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The London Markets and Private Equity-backed IPOs

Report prepared for The British Private Equity and Venture Capital Association (BVCA) and the London Stock Exchange

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Cass Private Equity Centre (CPEC)
Cass Business School

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The British Private Equity and Venture Capital Association

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Executive Summary

The British Private Equity and Venture Capital Association (BVCA) and the London Stock Exchange (LSE) commissioned Cass Private Equity Centre (CPEC) to assess the attractiveness of the London markets for private equity-backed initial public offerings (IPOs). The assessment is based on two key aspects of performance. First, the relative importance of different exit routes used by private equity firms for divestment of their holdings. Second, the initial and long-term aftermarket performance of private equity-backed IPOs.

The key research findings in this report are:

1. The London Stock Exchange Main and AIM markets provide a vital exit route through direct flotation and sale of quoted equity for some of the largest portfolio companies held by private equity firms in the UK.

2. During the period January 1995 to December 2006 a total of 1,735 initial public offerings raised a total of £70 billion on the London Stock Exchange Main and AIM markets. Private equity-backed IPOs (both venture capital and buyouts) accounted for a remarkable 22%, 382, of the total number of IPOs and 27%, £18.9 billion, in terms of amount raised over this period of time. There has been a strong trend of venture capital-backed companies floating on AIM while the Main market attracted the majority of buyouts with private equity backing.

3. The average amount raised through IPO for all flotations during the period 1995 to 2006 was £40.5 million (£12.5 million on AIM and £138.6 million on the Main market). Venture capital-backed IPOs raised on average £26.3 million (£8.9 million on AIM and £53.5 million on the Main market) and for private equity-backed IPOs £88.4 million (£26.8 million on AIM and £110.5 million on the Main market).

4. Private equity-backed IPOs account for more than 50% of the total number of companies in the consumer services, industrial, healthcare and technology sectors on the Main market. The majority of venture capital-backed IPOs are in the health and technology sectors.

5. Private equity-backed buyouts are relatively larger in terms of assets and sales, are more profitable and are floated at relatively modest valuations in comparison to their venture capital-backed counterparts.

6. The typical private equity-backed and venture capital-backed IPO spends more on research and development, £1 million and £1.4 million, than their equivalent non private equity-backed counterparts (£0.3 million) at the time of flotation.

7. The average length of time a private equity firm invests into a company before flotation is 4.5 years for venture capital-backed IPOs and 3.8 years for PE-backed IPOs.

8. The private equity firm or syndicates, if multiple investors are present, typically holds an average of 33.2% in venture capital-backed IPOs and 59.2% in private equity-backed IPOs just before flotation. Immediately after the flotation these holdings drop to 19.8% and 28.5% respectively.

9. Private equity-backed buyouts outperform the FTSE All Share index by 20%, in equal weighted terms, by their first year anniversary of their public listing; they also outperform their non private equity-backed counterparts both on an equal and value weighted terms, despite their lower first day returns. Venture capital-backed IPOs, on the other hand, exhibit rather poor performance by their first anniversary of their public listing.

10. IPOs in the Main market perform relatively better (in equal weighted returns) than their AIM counterparts. In value weighted terms, however, the performance of venture capital-backed IPOs in the Main market is severely affected by the small number of such IPOs listed in 2000.

Table of Contents

List of Tables

List of Figures

Section 1: Introduction

The British Private Equity and Venture Capital Association (BVCA) and the London Stock Exchange (LSE) sponsored Cass Private Equity Centre (CPEC) to assess the attractiveness of the London markets for private equity-backed initial public offerings (IPOs). The assessment is based on two key aspects of performance. First, the relative importance of different exit routes used by private equity firms for divestment of their holdings. Second, the initial and long-term aftermarket performance of private equity-backed IPOs.

Section 2 provides an analysis of the various types of exit routes used by private equity firms to divest their holdings from portfolio companies in the UK during the period 1998 to 2006; it also compares UK patterns with the pan-European experience.

Section 3 then compares the key characteristics of private equity-backed IPOs with their non private equity-backed counterparts, during the period January 1995 to December 2006.

Section 4 provides detailed analysis of the 12-month aftermarket performance of private equity-backed and non private equity-backed IPOs in aggregate and the Main and AIM markets independently.

Section 2: Types of Exit Routes for Private Equity Investors

Table 2.1 shows the total number and amount of divestments as well as the average size of transaction for each of the eight types of exits during the period 1998 to 2006. There were a total of 10,199 exits accounting for £44.6 billion during the nine year period under consideration.[1]

Trade sales emerge as the most popular means of divestment, both in terms of number of exits (20.6%) and total amount divested (23.5%); they are followed closely by repayment of preference shares/loans that account for 13.9% by volume and 23.3% of the value of the total divestments.[2] Divestments through the stock exchanges, both flotations and sales of quoted equity, represent 16.4% of the total number of exits. Although the number of flotations on their own are relatively small (2.7%), it is important to note that they have established themselves, over the years, as the preferred choice of exit for some of the largest portfolio companies by private equity firms. The average size of divestment during the period 1998 to 2006 was £13.9 million. Sales to another private equity firm (secondary buy-outs) are also relatively large average size transactions accounting for a total of £4.6 billion during the period, i.e. 10.4% of the total amount divested with an almost £12.4 million average deal size over the period. Interestingly the table also suggests that almost one in five of the exits is the inevitable outcome of unsuccessful investments resulting in write-offs; they are, however, relatively small individual divestments accounting for 8.9% of the total amount divested.

The pattern of divestment in the UK is broadly similar to pan-European firms' activities. Whilst divestment through trade sales was the largest type of exit route in Europe (excluding the UK) accounting for a quarter of all divestments in 2006, it is second in the UK with 19% of the total amount divested. The most popular divestment method in the UK since 2002 remains the repayment of preference shares/loans (22%); this accounts only for 10% in Europe. Flotations in Europe, excluding the UK, accounted for almost a quarter of all exits in 2006; adding the 11% of sales of quoted equity, the stock exchanges account for 36% of the total divestment in Europe. In sharp contrast, only 19% of divestments (both flotations and sales of quoted equity) were completed through the exchanges in UK.

[1] The BVCA and PwC statistics on amounts divested are at cost and cover transactions by BVCA members only; exits through flotations do not cover listings on the London Stock Exchange only.
[2] In fact, the data for repayment of preference shares/loans is only available for the period 2002 to 2006; restricting the comparison for this period only, this exit route emerges as the most common divestment method accounting for 36.9% of the amount and 16.3% of the total number of exits.

Table 2.1: Number and amount divested by type of exit, 1998-2006

	Number of exits		Total Amount Divested		Average size of exit
	No	**%**	**£(ml)**	**%**	**£(ml)**
Divestment on flotation	273	2.7	3,796	8.5	13.9
Sale of quoted equity	1,395	13.7	2,960	6.6	2.1
Trade sale	2,101	20.6	10,477	23.5	5.0
Sale to another private equity firm	374	3.7	4,628	10.4	12.4
Sale to financial institutions	186	1.8	2,268	5.1	12.2
Sale to management (buy-back)	1,232	12.1	1,357	3.0	1.1
Divestment by other means	1,162	11.4	4,791	10.7	4.1
Repayment of preference shares/loans*	1,419	13.9	10,389	23.3	7.3
Write-off	2,057	20.1	3,979	8.9	1.9
Total	10,199	100.0	44,645	100.0	4.4

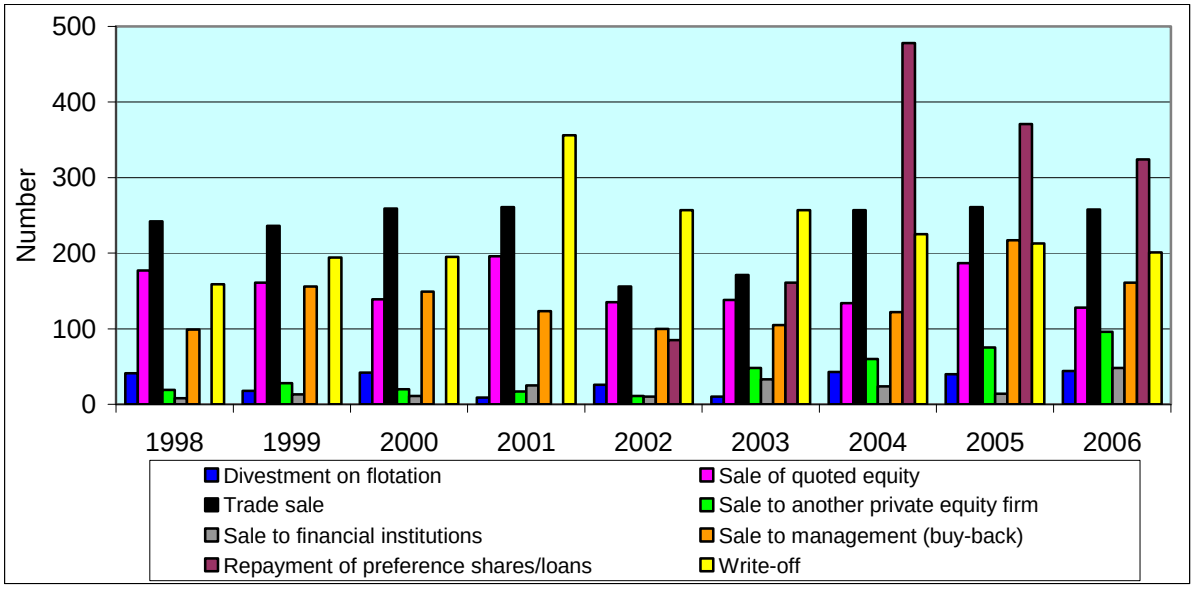
** Data covers the period 2002 to 2006 only*
Source: BVCA/PwC

Figure 2.1 shows that the number of exits by flotation in 2006 continued to account for a relatively small proportion of the total number of divestments (3%) in spite of having an all time high of 44 exits since 1998. In fact, the number of flotations has varied considerably in recent years reflecting market conditions and timing considerations by private equity investors. It is interesting to note, for example, the drop in exits by flotation and the increase in write offs in 2001 and 2002.

Figure 2.2 shows the amount divested through the various exit routes continued to increase in 2006, reaching a total of £13 billion, an increase of 34% from 2005. It follows a steady trend in the growth of divestments since 2003 across almost all types of exit routes except for write-offs, which have remained relatively stable. Divestments by flotation accounted for 11% of the total amount divested in 2006, the same as the average since 1998, but the size of such exits tripled from £440 million in 2005 to £1,413 in 2006.

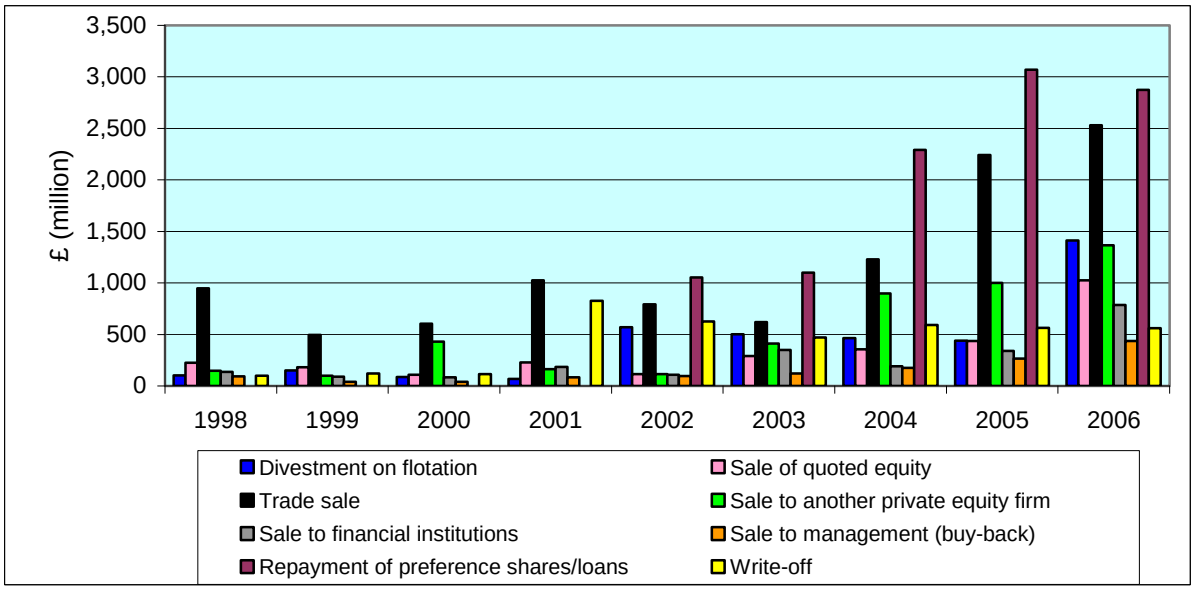
Figure 2.3 shows the average annual amount divested for each of the eight types of exit routes during the period 1998 to 2006. The average size for an exit through IPO in 2006 was £32.1 million compared to £16.3 and £14.2 million for sales to financial institutions and other private equity firms. Divestments by flotation continue to represent the preferred choice of exit for some of the largest holdings by private equity firms.

Figure 2.1: Number of divestments by type of exit, 1998-2006



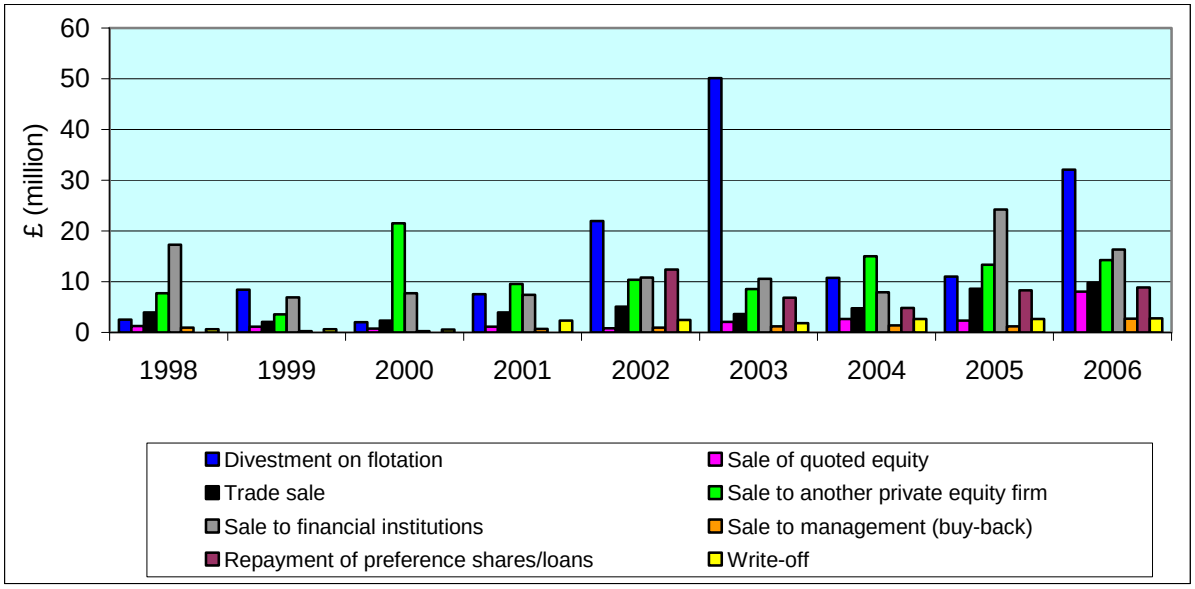
Source: Report on Investment Activity, 2006, BVCA/PwC

Figure 2.2: Amount divested by type of exit, 1998-2006 (£m)



Source: Report on Investment Activity, 2006, BVCA/PwC

Figure 2.3: Type of divestment by average value of divestment 1998-2006 (£m)



Source: Report on Investment Activity, 2006, BVCA

Section 3: IPOs in the Main London Stock Exchange and AIM Markets

Table 3.1 provides summary statistics of the sample of IPOs listed on the LSE Main and AIM markets during the period January 1995 to December 2006. A total of 1,735 (385 Main and 1,350 AIM) such IPOs have been floated on the two markets; 238 of them were venture capital-backed (VCs) and 144 were buyouts (BOs) with private equity backing; the other 1,353 were IPOs without private equity backing (NPEs).[3] PE-backed IPOs (both VCs and BOs) raised a total of £19 billion in both markets and account for 27% of the total amount raised in the London markets during the 12-year period.[4] The average market capitalization, at offer prices, of the average AIM IPO was £31.4 million while the equivalent average for those listed on the Main market was £366 million. There are no significant differences in the average market values among the three groups of IPOs. The average statistics, however, conceal the nature of the two types of PE-backed IPOs; the typical median value of a buyout is twice the size (£60 million) of the equivalent VC-backed issue.

Figure 3.1 shows the annual number of private equity-backed IPOs (VCs and BOs) for the two London markets. Since its inception in 1995, AIM has attracted a healthy number of both venture capital and buyout issues. Although the flow of VC-backed IPOs followed the general trend of the markets in 2000, buyout flotations remained at relatively moderate levels. Private equity-backed issuance followed the general subdued market trend during 2001 to 2003 but recovered strongly in both markets since 2004. In fact, there was a record number of 84 PE-backed (VCs and BOs) IPOs listed on AIM during the 3-year period 2004 to 2006.

[3] The sample of IPOs in this study excludes investment trusts, property funds, re-listings and transfers across markets.

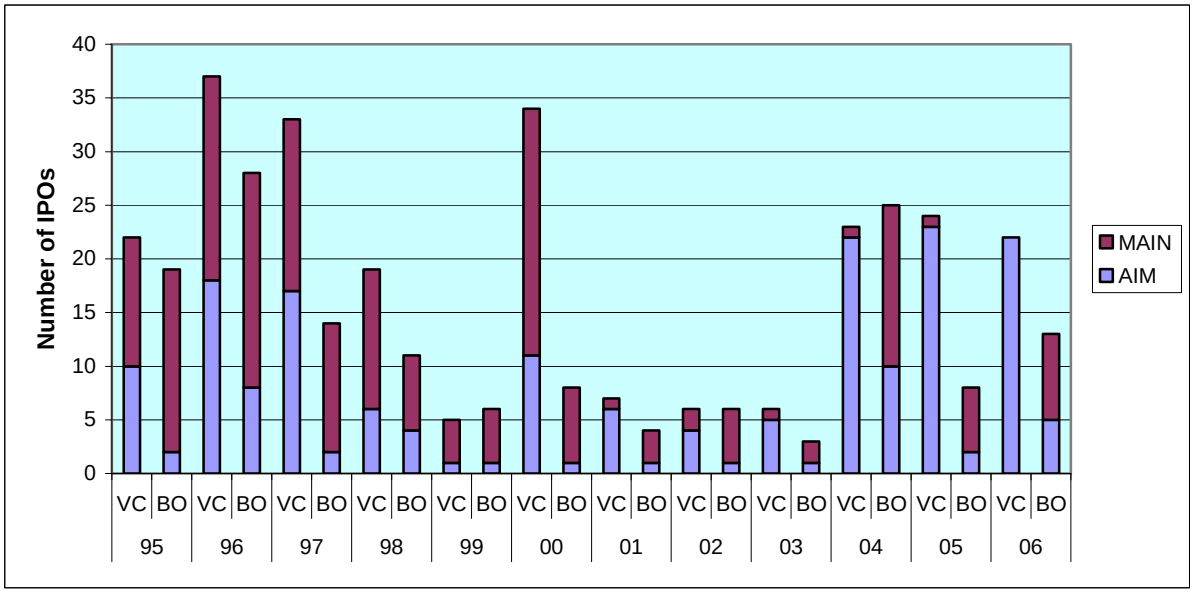
[4] The statistics on amounts raised are not directly comparable with the amounts divested through flotations as these are based on offer prices while divestments are at cost and cover the activities of BVCA members only at different points in time.

Table 3.1: Number, amount raised and average market value for all IPOs from January 1995 to December 2006 *

	NPE	VC	BO	ALL
Number of IPOs:				
AIM	1,167	145	38	1,350
MAIN	186	93	106	385
ALL	1,353	238	144	1,735
Total amount raised (£m):				
AIM	14,575	1,290	1,019	16,884
MAIN	36,684	4,975	11,716	53,375
ALL	51,259	6,265	12,735	70,259
Average market value (£m):				
AIM	31.5	29.1	38.1	31.4
MAIN	522.1	216.3	224.2	366.2
ALL	98.9	102.2	175.1	105.7

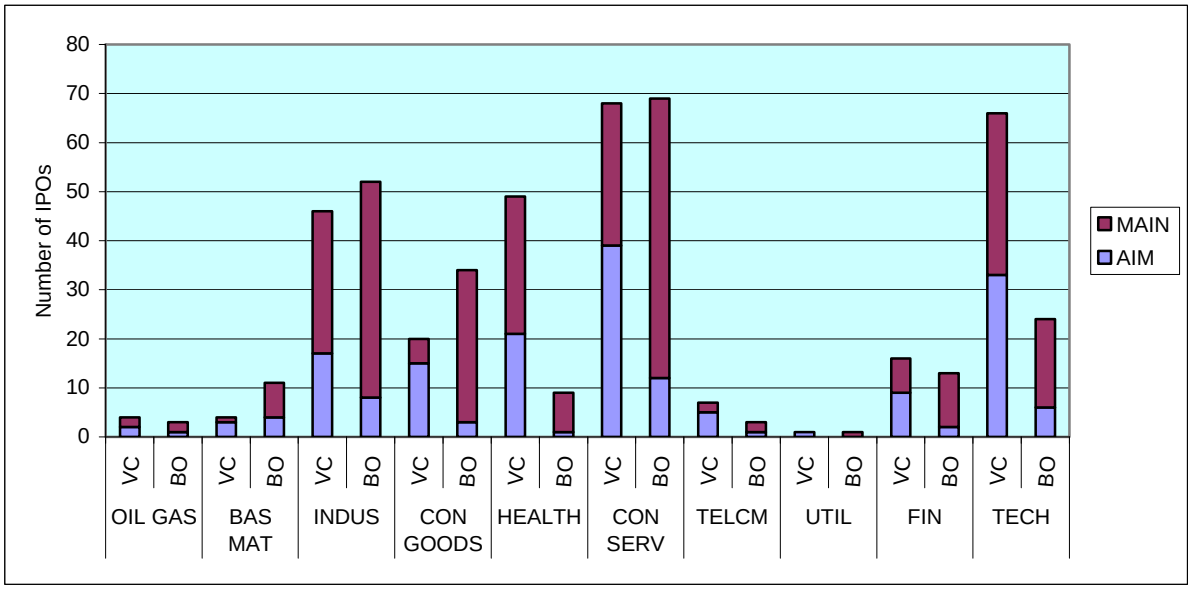
NPE: Non private equity-backed
VC: Venture capital-backed
BO: Private equity-backed buyouts
* Excluding investment trusts, property funds, re-listings and transfers across markets
Source: London Stock Exchange, Main and AIM New Issues Statistics; for definitions and sources of data for VCs and BOs see Appendix I.

Figure 3.1: Number of private equity-backed IPOs on the Main and AIM Markets, 1995-2006



Another indicator of the widespread contribution of the private equity industry to the flow of newly listed companies on the London markets is the spread of PE-backed companies across different industries. Figure 3.2 shows a relatively heavy concentration of private equity-backed IPOs (both VCs and BOs) in consumer services, health care, technology and industrials. PE-backed IPOs account for more than 50% of the total number of companies in these sectors on the Main market. On the other hand, Financials and Telecommunications are the least represented sectors in the PE-backed sample of IPOs.

Figure 3.2: IPOs on the Main and AIM Markets by Industry, 1995-2006



OIL GAS:	Oil & Gas	CON SERV:	Consumer Services
BAS MAT:	Basic Materials	TELCM:	Telecommunications
INDUS:	Industrials	UTIL:	Utilities
CON GOODS:	Consumer Goods	FIN:	Financials
HEALTH:	Health Care	TECH:	Technology

Table 3.2 provides summary accounting statistics for the three groups of IPOs at the time of the offer. Perhaps, not surprisingly, VC-backed IPOs are markedly smaller companies in terms of sales, assets and employment in comparison to buyouts and other IPOs. The average sales for a VC-backed IPO were £30.7 million (median £4.2 million) in comparison to £195 million (median £44 million) for the average PE-backed IPO and £101.8 million (median £3.0 million) for other NPE-backed IPOs. The same broad pattern applies for the size of total assets, salaries, number of employees, capital expenditure and profitability. VC-backed and PE-backed IPOs, however, spend more on research and development (median £1.4 million and £1 million) than NPE-backed IPOs (median £0.3 million).

Table 3.2: Summary accounting information for the three groups of IPOs at the time of flotation, 1995-2006 in £ million or as stated*

	NPE		VC		BO	
	Mean	Median	Mean	Median	Mean	Median
Sales	101.8	3.0	30.7	4.2	195.5	44.2
Assets	252.1	9.2	36.1	13.2	200.2	48.9
Salaries	14.1	1.4	8.3	2.8	51.6	18.3
Number of Employees (no)	571	44	277	72	2,000	319
Capital Expenditure (CAPEX)	7.0	0.2	3.2	0.5	8.1	1.8
Research and Development	1.6	0.3	2.9	1.4	18.9	1.0
EBITDA	10.2	0.02	0.5	0.1	27.8	7.1

* The number of IPOs included in each of the ratios varies depending on data availability and in all cases the number of observations included is less than the total sample of IPOs.
Source: Datastream

Table 3.3 shows a number of valuation, operational and leverage related multiples for the three groups of IPOs. VC-backed companies are floated at market capitalisations about three times their assets and sales values; in sharp contrast, the equivalent multiples for buyouts and other IPOs are close to 1. At the same time, VC-backed IPOs invest more on capital expenditure, in proportion to their average assets, in comparison to other IPOs. Probably the most striking aspect of the VC-backed IPOs is their very low profitability in comparison to their market valuation resulting in a market value to EBITDA multiple of 219.49%. The leverage ratios for the three groups of IPOs also confirm the heavy deployment of debt in buyout transactions; the average proportion of total debt to total capital (book values) for buyouts is 111.42% while the proportion of total debt to total equity (market value) and debt is 54.22%. Both measures of leverage are significantly higher than those for the other IPOs in general and VC-backed IPOs in particular.

Table 3.4 shows summary statistics related to the involvement of private equity firms in their portfolio companies; these are taken directly from either company account and/or offer prospectuses. The average length of investment of private equity firms in both VCs and BOs is 4.5 and 3.8 years; there is, however, more diversity with VC investments where the longest investment has been for 19 years. The private equity firm or syndicate, if multiple investors are present, typically holds an average of 33.2% in venture capital and 59.2% in buyouts just before the flotation. Immediately after the flotation these holdings drop to 19.8% and 28.5% respectively. Further significant divestments are most likely to take place 12 to 18 months after flotation at the end of the usual lock-up periods.

Table 3.3: Key financial ratios for the three groups of IPOs at the time of flotation, 1995-2006*

	NPE	VC	BO
Market Value/Sales	0.97	3.78	1.03
Market Value/Assets	0.59	3.24	1.02
Market Value/EBITDA	9.69	219.49	7.27
Sales/Salaries	7.19	3.79	4.77
Capex/Assets (%)	1.81	11.16	4.44
Debt/Total Capital (%)	39.37	18.87	111.42
Debt/Debt+Market Value (%)	27.64	4.25	54.22

* The number of IPOs included in each of the ratios varies depending on data availability and in all cases the number of observations included is less than the total sample of IPOs.
Source: Datastream

Table 3.4: Summary statistics of private equity involvement*

	VC		BO	
	Mean	Median	Mean	Median
Years of PE investment before IPO	4.5	4.0	3.8	3.0
Number of PE firms syndicate	1.8	1.0	2.1	2.0
PE shareholding before IPO (%)	33.2	32.8	58.0	59.3
PE shareholding after IPO (%)	23.1	19.8	26.2	23.6

* The number of IPOs included in each of the ratios varies depending on data availability and in all cases the number of observations included is less than the total sample of IPOs.
Source: Individual IPO prospectuses

Section 4: The Aftermarket Performance of Private Equity-backed IPOs

Table 4.1 provides summary statistics of the first day performance of the three groups of IPOs and the sample as a whole. Both groups of PE-backed IPOs and particularly buyouts start at lower first day returns (9.4% for buyouts and 15.1% for VCs) than their non private equity-backed counterparts (19.6%). Value weighted first day returns for buyouts are even lower (6%) but the rather strong debuts of some of the largest VC-backed IPOs result to a value weighted first day return of 20.3%. The median first day return and the proportion starting below the offer price for all three groups of IPOs is broadly similar. It is interesting, however, to note the high variability, exhibited by the standard deviation of first day returns within the group on non private equity-backed IPOs; on the other hand, the first day performance of buyouts is very consistent across this group. This may be due to the maturity and size of such issues and the ability of underwriters and private equity investors to better value their offerings.

Table 4.1: Average first day returns (%) on IPOs

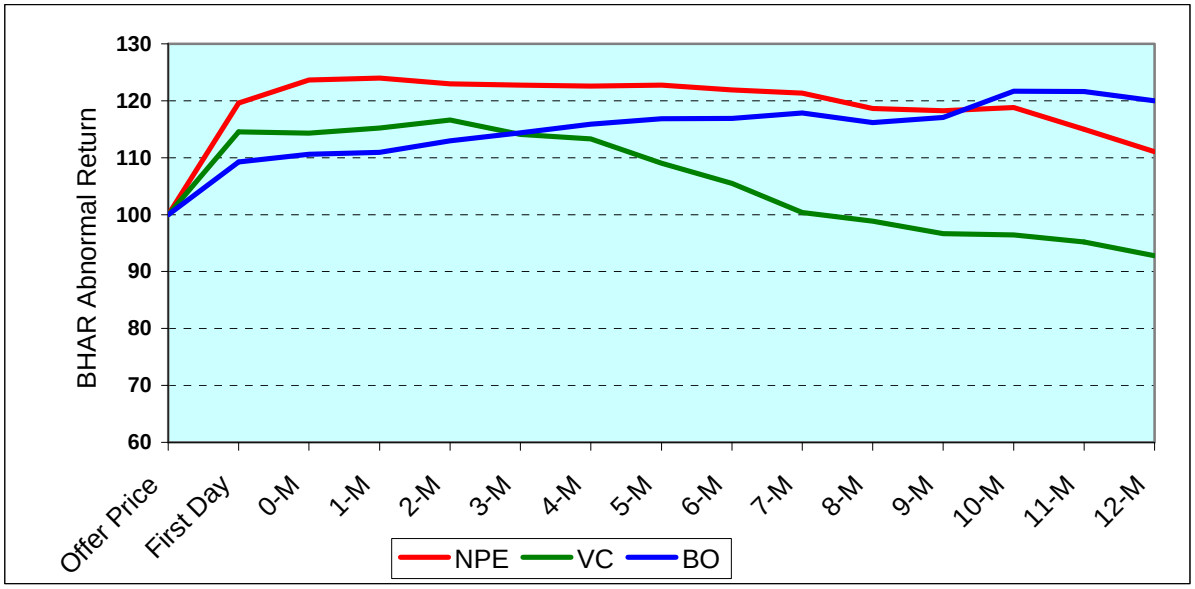
	NPE	VC	BO	ALL
Mean All (equal weighted)	19.6	15.1	9.4	18.2
Mean All (value weighted)	9.2	20.3	6.0	10.3
Median	7.5	8.5	7.2	7.6
Standard deviation	57.9	23.1	11.5	55.2
Starting below offer price	12.7	13.5	13.5	12.9

Table 4.2 and Figure 4.1 show the equal and value weighted average buy-and-hold abnormal returns (using the FTA All Share index as the benchmark and including first day returns) for the three groups of IPOs for the period 1995 to 2006. All IPOs have a complete record of 12 months aftermarket performance as the last returns' data refers to the end of December 2007. It is immediately apparent that despite their relatively moderate start on their first day of trading, buyouts outperform the FTSE All Share index and all other IPOs by the end of the first year of trading; the average buy-and-hold is 20% and 11.7% in equal weighted and value weighted terms respectively. NPE-backed and VC-backed IPOs on the other hand start rather strongly but their performance deteriorates gradually but consistently after the first full month of trading. VC-backed IPOs exhibit particularly severe underperformance in value weighted terms (-39.3%) by the end of the first year of trading. This is the direct result of very poor performance of a small number of very large VC-backed issues.

Table 4.2: Equal and value weighted abnormal buy-and-hold returns, 1995-2006

	Equal weighted			Value weighted		
	NPE	VC	BO	NPE	VC	BO
First day	19.6	14.6	9.2	9.3	20.3	6.0
One month	24.0	15.2	11.0	14.2	17.7	7.2
Three months	22.7	14.1	14.4	12.3	24.7	9.6
Six months	21.9	5.5	16.9	12.2	-10.2	10.4
Nine months	18.2	-3.4	17.1	8.5	-32.5	9.3
First year	11.0	-7.2	20.0	3.7	-39.3	11.7

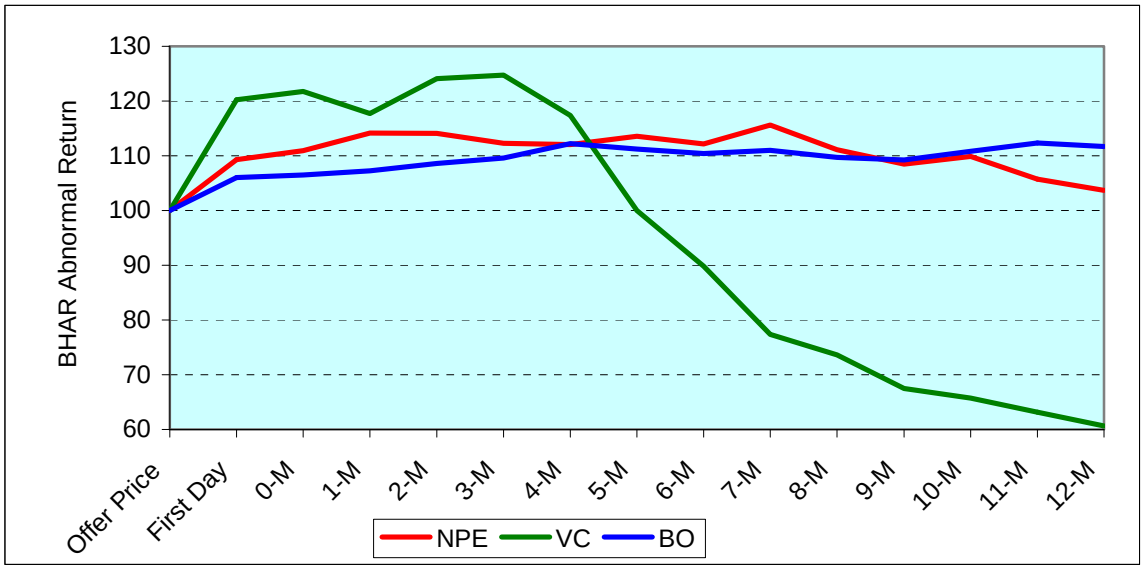
Figure 4.1: Equal weighted abnormal buy-and-hold returns 1995-2006



NPE: Non private equity-backed
VC: Venture capital-backed
BO: Private equity-backed buyouts

The aftermarket performance documented above is likely to be less relevant to investors with limited or no access to IPO allocations at the offer prices; individual investors, for example, are more likely to invest at market prices immediately after the offer. As it is also customary in the academic literature to assess long-run performance from prices at the close of the first day of trading, Table 4.3 shows equal and value weighted returns excluding the first day return. Not surprisingly, the 12-month abnormal returns across the three groups of IPOs are reduced significantly; PE-backed buyouts, however, continue to outperform the FTSE All Share index by 8.3% and 4.5% in equal and value weighted terms respectively.

Figure 4.2: Value weighted buy-and-hold abnormal returns 1995- 2006



NPE: Non private equity-backed
VC: Venture capital-backed
BO: Private equity-backed buyouts

Table 4.3: Equal and value weighted abnormal buy-and-hold returns for the period 1995 to 2006, excluding first day returns

	Equal weighted			Value weighted		
	NPE	VC	BO	NPE	VC	BO
End of offer month	1.8	-0.5	1.2	1.3	0.2	0.3
One month	2.2	0.4	1.3	4.4	-3.0	1.0
Three months	1.9	-0.2	4.3	2.6	2.0	3.1
Six months	1.8	-7.7	6.5	1.9	24.9	3.7
Nine months	-1.8	-16.3	6.2	-1.3	-43.1	2.4
First year	-7.2	-19.8	8.3	-5.2	-47.1	4.5

Empirical evidence and conventional wisdom suggest clear patterns in the long-run performance of IPOs; more specifically years of heavy issuing activity are associated with the most severe underperformance in the aftermarket. Thus, the inclusion of the technology bubble in this study's sample period is bound to have an impact on the average estimates of long-term performance. Table 4.4 provides a sharp illustration of such patterns by examining the 12-month performance of yearly IPO cohorts in equal and value weighted terms. PE-backed buyouts outperform the FTSE All index in nine out of the twelve years and appear particularly strong for the cohorts of 1995, 1998, 1999 and 2002. In fact, all IPOs launched during 2004 had positive performance during the strong market recovery in the following 12 months. The 1999 cohort also benefited from the rise in the markets during the first part of 2000.

On the other hand, “delayed” flotations in general and VCs in particular joining in 2000 suffered substantial losses in the following 12 months. VC-backed IPOs, for example, sustained a striking -56.1% underperformance in equal weighted terms and a staggering -94.3% value weighted return relative to the FTSE All Share index.

Table 4.4: 12-Months abnormal buy and hold returns by year of issue

	Equal Weighted			Value Weighted		
	NPE	VC	BO	NPE	VC	BO
1995	27.12	27.91	71.15	32.65	10.29	38.09
1996	3.24	-7.41	-3.53	6.02	-13.82	-10.01
1997	23.64	7.61	-6.92	16.26	-52.72	-2.66
1998	17.31	18.58	33.35	-5.13	1.88	31.85
1999	148.92	42.80	45.10	20.04	-3.73	25.90
2000	-5.45	-56.14	9.90	-33.25	-94.29	21.77
2001	-9.22	0.49	-0.97	-11.94	9.11	28.10
2002	-3.05	37.89	32.34	2.98	3.68	22.76
2003	44.10	-63.14	16.11	16.71	-60.98	3.11
2004	16.64	11.85	18.85	21.17	4.22	18.83
2005	-4.55	-29.03	24.84	17.84	6.37	17.57
2006	-1.24	-15.14	9.88	4.24	-18.26	-7.49

Given the exceptional circumstances of the 2000 cohort of IPOs, Tables 4.5 duplicates the aftermarket performance results excluding all flotations during 2000. It is immediately apparent that the 34 VC-backed IPOs in the Main and AIM markets have a marked impact on the overall 12-month performance of the group. There is a marked improvement in both the equally and value weighted returns when 2000 is excluded from the analysis. This is particularly pronounced for the value weighted returns where the 12-month returns are still negative at -11.0% they are better than the equivalent -39.3% shown in Table 4.2. There are also some, but not marked, changes for the NPE-backed portfolio but the performance of the buyouts is almost unaffected given that only 8 such issues were floated in 2000.

Table 4.5: Equal and value weighted abnormal buy-and-hold returns, 1995-2006 (excluding 2000)

	Equal weighted			Value weighted		
	NPE	VC	BO	NPE	VC	BO
First day	17.1	13.3	9.3	9.2	12.1	5.8
One month	22.1	14.5	10.3	13.3	11.8	6.3
Three months	21.8	13.8	14.0	13.9	17.6	8.8
Six months	21.5	10.1	16.4	16.4	6.5	9.5
Nine months	20.4	3.8	17.2	12.9	-5.7	8.7
First year	13.6	0.9	20.6	10.0	-11.0	11.3

The aftermarket performance results so far cover the whole sample of IPOs including flotations in both the Main and AIM markets. In Table 3.1 we show that the 1,350 issues in AIM account for 78% of the total number of IPOs but they represent only 24% of the total amount raised; they are also significantly smaller in terms of market capitalisation in comparison to their Main counterparts at the time of getting their public listing. Table 4.6 and Figures 4.3 and 4.4 show the 12-month aftermarket performance in equal and value weighted terms for the three groups of IPOs for each of the two markets separately. The estimates are based on two alternative benchmarks; for IPOs in the Main market we use the FTSE All Share index, as in the previous tables; for all AIM issues, however, given their smaller market capitalisations, we use the HGSC index as comparative benchmark. In equal weighted terms, all three groups of IPOs in the Main market outperform their AIM counterparts. The largest differences in the 12-month performance occur for the non private equity-backed portfolio; the sample of 186 such IPOs have an average abnormal return of 23.4% in comparison to the modest 6.2% for the much larger sample of 1,167 issues listed in AIM. There are also some differences in performance in favour of the Main market for buyouts, both in equal and value weighted terms but they are relatively modest. There is a striking difference, however, in the value weighted returns for VC-backed IPOs. This is entirely due to the very poor aftermarket performance of a handful of very large IPOs listed in the Main market during 2000.

Table 4.6: Equal and value weighted abnormal buy-and-hold returns for Main and AIM markets, 1995-2006

		Equal weighted			Value weighted		
		NPE	VC	BO	NPE	VC	BO
First day	Main	11.8	17.6	8.9	9.2	22.1	6.0
	Aim	20.9	12.6	10.1	9.4	11.3	6.1
One month	Main	15.5	19.0	11.5	14.6	20.1	7.0
	Aim	24.9	12.7	11.9	10.2	6.7	3.7
Three months	Main	21.3	24.3	16.7	12.0	27.6	9.6
	Aim	22.1	7.4	11.5	7.9	1.1	1.4
Six months	Main	20.9	14.9	20.3	10.8	-10.1	9.1
	Aim	20.2	0.8	11.2	4.5	-8.1	1.0
Nine months	Main	22.8	2.5	19.0	8.6	-35.5	6.8
	Aim	14.8	-5.2	17.3	-0.6	-15.0	5.5
First year	Main	23.4	0.2	23.3	3.2	-41.5	9.1
	Aim	6.2	-8.8	18.4	-3.8	-20.6	5.2

Figure 4.3: Equal weighted abnormal buy-and-hold returns for Main and AIM, 1995-2006

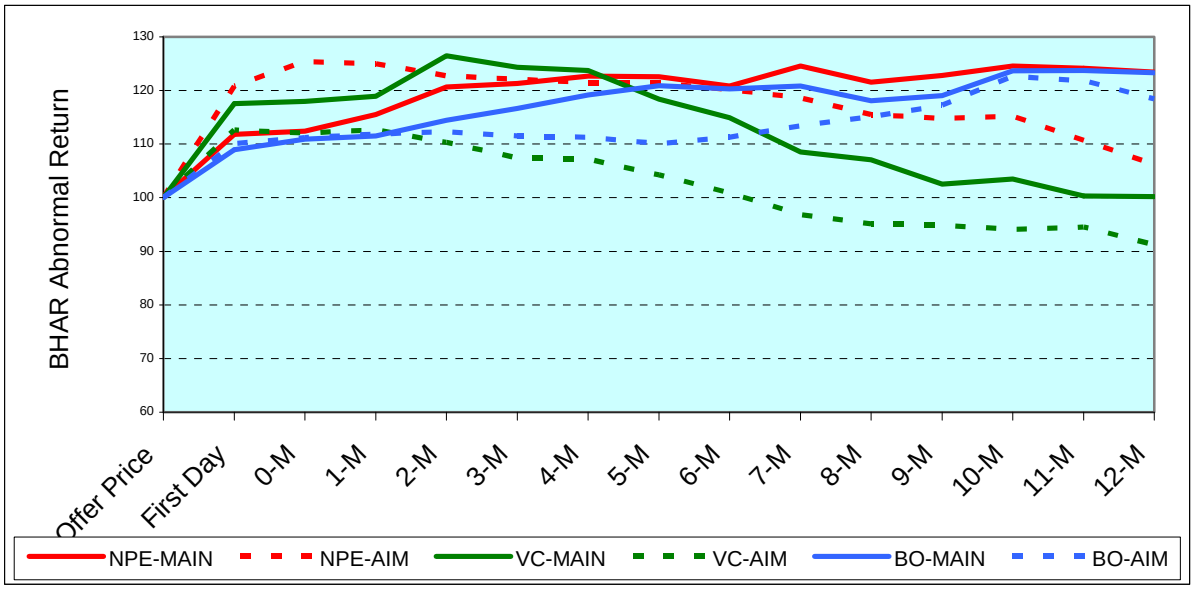
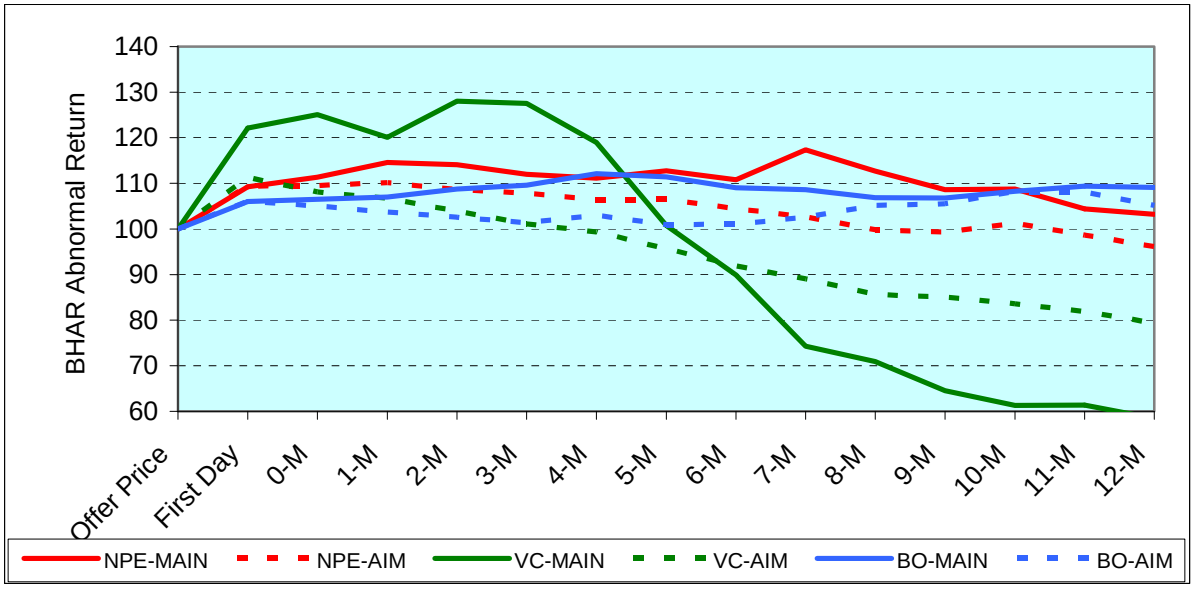


Figure 4.4: Value weighted abnormal buy-and-hold returns for Main and AIM, 1995-2006



To assess the impact of the 2000 cohort on each of the two markets, Table 4.7 shows equivalent performance estimates excluding the 63 issues in the Main market and their 162 peers in AIM during this year. Both the equal average return for NPE-backed and VC-backed IPOs in the Main market increase sharply; the average return for VC-backed portfolio increases from 0.2% to 19.2%; the changes in value weighted returns are even more pronounced; the dramatic underperformance of -41.5% observed in Table 4.6 reduces to -6.8%. There is also some improvement in the overall performance of the same group IPOs in AIM but this is relatively modest. There is also no evidence of any marked changes in the performance of buyouts either in the Main or AIM markets but this is hardly surprising given the small number of such in 2000. Thus, the overall underperformance observed for the VC portfolio is predominantly due to the very poor performance of a relatively small number of large issues listed in the Main market during 2000. A handful of IPOs that accounted for about a third of the total market capitalisation of all VC-backed IPOs during the period 1995-2006 suffered severe losses in value in the aftermath of the dot com bubble.

Table 4.7: Equal and value weighted abnormal buy-and-hold returns for Main and AIM markets, 1995-2006 (excluding 2000)

		Equal weighted			Value weighted		
		NPE	VC	BO	NPE	VC	BO
First day	Main	10.9	16.6	8.8	9.8	13.1	5.8
	Aim	18.0	11.6	10.6	7.8	9.8	6.2
One month	Main	14.2	17.6	10.2	13.7	12.6	6.0
	Aim	22.9	12.6	13.0	10.1	8.9	3.9
Three months	Main	19.2	24.8	15.9	14.2	23.3	8.8
	Aim	21.3	8.5	12.8	8.4	5.5	1.6
Six months	Main	23.2	26.6	19.4	17.8	14.2	8.2
	Aim	19.5	3.5	12.7	5.1	-1.3	1.3
Nine months	Main	29.1	19.9	18.6	14.3	0.0	6.1
	Aim	16.3	-1.9	19.3	1.6	-7.7	5.9
First year	Main	33.2	19.2	23.3	11.2	-6.8	8.6
	Aim	7.7	-5.0	20.7	-1.1	-13.1	5.6

Appendix I: Sample and Methodology

The study uses a total sample of 1,735 IPOs listed on the London Stock Exchange Main Market and the Alternative Investment Market during the period January 1995 to December 2006; it excludes Investment Trusts, re-listings and transfers across markets. The distinction between venture capital and buyouts is sometimes blurred. For the purpose of this study, VC-backed IPOs are defined as companies that have received venture capital funding at some stage before going public as start-ups, development or expansion capital. The funding for such purposes could take place only once or in several rounds. On the other hand, a PE-backed buyout is a company where the private equity firm(s) has a controlling interest that often occurs at the stage of a management buyout or buy-in. The use of high levels of debt is not a necessary criterion for inclusion in the sample of buyouts.

The full schedule of IPOs listed in UK markets originates from the London Stock Exchange statistics; this covers details for industry classification, market capitalisation, amount raised and issue price. The basic source of data for private equity-backed IPOs came from the British Private Equity and Venture Capital Association (BVCA). A number of different sources were used to define VC-backed and PE-backed BOs including Unquote and Thomson and Venture Expert. Unquote is a trade publication that provides regular details on individual transactions of both VCs and BOs; Thomson Venture Expert provides coverage on the various types of exits by private equity firms. Additional information on individual IPOs was obtained from Factiva. The final classification of VC and BOs was completed on the basis of information in the individual company prospectuses obtained through the Perfect Filings database. The final sample comprises 1,353 non-PE-backed (NPE), 238 Venture Capital-backed (VC) and 144 private equity-backed buyouts (BO) IPOs.

Aftermarket performance is estimated by Buy-and-Hold Abnormal Returns (BHARs). The long aftermarket return measures share price performance from the offer price to the end of a full 12 calendar months afterwards. Thus, the first set of calculations include the return on the first day of trading, the return in the remaining days (if any) from the closing price of the first day of trading to the end of the offer month and 12 monthly returns afterwards. All returns' data is from Datastream; they incorporate dividend payments and, where applicable, are adjusted for rights and script offerings.

Buy-and-hold returns are computed as:

$$BHAR_{it} = R_{it} = \prod_{t=1}^{T}(1 + r_{it}) - \prod_{t=1}^{T}(1 + r_{mt}) \qquad (6)$$

where r_{it} is the raw return on company *i* in event day/month *t* and r_{mt} is the equivalent return for the market benchmark.

When a firm from the portfolio is delisted from the database, the portfolio return for the next month is an equally weighted average of the remaining firms in the portfolio.

Thus, the estimation of buy-and-hold returns involves monthly rebalancing, with the proceeds of the delisted firm equally allocated among the surviving members of the portfolio in each subsequent month.

We report buy-and-hold returns based on two benchmarks. First, the FTSE All Share Index for all IPOs in both the Main and AIM markets. Second, to account for the market capitalisation differences between the two markets we use the same FTSE All Share for IPOs in the Main market and the Hoare Govett Smaller Companies Index (HGSC)[5] for all IPOs listed in AIM. BHARs are reported both on equally and value weighted basis. Weights are based on market values at offer for each of the three groups, adjusted for actual number of IPOs included in the BHAR estimates for each of the 12 months in the aftermarket.

[5] The Hoare Govett Smaller Companies Index measures the performance of the lowest tenth by market capitalisation of the main UK equity market.

Appendix II: Related Studies

To provide some context in the findings of this report we provide a brief summary of empirical evidence from other relevant studies covering US and other European capital markets.

Surprisingly, the choice and determinants of exit routes adopted by private equity firms have been relatively unexplored in the academic literature. The main obstacle is lack of readily available data. Nevertheless, Smith and Wall (1998)[6] find that venture capitalists generally prefer exits through IPOs as they are more likely to generate higher returns than other exit routes. Pagano et al (1998)[7] argue that an IPO may be more appropriate for larger companies given the significant transaction costs involved in such transactions;

In sharp contrast, there is a large volume of studies across different countries examining the short and aftermarket performance of IPOs. They show significant first day returns of the order of 15 to 20% for IPOs in general. For venture capital-backed IPOs Megginson and Weiss (1991)[8] suggest lower first day returns for VC-backed IPOs. The lower first day returns are attributed to venture capital certification reducing information asymmetry between investors and issuing firms. More recent evidence, however, by Francis and Hasan (2001)[9], Loughran and Ritter (2004)[10] show exactly the opposite.

On the long-run performance of IPOs in the US and UK evidence by Ritter (1991)[11] and Levis (1993)[12], respectively, suggests significant market underperformance in the three to five years following the listing. The evidence, however, on the impact of private equity on aftermarket performance is rather inconclusive. Brav and Compers (1997)[13] using a sample of 934 US venture-backed IPOs during the period 1972-1992, find that they outperform non-venture-backed IPOs, at least in equal weighted returns.

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[6] Smith, J. and Wall, J. (1998), 'Better Exits', Price Waterhouse Report.
[7] Pagano, M., Panetta, F. and Zingales, L. (1998), 'Why Do Companies Go Public? An Empirical Analysis', *Journal of Finance,* 53, 27-64.
[8] Megginson, W.L. and Weiss, K.A. (1991), 'Venture Capital Certification in Initial Public Offerings', *Journal of Finance*, 46, 879-903.
[9] Francis, B.B. and Hasan, I. (2001), 'The Underpricing of Venture and Non-venture Capital IPOs: An Empirical Investigation', Journal of Financial Services Research, 19, 99-113.
[10] Loughran, T. and Ritter, J. (1994), 'Why has IPO Underpricing Changed over Time?', Financial Management, Autumn, 5-37.
[11] Ritter, J. (1991), 'The Long-Run Performance of Initial Public Offerings', Journal of Finance, 46, 3-27.
[12] Levis, M. (1993), 'The Long-run Performance of Initial Public Offerings: The UK Evidence 1980-1988', Financial Management, 22, 28-41.
[13] Brav, A. and Gompers, P.A. (1997), 'Myth or Reality? The Long-run Underperformance of Initial Public Offerings: Evidence from Venture and Nonventure Capital-backed Companies', *Journal of Finance*, 52, 1791-1821.

Such superior performance by VC-backed IPOs is often attributed to the set up of better management teams and corporate governance structures that help such companies perform better in the long-run. Krishnan, Masulis and Singh (2007)[14] provide further support to this view by showing that VC firms with better reputations invest in portfolio companies with better long-run post-IPO performance. Preliminary evidence by Ritter (2006)[15], using comprehensive samples of VC-backed and PE-backed IPOs, also suggests relatively better performance for VC-backed IPOs and positive three year aftermarket performance for PE-backed IPOs.

Evidence from other countries, however, is even less conclusive. Hamao, Packer and Ritter (2000)[16], for example, using a sample of 355 Japanese IPO firms between 1989-1994, find the long-run performance of venture capital-backed IPOs to be no better than that of other IPOs, with the exception of firms backed by foreign owned or independent venture capitalists. Rinderman (2003)[17] using a rather small sample of venture and non venture-backed IPOs in Germany, UK and France, find that while there appears to be some underperformance for venture-backed IPOs in Germany and the UK, such differences were not statistically significant. Furthermore, Hadass (2004)[18] using a total sample of 571 venture and non-venture backed IPOs in the UK during the period 1985-2000, also find no evidence of significant differences in long-run performance between the two groups during the entire period. His evidence, however, tends to suggest out-performance of venture backed IPOs during normal market conditions.

There is also some evidence referring to the long run performance of buyouts and Reverse Leveraged Buyouts (RLBOs). Jelik, Saadouni and Wright (2005)[19], for example, focus on the performance of UK management buyout IPOs. Their sample of 167 buyouts includes 132 venture-backed buyouts and 35 non-venture backed IPOs; thus the emphasis is on the VC backing for MBOs only, rather than IPOs in general.

[14] Krishnan, C.N.V., Masulis, R.W. and Singh, A.K. (2007), Does Venture Capital Reputation Matter? Evidence from Subsequent IPO Issuer Performance, Working Paper, Case Western Reserve University.
[15] Ritter, J. (2006), 'Some Factoids about the 2005 IPO Market', Working Paper, University of Florida.
[16] Hamao, Y., Parker, F. and Ritter, J.R. (2000), Institutional Affiliation and the Role of Venture Capital: Evidence from Initial Public Offerings in Japan', Pacific-Basin Finance Journal, 8, 529-558.
[17] Rinderman, G. (2003), 'Venture Capitalist Participation and the Performance of IPO Firms: Empirical Evidence from France, Germany and the UK', Working Paper.
[18] Hadass, L. (2004), UK Initial Public Offerings, Investor Sentiment and Venture Capital', PhD Thesis, University of Essex.
[19] Jelik, R., Saadouni, B. and Wright, M. (2005), 'Performance of Private to Public MBOs: The Role of Venture Capital', Journal of Business Finance and Accounting, 643-681.

They find no evidence of significant differences in the long-run performance between VC-backed MBOs and their non-VC-backed counterparts; they find some evidence, however, suggesting that MBOs backed by highly reputable venture capital firms have better long-term performance compared to those backed by less prestigious venture capital groups.

There is, however, rather strong evidence of positive aftermarket long-run performance for private equity-backed reverse leveraged buyouts (RLBOs). Early studies by, DeGeorge and Zackhauser (1993)[20] and Holthousen and Larcker (1996)[21] using relatively small samples of RLBOs find some evidence of better accounting performance in comparison with their peers and no evidence of market underperformance. Moreover, Mian and Rosenfeld (1993)[22] in their study of 85 RLBOs find that they slightly outperform the market.

In a recent study, Cao and Lerner (2006)[23], using a large sample of RLBOs during the period 1980-2002, provide strong evidence of out-performance in the five years after the IPO in comparison both to other IPOs and various market benchmarks. Similar conclusions are also reached by von Drathen and Faleiro (2007)[24] using a UK based sample of RLBOs.

In summary, the short and long-run performance of private equity-backed IPOs, both on their own and in comparison to non PE-backed counterparts, is still a matter of controversy in the extant academic literature. While in the US venture capital-backed IPOs appear to defy the long established trend of underperformance of IPOs in general, in other countries, including the UK, their performance appears consistent with other IPOs.

[20] DeGeorge, F. and Zeckhauser, R. (1993), The Reverse LBO Decision and Firm Performance: Theory and Evidence', Journal of Finance, 48, 1323-1348.
[21] Holthausen, R.W. and Larcker, D.F. (1996), 'The Financial Performance of Reverse Leveraged Buyouts', Journal of Financial Economics, 42, 293-332.
[22] Mian, S. and Rosenfeld, J. (1993), 'Takeover Activity and the Long-Run Performance of Reverse Leveraged Buyouts', Financial Management, 22, 46-57.
[23] Cao, J. and Lerner, J. (2007), 'The Performance of Reverse Leveraged Buyouts', Working Paper, National Bureau of Economic Research.
[24] Von Drathen, C. and Faleiro, F. (2007), 'The Performance of Leveraged Buyout-Backed Initial Public Offerings in the UK', Working Paper, London Business School.

Appendix III: The Cass Private Equity Centre (CPEC)

CPEC was established to promote understanding and to provide evidence of the key issues and challenges facing participants in the private equity industry. It pursues this mission through research that is enriched by close working partnerships with private equity firms and their representative bodies, institutional investors, regulators, portfolio companies, trade unions and international leading academics.

More specifically CPEC aims to:

- Provide a mechanism for interaction between all parties directly involved in the private equity industry
- Support the activities for the private equity industry by developing and maintaining relevant databases, case studies and training for practitioners and PhD students
- Guide and disseminate research and best practice about private equity
- Establish a forum for public debate on contemporary issues related to the industry

CPEC is currently involved in the following research projects:

- Annual monitoring of PE-backed IPOs' market and operating performance
- Performance attribution for private equity-backed IPOs
- The debt structure and dynamics of LBOs
- Writing of case studies on IPO, LBO transactions

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Cass Business School
The name for City University's Business School is Sir John Cass Business School, City of London or Cass Business School for short.

Sir John Cass's Foundation
The Foundation has supported education in London since Sir John Cass set up a school in Aldgate in 1710. He was born in the City of London in 1661 and served as MP for the City. He was knighted in 1713.

In May 2001, the Foundation made a generous donation to the Business School's new building project and continues to provide on-going support to the Business School.

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