some final rationales for the findings are that capital providers are fooled into committing cash, lured by some eye-popping returns on highly-publicized deals, or that they do not fully understand the impact of the fee structure.

Corporate governance and value creation: evidence from Private Equity[14]

Evidence provided by recent literature backs the claim that largest and most mature buyout houses consistently outperform the market (150% of S&P 500 return), purporting the idea of a potential existence of "skills" in a fund manager. In this paper, the authors focus exclusively only such established groups and strive to separate the effects of leverage from those of improved performance.

The final dataset embraces 110 deals from 14 mature private equity houses, representative of the overall fund performance. Deals have a mean IRR of 38,6% with significant outliers. M&A and divestments strategies seem to be mutually exclusive. It's worth noticing that the first acquisition happens on average earlier than the first divestment during the private phase. The mean entry EV/ EBITDA multiple is 8,9, whereas the corresponding exit value is 11, 1. The mean debt to equity ratio at entry is 2,0, in line with the common LBO capital structure; the eventual exit value is 0,9. The debt to EBITDA ratio doesn't fall as much: this indicates that debt to equity falls only partly due to improvements in coverage ratio, with appreciations of equity value overtime playing a big role.

[14] Viral V. Acharya, Moritz Hahn and Conor Kehoe, Feb 2010

Variable	n	mean (median)	std. dev.	min	Max	t-stat of diff. exit and entry
Deal IRR (gross) %	110	38.6 (36.0)	40.5	-87.8	123.4	
Cash in/cash out multiple		2.9 (2.8)	1.8	0.0	10.3	
Duration (years) [1]	102	3.9 (3.6)	1.5	1.4	9.0	
Time until first M&A event	37	1.2 (0.9)	1.3	-0.2	4.3	
Time until first divestment	15	2.5 (2.2)	1.8	0.4	7.3	
Deal size (Entry) [1]	102	650.2 (397.6)	694.6	42.7	3,154.9	6.50***
Deal size (Exit) [1]		1,062.3 (592.2)	1,160.5	64.1	4,970.0	
Debt/equity (Entry) [2]	97	2.0 (1.9)	1.1	0.1	8.7	-9.97***
Debt/equity (Exit) [2]		0.9 (0.6)	0.8	0.0	4.5	
Deal size/EBITDA (Entry) [3]	73	8.9 (7.9)	7.0	-13.7	38.7	1.92*
Deal size/EBITDA (Exit) [3]		11.1 (9.5)	7.5	2.4	56.3	
Debt/EBITDA (Entry) [3]	73	5.6 (5.1)	4.5	-5.5	32.4	-1.33
Debt/EBITDA (Exit) [3]		4.7 (3.6)	4.4	0.0	33.6	

Note: In Mio. EUR; significance level * p<0.1, ** p<0.05, *** p<0.01

1 Only exited deals
2 Only exited deals, excluding 5 bankruptcies (since we assume zero equity for bankruptcies)
3 Only exited deals and if EBITDA for exit and entry date is available, including 5 bankruptcies

A painstaking estimate of the performance of a given firm requires the authors to employ the following regression:

$$R_{L,i} = \alpha_i + \left[R_{SU,i}\left(1+\frac{D}{E_{S,i}}\right) - R_{D,i}(1-t)\left(\frac{D}{E_{S,i}}\right)\right] + \left[R_{SU,i} - R_{D,i}(1-t)\left(\frac{D}{E_i} - \frac{D}{E_{S,i}}\right) + \alpha_i\left(\frac{D}{E_i}\right)\right]$$

- Deal-level abnormal performance: α_i. It measures the excess asset return generated at the enterprise level of the portfolio company for PE investors. It's purged of the effect of leverage since : $\alpha_i = R_{U,i} - R_{SU,i}$.
- Return from incremental debt: $R_{SU,i}\left(1+\frac{D}{E_{S,i}}\right) - R_{D,i}(1-t)\left(\frac{D}{E_{S,i}}\right)$. It captures both the amplification effect that the incremental deal leverage beyond sector's norm has on sector's returns and the total leverage has on enterprise-level out-performance.
- Levered sector return: $R_{SU,i} - R_{D,i}(1-t)\left(\frac{D}{E_i} - \frac{D}{E_{S,i}}\right) + \alpha_i\left(\frac{D}{E_i}\right)$. It highlights the effect of contemporaneous sector returns, including the effect of sector-level leverage.

We report the IRR decomposition for different scenarios: (1) We break down the returns for all deals, (2) only for the deals exited by 2008, and (3) only for deals for which the cost of debt was available.

Scenario	n	(i) deal-level abnormal performance	(ii) return from incremental leverage	(iii) levered sector return	total IRR
(1) All deals	110	8.41 (10.49) ***	21.65 (18.81) ***	8.53 (7.07) ***	38.59***
(2) Exited deals	102	9.83 (10.73) ***	22.95 (19.40) ***	8.15 (6.75) ***	40.93***
(3) Deals with cost of debt information	67	6.46 (4.31) ***	23.22 (18.38) ***	10.65 (10.50) ***	40.33***

Note: All values in percent, simple averages, medians in parentheses, significance level of difference to zero * p<0.1, ** p<0.05, *** p<0.01

1 We further use the average *D/E* ratio during deal life for the deals, a median *D/E* ratio over 3 year for the sector and $\beta=1$. We further assume the same cost of debt and corporate tax rate for the sector as for the deal. For 67 deals we find the cost of debt (based rate and margin spread) in Dealogic; for 19 we only find the base rate (Libor vs. Euribor); and for 24 deals we find no information. If the margin spread is unknown for a deal we use the median spread of PE deals in Western Europe in the same year. If the base rate is unknown we use Libor for UK deals and Euribor for all other deals.

As the table shows, sector and leverage risk account for only 8,5% out of the total 38,59% average IRR of the sample. Put in another way, merely a quarter of total return is attributable to stock picking abilities or sheer luck (this, along with all the figures in the table, is significant at the 1% level). Most of the gain arises from the higher debt level sustained at the individual deal's level (21,65%, almost two thirds of the total return), while the considerable abnormal performance (8,41%, or alternatively 22% of the total IRR) reinforces the claim that mature private equity houses generate higher returns. Even if the sample is subsequently fine-grained to those deal who are exited before 2008 or those featuring only precise data on the cost of debt (102 and 67 elements respectively), the results do not move a bit[15].

Improvements in operating performance can be captured in two ways: a larger increase in EBITDA of the portfolio company during PE ownership than pre-acquisition or, alternatively, a larger increase in EBITDA after PE ownership than the sector. Deals show a mean margin improvement of 2,13% and a multiple increase of 2,2 times as a consequence of the private restructuring (their t-statistics are 2,74 and 1,92 respectively). Sales growth seems to lag the general path traced by the relevant industry sector, even though revenues increase on average by a remarkable 5,6% (significant at the 1% level). What's eventually more important is the influence of General Partners. The background of those involved in the process matters dearly: deal partners with a strong operational heritage (consultants, industry's expert etc) generate sound outperformance in organic deals via cost cutting, expansion to

[15] Results are not reported here

new geographical markets and segments. Partners with a financial background (bankers, financial consultants) are better suited to strategies concerning M&A and inorganic growth.

Strategy	leading partner background [2]	n	(1) abnormal performance	(2) IRR	(3) PME
All deals	Banking	33	7.8 (14.0)	34.9 (34.0)	1.6 (1.4)
	Accounting [3]	42	4.9 (3.1)	31.04 (30.5)	0.8 (0.7)
	Subtotal (FPs)	75	6.2 (8.2)	32.74 (33.8)	1.1 (1.0)
	Consulting	15	16.4 (11.5)	67.88 (63.3)	1.5 (1.3)
	Industry Manager	12	11.6 (11.9)	44.4 (41.5)	1.2 (1.3)
	Subtotal (OPs)	27	14.3 (11.5)	57.45 (56.3)	1.4 (1.3)
	Total	102	8.3 (10.5)	39.28 (36.3)	1.2 (1.1)
Organic deals [4]	Banking	14	-2.0 (5.0)	22.8 (24.1)	0.8 (1.0)
	Accounting [3]	31	3.3 (1.8)	31.03 (32.9)	0.8 (0.7)
	Subtotal (FPs)	45	1.6 (1.8)	28.47 (28.2)	0.8 (0.7)
	Consulting	14	17.3 (12.1)	67.68 (63.2)	1.6 (1.4)
	Industry Manager	8	13.8 (14.6)	53.55 (62.5)	1.4 (1.9)
	Subtotal (OPs)	22	16.0 (12.1)	62.54 (63.2)	1.5 (1.4)
	Total	67	6.4 (8.2)	39.66 (36.5)	1.0 (0.1)
Inorganic deals [5]	Banking	19	15.0 (14.2)	43.81 (36.1)	2.2 (1.8)
	Accounting [3]	11	9.4 (4.5)	31.07 (27.1)	0.7 (0.5)
	Subtotal (FPs)	30	13.0 (13.5)	39.14 (35.7)	1.6 (1.2)
	Consulting	1	4.1 (4.1)	70.8 (70.8)	0.6 (0.6)
	Industry Manager	4	7.1 (3.8)	26.09 (26.0)	0.9 (0.6)
	Subtotal (OPs)	5	6.5 (4.1)	35.03 (39.6)	0.9 (0.6)
	Total	35	12.1 (13.2)	38.55 (36.1)	1.5 (1.1)

Note: Simple averages, medians in parentheses, abnormal performance and IRR in percent

As it appears, the "fit " between the partners' background and the strategy adopted during the private equity ownership strongly correlates with performance. It follows that skills and human capital are relevant performance drivers. If we cluster partners into Financial and Operation subgroups, we can extrapolate some attention-grabbing results: financial partners almost always carry out deals with inorganic strategies; in terms of raw averages, inorganic transactions appear to outperform their organic equivalents; operation partners, in general, seem to outperform financial partners. There are some concerns with these findings though, as some deals might suffer from reverse causality: later in a deal's life, operational partners may decide to embark in a major acquisition in order to hide underperformance (early inorganic strategies are more exogenous to deal performance). Another

issue is that PE house fixed effects could be the main pillars of improved efficiency rather than partners' expertise and commitment.

In the table posted below, abnormal performance is regressed on the increase in EBITDA margin, growth in sales and variations in the EBITDA multiple. Additional controls are enforced regarding duration and entry time. As we would expect, the two measures highlighting improved performance show up also as significant determinants of abnormal performance: EBITDA margin improvements are more important for organic deals while EBITDA multiples are salient for inorganic ones. Interestingly enough, there appears to be a stark separation among the two groups: EBITDA margins do no relate to abnormal performance in M&A-oriented strategies and the same holds true for EBITDA multiples when it comes down to an organic course of action (notice how significance is spread among columns 4 and 6). Improvement in those figures explain as much as 39% of abnormal performance. Nonetheless, we sport an R^2 of 0,39 for "growth-led" deals and 0,28 for inorganic ones.

Abnormal performance and operating changes

The table relates cross-sectional financial performance to changes in operating measures with OLS regressions.
For the operational changes we calculate the average difference ($\Delta x_i = x_{iT} - x_{it}$) from the last pre-acquisition year ($t=0$) to last PE-ownership year (T) for EBITDA margin, log sales and log EBITDA multiple.[1] We divide the difference for log sales by the number of PE ownership years ($T-t$) to get annual nominal sales growth. In the same way we add to the regressions median changes in the deal corresponding sector companies ($\Delta x_s = x_{sT} - x_{st}$).
First, in regression (1) – (2) we use all deals. Second, in regression (3) and (4) we show regressions for only organic deals and in the regression (5) and (6) for only inorganic deals. In the lower part of the table we control for deal duration and different entry time periods.

	Dependent variable: abnormal performance in %					
	(1) all deals		(2) organic deals [2]		(3) inorganic deals [3]	
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Δx_i log sales	-0.04	0.08	-0.05	0.03	-0.22	0.34
	(-0.29)	(0.44)	(-0.35)	(0.15)	(-0.38)	(1.04)
Δx_s sector log sales	-0.03	-0.60**	-0.10	-0.55*	0.04	-0.33
	(-0.11)	(-2.35)	(-0.42)	(-1.91)	(0.08)	(-0.43)
Δx_i margin	0.60**	1.07***	0.61**	1.08***	1.24*	2.09
	(2.38)	(3.06)	(2.34)	(2.82)	(1.95)	(1.56)
Δx_s sector margin	1.40	1.53	1.96	1.35	1.10	0.26
	(1.15)	(0.91)	(1.41)	(0.81)	(0.49)	(0.06)
Δx_i log multiple		0.09*		0.07		0.34***
		(1.97)		(-1.54)		(3.32)
Δx_s sector log multiple		-0.42**		-0.25		-1.01**
		(-2.15)		(-0.92)		(-2.94)

PE duration (exit – entry year)	-4.89***	-5.33***	-6.60***	-7.02***	-2.93*	2.69
	(-4.36)	(-3.31)	(-4.32)	(-3.68)	(-2.04)	(1.05)
Entry dummy 95-00	Yes	Yes	Yes	Yes	Yes	Yes
Entry dummy 01-02	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes	Yes	Yes
Number of deals	85 [4]	70 [4 5]	55 [4]	48 [4 5]	30 [4]	22 [4 5]
R^2 adjusted	0.23	0.32	0.31	0.39	0.02	0.28

Note: OLS regressions, t-stats in parentheses with robust standard errors, significance level * p<0.1, ** p<0.05, *** p<0.01

1 Without years with major M&A or divestment events during PE ownership as mentioned by the PE house or in the press, Capital IQ database, or PE house website. M&A events are major if they altered sales or enterprise value by more than 20%
2 Deals without major M&A activity during PE ownership
3 Deals with major M&A activity during PE ownership
4 Exited deals only, including bankruptcies
5 Including deals with entry and exit EBITDA multiple available only, excluding observations with negative EBITDA.

Improvements tend to be greater in companies where the former CEO is sacked at the time of the buyout, in particular in organic deals. It's also found that financial partners engage less frequently in the revision of management plans. Shockingly and clashing with deep-rooted assumptions, there's an inverse pattern between top abnormal performance deals and the practice of giving high cash-multiples to management. This research would then suggest that higher incentives do not relate to value creation. Age of the buyout group is positively related to the performance. Opposing the short-termism claims, LBOs actually augment long-term innovation: patents applied by private equity-owned companies are more frequently cited in concerned newspapers and publications.

EFFICIENCIES STEMMING FROM PRIVATE EQUITY TRANSACTIONS

"This is a leveraged buyout play. The investors' goal was to milk the thing, lever the baby up and take it public so they can focus on their next deal." Greg Gorbatenko

As stated previously, getting to grips with both the operating and financial performance of given establishments or firms is quite problematic. Most LBOs occur "below" the firm level, involving privately held businesses or divisions of larger corporations. This seriously undermines the availability and gathering of clear-cut performance measurements[16]. On top of that, accounting profits might not be necessarily correlated with real performance and many economists are growing increasingly skeptical about the efficient markets hypothesis (changes in stock prices mirror expected future real performance).

Studies of the real effects of leveraged and management buyouts and private equity

Authors	Country	Unit of analysis	Nature of transactions	Findings
Lichtenberg and Siegel (1990)	U.S.	Plant	Divisional and full-firm LBOs and MBOs of public and private companies	Plants involved in LBOs and MBOs are more productive than comparable plants before the buyout; LBOs and especially MBO plants experience a substantial increase in productivity after a buyout; employment and wages of non-production workers at plants (but not production workers) declines after an LBO or MBO; no decline in R&D investment
Wright, Thompson and Robbie (1992)	U.K.	Firm	Divisional, and full-firm MBOs of private companies	MBOs enhance new product development
Long and Ravenscraft (1993)	U.S.	Division	LBOs and MBOs	LBOs result in a reduction in R&D expenditure
Zahra (1995)	U.S.	Firm	MBOs	MBOs result in more effective use of R&D expenditure and new product development
Bruining and Wright (2002)	Holland	Firm	Divisional MBOs	MBOs result in more entrepreneurial activities such as new product and market development
Amess (2002)	U.K.	Firm	MBOs	MBOs enhance productivity
Amess (2003)	U.K.	Firm	MBOs	MBOs enhance productivity
Bruining, Boselie, Wright, and Bacon (2005)	U.K and Holland	Firm	MBOs	MBOs lead to increases in levels of employment, training, employee empowerment, and wages: these effects were stronger in the U.K. than in the Netherlands
Amess, Brown, and Thompson (in press)	U.K.	Firm	MBOs	Employees in MBO firms have more discretion over their work practices
Harris, Siegel, and Wright (2005)	U.K.	Plant	Divisional and full-firm LBOs and MBOs of public and private companies	Plants involved in MBOs are less productive than comparable plants before the buyout; they experience a substantial increase in productivity after a buyout ; plants involved in an MBO experience a substantial reduction in employment
Amess and Wright (in press)	U.K.	Firm	MBOs and MBIs	Employment grows in MBOs but falls in MBIs after buyout

Note: Real effects comprise changes in factor productivity, changes in employment and employee relations conditions, new product development and R&D expenditure.

[16] Note also that after these transactions, the entities result being privately held.

As a matter of fact, a great deal of attention has been devoted to the economic and organizational efficiencies that may arise following a private equity takeover. I now go in an in-depth analysis of all the findings that arisen in the relevant literature. This sections comprises three parts, each one going over the performance of LBO-related firms. The first section deals with LBOs at large and their effect on organizations; the second part addresses Management Buy Outs (MBOs), that is to say private equity transactions featuring the involvement of current management; the last part covers Reverse Leveraged Buy Outs (RLBOs), namely LBO firms that are subsequently re-collocated on the stock exchange via an IPO. To be true, the length of the post-buyout period varies noticeably and IPOs represent only a smaller fraction of the overall exit strategies. Increasingly, the firms are racked up by competitors or are the object of a secondary buyout.

Given all the difficulties mentioned above, a large portion of the relevant literature backs the claim that LBOs, and in particular management-led ones, enhance economic efficiencies, resulting in better-run companies with less managerial slack and less trifling expenses. An suitable indicator of executives' efficiency can be the ratio of cash flow from operations over operating assets. Cash flows are the preferred benchmark for performance measurement for a number of reasons: net income can be tampered downwards via write-ups reflecting the purchase price; reported earnings might appear understated in an attempt to depress the stock price; changes in accounting methods can affect real performance. A further device to evaluate the productivity of a business is to focus on total factor of productivity (TFP). In many instances, the authors felt the urge to target plant-level statistics. Two rationales are given: first, comprehensive information is needed on intermediate materials and capital; second, TFP estimations are heavily influenced by the accuracy of input/output price deflators[17]. As a matter of fact, plant level provides the most clear-cut evidence of the likely effects of an LBO.

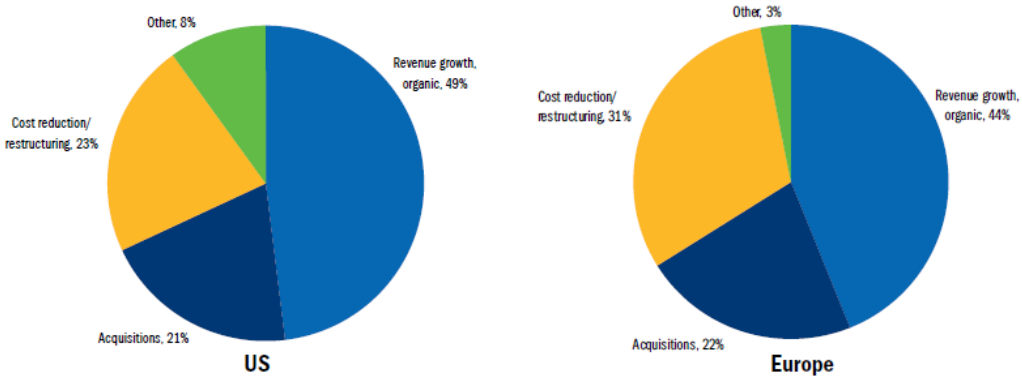
Acquisition of a firm via an LBO should ultimately entail an increase in TFP and all other operating measures, since compensation and the survival of the firm itself are much more tied to performance. As a matter of fact, this is what arises from the relevant literature. Contrary to the claims of free riding and predatory behavior, it is proven that LBO are beneficial to their targets. All measurements

[17] One company can have various establishments in different regions, hence facing different prices

of cash flows are found to increase, especially because of a painstaking management of working capital (clear reduction in the operating cycle time). There's no significant effect on employment; if anything, this is found to increase. In fact, LBOs often target cash-constrained divisions of larger companies. Private equity houses are then able to invest heavily on them and pursue growth-maximizing strategies. LBOs also promote the reduction of staff in "stuffed" headquarters, decreasing the ratio of white to blue collar workers. No effect on long-run competitiveness of the firms is spotted: R&D, advertising and maintenance expenses are not found to decrease. On the other hand, capital investments go down, but this is due to the curtailment of suboptimal investments that curse the public corporation. As far as RLBOs are concerned, we see that they consistently outperform their peers in the years following their floatation on the stock exchange: although this is not a direct proof of LBO efficiency, the fact RLBO firms are indeed hybrid organizations provide some ground for the claim of better-tailored incentives arising from LBOs.

The causal interpretation of all this is open for questioning. It can as well be the fact that productivity increases are driven by exogenous variations; some firms might be more suitable and indeed "begging" for a LBO restructuring (endogenous vs. exogenous LBOs); moreover, productivity growth might be a noisy and inaccurate indicator of actual performance; managers and buyout specialists might be trading on the advantage of private information. However, studies underscore that unsuccessful and non-defensive MBOs, those that are most likely to present asymmetric information, show no significant improvements or abnormal returns. Hence, we can infer that an enhanced performance is the ultimate consequence of private equity's overseeing. It would be interesting to determine why realignment contracts fail to work as effectively in public corporations.

Ernst and Young, a renowned consulting firm, publishes an yearly report on the state of the buyout industry. They've calculated that PE owned firms grow twice as fast than comparables with diffuse ownership. From their 2007 report, we get the following



"Their skill and luck in judging the timing of acquisitions and exits is one of the key success factors of Private Equity. However, the study also shows that Private Equity investors sold improved businesses with better prospects than they acquired.

Two-thirds of the growth in EBITDA came from business expansion, with organic revenue growth being the most significant element. This included the benefits of investment in sales and marketing and new product launches. Acquisitions were also important – to accelerate growth into new product categories and markets – as well as to achieve savings through synergies"

All in all, the claim that LBOs are unable to stand on their very own two legs, but instead they constantly need raising asset prices, willing investors, access to credit and steady economic growth is not mirroring the true state of affairs.

LEVERAGED BUYOUTS AND PRIVATE EQUITY SPECIALIST

Barbarians at the gate? Leveraged buyouts, private equity and jobs[18]

As the progress into becoming a global force, LBOs and private equity are largely looked down with fear and suspicion. There's rife consensus that the efficiency and financial gains that arise from attenuated incentive problems come at the expenses of workers and employees. Although there's plenty of evidence addressing the economic performance of LBO firms, the few, patchy studies we have about employment effects do not supply straightforward answers: Kaplan's research demonstrates that industry's adjusted employment decreases by as much as 12% once the transaction is sealed; Smith doesn't find any employment effect attributable to MBOs; some other scholars notice that non-production staffing declines by 8,5%.

Despite all the accusations of short-termism featuring the sack of many employees, there's an interesting point to be made here: non-LBOs overtime might pursue sub-optimal firm size. The private stage may give them the opportunity to scale back to optimal staffing levels. Advocates of private equity also highlight that corporate changes are eased by delisting, since an LBO clears executives of the pressure and demands of stock market volatility. Moreover, it may as well be that market forces are those which entice short-term goals in order to remunerate shareholders; with an LBO, the new owners can scan entrepreneurial growth strategies which will be conducive for increased employment. This is especially the case of divisions and subsidiaries of larger corporations, since bureaucratic company-wide incentive and control measures may restrict innovation activity. From all the above stems that a clear distinction has to be drawn between endogenous and exogenous LBOs, pointing out to the fact that they do not occur randomly in the market, but instead they're driven by some firms "calling" for restructuring

In their research, the authors assume that firms commit to a certain employment level at t – 1, whilst minimizing a cost function, and investment decisions are supposed to follow a Cobb-Douglas technological curve. They come up with the relevant equation[19] expressed here:

[18] Kevin Amess, Mike Wright, 2007

$$n_{it} = \beta_1 n_{it-1} + \beta_2 w_{it} + \beta_3 w_{it-1} + \beta_4 y_{it} + \beta_4 y_{it-1} + \beta_5 prepelbo + \beta_6 prenpelbo + \beta_7 pelbo + \beta_8 npelbo + (\beta_9 prepelbo + \beta_{10} prenpelbo + \beta_{11} pelbo + \beta_{12} npelbo)\, size + f_t + f_i + v_{it}$$

The sample encompasses 533 firms of different nature and scope. The majority of the LBOs in the sample were sourced from private deals and, in addition, 65% of them had private equity involvement (this leaves a significant proportion of npeflbos, also called indlbos). The employment and turnover statistics highlight that the average LBO firm is larger than non-LBOs and it tends to have less capital devoted to fixed assets, making the common LBO firm more labor intensive. By looking at the pelbo and npelbo (or alternatively indlbo, independently financed LBO), we find that deal back by companies other than private equity firms tend to be larger in terms of employment and turnover. Such funds tend to overlook smaller deals because of high transactions costs and their will to invest as much equity capital as the can in every single deal (which would otherwise sit idle).

Variable	*All Firms*	*prelbo=1*	*lbo*=1	*lbo*=0	*prepelbo=1*	*pelbo*=1	*preindlbo=1*	*indlbo*=1
Employees	188.918 (1016.879)	305.655 (999.305)	225.985 (972.270)	179.395 (1027.863)	382.456 (1237.269)	274.379 (1190.525)	191.806 (435.362)	137.623 (268.319)
Pay per employee	22.449 (13.780)	20.684 (11.860)	21.712 (9.957)	22.638 (14.596)	19.500 (8.406)	21.117 (8.601)	22.440 (15.479)	22.800 (11.975)
Value-added	4328.462 (12291.062)	6678.410 (23035.912)	4953.633 (15291.922)	4167.839 (11388.630)	8570.484 (28802.157)	5792.678 (18352.537)	3873.641 (8672.050)	3421.639 (6509.277)
Fixed assets	5885.668 (44830.296)	8072.854 (38199.471)	4715.926 (20856.464)	6186.206 (49132.512)	10963.085 (41681.841)	5714.818 (19992.620)	3788.437 (31921.073)	2892.071 (22244.765)
Turnover	16820.659 (40698.841)	25737.414 (71116.852)	20582.089 (45141.157)	15854.249 (39421.646)	30137.320 (87867.748)	22430.897 (52554.022)	19215.086 (32353.759)	17206.394 (26448.197)
Number of observations	11433	1127	2337	9096	673	1510	454	827

Notes: (1) Financial figures expressed in real terms (2000=100); (2) Financial figures are in £'000

The table below gives us some insight on LBOs' effect on employment. The first four regressions indicate that prepelbo is the only significant LBO-related variable (10 % level), showing that employment levels are 3,7% lower in firms that are subject to private equity backed LBO compared to those who are not. On the other hand, if we assume LBO effects to be conditional on firm's size and an exogenously-driven buyout, LBOs have a statistically significant effect on workers: pre and post-

[19] Where, expressed in natural logarithms, n is the number of employees, w is the wage rate, y is output, f_t are time effects capturing factors that affect employment over time that are common to all firms, f_i are firm-specific fixed effects capturing permanent differences between firms, pelbo takes the value of 1 for private equity-financed LBOs, npelbo takes the value of 1 for non private equity-financed LBOs, prepelbo prenpelbo are pre-buyout dummy variables in order to quantify employment differences prior to the transaction, and v_{it} is the error term.

LBO employment is 20,24% and 7,20% higher[20]. The same trend surfaces for pelbo and indlbo which have pre-buyout levels of employment 23,19% and 10,8% higher than non-LBOs. In columns 7 & 8, where the transaction is intended as endogenous, none of the LBO control variables is significant.

Pre-Buyout and Post-Buyout Effects on Employment (dependent variable = n_{it})

Independent variables	LBO effect *not* conditional on size				LBO effect conditional on size			
			Endogenous Buyout				Endogenous Buyout	
	1	2	3	4	5	6	7	8
n_{it-1}	0.923[c] (27.48)	0.924[c] (27.61)	0.887[c] (28.76)	0.898[c] (25.99)	0.932[c] (26.47)	0.933[c] (26.33)	0.894[c] (28.52)	0.925[c] (23.58)
w_{it}	-0.677[c] (-3.47)	-0.671[c] (-3.44)	-0.511[b] (-2.43)	-0.679[c] (-3.76)	-0.669[c] (-3.29)	-0.668[c] (-3.27)	-0.467[c] (-2.59)	-0.557 (-1.41)
w_{it-1}	0.520[c] (2.58)	0.517[b] (2.56)	0.424[b] (1.99)	0.555[c] (3.09)	0.509[b] (2.37)	0.509[b] (2.35)	0.412[b] (1.98)	0.578 (1.49)
y_{it}	0.493[c] (5.86)	0.492[c] (5.86)	0.350[c] (4.84)	0.381[c] (4.71)	0.509[c] (5.95)	0.509[c] (5.90)	0.354[c] (4.71)	0.383[c] (4.56)
y_{it-1}	-0.347[c] (-3.69)	-0.347[c] (-3.69)	-0.238[c] (-2.85)	-0.324[c] (-3.58)	-0.351[c] (-3.73)	-0.353[c] (-3.73)	-0.233[c] (-2.72)	-0.335[c] (-2.89)
prelbo	-0.017 (-0.95)		-0.032 (-1.07)		0.675[c] (3.01)		0.130 (0.40)	
lbo	-0.013 (-1.13)		-0.122 (-1.54)		0.469[c] (2.62)		0.134 (0.12)	
prepelbo		-0.038[a] (-1.66)		0.004 (0.08)		0.746[c] (2.94)		-0.212 (-0.26)
preindlbo		0.013 (0.76)		0.026 (0.65)		0.483[b] (2.21)		-0.305 (-0.38)
pelbo		-0.017 (-1.15)		-0.063 (-0.55)		0.494[c] (2.63)		-0.242 (-0.10)
indlbo		-0.008 (-0.63)		-0.045 (-0.29)		0.413[b] (2.23)		-1.279 (-0.31)
(*prelbo•size*)					-0.075[c] (-2.94)		-0.018 (-0.51)	
(*lbo• size*)					-0.053[c] (-2.61)		-0.026 (-0.23)	
(*prepelbo• size*)						-0.085[c] (-2.93)		0.023 (0.26)
(*preindlbo• size*)						-0.052[b] (-2.09)		0.039 (0.44)
(*pelbo• size*)						-0.056[c] (-2.61)		0.020 (0.08)
(*indlbo• size*)						-0.046[b] (-2.25)		0.157 (0.35)
Constant	-0.329 (-1.32)	-0.204 (-0.98)	-0.094 (-0.40)	0.476[b] (2.47)	-0.320 (-1.38)	-0.313 (-1.35)	-0.164 (-0.56)	0.019 (0.03)
Year dummies [prob.]	30.27 [0.00]	30.20 [0.00]	34.72 [0.00]	28.44 [0.00]	29.03 [0.00]	28.33 [0.00]	36.50 [0.00]	37.15 [0.00]
Sargan [prob.]	90.68 [0.43]	90.01 0.45]	104.2 [0.13]	100.6 [0.19]	87.38 [0.53]	87.41 [0.53]	102.5 [0.16]	104.7 [0.11]
AR(2) [prob.]	-0.15 [0.88]	-0.16 [0.88]	-0.502 [0.62]	-0.24 [0.81]	-0.16 [0.88]	-0.16 [0.87]	-0.540 [0.59]	-0.29 [0.77]

[20] Since we also account for size, βetas are no longer the only relevant parameter. The overall impact is computer as follows: [exp. (B_6) - 1 + B_8 (ln Size)] x 100 .

Overall, this paper shows us that LBOs have a significant effect on employment only when the LBO dummies are assumed to be exogenous. If the deal is regarded as endogenous, the LBO effects on employment are rendered insignificant. Therefore, once we account for such control variable, LBOs do not feature significantly different level of employment from other firms. The allegations that private equity and LBOs destroy occupation are then to be discarded.

The effects of leveraged buyouts on productivity and related aspects of firm behavior[21]

In order to come up with a satisfactory sample of deals, the authors merge the Census Bureau's LRD with a list of the major LBOs that had taken place. Despite the available dataset's narrow focus and the additional size threshold the researchers imposed[22] on themselves, the sample turns out to be satisfactory, with as much as 57% of major LBOs in terms of value included. The scholars find that MBOs account for 45% of the total value of all major buyout transactions during the period 1981-1986; however, this rate drops to 27% in the sample analyzed, probably for management's unwillingness to participate in LBOs concerning the manufacturing sector. Another important discovery is that a faster rate of ownership change characterizes the firms targeted by private equity houses.

Distribution of LRD establishments involved in major LBOs during 1981-86, by type of LBO

	MBO	Other LBO	
FULL-FIRM LBO	239	553	791
(percent)	21.1	48.9	
(row percent)	30.2	69.8	
(column percent)	59.9	75.4	
PARTIAL-FIRM LBO	160	180	340
(percent)	14.1	15.9	
(row percent)	47.1	52.9	
(column percent)	40.1	24.6	
	399	733	

Note: sums do not exactly match because several plants were involved in more than one type of transaction.

To stress the difference in performance between LBO and non-LBO establishments, the authors come up with the following regression.

[21] Frank Liechtenberg, Donald Siegel, *National Bureau of Economic Research*, June 1989

[22] Each deal had to be greater than 35 $ million and the LRD dataset includes only manufacturing firms

$$\log_{VQ_{ijt}} = \beta_{0jt} + \beta_{Ljt} \log L_{ijt} + \beta_{Kjt} \log K_{ijt} + \beta_{Mjt} \log VM_{ijt} + u_{ijt}$$

where VQ denotes the value of production, L represents the labor inputs, K is the capital inputs, VM stands for the value of all the materials consumed, U is a disturbance error while the subscript ijt describes establishment i in 4-digit SIC industry j in year t. To be true, output and materials are measured in nominal terms due to the lack of accurate price deflators from the LRD dataset. Thus, the residual might capture either productivity or price differences.

The starting point to tackle the effectiveness of LBOs is to estimate the difference in TFP growth between various establishments, conditional on their starting level of productivity. In the following regression, the coefficient γ_1 points out to such difference:

$$\gamma_{ij86} = \gamma_0 + \gamma_1 x_{ij81-86} + \gamma_2 y_{ij81} + \varepsilon_{ij86}$$

Y denotes either the studentized residual or the raw residual and X is an LBO dummy. The coefficient on 1981 productivity is specified as a free parameter in order to allow for the possibility that productivity growth comes down to its starting level and for a possible correlation between X and initial productivity.

Estimates of Parameter γ_1 in Equation (2):
Effects of LBOs and MBOs on Productivity Growth

	Independent variable	
Productivity measure	LBO dummy	MBO dummy
Raw residual	.028 (2.7)	.039 (2.3)
Studentized residual	.100 (2.9)	.134 (2.4)

Note: t - statistics in parentheses.

The estimates of the parameter γ_1 indicate that the cumulative productivity growth during 1981-1986 of plants involved in LBOs was 2,8% higher than that of unsold competitors. As the t-statistics underlines, the difference is statistically significant. The results for the studentized and raw residuals are qualitatively similar.

Data retrievable in major publications shows that TFP in the manufacturing sector rose by 19,9% in the 5 years under investigation. This figure may be intended as a weighted average of the productivity growth rates of LBO and non-LBO plants, which can be summarized by the following:

$$\pi = S_{lbo} * \pi_{lbo} + (1 - S_{lbo}) * \pi_{non-lbo} = \pi_{non-lbo} + S_{lbo} * (\pi_{lbo} - \pi_{non-lbo})$$

where $\pi, \pi_{lbo}\ and\ \pi_{non-lbo}$ denote the productivity growth rates and S_{lbo} is the fraction of all workers employed by LBO firms (roughly 5,25%). The data imply that $\pi_{lbo} - \pi_{non-lbo} = 0{,}028$, from which we can infer that $\pi_{non-lbo} = 0{,}198$ and $\pi_{lbo} = 0{,}26$, that is a 14% difference is productivity rates.

An additional topic for discussion is the effect on employment brought about by LBOs. Previous studies show that ownership changes tend to be coupled by stark reductions in the ratio of auxiliary-establishment to production establishment workforce. Failing to account for this shrunk administrative burden may after all downplay the effects of ownership change on productivity. If we assume LBOs to have a comparable effect, this would make $\pi_{lbo} - \pi_{non-lbo}$ jump to 0,0314.
In the three years before the LBO, the wage bill (total labor income generated) of non-production workers is growing at the same rate in both LBO and non-LBO plants; however, after the deal is sealed, this growth tends inexorably to lag. This decline in the wage bill is equally due to reductions in auxiliary employment and relative annual wages. In contrast, the wage bill of production workers is on the rise in LBO plants, mainly thanks to increases in the hourly wage rate and the hours put in by every worker. All in all, LBO establishment appear to be production-labor using and nonproduction-labor saving. Moreover, due to its consequences on wages, private equity seems to reduce inequalities within plants. In light of the "efficiency wage" theory, these findings are consistent with firms resorting to "the carrot " of high wages in order to elicit efforts, rather than "the stick" of intense supervision or sanctions.

An alternative approach to assess productivity is to refer to residual values. This method provides evidence concerning the exact timing of the productivity movements relative to the transactions but, that is to say, differences in annual productivity variations are estimated less precisely than over a 5-year time frame.

The results are obtained by regressing the residual on an LBO dummy variable. As the table below shows, plants involved in an LBO boasted an above-average productivity in every year from t-13 to t+2. Moreover, efficiency appears to be declining prior to the LBO and then spurts back to abnormal levels after the transaction (results in most cases are statistically significant). In year t+1 the productivity difference is the largest although it declines in the following year. MBOs reflect the same pattern, even though it is way more pronounced, both in the initial decline and the ensuing comeback. We evince that private equity houses target the untapped potential of once-efficient firm, which have been slacking prior to the LBO and thus present the greatest room for restructuring.

Differences Between Buyout Plants and Non-Buyout Plants in Mean Productivity Residual, by Year Relative to Year of Buyout
(t-statistics in parentheses)

Year	$\bar{e}_{LBO} - \bar{e}_{NON\text{-}LBO}$	$\bar{e}_{MBO} - \bar{e}_{NON\text{-}MBO}$
-13	1.6 (1.3)	1.2 (0.6)
-12	2.9 (2.6)	3.2 (1.8)
-11	2.6 (3.0)	3.6 (2.3)
-10	1.9 (2.4)	2.2 (1.7)
-9	1.8 (2.4)	2.0 (1.6)
-8	1.4 (2.1)	1.3 (1.1)
-7	2.0 (2.9)	2.3 (1.9)
-6	1.2 (1.6)	-0.1 (0.1)
-5	1.1 (2.1)	0.7 (0.8)
-4	1.2 (1.9)	-0.0 (0.1)
-3	1.3 (2.2)	1.9 (1.6)
-2	1.3 (1.7)	2.2 (2.0)
-1	1.1 (1.4)	4.9 (3.1)
0	2.2 (2.5)	2.7 (1.7)
1	3.5 (3.1)	7.2 (3.2)
2	2.3 (1.7)	7.7 (3.0)

One important consideration is to account for both output and input in the production process. As a matter of fact, productivity growth rates are due to changes in either one of the two factors. LBO plants had higher growth rates of output in the years 1981-1986, but the difference is not statistically

significant. However, as we can see from the table, inputs such as labor and capital are found to decline in every year, but these negative results are significant only in the years before the LBO (t-2 until t). Thus, inputs were declining prior to the transaction and at a much faster pace.

Differences Betwen LBO plants and Non-LBO Plants in Mean Growth Rates (in percent) of Output and Inputs, by year relative to year of LBO

Year	Output	Capital	Labor	Materials
-2	0.5 (0.4)	-0.9** (2.4)	-1.9 (1.1)	1.2 (0.6)
-1	0.3 (0.2)	-0.4 (1.0)	-2.9** (2.4)	-0.8 (0.4)
0	-0.0 (0.0)	-0.8* (1.8)	-0.9 (0.8)	-1.3 (0.7)
1	-0.7 (0.5)	-0.1 (0.3)	-1.3 (0.9)	2.5 (1.0)
2	-0.2 (0.1)	-0.9 (1.4)	-1.0 (0.6)	-0.5 (0.2)
Averages				
-2,-1,0 (Before)	0.3	-0.7	-1.9	-0.3
1,2 (After)	-0.5	-0.5	-1.2	1.0

t-statistics in parentheses
* significantly different from zero at .05 level (one-tailed test)

** significantly different from zero at .01 level (one-tailed test)

Year 0 is the year in which the LBO occurs (is completed). The growth rates refer to changes from the previous year, e.g., the growth rate for year -2 is the change from year -3 to year -2.

As we can all imagine, the probability of a future plant closing is negatively related to productivity. Since LBOs show outperformance, especially around the date of the buyout, one could expect there to be a lower incidence of shut downs among LBO establishments. Nevertheless, data denies this claim, as the likelihood of plants' closing is no different among LBO and non-LBO establishments. This can be due to the fact that, although they're more efficient, LBO firms are usually somewhat smaller and hence more vulnerable to market shifts. On top of that, the research shows that MBO plants are far less likely to close vis-à-vis other LBOs.

Consequences for research and development are carried out looking at two alternative measures of R&D intensity: the ratio of R&D expenditures over total sales and the number of full-time researchers and engineers as a fraction of the total workforce.

Year	(1) Mean R&D Intensity of LBO Firms	(2) Mean R&D Intensity of All R&D Performers	(1)÷(2)
A. R&D Expenditure ÷ Sales			
1978	1.2%	2.9%	.41
1979	1.2	2.9	.41
1980	1.4	3.0	.47
1981	1.4	3.4	.41
1982	1.6	3.5	.46
1983	1.7	3.7	.46
1984	1.5	3.6	.42
1985	1.5	3.7	.41
1986	1.8	3.4	.53
B. R&D Scientists & Engineers ÷ Total Employment			
1978	1.4	3.1	.45
1979	1.4	3.3	.42
1980	1.5	3.2	.47
1981	1.5	3.3	.45
1982	1.5	3.8	.39
1983	1.5	3.9	.38
1984	1.5	3.8	.39
1985	1.7	4.0	.43
1986	1.7	3.6	.47

The relative intensity of R&D (reported in the last column of the table) increases less than the absolute R&D intensity, but increases nevertheless, particularly in the latter three years, when most LBO occurred. The table ultimately shed some doubt over the assumption that LBOs worsen the future prospects of a firm.

THE CASE OF MANAGEMENT BUYOUTS

Assessing the impact of management buyouts on economic efficiency: plant-level evidence from the United Kingdom[23]

This 2004 study assesses the performance of UK manufacturing firms both before and after the buyout. To come up with their sample of firms, Harris, Siegel & Wright merged the ARD file, containing precise data on output, materials, employment of businesses with a second file encompassing the characteristics of UK buyouts, private equity and debt holders. This enabled them to painstakingly crosscheck for reliability. Their final sample comprises 979 MBOs and 4877 plants, embracing as much as 18 different UK industries, as denoted by the two digit SIC code. As it appears from the table posted below, MBO plants have a tendency to be smaller and less capital intensive compared to their non MBOs counterparts.

Comparison of mean values of output, capital, labor and other variables

Variable	MBO Plants	Non-MBO Plants	*t*-Tests for Differences in Means
Real gross output (£m, 1990 prices)	3.3	4.2	6.29**
Real value of plant and machinery capital stock (£m, 1980 prices)	0.7	1.1	5.95**
Plant employment	59	54	1.75
Percentage foreign-owned	6.9	11.9	13.44**
Percentage located in Assisted Areas	40.3	39.5	−1.15
Number of plants	4877	30,875	

Source: Authors' calculations based on the linked ARD-CMBOR data set.
** Significant at 5% level.

The authors then move to set up their regression, whose results will be later shown in table 3 (only statistically significant coefficients are reported):

[23] Richard Harris, Donald S. Siegel and Mike Wright, The Review of Economics and Statistics, Feb 2005

$$\text{Ln(OUTPUTit)} = \beta 0 + \beta 1 \ln(\text{CAPITALit}) + \beta 2 \ln(\text{LABORit}) + \beta 3 \ln(\text{MATERIALSit}) + \beta 4 \text{PREMBOit} + \beta 6 \ln(\text{AGEit}) + \beta 7 \text{AAit} + \beta 8 t + \beta 9 \text{USit} + \beta 10 \text{EUit} + \beta 11 \text{OFOit} + \sum_{j=1}^{18} \theta j SICij + \sum_{k=1}^{11} \gamma k REGik + ait$$

where OUTPUT is real gross output; CAPITAL refers to plant and machinery capital stock; LABOR is total employment; MATERIALS is real intermediate inputs; PREMBO is a dummy that equals 1 if the plant was involved in a MBO during 1994–1998, POSTMBO is a dummy that equals 1 in each year after a buyout occurs; AGE is the number of years the plant has been in operation4; AA is a dummy that equals 1 if the plant is located in an Assisted Area of Great Britain; t is a time trend; US, EU, and OFO are dummies that equal 1 if the plant is owned by a U.S., E.U., or other foreign parent company; SIC is a dummy for the two-digit SIC industry of the plant (1980 SIC); REG is a dummy that is equal to 1 if the plant is located in a specific standard U.K. region; and α is an error term.

Indeed, foreign-owned plants tend to be more productive: we notice that the Betas for US or foreign ownership are positive and statistically significant, reaching respectively 0,088 and 0,078 in the long run. Older establishments, highlighted by the independent variable AGE have a negative coefficient, sinking as far as -0,08 in the long run. Plant located in assisted areas are also likely to underperform (-0,016 and -0,021 in the short and long term). Such variables happen to explain much of the variation in TFP across plants.

Of particular relevance are the coefficients on the pre and post-buyout dummies (PREMBO and POSTMBO respectively). On average, plants that took part in MBOs were less productive than comparable establishments in their industry (Betas of -0,016 and -0,02 in the short and long run) while, after the deal is sealed, they experience a substantial hike in TFP, outperforming considerably their industry and boasting a dazzling improvement of 90,3% in the long perspective.

Coefficient on	Short Run $\hat{\beta}$	Short Run t-Value	Long Run $\hat{\beta}$	Long Run t-Value
ln (*LABOR*)	0.2380	13.50	0.2574	13.74
ln (*MATERIALS*)	0.6569	22.60	0.6629	25.89
ln (*CAPITAL*)	0.1321	5.20	0.1336	5.79
AGE	−0.0631	−4.62	−0.0808	−4.69
AA (Assisted Area)	−0.0165	−4.09	−0.0212	−4.09
U.S.-owned plant	0.0689	10.00	0.0882	10.27
Other foreign owner	0.0615	6.43	0.0788	6.50
PREMBO	−0.0157	−2.70	−0.0202	−2.70
POSTMBO	0.7049	4.94	0.9032	4.96
PREMBO × *SIC24* (nonmetallic minerals)	0.4641	2.55	0.5946	2.55
POSTMBO × *SIC24* (nonmetallic minerals)	−0.9969	−4.45	−1.2773	−4.45
PREMBO × *SIC25* (chemicals)	0.2874	7.70	0.3683	7.65
POSTMBO × *SIC25* (chemicals)	−0.3915	−3.64	−0.5017	−3.64
PREMBO × *SIC33* (office machinery)	−0.1081	−2.14	−0.1385	−2.14
POSTMBO × *SIC34* (electrical eng.)	−0.0598	−2.78	−0.0767	−2.78
POSTMBO × *SIC42* (drink and tobacco)	−0.2333	−5.09	−0.2990	−5.11
PREMBO × ln (*LABOR*) × *SIC24*	−0.1410	−3.25	−0.1806	−3.25
POSTMBO × ln (*LABOR*) × *SIC24*	−0.2721	−2.09	−0.3486	−2.09
PREMBO × ln (*MATERIALS*) × *SIC24*	0.2664	3.22	0.3413	3.22
POSTMBO × ln (*MATERIALS*) × *SIC24*	0.9069	5.28	1.1619	5.27
POSTMBO × ln (*CAPITAL*) × *SIC24*	−0.9202	−6.91	−1.1790	−6.88
POSTMBO × ln (*LABOR*) × *SIC25*	0.0510	2.57	0.0653	2.57
PREMBO × ln (*MATERIALS*) × *SIC25*	−0.1957	−4.16	−0.2507	−4.14
PREMBO × ln (*CAPITAL*) × *SIC25*	0.1597	3.75	0.2046	3.73
POSTMBO × ln (*LABOR*) × *SIC31*	0.0332	2.99	0.0653	2.99
POSTMBO × ln (*MATERIALS*) × *SIC31*	−0.1317	−3.53	−0.1687	−3.53
POSTMBO × ln (*CAPITAL*) × *SIC31*	0.0528	2.41	0.0677	2.41
PREMBO × ln (*LABOR*) × *SIC34*	0.0155	3.60	0.0199	3.59
PREMBO × ln (*LABOR*) × *SIC35*	−0.0281	−2.73	−0.0360	−2.75
POSTMBO × ln (*LABOR*) × *SIC35*	0.0500	2.93	0.0640	2.94
PREMBO × ln (*MATERIALS*) × *SIC35*	0.1183	3.74	0.1515	3.77
POSTMBO × ln (*MATERIALS*) × *SIC35*	−0.1786	−3.72	−0.2289	−3.73
PREMBO × ln (*CAPITAL*) × *SIC35*	−0.0490	−2.49	−0.0628	−2.50
POSTMBO × ln (*CAPITAL*) × *SIC35*	0.0944	2.51	0.1210	2.51
PREMBO × ln (*MATERIALS*) × *SIC41*	0.0674	2.53	0.0863	2.54
PREMBO × ln (*LABOR*) × *SIC42*	0.0282	3.65	0.0361	3.68
PREMBO × ln (*CAPITAL*) × *SIC42*	−0.0404	−4.30	−0.0518	−4.33
POSTMBO × ln (*CAPITAL*) × *SIC42*	0.0569	2.68	0.0729	2.68
PREMBO × ln (*LABOR*) × *SIC43*	0.0208	3.96	0.0266	3.98
POSTMBO × ln (*LABOR*) × *SIC43*	−0.0301	−2.46	−0.0386	−2.47
PREMBO × ln (*MATERIALS*) × *SIC43*	−0.0702	−5.18	−0.0900	−5.17
POSTMBO × ln (*MATERIALS*) × *SIC43*	0.1651	3.82	0.2115	3.83
PREMBO × ln (*MATERIALS*) × *SIC45*	0.0573	2.23	0.0734	2.23
POSTMBO × ln (*LABOR*) × *SIC46*	0.0361	2.12	0.0462	2.12
POSTMBO × ln (*MATERIALS*) × *SIC46*	−0.1073	−2.63	−0.1374	−2.63
POSTMBO × ln (*CAPITAL*) × $SIC46_i$	0.0479	2.38	0.0614	2.38
PREMBO × ln (*MATERIALS*) × *SIC47*	0.0199	1.89	0.0255	1.90
POSTMBO × ln (*MATERIALS*) × *SIC48*	0.0734	1.85	0.0941	1.85
PREMBO × ln (*CAPITAL*) × *SIC49*	−0.0375	−2.06	−0.0480	−2.06
POSTMBO × ln (*MATERIALS*) × *SIC49*	−0.0700	−3.05	−0.0896	−3.03
POSTMBO × ln (*CAPITAL*) × *SIC49*	0.0721	4.14	0.0924	4.12
t	0.0050	2.47	0.0065	2.47
Nonmetallic minerals (*SIC24*)	0.0397	3.62	0.0508	3.63
Office machinery (*SIC33*)	0.2548	13.30	0.3264	13.42
Textiles (*SIC43*)	−0.0817	−9.14	−0.1047	−9.36
Paper, publishing (*SIC47*)	0.0505	6.69	0.0648	6.64
East Anglia	0.0202	2.70	0.0258	2.70
East Midlands	−0.0170	−2.83	−0.0218	−2.83
Yorks-Humberside	−0.0146	−3.26	−0.0187	−3.27
North West	−0.0124	−2.36	−0.0159	−2.36
North	−0.0120	−2.19	−0.0154	−2.19
Wales	−0.0130	−2.18	−0.0167	−2.18
Northern Ireland	−0.0266	−3.39	−0.0340	−3.40
Diagnostic Tests*				
Sargan ~ χ^2	1.666	[0.65]		
m1 ~ $N(0, 1)$	−24.180	[0.00]		
m2 ~ $N(0, 1)$	1.900	[0.06]		
Zero-slopes ~ χ^2 ($\times 10^5$)	26.220	[0.00]		
No. of plants	35,752			
No. of observations	195,676			

This latter results can be likened across sectors, as the average manufacturing plant benefitted from productivity increases in 14 out of 18. The above table may shed some light on the figures just

reported: MBO plants witness their output plummet in the post buyout period, but this is coupled with even harsher reductions in the workforce. The end result is a sharp increase in TFP. The improvement in efficiency may be due to the outsourcing of intermediate processes, aiming at reducing the labor intensity of the plant. The paper supports the theory that takeovers shifts the firm's resources to their most fruitful use and hand them to better managers.

TABLE 4.—MEAN VALUES OF RATIO OF POST-MBO TO PRE-MBO LEVELS OF REAL OUTPUT, LABOR PRODUCTIVITY, EMPLOYMENT, CAPITAL/LABOR RATIO, AND MATERIALS/LABOR RATIO*

Industry (SIC)	Output	Total Factor Productivity	Labor Productivity	Plant Employment	Capital/Labor Ratio	Materials/Labor Ratio
Total manufacturing	50.5	108.6	112.0	39.0	84.9	137.9
Metal manufacturing (22)	49.1	103.3	124.6	47.8	40.0	113.4
Nonmetallic minerals (24)	14.7	167.0	33.4	15.4	60.5	106.8
Chemicals (25)	36.4	93.1	74.4	32.7	68.1	113.2
Metal goods n.e.c. (31)	54.8	102.4	135.2	46.1	84.5	116.4
Mechanical engineering (32)	88.5	101.6	148.7	68.9	75.2	143.8
Office machinery (33)	147.5	107.8	277.9	71.2	50.5	199.0
Electrical and electronics (34)	53.2	100.2	144.6	42.1	66.3	134.3
Motor vehicles (35)	57.0	100.4	101.1	52.2	135.1	120.4
Other transport equipment (36)	29.9	99.2	117.6	26.8	122.4	132.0
Instrumental engineering (37)	61.3	100.9	117.1	51.8	207.8	111.9
Food (41)	76.8	103.5	122.7	69.2	68.9	104.3
Drink and tobacco (42)	48.5	96.9	80.7	48.9	71.9	107.8
Textiles (43)	112.5	99.9	127.3	80.6	95.8	150.2
Footwear and clothing (45)	89.1	100.0	112.4	70.1	73.6	128.7
Timber and wood (46)	60.8	101.8	137.3	52.0	87.8	111.1
Paper and publishing (47)	59.7	107.9	147.4	46.4	76.1	139.3
Rubber and plastics (48)	69.0	102.5	149.3	60.6	84.5	126.5
Other manufacturing (49)	82.6	100.6	107.2	62.9	230.3	122.6

* All figures are weighted percentages. Only plants that experienced an MBO are included in this analysis (4,877 plants).

Efficiency gains in unsuccessful management buyouts[24]

In this research dating back to 1994, Eli Ofek argues that the improved operating performance following an MBO can be attributable either to the managers' incentives' realignment or to the private information hypothesis, with managers exploiting asymmetric information. His findings are ultimately consistent with the former. Examining unsuccessful MBOs can help tell the two competing claims apart: if managers were to get a free ride, the firm's performance should improve regardless of the completion of an MBO offer (endogenous growth). The author finds that cumulative return

[24] Eli Ofek, *The Journal of Finance*, Jun 1994

starting from one month before the MBO offer hovers around 0 percent for two years after the cancellation of the bid and it's never statistically significant.

In the sample comprising 120 firms, the reasons alleged for cancellation are acceptance of a higher bid, rejection by the board, inability to secure financing etc. The failed shot at MBO doesn't result in a significant increase in leverage (no organizational change is implemented).
The following table reports the abnormal return[25] accruing to shareholders around the buyout offer day and the cancellation one, as well as the time stretch in between. If we break down the sample between the firms that have a higher competing bid and those that do not at the time of the withdrawal, results are pretty interesting.

Abnormal Return Around the Event Days

Cumulative average abnormal return for the sample of MBOs and for the subsamples of firms that received another bid and those that did not. The abnormal returns are measured around the announcement and cancellation day and betwen those dates. *P*-values are in parentheses, and the number of observations is in square brackets.[a]

	Cumulative Average Abnormal Returns		
Group/Event Time	Offer Days −5 to 1 (%)	From Offer +2 to Cancellation −5 (%)	Cancellation Days −5 to 1 (%)
Full sample	17.94[d]	−3.95[e]	−4.19[d]
	(0.000)	(0.024)	(0.002)
	[118]	[111]	[108]
Group that received another bid[b]	20.36[d]	3.37	4.54[d]
	(0.000)	(0.180)	(0.001)
	[47]	[44]	[42]
Group that did not receive another bid[c]	16.33[d]	−8.76[d]	−9.75[d]
	(0.000)	(0.000)	(0.000)
	[71]	[67]	[66]

[a] The abnormal returns were retrieved from the BXRET array in the CRSP tape. These returns are calculated in the following form: each year all firms are grouped into 20 portfolios according to their beta that year (beta portfolios). The daily abnormal return of a firm in the following year is the difference between the firm's daily return and the daily return on its beta portfolio that day.
[b] This group includes only the firms for which the reason for the cancellation of the MBO offer was a competing bid.
[c] The group includes the firms that did not have a competing bid when the MBO was canceled.
[d] Significant at the 1 percent level.
[e] Significant at the 5 percent level.

The former group continues to fare pretty well (cumulative returns close to 8%), while the latter one suffers sound losses, canceling all previous gains (note that they're all statistically significant). This pattern is consistent with the claim of the organizational change hypothesis: market's expectations

[25] Computed as the difference among the firm's daily stock return and that of its beta portfolio

for a firm's restructuring are let down, and that is translated into falling stock prices.

In an opposite fashion, if undervaluation is the driver behind MBOs, abnormal returns should persists regardless of the cancellation. This table shows otherwise, as there's no future increase in value for a firm that featured a failed MBO.

Abnormal Returns When No Subsequent Successful Bid Is Made

Mean abnormal returns of firms that had an unsuccessful Management Buyout Offer and remained publicly traded for at least two years following the cancellation of the offer. The abnormal returns are from one month before the offer until twenty-four months after the cancellation. All returns are monthly except for returns around the announcement, between the announcement and cancellation, and around the cancellation of the MBO offer. P-values are in parentheses. Returns are in percentages.

Cumulative Abnormal Returns			
Period	All Firms	Terminated Offer[a]	Rejected Offer[b]
Observations	41	26	15
Announcement[c]	17.59[f] (0.000)	19.16[f] (0.000)	14.87[f] (0.003)
Between period[d]	−8.87[f] (0.000)	−12.90[f] (0.000)	−1.89 (0.350)
Cancellation[e]	−9.79[f] (0.000)	−12.44[f] (0.000)	−5.21[g] (0.066)
Month −1 to announcement	26.67[f] (0.00))	32.44[f] (0.000)	16.69[f] (0.008)
Months −1 to 1	2.28 (0.520)	−1.22 (0.780)	8.36 (0.180)
Months −1 to 6	−2.62 (0.600)	−7.66 (0.220)	6.10 (0.470)
Months −1 to 12	−7.22 (0.340)	−5.40 (0.620)	−10.40 (0.250)
Months −1 to 24	−8.07 (0.310)	−10.40 (0.320)	−4.00 (0.750)

[a] This group includes MBOs with the following reasons given for their cancellation: unable to obtain financing, uncertain economic conditions, firm's latest poor performance, offer withdrawn and no reason given.

[b] This group includes MBOs with the following reasons given for their cancellation: rejected by the board or rejected by stockholders.

[c] Abnormal return from 5 days before the announcement until 1 day after.

[d] Abnormal return from 2 days after the announcement until 6 days before the cancellation.

[e] Abnormal return from 5 days before the cancellation until 1 day after.

[f] Significant at the 1 percent level.

[g] Significant at the 10 percent level.

Were we to assume the viewpoint of operating performance, the end result wouldn't differ substantially: firms in the dataset lag their peers when we address industry-adjusted (aimed at controlling for inflation) changes in operating incomes, sales, EBITD/assets, EBITD/sales. Coefficients

are diffusely negative and, in some instances, statistically significant. Changes in operating income and margins do not highlight increases in profitability, neither do sales point to a faster growth. This is consistent with the organizational change hypothesis.

Performance Changes of All Firms with Available Data

Median changes in the ratios of operating income to assets, operating income to sales, and median percentage change in sales and operating income, for the sample of firms that had an unsuccessful MBO offer in the period 1974 to 1989. The *P*-values of a Wilcoxon signed rank text are in parentheses. EBITD is earnings before interest, taxes, and depreciation.

	Changes from Years				
Performance Measures	− 3 to −1	−2 to --1	−1 to 1	−1 to 2	-1 to 3
Observations	61	62	63	52	35
Panel A. Change in Operating Income					
Median absolute change	0.3280[a] (0.000)	0.1800[a] (0.000)	0.0890 (0.755)	0.2720[b] (0.021)	0.2600[c] (0.068)
Industry-adjusted median change	0.0450 (0.121)	0.0400[b] (0.053)	−0.1250[a] (0.013)	−0.0340 (0.542)	−0.0270 (0.527)
Panel B. Change in Sales					
Median absolute change	0.1930[a] (0.000)	0.1070[a] (0.000)	0.1000 (0.176)	0.1400[b] (0.011)	0.2440[a] (0.001)
Industry-adjusted median change	0.0050 (0.736)	0.0036 (0.926)	−0.0743[a] (0.010)	−0.1530[c] (0.051)	−0.0640 (0.507)
Panel C. Change in EBITD/Assets					
Median absolute change	0.0140 (0.202)	0.0090 (0.240)	−0.0130 (0.177)	−0.0010 (0.665)	−0.0070 (0.494)
Industry-adjusted median change	0.0141[c] (0.090)	0.0036 (0.400)	−0.0077 (0.421)	0.0112 (0.177)	0.0076 (0.321)
Panel D. Change in EBITD/Sales					
Median absolute change	0.0105[c] (0.076)	0.0090[b] (0.041)	−0.0060[c] (0.068)	−0.0010 (0.776)	−0.0030 (0.310)
Industry-adjusted median change	0.0022 (0.192)	0.0039 (0.129)	−0.0059[c] (0.052)	−0.0003 (0.802)	0.0005 (0.889)

The sample of failed MBO might be hampered by a self selection bias: managers are more likely to withdraw their bid if some meager prospects leak to them. This would make it quite hard to distinguish among the two competing hypothesis. A final revision can be that to sort unsuccessful MBO according to the motives behind the rejection: those voluntarily cancelled by the management's team and those turned down by shareholders or directors (this latter sample shouldn't suffer from self selection bias, management does not withdraw the offer). As we've seen previously, firms with a

rejected offer do not enjoy significant returns in the period between the announcement and the cancellation date: this supports the argument of the organizational change hypothesis and no selection bias. The table below illustrates the operating results of this latter group of firms: they're in line with those arising from the full sample, showing no excess increase in profits or sales.

Performance Changes for Firms that Had the MBO Unwillingly Canceled

Median changes in various operating performance measures for the subsample of firms that had an unsuccessful MBO offer that management canceled unwillingly. The stated reasons for cancellation are: the offer was rejected by the board, the offer was rejected by the firm's stockholders, or the firm accepted a higher bid. *P*-values of a Wilcoxon signed rank text are in parentheses. EBITD is earnings before interest, taxes, and depreciation.

	Changes from Years				
Performance Measures	−3 to −1	−2 to −1	−1 to 1	−1 to 2	−1 to 3
Observations	28	28	28	22	15
Panel A. Change in Operating Income					
Median absolute change	0.2600[b] (0.038)	0.1140[a] (0.006)	0.0350 (0.864)	0.3300[c] (0.080)	0.2910[c] (0.074)
Industry-adjusted median change	0.0000 (0.589)	0.0204 (0.494)	−0.1890[a] (0.003)	−0.2300 (0.217)	−0.3020 (0.209)
Panel B. Change in Sales					
Median absolute change	0.1690[a] (0.005)	0.0950[b] (0.039)	0.1075 (0.531)	0.1710[c] (0.055)	0.2950[b] (0.025)
Industry-adjusted median change	0.0000 (0.674)	0.0030 (0.690)	−0.0811 (0.161)	−0.0910 (0.256)	−0.1390 (0.268)
Panel C. Change in EBITD/Assets					
Median absolute change	0.0135 (0.955)	0.0040 (0.918)	−0.0280[b] (0.028)	−0.0015 (0.884)	−0.0160 (0.363)
Industry-adjusted median change	0.0033 (0.741)	0.0003 (0.792)	−0.0159[c] (0.090)	0.0114 (0.673)	−0.0024 (0.798)
Panel D. Change in EBITD/Sales					
Median absolute change	0.0075 (0.561)	0.0045 (0.648)	−0.0075 (0.172)	0.0020 (0.779)	−0.0040 (0.551)
Industry adjusted median change	0.0000 (0.855)	0.0013 (0.991)	−0.0064[c] (0.063)	0.0001 (0.685)	0.0001 (0.670)

Furthermore, when submitting their offer, managers expose themselves to the risk of losing their job, since replacement of managers is a common practice in the year following the unsuccessful MBO attempt (47% of cases). All these hint to the fact that insiders are not endowed with superior information and that efficiency gains in successful MBO would have taken place regardless of such transaction.

Corporate ownership structure and performance: the case of management buyouts[26]

An MBO offers incentives which are hard to pass on: the increased equity holding of managers and the requirement to pay down debt reduces executives' shirking and consumption of perks; greater concentration of ownership eases and fosters closer monitoring. Improvements in the management of working capital play a pivotal role in such enhanced performance, which is nonetheless not attributable to layoffs or reduction in advertising, research and development.

In their 58-strong sample the authors uncover that, after the buyout, sales and tangible assets increase: these statistics cast doubt on the assumption that firms decline in size, although large asset sales are associated with some LBOs. Firms are eventually separated out following this criteria. The median ratio of debt to book value of tangible assets goes from 0,59 to 1,01 after the buyout, while officers, outside directors and other major stockholders end up owning more than 95% of the company. Cash flows and returns per employee are used as an additional measure. Beware that operating cash flows may improve at least partly from a reduction in working capital, but also the may be the result of cutbacks in R&D, advertising. Reduction in such discretionary items allegedly compromise the long-run competitive position of the firm in order to increase short-run cash flows.

The ensuing table clearly shows that operating returns increase significantly during the private phase from the median of 0,239 in year-1. The median change to year +1 is 0,063, significant at the 5% level. The median rise from year-1 to year+2 (0,098, statically significant) suggests that returns are sustained. In contrast, median changes prior to the MBO are not significant. Industry adjusted returns follow this favorable trend too. The analysis of the asset-sale and non-sale subsample reinforces these claims, pointing out that higher growth in returns is not due solely to the sale of sluggish assets or branches.

[26] Abbie J. Smith, *Journal of Financial Economics*, 1990

Measure of operating returns	Years relative to completion of buyout			
	From −3 to −1	From −2 to −1	From −1 to +1	From −1 to +2
A. Operating cash flows/operating assets				
Median level in year −1: 0.239				
Median change	0.020	0.024	0.063[b]	0.098[c]
Median industry-adjusted change	0.033	0.033	0.043[b]	0.059[b]
Number of observations	52	51	52	20
B. Operating cash flows/employee (in $000)				
Median level in year −1: 8.793				
Median change	0.507	0.693	3.718[a]	1.369
Median industry-adjusted change	0.514	−0.103	2.588[a]	0.948
Number of observations	43	43	44	12

[a, b, c] indicate that the median change is significantly different from zero at the 0.01, 0.05, and 0.10 probability level, respectively, as measured by two-tailed Wilcoxon signed rank statistics.

The ratio of cash flows to employees is significant at the 1% confidence level before and after adjusting for industry trends (results are similar for the subsamples too). On the other hand, the increase from year-1 to year+2 is not significant, but this might be imputable to the small number of observations. Above all, this augmented performance is not accompanied by meaningful reductions in the workforce (median changes are insignificant).

Another crucial aspects is the management of working capital. As the table below shows, all figures hints us that working capital is tightened as a result of the transaction. The percentage change of Sales / WC is 24,2% from year year-1 to year+1, significant at the 1% level. Changes in such a ratio are not statistically different from zero prior to the MBO. The operating cycle[27] constantly shrinks: its median industry-adjusted percentage change is -18,5% (significant at the 5% level), hinting a reduction of almost two weeks from the pre-MBO level of 73,087 days

[27] The operating cycle equals the inventory holding period plus the accounts receivable collection period less the accounts payable period

Measure of working capital management	Years relative to completion of buyout: From −3 to −1	From −2 to −1	From −1 to +1	From −1 to +2
A. Sales/working capital				
Median level in year −1: 6.588				
Median change	−0.284	−0.012	0.878[b]	−0.275
Median percentage change	−0.063	−0.004	0.242[a]	−0.001
Median industry-adjusted change	−0.195	−0.392[c]	2.098[a]	1.352
Median industry-adjusted percentage change	−0.035	−0.031	0.193[a]	−0.089
Number of observations	44	45	45	20
B. Operating cycle (days)				
Median level in year −1: 73.807				
Median change	−4.319[b]	−3.685[b]	−6.842[c]	−9.240[c]
Median percentage change	−0.102[b]	−0.083[a]	−0.131[c]	−0.150
Median industry-adjusted change	−6.083	−2.653	−11.169[a]	−13.228
Median industry-adjusted percentage change	−0.035	−0.024	−0.185[b]	−0.140
Number of observations	49	50	50	22

Panels C, D and E, tackling inventory holding periods, accounts receivables/ payables periods, feature Betas that all reinforce the previous allegations: inventory holding periods and account receivables have negative coefficients, while a positive Beta coupled with trade payables reveals a more diluted compensation of suppliers (the first two ratios are significant in the year-1 to year+1 period, while the latter one presents significance only prior to the buyout).

C. Inventory holding period (days)				
Median level in year −1: 70.711				
Median change	−1.095	−1.729	−2.535[b]	−3.203
Median percentage change	−0.028	−0.015	−0.058[b]	−0.067
Median industry-adjusted change	−0.238	−0.260	−3.435[c]	−6.420
Median industry-adjusted percentage change	0.018	−0.012	−0.076[b]	−0.153
Number of observations	49	50	50	22
D. Accounts receivable collection period (days)				
Median level in year −1: 44.948				
Median change	−0.570	−0.411	−0.505	−0.975
Median percentage change	−0.051	−0.037	−0.030[b]	−0.026
Median industry-adjusted change	−0.370	0.156	−2.816[b]	0.625
Median industry-adjusted percentage change	−0.028	−0.010	−0.081[b]	0.070
Number of observations	56	57	57	27
E. Accounts payable period (days)				
Median level in year −1: 32.737				
Median change	1.090[c]	1.203[b]	1.151	1.432
Median percentage change	0.066[b]	0.061[b]	0.050	0.056
Median industry-adjusted change	1.744	0.630	2.239	2.965
Median industry-adjusted percentage change	0.052	0.033	0.041	0.153
Number of observations	50	51	51	22

[a,b,c] indicate that the median change is significantly different from zero at the 0.01, 0.05, and 0.10 probability level, respectively, as measured by two-tailed Wilcoxon signed rank statistics.

There are some concerns whether this more stringent management of working capital arises from a one-time effort. Evidence, however, shows us otherwise: the median changes in receivables, payables and inventories represent only 1% of the yearly median operating cash flows, while the growth in working capital from operations over operating assets (Beta amounting to 0,054 significant at the 1%level) purports that the increase in operating returns can't be wholly attributed to a revision in those three parameters.

Lastly, the latter table describes the changes in discretionary expenditures exemplified as a their proportion on sales. Except for some patchy evidence related to capital expenditures, we can see that none of the variations occurring after the MBO are statistically different from zero. This should topple the assumption that MBO hamper a firm's future growth potential. More in details, while the median changes in advertising, R&D and maintenance are insignificant from the year-1 to year+1, we notice that the first two terms were growing significantly prior to the private phase. However, their median levels in year-1, ranging from 3,4% of sales of capital expenditures to 1,2% of research and development entails that even a statistically significant decline after buyouts would have only a modest effect on operating cash flows. As far as outflow on Property, Plant and Equipment are concerned, we see that the median percentage change over year-1 levels is -18% and-9,2% if we look at the general industry trends (both significant at the 5% level). However, this latter measurement is found to recede significantly also prior to the buyout[28].

	Years relative to completion of buyout			
Discretionary item as a proposition of sales	From −3 to −1	From −2 to −1	From −1 to +1	From −1 to +2
A. Capital expenditures				
Median level in year −1: 0.034				
Median change	0.001	−0.001	−0.005[a]	−0.011[b]
Median percentage change	0.110[c]	−0.055[c]	−0.180[b]	−0.315
Median industry-adjusted change	−0.006	−0.004	−0.003	−0.002
Median industry-adjusted percentage change	−0.123	−0.106[c]	−0.092[b]	−0.031
Number of observations	58	58	58	37

[28] Note that a reduction in PPE expenses does not increase operating cash flows

B. Advertising expense				
Median level in year −1: 0.024				
Median change	0.003[b]	0.001[c]	−0.001	0.009
Median percentage change	0.102[b]	0.053	−0.053	0.281
Median industry-adjusted change	0.003	0.001	−0.002	0.002
Median industry-adjusted percentage change	−0.009	0.020	0.012	−0.018
Number of observations	21	22	22	8
C. Research and development expense				
Median level in year −1: 0.012				
Median change	0.002[b]	0.001[b]	0.000	0.000
Median percentage change	0.269[b]	0.210[b]	−0.002	−0.074
Median industry-adjusted change	−0.001	0.001	−0.003	−0.003
Median industry-adjusted percentage change	−0.172	−0.014	−0.608	−0.751
Number of observations	7	7	7	5
D. Maintenance and repairs expense				
Median level in year −1: 0.019				
Median change	−0.001	−0.000	−0.001	0.001
Median percentage change	−0.091	−0.035	−0.054	0.052
Median industry-adjusted change	NA	NA	NA	NA
Median industry-adjusted percentage change	NA	NA	NA	NA
Number of observations	2	5	19	7

[a, b, c] indicate that the median change is significantly different from zero at the 0.01, 0.05, and 0.10 probability level, respectively, as measured by two-tailed Wilcoxon signed rank statistics.

The increase in operating returns might be imputable to asymmetric information. Nonetheless, managers may attempt to depress stock prices by understating future earnings before the MBO is sealed. However the claim is flawed in at least two aspects: if anything, earnings forecasts associated with the buyouts proposals actually tend to overshoot subsequent net incomes and, as other literature underscores, stock-price hikes following failed MBOs are not permanent, as an information asymmetry theory would suggest.

Moreover, all annual reports and documents filed by buyout companies highlight restructuring activities, without a single evidence attachable to private information. Operating returns are also not found to increase after unsuccessful MBO, further minimizing the info asymmetry claims, while the lack of operating returns difference between defensive and current management-led MBOs is yet another proof.

All in all, resources tied up in working capital are reduced subsequent to the buyouts and, on top of that, there's no evidence for the assertion that pervasive cutbacks in expenditures are responsible for the increased cash flows. As a consequence, the augmented efficiency most likely mirrors improved managerial incentives.

WHAT IF A FIRM GOES PUBLIC AGAIN? REVERSE LEVERAGED BUYOUTS

The financial performance of reverse leveraged buyouts[29]

Jensen's claims that LBOs provide a superior incentive scheme can be further consolidated by an analysis of the performance of RLBOs. Were his arguments indeed correct, we could forecast a lag in performance once ownership becomes dispersed and debt reduced. Regardless the IPO, we notice that RLBO firms still feature levels of concentrated ownership and leverage that are higher relative to the average public corporation. Nonetheless, we can proclaim that they're almost hybrid organizations, even though they slowly resemble the typical corporation outlook. The results depend on whether these changes in corporate incentives are assumed to be exogenous or endogenous: if the shifts in leverage and ownership are trigged from the outside (exogenous), results are nonetheless consistent with those found by Jensen while, if we embrace the endogenous perspective, such changes might be driven by the need to tackle evolving economic environments confronting the firm. However, it's almost unfeasible to determine the real rationales behind this RLBO transaction.

Table 2
Descriptive statistics (mean, median, standard deviation, first and third quartiles) for leverage, equity ownership, and board composition for 90 reverse LBOs that went public between 1983 and 1988

	Mean	Median	Std. dev.	Quartiles Q1	Quartiles Q3
Leverage					
Pre-IPO debt/capital[a]	0.83	0.86	0.21	0.74	0.93
Post-IPO debt/capital[b]	0.56	0.58	0.24	0.40	0.75
Change in debt/capital[c]	− 0.28	− 0.23	0.23	− 0.40	− 0.10
Equity ownership					
Pre-IPO insiders' % equity[d]	74.67	82.40	24.97	60.50	95.15
Post-IPO insiders' % equity[e]	48.80	51.30	19.50	35.90	63.45
Change in insiders' % equity[f]	− 25.72	− 23.45	16.67	− 33.37	− 14.63
Pre-IPO mgmt % equity[g]	36.02	21.40	32.83	10.03	67.95
Post-IPO mgmt % equity[h]	23.74	14.30	22.36	6.90	40.45
Change in mgmt % equity[i]	− 12.41	− 6.00	15.71	− 20.35	− 2.58
Pre-IPO non-mgmt insiders' % equity[j]	38.68	37.35	32.62	5.00	70.00
Post-IPO non-mgmt insiders' % equity[k]	25.06	23.10	22.28	2.30	41.05
Change in non-mgmt insiders' % equity[l]	− 13.34	− 9.40	14.75	− 21.87	− 0.55
Post-IPO public % equity[m]	34.36	32.10	15.22	25.52	41.72
Months private[n]	29.37	22.00	21.59	13.00	39.50
Board of director composition at time of IPO					
Board size	6.99	7.00	2.14	5.00	8.00
% of operating management directors[o]	33.51	29.30	16.00	20.00	42.80
% of non-mgmt capital provider directors[p]	33.22	33.30	23.35	14.30	50.00
% of external directors[q]	27.13	25.00	19.76	14.28	40.00
% of new directors[r]	12.47	0.00	20.18	0.00	20.00
% of director seats vacant[s]	6.14	0.00	13.01	0.00	0.00

[29] Robert Holthausen, David Larcker, *Journal of Financial Economics*, june 1996

The sample the authors analyze comprises 90 RLBOs. As reported by the table above, the mean debt ratio falls by 27%, with the greatest share of the proceeds devoted to debt repayment. Interestingly enough RLBOs shares are not traded for long, averaging only 29,37 months on the stock exchange. After that they're either taken over or they go through an additional private equity transaction.

	Year − 1	Year 0	Year + 1	Year + 2	Year + 3	Year + 4	Avg. years +1 to +4[c]
Median level of OCF/assets							
Firm	0.193[d]	0.146[d]	0.119[d]	0.143[d]	0.135[d]	0.154[d]	0.150[d]
Industry-adjusted	0.092[d]	0.047[d]	0.014	0.040[d]	0.023	0.029[e]	0.041[d]
Mean-reversion-adjusted	− 0.002[e]	− 0.030	− 0.048[d]	− 0.011	− 0.019	− 0.003	− 0.004
# observations[g]	54	58	55	45	44	39	37
Median level of OPINC/assets							
Firm	0.195[d]	0.198[d]	0.175[d]	0.171[d]	0.147[d]	0.153[d]	0.167[d]
Industry-adjusted	0.077[d]	0.079[d]	0.052[d]	0.054[d]	0.029[f]	0.043[d]	0.047[d]
Mean-reversion-adjusted	− 0.002[e]	0.012	0.009	0.006	− 0.008	0.004	0.015
# observations[g]	62	66	56	47	44	39	38

Panel B: Results on the changes in accounting performance

	Year − 1 to year 0	Year − 1 to year + 1	Year − 1 to year + 2	Year − 1 to year + 3	Year − 1 to year + 4	Year − 1 to avg. years + 1 to + 4[c]
Median change in OCF/assets						
Firm	− 0.047[d]	− 0.062[d]	− 0.044[f]	− 0.045[f]	− 0.021	− 0.026
Industry-adjusted	− 0.043[e]	− 0.065[d]	− 0.045[f]	− 0.052[e]	− 0.031	− 0.032
Mean-reversion-adjusted	− 0.031	− 0.045[d]	− 0.011	− 0.017	− 0.001	− 0.004
# observations[g]	51	51	42	40	36	35
Median change in OPINC/assets						
Firm	0.004	− 0.013	− 0.022	− 0.041[d]	− 0.034[e]	− 0.020
Industry-adjusted	0.002	− 0.016	− 0.019	− 0.036[e]	− 0.020[f]	− 0.015
Mean-reversion-adjusted	0.012	0.012	0.009	− 0.009	0.003	0.016
# observations[g]	62	55	46	43	38	37

[a]The industry performance is computed using the median *OPINC/assets* (*OCF/assets*) for firms in the two-digit SIC code of the reverse-LBO firm. The industry-adjusted *OPINC/assets* (*OCF/assets*) performance during a given period is computed by subtracting the industry performance from the *OPINC/assets* (*OCF/assets*) of each reverse-LBO firm.

[b]The benchmark performance for the mean-reversion-adjusted performance measures is computed using the median *OPINC/assets* (*OCF/assets*) for firms in the same two-digit SIC code as the reverse-LBO firm and whose performance in the same calendar year as year − 1 of each reverse-LBO firm is within 10% of the reverse-LBO firm's performance (e.g., if the reverse-LBO firm has *OPINC/assets* (*OCF/assets*) of 0.20, the comparison firms would be those whose *OPINC/assets* (*OCF/assets*) varied between 0.18 and 0.22). The mean-reversion-adjusted *OPINC/assets* (*OCF/assets*) performance during a given period is computed by subtracting the benchmark performance from the *OPINC (OCF)* of each reverse-LBO firm.

[c]Average years + 1 to + 4 is the average of *OPINC/assets* (*OCF/assets*) over the time period consisting of the first fiscal year after the IPO to the fourth fiscal year after the IPO.

[d]Significantly different from zero at the 0.01 level (two-tailed test).

[e]Significantly different from zero at the 0.05 level (two-tailed test).

[f]Significantly different from zero at the 0.10 level (two-tailed test).

[g]The number of observations reported is for the firm performance and for the industry-adjusted performance. The number of observations for the mean-reversion-adjusted performance is approximately four fewer.

As a measure of performance, Holthausen&Larcker resort to such common indicators as operating income and operating cash flow[30]. They assess firms' performance against three benchmarks: stand-alone basis, industry adjusted, mean-reversion adjusted[31].

[30] Respectively shortened into OPINC and OCF

The overall evidence collected from the table above suggests that RLBOs performance overwhelms that of their industry in the year prior to the IPO, both in terms of OCF/assets and OPINC/assets (statistically significant). Even though such figures do not necessarily imply that private equity-run firms outperforms their peers due to a potential self selection bias, they still hint that LBO firms might wield optimal incentive and capital structures. Going back to the table we clearly see that, ensuing the IPO, firms continue to surmount the industry's average, even though there's a slight decline in performance. This lasts for at least four fiscal years and applies to both OCF/assets and OPINC/assets. Industry-adjusted measurements are in most cases significant and they average roughly 4,1% and 4,7% a year respectively. Furthermore, there's little evidence that RLBOs behave differently that the firms in the mean-reversion-adjusted benchmark (β coefficients are hardly, if never, significant), revealing that the two groups perform accordingly.

The next step would be to look at the expenses related to advertisement, capital equipment and R&D, as well as working capital and labor decisions. Evidence from previous papers hints that LBO firms tend to be thrifty, with lower working capital cycles and smaller capital investments. It's thus worth having a look at the cash outflows of RLBO businesses.

Panel A: Results on the level of discretionary expenditures, working capital and employment

	Year − 1	Year 0	Year + 1	Year + 2	Year + 3	Year + 4	Avg. years + 1 to + 4[b]
Median level of capital expenditures/assets							
Firm	0.043[c]	0.048[c]	0.053[c]	0.047[c]	0.054[c]	0.044[c]	0.056[c]
Industry-adjusted	− 0.013[d]	− 0.005	0.000	− 0.005	0.000	− 0.004	0.004
# observations	61	66	55	47	43	37	36
Median level of advertising/assets							
Firm	0.030[c]	0.024[c]	0.026[c]	0.023[c]	0.029[c]	0.036[c]	0.034[c]
Industry-adjusted	0.010[d]	0.006[d]	0.008[d]	0.005[d]	0.011[d]	0.015[c]	0.013[c]
# observations	37	49	45	38	35	31	30
Median level of R&D/assets							
Firm	0.014[c]	0.011[c]	0.011[c]	0.011[c]	0.011[c]	0.013[c]	0.013[c]
Industry-adjusted	− 0.003	− 0.001	− 0.003	0.000	0.000	0.001	0.000
# observations	29	32	25	23	23	23	21
Median level of working capital/assets							
Firm	0.144[c]	0.145[c]	0.150[c]	0.138[c]	0.131[c]	0.145[c]	0.134[c]
Industry-adjusted	− 0.140[c]	− 0.136[c]	− 0.101[c]	− 0.107[c]	− 0.121[c]	− 0.106[c]	− 0.115[c]
# observations	54	53	55	45	43	38	37
Median level of employees/assets							
Firm	0.018[c]	0.015[c]	0.013[c]	0.013[c]	0.012[c]	0.011[c]	0.012[c]
Industry-adjusted	0.002	0.001	0.000	0.000	− 0.000	− 0.000	0.000
# observations	44	63	55	48	43	40	39

[31] With mean reversion, we control for both time period and industry effect, as the firm is likened to equally performing competitors throughout time. It's a proven effective benchmark, as other measurements might be biased by accounting errors, one-time nonrecurring abnormal performance and difficulty in maintaining superior performance as competition increases in profitable market segments. It's widely used in exchange rates and stocks, all expected to be mean-reverted.

[a]The industry levels of capital expenditures/assets, R&D/assets, advertising/assets, working capital/assets and employees/assets are computed using the median levels for firms in the two-digit SIC code of the reverse-LBO firm. The industry-adjusted capital expenditures/assets, R&D/assets, advertising/assets, working capital/assets, and employees/assets during a given period are computed by subtracting the appropriate industry benchmark from the appropriate number for each reverse-LBO firm.

[b]Average +1 to +4 is the average capital expenditures/assets, R&D/assets, advertising/assets, working capital/assets, and employees/assets over the time period consisting of the first fiscal year after the IPO to the fourth fiscal year after the IPO.

[c]Significantly different from zero at the 0.01 level (two-tailed test).

[d]Significantly different from zero at the 0.05 level (two-tailed test).

[e]Significantly different from zero at the 0.10 level (two-tailed test).

(for the sake of simplicity, only results on the level of expenditures are reported here; median changes in all the control variables indicate a similar trend).

At a first glance, it appears that some of the independent variables revert to industry's median, while others continue on their LBO-determined trend. Despite being lower than the industry norm up until year-1, capital expenditures tend to rise to conventional level after the public offering (a 5%, statistically significant hike). Commitments to advertising are higher than the industry average, while R&D expenses are never statistically different from 0. Working capital increases slightly, as a β equals to 0,012 suggests a longer time span between payment of suppliers and collection of revenues. Nevertheless, it's still statically significant far below the industry's average. Regarding employment, we witness a repeated growth throughout the years (average β is 0,012), which is not statistically different from the industry's levels.

Now the authors set out to measure the extent to which cross-sectional variation in RLBOs performance can be justified by changes in leverage and ownership structure.

Panel A: No control for industry or mean reversion performance

	Independent variables						
Dependent variable	Intercept	Change in *debt/capital*[a]	Change in *mgmt % equity*[b]	Change in *non-mgmt insider % equity*[c]	Adj. R^2	*F*-stat.	# obs.
Change in firm *OPINC/assets* from year −1 to +1	0.0276 (0.220)	0.0089 (0.853)	0.0013 (0.042)	0.0017 (0.029)	7.3%	2.39 (0.088)	54
Change in firm *OPINC/assets* from year −1 to the average of years +1 to +4[d]	0.0426 (0.136)	−0.0187 (0.776)	0.0022 (0.025)	0.0021 (0.050)	11.9%	2.57 (0.071)	36
Change in firm *OCF/assets* from year −1 to +1	0.0173 (0.636)	−0.0761 (0.317)	0.0038 (0.001)	0.0040 (0.002)	22.9%	5.95 (0.002)	51
Change in firm *OCF/assets* from year −1 to the average of years +1 to +4	0.0625 (0.065)	−0.0355 (0.641)	0.0044 (0.000)	0.0035 (0.006)	33.5%	6.71 (0.001)	35
Change in firm *working capital/assets* from year −1 to +1	−0.0296 (0.297)	0.0326 (0.586)	−0.0023 (0.007)	−0.0024 (0.017)	12.3%	3.37 (0.026)	52
Change in firm *working capital/assets* from year −1 to the average of years +1 to +4	−0.0134 (0.611)	0.0416 (0.505)	−0.0007 (0.448)	−0.0028 (0.008)	14.2%	2.77 (0.060)	33

Change in firm *capital expenditures/ assets* from year − 1 to + 1	− 0.0129 (0.292)	− 0.0440 (0.084)	0.0000 (0.940)	− 0.0008 (0.054)	10.0%	2.88 (0.045)	52
Change in firm *capital expenditures/ assets* from year − 1 to the average of years + 1 to + 4	− 0.0095 (0.454)	− 0.0178 (0.541)	0.0001 (0.739)	− 0.0008 (0.095)	6.4%	1.73 (0.183)	33

[a] *Change in debt/capital* is the debt/capital immediately *after* the IPO minus the debt/capital immediately *prior* to the IPO. Debt/capital is the sum of long-term debt, short-term debt, capitalized leases, and redeemable preferred stock divided by the sum of long-term debt, short-term debt, capitalized leases, redeemable preferred stock, and the book value of common equity.

[b] *Change in mgmt % equity* is the percentage of shares owned by operating management immediately *after* the IPO minus the percentage of shares owned by operating management immediately *prior* to the IPO.

[c] *Change in non-mgmt insiders % equity* is the percentage of shares owned by insiders who are not operating management immediately *after* the IPO minus the percentage of shares owned by insiders who are not operating management immediately *prior* to the IPO.

[d] Average + 1 to + 4 is the simple average of *OPINC/assets* (*OCF/assets*) over the time period consisting of the first fiscal year after the IPO to the fourth fiscal year after the IPO.

[e] The industry performance is computed using the median *OPINC/assets* (*OCF/assets*) for firms in the two-digit SIC code of the reverse-LBO firm. The time period used is the same as the dependent variable.

[f] The benchmark performance for the mean-reversion-adjusted performance measure is computed using the median *OPINC/assets* (*OCF/assets*) for firms in the same two-digit SIC code as the reverse-LBO firm and whose performance in the same calendar year as year − 1 of each reverse-LBO firm is within 10% of the reverse-LBO firm's performance (e.g., if the reverse-LBO firm has OPINC (OCF) of 0.20, the comparison firms would be those whose *OPINC/assets* (*OCF/assets*) varied between 0.18 and 0.22). The time period used is the same as the dependent variable.

(Results controlling for industry trends and mean-reversion entails identical conclusions). OCF/assets and OPINC/assets are regressed as dependent variables. If a fall in leverage and insiders' ownership harms performance, we should witness a positive correlation between those variable. On the other hand, if those incentive structure are found to be inefficient, the end result should be negative coefficients on their respective βetas. In addition to that, if increases in working capital and capital expenditures signal lower performance, then the signs on leverage and ownership should be negative. The results are somewhat surprising: the first four regression, namely those concerning cash flows, tell us that changes in leverage are not associated with accounting performance (t-statistics not statistically significant), while variations in the percentage of equity detained by operating management is generally significant and positively associated with operating results. A 10% decrease in management equity can hurt OCF/assets and OPINC/assets by 2,2% and 4,4% respectively. Given that the average firms experiences a 13% drop in equity ownership of both managers and non-management insiders, this is translated into a severe blow to the company's prospects.

If we then focus our attention to cash outlays, we're still struck by the fact that changes in leverage are not associated with changes in working capital and only weakly negatively correlated with capital expenditures. Unsurprisingly, the reduction of outsiders stake in the company is strongly negatively associated with such expenses: as monitoring costs rise, management can have more leeway in the allocation of funds (strong t-statistics, even though the βetas are not remarkably high). Lastly, reductions in managerial equity seem not to be associated with such expenditures, except for the case of working capital in the short term (year-1 / year +1). One drawback associated with the

analysis of working capital and investments is that many firms resort to IPOs in order to raise funds. Therefore, the negative association between ownership and such variables may stem from the cash accrued to the company. Anyhow, regressions are not sensitive to the inclusion of an IPO variable, thus dismissing the claim. Furthermore, accounting performance is backed by solid evidence on stock market values subsequent to the IPO.

Lower incentives should then trigger a deterioration of performance. One last assumption is that managers greedily exploit asymmetric information and launch their IPOs at artificially-inflated offering prices. Investors would be consequently haunted by negative returns. Facts inconsistent with this claim would be zero or positive excess returns after the acceptance into the stock market.

Panel B: Sample of reverse LBO's still listed 48 months after month of reverse LBO

	12 months			24 months			36 months			48 months		
	#	Mean	Median	#	Mean	Median	#	Mean	Median	#	Mean	Median
Raw returns	44	4.72 (0.520)	− 0.62 (0.958)	44	29.70 (0.037)	0.90 (0.185)	44	51.60 (0.017)	11.50 (0.064)	44	59.70 (0.030)	− 9.30 (0.398)
Market-adj.	44	0.39 (0.960)	− 4.71 (0.495)	44	11.80 (0.400)	− 19.01 (0.986)	44	18.60 (0.370)	− 21.30 (0.704)	44	11.00 (0.680)	− 60.80 (0.241)
Jensen alpha	44	3.89 (0.620)	− 7.07 (0.784)	44	8.50 (0.470)	− 16.00 (0.784)	44	10.40 (0.490)	− 12.70 (0.548)	44	3.20 (0.860)	− 35.70 (0.197)

As a matter of fact, initial day's return are smaller for RLBOs compared to other IPOs, indicating no substantial mispricing. The table above suggest that raw returns, market-adjusted ones and Jensen's alphas are all statistically insignificant. There's no evidence of significant negative returns that might be attributable to asymmetric information. An extended analysis embracing leverage and ownership support this claim.

Overall, this paper suggests that RLBOs continue to outperform their peers, mostly due to the fact that they retain most of the characteristics of the common LBO firm. However, the loss suffered after the IPO must be smaller than the costs of reverting back to an LBO structure, as these companies intriguingly drift toward the outlook of the average corporation.

The performance of reverse leveraged buyouts[32]

It's often argued that private equity firms push overleveraged companies way too early into the public market, drawing much criticism and allegations of "quick flips". To counter these claims, one should bear in mind that buyouts groups retain a large ownership stake in RLBOs, thus being exposed to both financial harm and reputational damage in the event of underperformance. Evidence about RBLOs behavior is anyhow scant and somewhat deceitful.

Identifying buyout-backed IPOs gets tougher by the day: first of all, these are private companies which generally do not utter a single word about their operation; second the boundaries between private equity and venture capital are increasingly blurred, rendering it impractical to tell such deals apart. In their paper, the authors address a final sample of 496 RLBOs, which is in fact far smaller than the number of plain LBOs, IPOs etc, both in absolute and monetary terms. Anyhow, RLBOs tend to be larger deals compared to the average IPO, with more assets beforehand and an evident propensity to be priced more fairly.

	RLBOS					Non-Buyout backed IPOs				
	Gross Proceeds (Million)	Under-pricing (Percentage)	Total Debt/Capitalization After IPOs	Assets Before IPOs (Million)	Gross Spread (Percentage)	Gross Proceeds (Million)	Under-pricing (Percentage)	Total Debt/Capitalization After IPOs	Assets Before IPOs (Million)	Gross Spread (Percentage)
1980	15.00		20.01		7.00	13.70		29.30		7.78
1981	23.40		49.21		7.18	12.76		23.32		7.86
1983	53.11		33.17		6.58	23.06		33.95		7.49
1984	21.03		56.38		7.07	13.94		37.29		7.65
1985	19.40		53.98	234.20	7.31	33.59		39.13	57.74	7.48
1986	37.79	4.09	53.28	169.47	6.97	30.59	70.77	41.53	70.87	7.26
1987	44.61	10.39	61.73	216.19	6.85	31.38	32.76	37.90	67.32	7.27
1988	55.23	-0.14	46.29	151.78	6.84	34.57	49.91	40.76	69.32	7.10
1989	46.24	3.21	59.28	854.60	6.75	33.72	56.24	31.45	46.32	7.21
1990	38.79	16.37	58.06	142.83	6.85	40.95	28.50	25.60	36.81	7.04
1991	59.94	14.00	45.79	244.80	6.50	43.87	32.44	24.76	58.48	6.88
1992	65.60	9.08	49.08	173.33	6.82	49.14	13.64	26.20	45.70	7.07
1993	77.57	10.44	47.16	136.01	6.80	59.33	14.91	27.38	63.06	6.99
1994	66.23	9.37	44.01	220.00	6.78	56.27	13.86	30.33	56.39	7.03
1995	89.05	5.81	32.05	162.81	6.55	56.55	28.27	22.81	51.80	7.06
1996	118.20	13.48	54.93	295.11	6.67	54.81	20.29	23.15	53.97	7.09
1997	112.72	11.92	39.65	321.23	6.77	70.92	15.16	22.54	68.62	7.03
1998	134.54	42.72	40.72	287.26	6.62	62.30	22.04	24.60	100.98	7.02
1999	147.01	54.21	51.18	260.98	6.60	80.26	73.00	13.77	76.38	6.91
2000	163.89	31.67	34.29	218.51	6.55	64.77	61.25	9.41	97.60	6.96
2001	148.13	15.06	38.58	350.52	6.72	142.38	15.34	20.34	114.80	6.54
2002	202.62	10.30	36.52	335.83	6.76	145.53	9.24	27.52	223.55	6.67
AVG	79.09	15.41	47.87	265.30	6.79	52.47	32.80	27.84	75.74	7.19

[32] Jerry Cao and Josh Lerner, 2006

On average, the typical RLBO firms remains private for six years after having completed its transition. Buyout group's and management's equity interests in the company suffer severe haircuts after the IPO, plummeting to 37% (which is still extraordinarily high vis-à-vis the common public corporation).

	Mean	Median	Standard Deviation	Industry Adjusted by Other IPOs
Market Value ($ Million)	902.84	452.72	2077.88	433.92***
Book/Market	0.62	0.45	0.72	0.15***
Assets ($ Million)	955.04	406.98	2001.35	357.53***
Operating Income/Assets	3.76%	3.58%	2.83%	2.48%***
Net Income/Assets	1.98%	0.88%	3.14%	1.79%***
Long-term Debt/Assets	33.43%	31.32%	24.95%	13.21%***
CAPEX /Assets	4.46%	3.21%	4.22%	-2.75%***
Underwriter Rank	8.65	9	0.95	1.10***

***= significant at the 1% confidence level; **=5%; *=10%.

As demonstrated in the table above, RBLOs show super performance if compared to other IPOs. The Return On Assets (ROA) is 2,48% higher than the industry's average (highly significant) and similar results yields for the ratio Net income/assets. In agreement with previous empirical research, LBOs that go public retain a higher share of debt over book value, are less inclined to embark in costly capital expenditures and are backed by more reputable underwriters (all of the above coefficients are significant at the 1% level).

RLBO firms also create value for capital providers: the mean five-years raw return is 72,27%, indeed statistically significant. However, it's worth noticing that when we correct for market benchmarks while the mean remains positive, the median slips to very accentuated negative figures (in most cases the median is significant while the mean is not). This can be attributable to a very large dispersion of RLBOs returns, with some great positive one affecting the whole sample. If we use risk-returns from the CAPM or Fama-French models, they are positive and significant over all the years after the IPO. Two additional tables, not reported here, further decompose the sample into such RLBOs that after 5 years are still publicly traded and those that are taken over by another corporation: the first subgroup

follows the path of the total sample, while the latter subgroup eventually outmatches market returns (the mean tends to be statistically significant, while the median doesn't).

If we additionally introduce the concept of "wealth relative"[33], we spot that either equal-weighted and value-weighted buyout-backed IPOs far outperform the whole population of initial listing offers. RLBOs consistently hover around an average 1,1 wealth relative, while simple IPOs can boast only a 0,9 one. Performance tends to cluster together, showing great variability (the worst performing years are those in the mid-to late 1990s).

Panel A: Total sample of RLBOs

	12 months N=428		24 months N=428		36 months N=428		48 months N=428		60 months N=428	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Raw Returns	18.25 (0.00)	5.96 (0.00)	26.21 (0.00)	4.40 (0.00)	43.83 (0.00)	2.70 (0.01)	63.54 (0.00)	2.59 (0.01)	72.27 (0.00)	9.91 (0.00)
Market-adj.	8.10 (0.02)	6.08 (.58)	3.47 (0.46)	-9.78 (0.38)	6.34 (0.45)	-17.55 (0.02)	7.88 (0.52)	-27.69 (0.00)	15.45 (0.34)	-31.82 (0.01)
Jensen alpha	0.65 (0.01)	0.62 (0.01)	0.65 (0.01)	0.46 (0.01)	0.65 (0.01)	0.39 (0.03)	0.65 (0.05)	0.61 (0.03)	0.50 (0.01)	0.52 (0.01)
FF alpha	0.71 (0.02)	0.29 (0.06)	0.57 (0.01)	0.48 (0.01)	0.56 (0.01)	0.44 (0.09)	0.45 (0.01)	0.48 (0.08)	0.44 (0.01)	0.45 (0.00)

Further distinctions are drawn between the nature of the LBO, the length of the private phase and the allocation of the proceeds raised via the IPO. Even though the differences are rarely statistically significant, the provide evidence for some of the best practices related to LBOs

Panel A. Private LBOs vs. Public LBOs

	Private LBOs (254)	Public LBOs (114)	p-Value for Difference
Value-weighted Market Benchmark	8.03	25.34	0.29
Equal-weighted Market Benchmark	-0.45	16.51	0.30
S & P 500 Index Return	13.98	31.76	0.28

[33] Given by the formula $Wealth\ relative = \frac{\sum(1+R_{i,T})}{\sum(1+R_{benchi,T})}$, where $R_{i,T}$ is the buy-and-hold return for stock i in year T, while $R_{benchi,T}$ applies to the returns accruing to the benchmark index

Panel C. Longer Holding Periods vs. "Quick Flips"			
	Above 12 Months (315)	Below 12 Months (53)	p-Value for Difference
Value-weighted Market Benchmark	8.64	-17.89	0.22
Equal-weighted Market Benchmark	17.36	-10.17	0.21
S & P 500 Index Return	23.65	-4.69	0.19

Panel D. Use of Proceeds is Debt Reduction vs. Other Use			
	Debt Reduction (172)	Other Use (181)	p-Value for Difference
Value-weighted Market Benchmark	17.31	1.93	0.32
Equal-weighted Market Benchmark	17.74	-12.24	0.06
S & P 500 Index Return	22.96	8.61	0.37

Public LBO firms perform much better than their private counterparts when the go public; "quick flips", that is those LBOs that go public again within one year, provide little value as they feebly underperform LBOs with longer holding periods; moreover, firms that use the funds from the IPO offer for debt reduction are on a better track record vis-à-vis the others that do not follow suit.

The last issue this paper tackles is what role do buyout groups play in the post-RLBOs long-run performance. Facts clearly highlight that performance is cross-sectionally associated with ownership, governance and reputation proxies. RLBO's returns are chosen as the regression's dependent variable. The first four regression may raise some eyebrows: according to the βeta coefficients and their statistics, it seems that younger groups perform better, more leverage fosters higher performance and that companies with a buyout affiliate actually do not fare too well. The results are dramatically altered if controls concerning industry and offering year area added in the regression: in columns 5 through 8, the negative coefficients on age disappear (a bias maybe due to the fact that in the 1980's newly-born private equity firms attained remarkable returns), those on the debt burden become insignificant, while the only positive and significant βeta remaining is the one on buyout group size, consistent with the idea that sponsorship from a large group is beneficial

	1	2	3	4	5	6	7	8
Buyout Firm Age Before RLBO	-0.008*** (2.73)		-0.008** (2.40)	-0.007** (2.08)	-0.001 (0.02)		-0.001 (0.32)	-0.004 (0.64)
Logarithm of Buyout Firm Capital Before RLBO		-0.036 (1.03)	-0.015 (0.41)	-0.023 (0.43)		0.074 (1.52)	0.077 (1.54)	0.175 (2.16)**
Chairman Dummy				-0.460** (2.24)				-0.385 (1.34)
Buyout Presence in Board				0.218 (0.58)				-0.422 (0.55)
Buyout Firm Ownership Before IPO				0.315 (0.97)				-0.041 (0.09)
Logarithm of Market Cap shortly after IPO				-0.058 (0.67)				-0.026 (0.21)
Debt/Asset Ratio shortly after IPO				0.632*** (2.77)				0.588 (1.41)
Underwriter Reputation				-0.047 (0.70)				-0.088 (0.58)
Intercept	0.234*** (2.89)	-0.123 (0.53)	-0.138 (0.60)	0.119 (0.20)				
Observations	371	372	371	266	371	372	371	266
R^2	0.01	0.003	0.02	0.07	0.49	0.49	0.49	0.64
Year Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes

***= significant at the 1% confidence level; **=5%; *=10%.

This paper clearly stresses some of the characteristics of RLBOs: their greater size compared to other IPOs, their constant and not patchy outperformance of the market benchmark in the long run, that leverage doesn't affect returns and that buyout groups play a fundamental role in their management. Although indirectly, this can be regarded as evidence of the superior mechanisms introduced by an LBO deal.

CONCLUSIONS

LBOs have come a long way. They peaked into the financial system in the early 1970's to eventually become a steamrolling force by the end of the 1980's, mainly favored by the creation of the junk-bond market by Mike Milken. As credit drained due to the collapse of such high-yield bonds, LBOs withdrew from the fore, but managed to come back at full throttle with the favorable, cheap loan conditions during the outset of the new millennium.

Throughout this thesis, I've provided evidence against the unwarranted claim that private equity houses are merely corporate raiders, which plunder profitable companies and fest via the sale of their most mouth-watering assets. All measures relating to operating efficiency appear to be improving: working capital is managed more accurately, employment is boosted by strategies focusing on growth, long-term competitiveness is unaltered as spending level s on R&D, advertising and maintenance are untouched. As far as financial returns are concerned, numerous study see it eye-to-eye on the fact that private equity houses fall short of the market benchmark if we subtract fee payments. However, buyouts do indeed create value gross of fees. A strong persistence is returns is present, with larger funds consistently capable of achieving abnormal returns.

Despite all the endeavors of previous literature, most issues remain still unresolved and could be the topic for some interesting future research

- Private firms are less affected by agency costs due to concentrated ownership and management. It would be useful to analyze productivity gains in just this class of businesses
- Additional studies should consider the impact of different regulatory contexts on private equity's performance and investments. For instance, GP in the United States tend to be an independent group of specialists while in Europe buyout funds are often divisions of banks and insurance companies.
- A thorough study concerning the relation between human capital factors and financial or economic returns is still missing.
- Fourth, the emergence of second-lien debt, carrying less covenants but sharing the collateral with senior obligations, has brought about the possibility of longer maturities and more

attractive rates, but also a pending conflict of interest between junior and senior debt providers.

- The resurgence of club deals has enabled private equity firms to carry out acquisitions that would have otherwise been inaccessible on a stand-alone basis. However, coordination problems may come up when restructuring of distressed buyouts is required. On top of that, an additional facet of syndicated or club deals regards their potential effect upon competition in the market and hence the prices paid for any given deal: the drawbacks of possible collusion have to be judged against the benefits derived from improved corporate governance and mechanisms.
- Lastly, studies controlling the performance of secondary and foreign buyouts are needed.

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