NHH ACPE

ARGENTUM CENTRE *for* PRIVATE EQUITY

Stakeholders and PE

How does Private Equity affect stakeholders?

- We will proceed in two steps:
  - First we will discuss the case for LBOs
  - If time permits we will discuss VC
- Both types of PE too different to bunch them together

BUYOUTS

Do LBO's add value?

- There is a long debate about why LBO's might add value
- The reasons are very different from those mentioned for VC
- We will discuss these
- There is more empirical evidence – will discuss some of it

The rationale for LBOs

- Better corporate governance (Jensen, 1986)
  - Higher leverage and concentrated ownership discipline management create value
- New owners get rents by taking money from other stakeholders (Shleifer and Summers, 1988)
  - New owners decrease value of existing debt, lower wages and squeeze suppliers

Debt as a disciplining device

- Jensen (1986) argues that debt (and dividends) can discipline managers.

- SAC (Danbury, Co) manufactures protective packaging materials.
  - Publicly listed since 1971.
  - April 27, 1989: SAC announced a special leveraged dividend of $40 per share
  - Almost equal to its stock price. Before, highest dividend: 18 cents a share.

- Financed by debt: 307 million (in private and public debt), debt ratio increase from 13% to 136%.

- Book equity goes from +$162m to -$161m!

The case against LBOs

- Breach of Trust – Shleifer/Summers
  - LBOs make money by redistributing funds from:
    - Employees
    - IRS
    - Suppliers
    - Bondholders

Private equity, not the mobile, killed Phones 4U

By Jonathan Ford

Print Clip Comments

When a high street chain falls down dead, it is never long before the accusations of murder start to fly.

Last week, after eight years in private equity ownership, Phones 4U, Britain's second-biggest independent mobile phone retailer, was placed in administration. Its bond investors may, just, get back pennies on the pound on their investment. Many of the retailer's 5,500 employees are likely to lose their jobs.

Source: FT, September 21, 2014

The early evidence

- Evidence can be split into two periods, an early one up to the middle of the 1990s and a later period.

- There seems to be evidence that the business model changed.

Early Empirical Evidence

- Kaplan (JFE, 1989): Operating results for 76 MBOs (’80-’86)
- In the three years after the buyout, these companies experience:
  - increases in operating income (before depreciation),
  - decreases in capital expenditures,
  - increases in net cash flow.
- The mean and median increases in market value (adjusted for market returns) are 96% and 77% from two months before the buyout announcement to the post-buyout sale.
- The evidence suggests the operating changes are due to improved incentives rather than layoffs or managerial exploitation of shareholders through inside information.

Taxes

- Kaplan (JF, 1989): Tax savings for 76 large MBOs (’80-’86)
- Median value of tax benefits (time firm goes private),
  - has a lower bound of 21% and
  - an upper bound of 143% of the premium paid to pre-buyout shareholders.
- The estimated value depends on the rate buyout debt is repaid and the tax rate applied to the interest deductions.
- The results in this paper suggest that tax benefits are an important source of the wealth gains in management buyouts.

Bondholders

- Do bondholders lose out at a LBO?
- Difficult to judge – NJR Nabisco suggests that bondholders lost as many as 15% of the value of the bond
- Lehn and Poulson, 1988
  - No effects on bondholders
- Travlos & Cornett (J of Acc, Aud, and Fin, 1993)
  - Negative, but small effects
- Warga/Welsh

LBOs and holders of existing debt

- Holder of existing debt often demand early repayment of their debt in case of an LBO.
- By increasing leverage existing debt becomes more risky – the risk of bankruptcy rises and bond prices will fall.
- Unless debtholders have build in protection against such events they will be unable to stop an LBO or demand compensation.
    - In an sense an LBO can be seen as an ex-post transfer of wealth from debt holders to equity holders.

Bond Covenants & LBOs

Table 2

One-month, four-month, and entire-period[a] average abnormal bond returns[b] and standard errors at buyout announcements by amount of covenant protection for the complete sample of existing 214 bonds.

Q	One-month avg. abnormal bond returns	Standard error	N	(% < 0)	Four-month avg. abnormal bond returns	Standard error	N	(% < 0)	Entire-period avg. abnormal bond return	Standard error	N	(% < 0)
All bonds	−1.1%	0.4%	199[c]	(60.3)	−2.2%	0.6%	198[c]	(66.7)	−2.0%	0.7%	183[c]	(57.4)
Strong covenant[d] protection	−0.1%	0.7%	29[e]	(58.6)	−1.0%	1.2%	29[e]	(58.6)	+2.6%	1.1%	28[e]	(28.6)
Weak covenant[d] protection	−0.3%	0.6%	60[c]	(55.0)	−0.5%	1.3%	60[c]	(60.0)	−0.7%	1.6%	50[c]	(48.0)
No covenant[d] protection	−2.6%	0.6%	70[c]	(71.4)	−4.0%	0.7%	70[c]	(72.9)	−5.2%	1.1%	69[c]	(73.9)

[a]One-month abnormal returns are calculated from the month-end preceding a buyout announcement to the month-end following it. Four-month abnormal returns are calculated from the month-end two months preceding a buyout announcement to the end of the second month following the announcement. Entire-period abnormal returns are calculated from the month-end two months preceding a buyout announcement to the end of the second month following the announcement of its completion or cancellation. For example, if the announcement is January 10, the one-month abnormal return is calculated from December 31 to January 31. The four-month abnormal return is calculated from November 30 until March 31.

[b]Monthly abnormal returns are calculated by subtracting the change in the maturity-matched Shearson–Lehman–Hutton corporate bond index from the monthly bond returns using *Standard & Poor's Bond Guide*.

[c]The totals do not equal 214 for any period because prices were missing for some bonds. The sum of the totals for covenant protection does not equal the total for all bonds because the prospectuses were not available for 43 bonds.

[d]Bonds are classified as having strong covenant protection if they have (a) a net worth restriction on the surviving firm in a merger, or (b) a limit on total funded debt, or (c) a mortgage, lien, or defeasance before the buyout. Bonds are classified as having weak covenant protection if they have (a) a limit on senior funded debt or (b) a restriction on dividends or special payouts from retained earnings. Bonds are classified as having no covenant protection if they have none of the above covenants.

P. Asquith and T.A. Wizman, Bondholder returns in leveraged buyouts

Source: Asquith & Wizman: JFE 1990

Employment

- Lichtenberg & Siegel (JLE, 1990)
- Both find that employment effects are either negative or zero

- Wage effects are negative relative to industry growth

- But no study is able to overcome the selection bias in LBOs

Lichtenberg and Siegel, JFE 1990

Table 6

Differences between LBO and non-LBO plants in mean growth rates (in percent) of labor variables, by period relative to year of LBO (absolute values of t-statistics in parentheses).[a]

The figures are estimates of the expression $(\Theta_k - \Theta_{k-1})$ from the equation $Y_{i,t+k} - Y_{i,t+k-1} = (\Theta_k - \Theta_{k-1})\, LBO_{i,t} + w_{i,t+k}$, where $Y_{i,t+k}$ is the value for plant i in year $t+k$ of the logarithm of one of the following variables, or of their ratios: E_N, number of nonproduction workers; E_P, number of production workers; C_N, total annual compensation (wage bill) of nonproduction workers; C_P, total annual compensation of production workers; W_N, annual compensation per nonproduction worker $(= C_N/E_N)$; W_P, annual compensation per production worker $(= C_P/E_P)$; H_P, average annual man-hours of production workers; or W_P', compensation per production-worker man-hour $(= W_P/H_P)$. $LBO_{i,t}$ is equal to 1 if plant i was involved in any leveraged buyout in year t, and otherwise equal to zero; and w is a disturbance. Before estimating the equations above, we standardized the Y values by 4-digit SIC industry and year. The values of $\Theta_k - \Theta_{k-1}$ are multiplied by 100, and therefore represent differences between mean percentage changes (growth rates) of buyout and nonbuyout plants.

Period	Growth rate during period											Number of LBO plants
	C_N	C_P	C_N/C_P	E_N	E_P	E_N/E_P	W_N	W_P	W_N/W_P	W_P'	H_P	
$t-3$ to $t-2$	3.5% (2.5)	−0.6% (0.7)	4.1% (3.0)	1.3% (1.2)	−0.0% (0.0)	1.3% (1.2)	2.2% (2.1)	−0.6% (1.2)	2.8% (2.3)	−0.0% (0.0)	−1.6% (1.4)	983
$t-2$ to $t-1$	−2.6 (2.3)	−0.3 (0.3)	−2.3 (2.4)	−2.7 (2.4)	0.1 (0.1)	−2.8 (2.7)	0.1 (0.8)	−0.4 (0.5)	0.5 (0.4)	0.6 (0.8)	−2.7 (2.2)	983
$t-1$ to t	−3.1 (3.1)	−0.4 (0.3)	−2.7 (2.1)	−3.1 (2.7)	−0.3 (0.4)	−2.8 (2.2)	−0.0 (0.0)	−0.1 (0.2)	0.1 (0.1)	0.0 (0.1)	−0.8 (0.7)	983
t to $t+1$	−3.4 (2.3)	0.8 (0.5)	−4.2 (2.7)	−3.3 (2.4)	−1.4 (1.3)	−1.9 (1.3)	−0.1 (0.1)	2.2 (2.7)	−2.3 (1.5)	1.7 (1.9)	−1.7 (1.1)	636
$t+1$ to $t+2$	−7.2 (4.4)	1.2 (0.8)	−8.4 (4.8)	−2.1 (1.3)	−0.3 (0.3)	−1.8 (1.2)	−5.1 (3.6)	1.5 (1.8)	−6.6 (3.8)	0.6 (0.6)	1.2 (0.7)	481
$t-3$ to $t-1$	0.9	−0.9	1.8	−1.4	0.1	−1.5	2.3	−1.0	3.3	0.6	−4.3	983
$t-1$ to $t+2$	−13.7	1.6	−15.3	−8.5	−2.0	−6.5	−5.2	3.6	−8.8	2.3	−1.3	481

[a]The sample is an extract of the Census Bureau's Longitudinal Research Database linked to Morgan Stanley data on LBOs and includes annual data for 1972–1986 on 12,895 continuously observed manufacturing plants.

What changed?

- Old school buyouts are easy to replicate by managers. (Kaplan and Stein)
  - Often firms had suboptimal leverage ratios.
  - Low managerial ownership.
  - Sellers were often naïve.

- These low hanging fruits have often (but not always) disappeared in recent years.

- More emphasis on adding value to meals beyond pure increases in leverage

Managerial Ownership

Managerial Ownership in LBOs

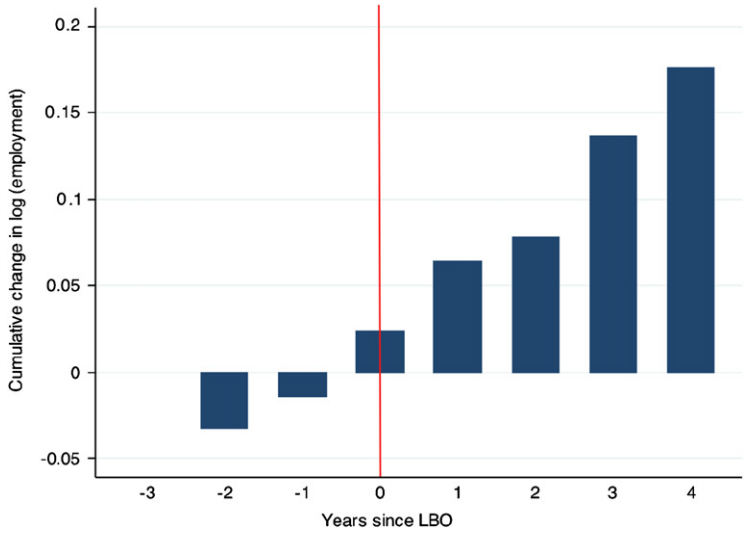
Year	(1) Old mgmt. equity(%)	(2) New mgmt. equity(%)	(3) New % / old % mgmt.equity	(4) New $1 old $ mgmt.equity	(5) Hostile pressure	(6) Total fees to capital
1980 + 1981	1.5	10.1	7.58	0.707	50	2.05
1982	2	23.1	6.79	0.958	50	2.66
1983	5.2	15.5	3.42	0.524	30	2.58
1984	4.4	27.5	3.81	0.67	23.5	2.21
1985	3.5	22.5	4.51	0.334	41.7	3.69
1986	5.1	20.8	6.28	0.314	46.7	5.06
1987	8.1	19	3.54	0.41	50	4.32
1988	8.4	28.5	2.86	0.349	30	5.97
1989	6.2	15.3	2.93	0.542	25	5.73
Total	5	22.3	4.14	0.46	37.7	3.81

Source: Kaplan & Stein, QJE, 1993

The new evidence

- We have different evidence for a lot of buyouts that happened after the initial boom.
- The new evidence is more geographically dispersed and includes evidence from both Europe and the US
- In general buyouts still show both increases in performance and leverage but the results are more pronounced in Europe
- Employment is similarly affected. There is US evidence that is essentially neutral whereas evidence from Europe is more positive in general

Growth LBOs I – Evidence from France



Source: Boucly et al

Growth LBOs II - Evidence from France

Table 4
Sample of LBO targets and their control firms (see text for details). Sample period: 1994–2004. OLS estimates of the impact of a LBO on targets' behavior including pre-buyout growth controls (Panel A) and for different sub-periods (Panel B). All regressions include firm and year fixed effects. post is a dummy equal to 1 for the 3 years following the LBO and 0 for the 3 years preceding the LBO. LBO is a dummy equal to 1 if the observation is an LBO target and 0 if it is a control firm. log(Empl) is the logarithm of employment. WC is working capital. FA is fixed assets. CAPEX is capital expenditures. Other variables are self-explanatory. Panel A controls for pre LBO growth by adding an interaction between firm level pre LBO sales growth and the post dummy. Panel B runs the estimation separately for pre and post 2000 transactions. Error terms are clustered at the deal × post level.

	ROA (1)	log(EBITDA) (2)	log(Empl) (3)	log(Sales) (4)	log(FA+WC) (5)	Leverage (6)	log(CAPEX) (7)
Panel A: Including controls for pre-buyout growth							
post × LBO	.043***	.18***	.12***	.11***	.06***	.026***	.23***
	(.007)	(.028)	(.019)	(.023)	(.019)	(.0063)	(.044)
post	.0056	.91***	.97***	1.4***	1.1***	.027**	.72***
× pre LBO sales growth	(.017)	(.071)	(.044)	(.059)	(.055)	(.014)	(.1)
post	−.025***	−.22***	−.17***	−.24***	−.15***	−.0055	−.19***
	(.0051)	(.02)	(.011)	(.015)	(.014)	(.004)	(.034)
Observations	32,861	27,454	32,755	33,014	32,596	32,229	32,603
Number of deals	839	793	839	936	839	838	839
Adj. R^2	.53	.87	.94	.92	.93	.61	.72

Source: Boucly et al

US -Hotchkiss et al

Panel A: Percentage Change in Operating Performance from Year i to Year j (# Observations; # Positive Observations)

	−2 to −1	−1 to +1	−1 to +2	−1 to +3	−1, last year	−1, last year deals with outcome
A.1. Profitability						
EBITDA/sales						
Unadjusted change	5.55%*** (94; 58)	−1.89% (84; 35)	−10.60%*** (60; 18)	−8.89%*** (48; 16)	−6.72%*** (94; 32)	−6.24%*** (74; 26)
Industry-adjusted change	1.97% (94; 53)	4.96% (84; 49)	2.55% (60; 33)	2.25% (48; 24)	−1.38% (94; 44)	−1.38% (74; 35)
Ind&perf&M/B-adjusted change	−0.47% (94; 42)	7.83%*** (84; 53)	11.43%** (60; 36)	1.57% (48; 25)	6.60% (94; 53)	5.27% (74; 42)
Net cash flow/sales						
Unadjusted change	15.24%*** (94; 59)	2.61% (83; 43)	−4.31% (59; 26)	−5.03% (48; 21)	−7.76% (94; 41)	−3.87% (74; 34)
Industry-adjusted change	14.69%*** (94; 57)	4.01% (83; 46)	−2.04% (59; 32)	−12.54% (48; 21)	−8.64% (93; 43)	−10.97% (73; 35)
Ind&perf&M/B-adjusted change	−0.51% (94; 50)	5.36%* (83; 44)	14.27%*** (59; 38)	10.35% (48; 29)	14.33% (94; 58)	11.01% (74; 45)
A.2. Return on assets						
EBITDA/total assets						
Unadjusted change	11.25%*** (94; 68)	−11.44% (83; 36)	−17.02%** (60; 20)	−15.73%*** (48; 13)	−4.43% (94; 39)	−4.43% (74; 31)
Industry-adjusted change	12.29%*** (94; 65)	7.11% (83; 51)	2.56% (60; 34)	−4.22% (48; 20)	1.52% (94; 52)	2.54% (74; 42)
Ind&perf&M/B-adjusted change	0.71%* (93; 52)	6.07% (83; 44)	7.70%* (60; 33)	6.76%* (48; 27)	10.91%*** (94; 59)	10.91%** (74; 45)
Net cash flow/total assets						
Unadjusted change	24.02%*** (94; 61)	−9.03% (82; 38)	−3.89% (59; 26)	−4.99% (48; 19)	−5.30% (94; 40)	−4.51% (74; 33)
Industry-adjusted change	17.32%*** (94; 63)	12.58% (82; 41)	11.04% (59; 34)	9.47% (48; 27)	6.65% (94; 47)	20.07% (74; 37)
Ind&perf&M/B-adjusted change	8.37%* (93; 52)	0.15% (82; 43)	19.80%*** (59; 38)	9.18% (48; 26)	22.27%*** (94; 57)	19.75%*** (74; 43)

(*continued*)

US -Hotchkiss et al

Table VI—*Continued*

Panel B: Percentage Change in Operating Performance from Year −1 to Last (# Observations; # Positive Observations), Grouped by Outcome

	IPO	Sold	2nd LBO	Chapter 11	Still private	All deals
B.1. Profitability						
EBITDA/sales						
Unadjusted change	−1.56% (28; 13)	−16.28% (18; 5)	3.17% (14; 8)	−58.34%*** (14; 0)	−15.74%* (20; 6)	−6.72%*** (94; 32)
Industry-adjusted change	8.57%** (28; 20)	−18.84% (18; 5)	8.93% (14; 8)	−39.28%** (14; 2)	−2.24% (20; 9)	−1.38% (94; 44)
Ind&perf&M/B-adjusted change	12.78%*** (28; 21)	7.44% (18; 10)	12.83%* (14; 9)	−54.18%*** (14; 2)	8.46% (20; 11)	6.60% (94; 53)
Net cash flow/sales						
Unadjusted change	8.22% (28; 17)	−30.47% (18; 5)	24.63%** (14; 10)	−66.87%** (14; 2)	−22.89% (20; 7)	−7.76% (94; 41)
Industry-adjusted change	15.94% (28; 18)	−38.97% (18; 4)	11.89%** (13; 9)	−34.33% (14; 4)	−6.91% (20; 8)	−8.64% (93; 43)
Ind&perf&M/B-adjusted change	31.22%* (28; 22)	−4.58% (18; 7)	50.08%** (14; 11)	−37.83%* (14; 5)	19.28%* (20; 13)	14.33%* (94; 58)
B.2. Return on assets						
EBITDA/total assets						
Unadjusted change	4.00% (28; 16)	−11.78% (18; 5)	14.16% (14; 9)	−53.48%*** (14; 1)	−5.40% (20; 8)	−4.43% (94; 39)
Industry-adjusted change	20.09%** (28; 21)	−17.83% (18; 7)	31.48%** (14; 10)	−16.84% (14; 4)	−1.97% (20; 10)	1.52% (94; 52)
Ind&perf&M/B-adjusted change	18.14%*** (28; 20)	19.86% (18; 11)	21.34%** (14; 11)	−37.81%** (14; 3)	9.52%* (20; 14)	10.91%*** (94; 59)
Net cash flow/total assets						
Unadjusted change	3.69% (28; 15)	−18.35% (18; 5)	26.06%** (14; 10)	−57.14%** (14; 3)	−11.77% (20; 7)	−5.30% (94; 40)
Industry-adjusted change	21.96% (28; 16)	−30.49% (18; 5)	49.17% (14; 10)	−19.78% (14; 6)	−1.12% (20; 10)	6.65% (94; 47)
Ind&perf&M/B-adjusted change	30.46%** (28; 19)	−7.44% (18; 8)	54.03%* (14; 11)	−2.73% (14; 5)	36.76%* (20; 14)	22.27%*** (94; 57)

Source: Hotchkiss et all, Do Buyouts (still) create Value, JF 2011

Bankrupcy I

Table 2: Default frequencies and other characteristics by year

Sample consists of 2,160 firms with leveraged loan financing. Firms enter the sample if a leveraged loan is observed in Dealscan, Dealogic, or the firm has a non-investment grade loan rating in Moody's DRS database. Firms exit the sample in the year following default, acquisition, or in the case of non-PE backed firms if they no longer have a non-investment grade rating from Moodys. *PE exited* firms were PE owned within the prior 5 years. Defaults include out of court reorganizations and bankruptcy filings identified by Moodys or reported in news services. Credit rating is coded as a numerical variable between 1 (AAA-rating) and 27 (C-rating), with: "Aaa" 1, "Aa" 2, "Aa1" 3, "Aa2" 4, "Aa3" 5, "A" 6, "A1" 7, "A2" 8, "A3" 9, "Baa" 10", Baa1" 11, "Baa2" 12, "Baa3" 13, "Ba" 14, "Ba1" 15, "Ba2" 16, "Ba3" 17, "B" 18, "B1" 19, "B2" 20, "B3" 21, "Caa" 22, "Caa1" 23, "Caa2" 24, "Caa3" 25, "Ca" 26, and "C" 27.

Panel A: Defaults by year

	Non- PE		PE-owned		PE exited		Total
Default year	# firms in sample	% that default	# firms in sample	% that default	# firms in sample	% that default	% that default
1997	746	1.1%	183	1.1%	50	2.0%	1.1%
1998	873	2.5%	259	4.6%	58	6.9%	3.2%
1999	850	4.2%	316	6.3%	59	0.0%	4.6%
2000	815	5.2%	333	9.3%	60	3.3%	6.2%
2001	775	4.4%	320	6.6%	69	0.0%	4.7%
2002	739	2.7%	330	4.2%	66	4.5%	3.3%
2003	674	1.8%	362	3.3%	81	1.2%	2.2%
2004	620	1.6%	403	2.0%	113	0.9%	1.7%
2005	570	1.1%	418	2.4%	153	0.0%	1.4%
2006	491	0.4%	440	0.9%	184	0.0%	0.5%
2007	391	5.1%	454	7.3%	213	2.3%	5.5%
2008	294	18.4%	416	14.2%	180	7.8%	14.3%
2009	87	2.3%	341	2.6%	143	2.8%	2.6%
All years	7,925	3.4%	4,575	5.1%	1,429	2.4%	3.9%

Source: Hotchkiss et all, Private Equity and the Resolution of Financial Distress, WP, 2011

Bankruptcy II

Table 3: Determinants of defaults for the leveraged loan sample

This table shows the results from the estimation of a discrete time hazard model for the probability of default, controlling for firm rating, industry performance, and characteristics. Standard errors are adjusted as in Shumway (2001). Panel is based on 2,156 firms with leveraged loan financing, followed from 1997 to 2010. Firms enter the panel if a leveraged loan is observed in Dealscan, Dealogic, or the firm has a non-investment grade loan rating in Moody's DRS database. Credit rating is coded as a numerical variable between 1 (AAA-rating) and 27 (C-rating). The median rating of 20 corresponds to "B2". Chi-square statistics are reported in parentheses and are statistically significant at the 1% (***), 5% (**), and 10% (*) levels.

	All firms			PE owned or exited only	
	(1)	(2)	(3)	(4)	(5)
Intercept	-1.78 ***	-3.34 ***	-9.82 ***	-9.95 ***	-10.04 ***
	(24.80)	(209.57)	(65.26)	(15.54)	(16.08)
PE owned	0.43 **	0.44 **	0.12		
	(3.24)	(3.66)	(0.20)		
PE exited	-0.90 **	-0.84 **	-1.08 **	-1.18 *	-1.16 *
	(3.52)	(3.15)	(4.43)	(2.41)	(2.30)
Median industry change in sales	-2.75	-0.71	-0.90	-1.21	-0.91
	(1.72)	(0.16)	(0.20)	(0.08)	(0.04)
Median industry change in EBITDA/sales	-10.59	-18.12 **	-19.52 **	-10.03	-10.44
	(1.40)	(5.00)	(3.82)	(0.19)	(0.21)
Recap in past 5 years	0.01	0.09	0.01	-0.16	-1.23
	(0.00)	(0.07)	(0.00)	(0.07)	(0.94)
Acquisition financing in last 5 years	-0.01	0.04	-0.03	-0.14	-0.16
	(0.00)	(0.03)	(0.02)	(0.09)	(0.12)
S&P 500 return		-2.29 ***	-2.06 ***	-2.07	-2.00
		(19.55)	(13.37)	(1.47)	(1.42)
Rating at last financing			0.35 ***	0.36 ***	0.37 ***
			(36.55)	(9.78)	(10.17)
PE size				0.00	0.00
				(0.01)	(0.01)
Year dummies	Yes	Yes	Yes	Yes	Yes
N	12,737	12,737	7,885	2,635	2,635

Source: Hotchkiss et all, Private Equity and the Resolution of Financial Distress, WP, 2011

Taxes

- Evidence on taxes is mixed. The US and Finland show some evidence for tax-planning.
- A recent master thesis looking from NHH looks at all buyouts in Norway and finds that apart from increased leverage there is no evidence whatsoever for increased tax-planning.
- Actually buyout firms pay more taxes on average that peer firms presumably as performance increased more than in comparable firms.

PE Tax Planning - Norway

Table 6, Aggregated Propensity Score Matching Results for Hypothesis 1:

The table below shows the Aggregated Average Effect of the Treatment on the Treated (Aggr ATT) and the t-values of our five proxies for tax planning for Hypothesis 1. These values are found by aggregating the results from the propensity score matching method by using the Fama-MacBeth procedure, as described in Section III. The Aggr ATT displays the average aggregated differences between the PE-backed companies and their peers, aggregated for the years 2005-2014. The detailed calculations made to generate these numbers are found in Table 10 and 11 in the Appendix.

Proxies	Aggr ATT	T-values
Total Book Tax Differences	-0.0089	-1.5028
Discretionary Permanent Differences	-77.1103	-0.6504
Cash Effective Tax Rate	0.0050	0.9905
Marginal Tax Rate	0.0013	0.2375
Leverage Ratio	1.0082	9.3641***

Source: Roti and Roald, Master Thesis, NHH, 2015

Innovation

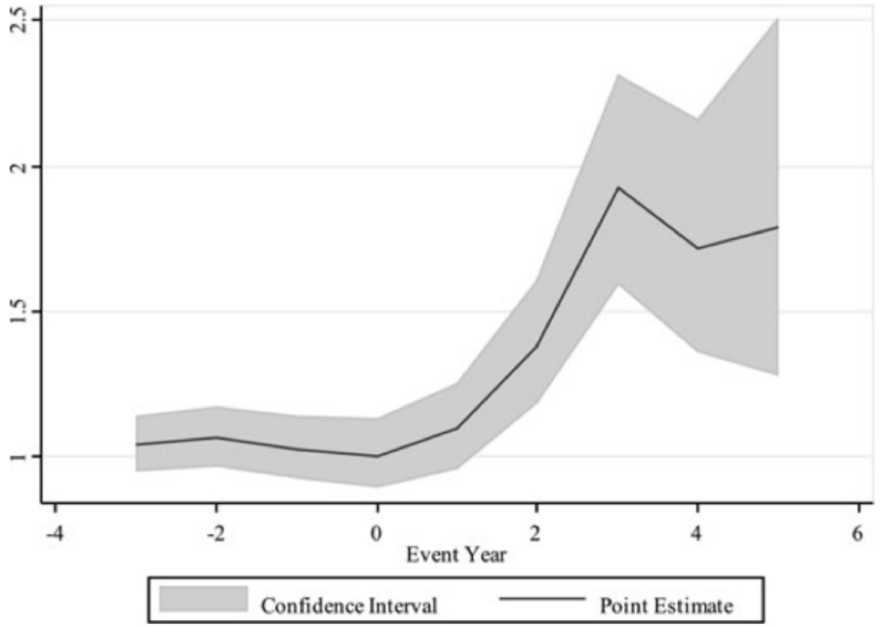


Figure 1. Citation intensities from negative binomial regression. The full sample consists of 6,398 patents awarded through May 2007 to 472 firms that received private equity backing between 1986 and 2005. The chart uses the subsample of 4,207 patents awarded before December 2004. Firms and patents are only included in the sample if patents were applied for between 3 years before and 5 years after the private equity investment. The chart presents the estimated incidence rates and confidence intervals from the patent timing variables in the second specification in Table IV.

Source: Lerner, Sorensen, Stromberg

VC

Why Venture Capital?

NHH ACPE
ARGENTUM CENTRE for PRIVATE EQUITY

- Young firms face three different problems:
  - Moral Hazard
    - The effort of a person cannot be verified
  - Adverse selection
    - Intrinsic quality of a person or project cannot be verified
  - Hold-up
    - Unverifiable cash-flows or opportunistic decision making
    - Potential for exploitation by entrepreneur

Why Venture Capital?

- All problems make traditional bank-debt finance impossible
  - Akerlof, 1970, QJE
    - Adverse selection effects –
      - Too many lemons distort the market
  - Holmström/Tirole, 1997, QJE
    - Effort choice of the entrepreneur is not observable
      - Moral Hazard too high – repayment too low
  - Aghion/Bolton, 1992, RES
    - There are non-contractible actions
      - Not enough funds to let investor break even
      - Even though effort is irrelevant

Are VC firms special?

- Why don't banks imitate VCs?
  - Answer is not clear!
    - Either banks don't have right 'technology'
      - i.e. screening, support, experts
    - Or regulatory problems
      - VC eats up to much regulatory capital
    - One approach: Ueda (JF, 2004) models trade-off between banks and VCs
      - Banks don't screen well
      - VCs screen well, but may steal technology

Screening

- Firms use various forms of screening
  - Entrepreneurs must have a business plan
  - Often VCs rely on their own expertise or have networks of analysts
- Allows VCs to sort out
  - Bad projects
  - Projects that should be financed by banks
  - VCs often have a hurdle rate: IRR must be at least XXX%,
- A VC will evaluate about 100 plans to take 1-3 investments

Is it just better screening?

- Does screening add value? Sørensen (WP, 2006)
- Problem: Better VCs select better investments
- Sørensen overcomes this problem by a matching model
- He finds that 60% of all value added comes from screening
- While 40% of value added is due to the VC's influence
- How should we interpret this?

Hellmann & Puri (JF, 2002)

- Do VCs help their portfolio firms to become more professional?
- Evidence directly from Silicon Valley start-ups
- Compare VC-backed vs. non VC backed
- VC seems to be related to a variety of value added actions:
  - human resource policies,
  - the adoption of stock option plans,
  - hiring of a marketing VP
  - More frequent replacement of CEO with outsider

Hellmann & Puri (RFS, 2002)

- Using the same sample as above they find that:
- Innovating firms get VC finance more frequently than imitators
- Innovators get finance earlier than imitators
- The presence of a VC is associated with a faster time to market
  - So VCs help firms to bring products faster to the market
  - In particular for innovators, less for imitators

What's missing here?

- There is virtually no impact on the dark side of venture capital.
- What dark side? In recent years we have seen that Uber or Airbnb have created very controversial business models.
  - More efficient use of existing resources
  - Creation of more unstable employment relations
  - Disregard for existing regulations
- This is a development that may harm the general consensus that VC is by and large a positive contribution to society.

Summary

- VC's seem to add value in a variety of ways:
  - They provide capital
  - They professionalize firms
  - They help firms to bring products to the market faster
- … but VCs seen also very good at screening firms

Summary

- There seems to be evidence that
  - LBOs increase efficiency
  - Create value through the use of tax shields
  - Are neutral on employment, wages and bondholders.
  - All studies have selection problems however.