

# Web Appendix to Why Do Firms Use Private Equity to Opt Out of Public Markets?

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## **Abstract**

This appendix repeats all of the analysis in the original paper using the expanded sample of firms (referred to as the 13e-3 + SDC database sample in the paper).

**Table 1, Panel A: Sample Selection**

This table presents data on the derivation of the going private sample for the period 1980-2004 from various data sources and used in the paper. The second column consists of firms obtained from 13e-3 filings and also firms from the SDC database for which no 13E3 filings were required under the law.

<b>Sample Source / Screen</b>	<b>Number of Firms 13E3 + SDC database</b>
Edgar only	1,121
Lehn & Poulsen (LP) only	92
Edgar / LP Common	164
Firms from SDC (not included in above classification)	880
<b>Total Base Sample</b>	<b>2,257</b>
Less: firms not on Compustat in years between IPO & going private	-442
Less: firms with 6 or 49 SIC code	-389
Less: firms where IPO date is after going private date	-26
<b>Total Sample</b>	<b>1,400</b>

**Table 1, Panel B: Industry Distribution**

This table reports the industry distribution of the going private sample of firms. We use the 12 industry classification of Fama and French (available at Ken French's Web site <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french>) to classify the firms.

<b>S.No.</b>	<b>Description</b>	<b>Number of Firms 13E3+ SDC database</b>
1	Consumer Nondurables	191
2	Consumer Durables	61
3	Manufacturing	246
4	Energy	66
5	Chemicals	24
6	Business Equipment	197
7	Telecom	41
8	Utilities	0
9	Shops	252
10	Healthcare	71
11	Money	0
12	Other	251
	<b>Total</b>	<b>1400</b>

**Table 1, Panel C: Time Series Distribution**

This table presents the number of firms in the sample that went private in each year in the first column using the 13e-3 + SDC database filings sample. The second column reports the time series distribution of the same firms based on their IPO year. The third column reports the time series distribution by IPO year of all other firms that did not go private until the end of our sample period and labeled the comparison sample.

Year	Going private sample	IPO year- going private sample	IPO year - comparison sample
Before 1970		256	
1970		22	66
1971		38	85
1972		237	195
1973		13	26
1974		4	3
1975		20	5
1976		15	29
1977		7	19
1978		16	25
1979		13	51
1980	21	36	73
1981	41	40	209
1982	53	20	76
1983	49	69	388
1984	78	43	181
1985	76	36	177
1986	80	69	307
1987	66	39	251
1988	99	13	108
1989	79	13	134
1990	52	17	116
1991	19	30	254
1992	17	36	357
1993	23	50	466
1994	30	41	405
1995	44	33	428
1996	32	50	616
1997	55	51	388
1998	67	29	228
1999	90	29	397
2000	96	14	332
2001	76	1	69
2002	58		
2003	77		
2004	21		
2005	1		
Total	1400	1400	6464

**Table 2: Age distribution and comparison of firm age at IPO of going private sample and comparable IPO firms**

This table presents the distribution of firm age. The first column presents the age of the firm in public markets (number of years the firm stayed public before becoming private) for the going private sample which includes both 13e3 filings and firms from the SDC. Column A presents the distribution of firm age at the time of the IPO for the going private sample. Column B presents the same information for the comparison sample. t-stat (z-stat) reports the results of a test of difference in means (medians) between the (B) and (A) columns is equal to zero. \*\*\*, \*\*, \* indicates significance at 1%, 5% and 10% level respectively. Note that we do not have firm age information for all firms in our sample.

Age No. of Years	No.of firms Going Private sample	Age at IPO	
		Going Private sample (A)	Comparison sample (B)
1	5	57	349
2	71	39	359
3	106	39	517
4	107	53	450
5	94	29	389
6	82	30	332
7	60	43	315
8	53	22	260
9	55	31	213
10	59	27	175
11-19	429	160	959
20-29	180	78	353
30-39	46	61	145
40-49	21	34	103
50-59	22	24	83
60-69	11	27	60
70-79	3	17	54
80-89	1	10	47
90-99		6	34
100 <sub>i</sub> =		8	41
Mean	13.3	20.4	13.8
Median	11	11	7

t-stat for difference in means (B)-(A): -3.2\*\*\*

z-stat for difference in medians (B)-(A) : -5.6\*\*\*

**Table 3: Comparison of firm characteristics at IPO - Going private sample vs. Comparison IPO sample**

This table presents firm characteristics for the going private sample which includes both 13e3 filings and firm from the SDC data base (column A) and the comparison sample (column B) at the same point in time, i.e, at the time of the IPO. t-stat (z-stat) reports the results of a test of difference in means (medians) between the two columns is greater than zero. \*\*\*, \*\*, \* indicates significance at 1%, 5%, and 10% level respectively.

Measure	Private Firms <i>t= IPO year</i> (A)	Comparison Sample <i>t= IPO year</i> (B)	Difference T stat (Z-Stat) (B)-(A)
<b>Information Variables</b>			
Sales	242.24	248.96	0.2
	81.91	40.07	-13.9***
Assets	209.96	303.93	1.4
	67.27	51.35	-7.0***
Market Value	286.66	505.39	2.8***
	78.17	100.12	4.9***
Analyst Coverage	0.80	1.10	4.3***
	0.00	0.00	4.7***
Institutional Holdings	12.56	13.84	1.9*
	5.37	7.06	1.0
R&D/Sales	0.12	1.34	2.1**
	0.00	0.00	16.7***
<b>Access to Capital</b>			
Capex/Sales	0.23	0.82	2.1**
	0.04	0.06	9.2***
KZ Index Dummy	0.44	0.42	-1.3
	0.00	0.00	-1.3
Dividend Dummy	0.33	0.15	-14.6***
	0.00	0.00	-14.3***
<b>Liquidity Variables</b>			
Illiq	0.03	0.01	-8.7***
	0.01	0.00	-14.6***
Turnover	0.06	0.08	6.0***
	0.03	0.05	11.3***

**Table 3 (continued): Comparison of firm characteristics at IPO - Going private sample vs. Comparison IPO sample**

Measure	Private Firms <i>t= IPO year +1</i> (A)	Comparison Sample <i>t= IPO year + 1</i> (B)	Difference T stat (Z-Stat) (B)-(A)
<b>Control Considerations</b>			
Merger Count	0.32	0.30	-0.5
	0.00	0.00	-1.8*
Market to Book	2.16	3.27	7.8***
	1.54	2.22	16.3***
<b>Agency Considerations</b>			
Free cash flow/Assets	0.05	-0.03	-10.0***
	0.07	0.05	-10.9***
Leverage	0.16	0.11	-9.2***
	0.11	0.02	-12.9***
Cash to Assets	0.18	0.35	19.1***
	0.10	0.29	17.9***
Net Fixed Assets/Assets	0.30	0.21	-12.8***
	0.24	0.13	-14.5***

**Table 4: Going Private Sample - comparison of firm characteristics at IPO and going private years**

This table presents firm characteristics for the going private sample at two points in time: At the time of the IPO (column A) and at the time of going private (column B). t-stat (z-stat) reports the results of a test of difference in means (medians) between the two columns is equal to zero. \*\*\*, \*\*, \* indicates significance at 1%, 5%, and 10% level respectively.

Measure	Private Firms <i>t= IPO year</i> (A)	Private Firms <i>t= Private year</i> (B)	Difference T stat (Z-Stat) (B)-(A)
<b>Information Variables</b>			
Sales	242.24	527.77	10.8***
	81.91	141.37	16.7***
Assets	209.96	475.67	9.2***
	67.27	107.10	16.3***
Market Value	286.66	349.04	0.2
	78.2	56.7	-1.6
Analyst Coverage	0.80	2.17	11.5***
	0.00	1.00	11.8***
Institutional Holdings	12.56	19.77	11.2***
	5.37	13.42	10.5***
R&D/Sales	0.12	0.09	-0.6
	0.00	0.00	2.8***
<b>Access to Capital</b>			
Capex/Sales	0.23	0.08	-3.7***
	0.04	0.03	-9.3***
KZ Index Dummy	0.44	0.32	-4.5***
	0.00	0.00	-4.4***
Dividend Dummy	0.33	0.32	-4.2***
	0.00	0.00	-3.3**
<b>Liquidity Variables</b>			
Illiq	0.03	0.04	1.1
	0.01	0.01	0.4
Turnover	0.06	0.03	-5.8***
	0.03	0.02	-7.3***

**Table 4 (continued): Going Private Sample - comparison of firm characteristics at IPO and going private years**

Measure	Private Firms <i>t= IPO year</i> (A)	Private Firms <i>t= Private year</i> (B)	Difference T stat (Z-Stat) (B)-(A)
<b>Control Considerations</b>			
Merger Count	0.32	0.26	0.2
	0.00	0.00	0.3
Market to Book	2.16	1.28	-12.6***
	1.54	1.09	-16.5***
<b>Agency Considerations</b>			
Free cash flow/Assets	0.05	0.03	-2.6***
	0.07	0.06	-5.0***
Leverage	0.16	0.19	6.0***
	0.11	0.16	4.8***
Cash to Assets	0.18	0.13	-9.1***
	0.10	0.06	-9.5***
Net Fixed Assets/Assets	0.30	0.33	3.8***
	0.24	0.26	4.2***

**Table 5 : Cox Proportional hazard models for time to go private** This table reports the results of Cox proportional hazard models with time varying covariates based on all variables. The dependent variable is time to private which measures the time between IPO of the firm and the time they go private. All specifications include Fama-French Industry classification controls. The table reports the coefficients and in parentheses, the standard errors. Variables are defined in appendix A. \* \* \*, \*\*, \* indicates significance at 1%, 5%, and 10% level respectively.

	(13e-3 filings + SDC Sample)				
	(1)	(2)	(3)	(4)	(5)
Log(Sales)	.08*** (.03)	.08*** (.03)	.05** (.02)	.07*** (.03)	.14*** (.03)
Analyst Coverage	-.05*** (.01)	-.05*** (.01)		-.05*** (.01)	-.07*** (.01)
R&D/Sales	.006 (.008)	.004 (.009)	.004 (.009)	.005 (.009)	-.02 (.05)
Capital Expenditure/Sales	-.30** (.15)	-.32** (.15)	-.34** (.16)	-.37** (.18)	-.34* (.20)
Dividend Dummy	.10 (.08)	.07 (.08)	.05 (.08)	.02 (.09)	
Turnover	-8.80*** (1.17)	-8.56*** (1.16)	-8.96*** (1.16)	-8.15*** (1.21)	-11.68*** (1.27)
Market to Book	-.41*** (.05)	-.41*** (.05)	-.43*** (.05)	-.45*** (.06)	
Free Cash Flow/Assets	.07 (.19)				
Free Cash Flow post-1990s		-.27 (.17)	-.24 (.17)	-.20 (.21)	
Free Cash Flow pre-1990s		2.62*** (.54)	2.55*** (.53)	2.77*** (.61)	
Leverage	.05 (.18)	.07 (.18)	.11 (.17)	.09 (.19)	
Cash/Assets	.70*** (.22)	.64*** (.22)	.60*** (.22)	.54** (.24)	
Net Fixed Assets/Assets	.32* (.17)	.28* (.17)	.21 (.17)	.12 (.18)	.41** (.19)
Merger Count	-.06 (.04)	-.05 (.04)	-.06 (.04)	-.07 (.04)	-.11** (.05)
Inst. Ownership			-.005*** (.002)		
Annual Adjusted Return				.03 (.05)	-.12** (.05)
KZ index					-.18** (.08)
Illiq					.10 (.07)
Obs.	35805	35805	35805	32412	32988

**Table 6: Cox Proportional hazard models for time to go private - Impact of Macro Variables**

This table reports the results of Cox proportional hazard models with time varying covariates based on Macro variables. The sample is the same as in table 5. The dependent variable is time to private which measures the time between IPO of the firm and the time they go private. All specifications include Fama-French Industry classification controls. The table reports the coefficients and in parentheses, the standard errors. Variables are defined in appendix A. \*\*\*, \*\*, \* indicates significance at 1%, 5%, and 10% level respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Log(Sales)	.07*** (.03)	.07*** (.03)	.09*** (.03)	.13*** (.03)	.06 (.04)	.06 (.04)
Analyst Coverage	-.05*** (.01)	-.05*** (.01)	-.05*** (.01)	-.05*** (.01)	-.06*** (.02)	-.06*** (.02)
R&D/Sales	.006 (.009)	.006 (.009)	.006 (.008)	.009 (.007)	.006 (.01)	.006 (.01)
Capital Expenditure/Sales	-.32** (.15)	-.31** (.15)	-.33** (.16)	-.31* (.16)	-.46* (.26)	-.45* (.26)
Dividend Dummy	.09 (.08)	.10 (.08)	-.0005 (.08)	-.06 (.08)	-.25* (.15)	-.25 (.15)
Turnover	-8.86*** (1.16)	-8.66*** (1.16)	-7.04*** (1.13)	-6.21*** (1.11)	-6.88*** (1.39)	-6.71*** (1.38)
Market to Book	-.41*** (.05)	-.41*** (.05)	-.39*** (.05)	-.38*** (.05)	-.39*** (.07)	-.39*** (.07)
Free Cash Flow/Assets	.08 (.19)	.09 (.19)	.08 (.19)	.07 (.19)	-.11 (.22)	-.06 (.22)
Leverage	.05 (.18)	.05 (.18)	.03 (.18)	-.03 (.18)	.09 (.25)	.11 (.25)
Cash/Assets	.69*** (.22)	.66*** (.22)	.71*** (.23)	.88*** (.23)	.32 (.32)	.29 (.32)
Net Fixed Assets/Assets	.32* (.17)	.32* (.17)	.32* (.17)	.33* (.17)	.24 (.25)	.23 (.25)
Number of Mergers	-.06 (.04)	-.06 (.04)	-.04 (.04)	-.02 (.04)	.004 (.04)	.009 (.04)
Sentiment 1	.15*** (.05)					
Sentiment 2		.20*** (.07)				
Term Premium			-.10*** (.03)			
Default Risk Premium			.63*** (.08)			
Real \$ Bank Loans				35.03*** (2.60)		
Number IPO					-.01*** (.004)	
Private Equity Deals					.0002*** (.0000439)	
IPO Volume						-1.14 (1.67)
Real \$ Private Equity						22.05 (16.40)
Obs.	35805	35805	35805	35805	20970	20970

**Table 7 - Panel A: Logistic regression models explaining the decision to go private using all variables at the time of IPO** This table reports the results of logistic regressions that predict the propensity of a firm to go private based on all variables for which data is available measured at the time of the IPO year. The dependent variable is one if a firm goes private and zero otherwise. All specifications include Fama-French Industry classification controls. The tables report the coefficients and in parentheses, the standard errors. Variables are defined in appendix A. \* \* \*, \*\*, \* indicates significance at 1%, 5%, and 10% level respectively.

	(13e-3 filings + SDC Sample)			
	(1)	(2)	(3)	(4)
Log(Sales)	.05 (.04)	.05 (.04)	.03 (.04)	.20*** (.04)
Analyst Coverage	-.08** (.03)	-.07** (.03)		-.13*** (.04)
R&D/Sales	-.0005 (.01)	-.002 (.01)	-.002 (.02)	.0008 (.03)
Capital Expenditure/Sales	-.03 (.04)	-.03 (.04)	-.03 (.04)	-.06 (.08)
Dividend Dummy	-.07 (.13)	-.06 (.13)	-.06 (.13)	
Turnover	-3.12*** (.90)	-3.04*** (.90)	-3.08*** (.92)	-2.47** (1.02)
Market to Book	-.006 (.02)	-.006 (.02)	-.01 (.02)	
Free Cash Flow/Assets	.49* (.28)			
Free Cash Flow post-1990s		.21 (.28)	.25 (.28)	
Free Cash Flow pre-1990s		1.73*** (.62)	1.83*** (.63)	
Leverage	.11 (.28)	.11 (.28)	.13 (.28)	
Cash/Assets	-1.01*** (.28)	-1.03*** (.28)	-1.10*** (.28)	
Net Fixed Assets/Assets	.26 (.26)	.24 (.26)	.22 (.26)	.90*** (.31)
Merger Count	.008 (.04)	.008 (.04)	-.007 (.04)	.03 (.05)
Inst. Ownership			-.002 (.003)	
KZ index				-.15 (.13)
Illiq				6.85*** (1.85)
Obs.	4339	4339	4340	3137
Pseudo R-Sq	.05	.05	.05	.06

**Table 7 Panel B - Economic Significance of forces that explain the decision to go private using variables at the time of IPO**

This table reports the increase in probability of going private for a 1/2 standard deviation around the mean for each explanatory variable, holding all other variables at their mean. For dummy variables, the change is from 0 to 1. All the results are based on specification 2 of Table 7, Panel A. Economic significance of variables that are not included in specification 2 is based on the specifications (3-4) in Table 7 Panel A in which they first appear.

Variable	Change in Probability (%)
Log(Sales)	0.83
Analyst Coverage	-1.23
R&D/Sales	-0.34
Capital Expenditure/Sales	-2.01
Dividend Dummy	-0.20
Turnover	-2.53
Market to Book	-0.29
Leverage	0.18
Cash/Assets	-2.61
Net Fixed Assets/Assets	0.45
Merger Count	0.09
Free Cash Flow/Assets Pre 1990s	1.69
Free Cash Flow/Assets Post 1990s	0.46
Inst. Ownership	-0.40
KZ index	-0.58
Illiq	1.38
E (Private  X)%	9.56

**Table 8 : Cox Proportional hazard models for time to go private - Matched initial conditions analysis**

This table reports the results of Cox proportional hazard models with time varying covariates based on all variables. The dependent variable is time to private which measures the time between IPO of the firm and the time they go private. All specifications include the going private firms and a comparison sample matched by Fama-French Industry classification and the IPO year of the going private firm. Thus for each going private firm there could be multiple matches. Specification 1, is the industry and IPO year matched sample. Specifications 2 through 5 match firms in addition to industry and IPO year, other characteristics in the IPO year. These include market to book (MB, specification 2), Analyst coverage (analyst, Specification 3), Market capitalization (MktVal, Specification 4) and Turnover (Turnover, Specification 5). The table reports the coefficients and in parentheses, the standard errors. Variables are defined in appendix A. \*\*\*, \*\*, \* indicates significance at 1%, 5%, and 10% level respectively.

	Industry	MB	Analyst	MktVal	Turnover
Log(Sales)	.05* (.03)	.04 (.03)	.05* (.03)	.08*** (.03)	.03 (.03)
Analyst Coverage	-.05*** (.01)	-.05*** (.01)	-.04*** (.01)	-.04*** (.01)	-.03** (.01)
R&D/Sales	.003 (.01)	.003 (.009)	.004 (.009)	.003 (.009)	.005 (.01)
Capital Expenditure/Sales	-.33** (.16)	-.33** (.15)	-.35** (.16)	-.32** (.15)	-.39** (.16)
Dividend Dummy	.10 (.08)	.08 (.08)	.10 (.08)	.06 (.08)	-.02 (.08)
Turnover	-6.99*** (1.09)	-6.61*** (1.08)	-7.13*** (1.10)	-6.48*** (1.08)	-5.68*** (1.06)
Market to Book	-.42*** (.05)	-.39*** (.05)	-.41*** (.05)	-.41*** (.05)	-.32*** (.05)
Free Cash Flow post-1990s	-.26 (.17)	-.28* (.16)	-.29* (.16)	-.30* (.16)	-.07 (.18)
Free Cash Flow pre-1990s	2.80*** (.55)	2.67*** (.55)	3.02*** (.56)	2.02*** (.54)	.78 (.49)
Leverage	.17 (.18)	.11 (.18)	.17 (.18)	.06 (.18)	.03 (.18)
Cash/Assets	.52** (.23)	.61*** (.23)	.42* (.23)	.57** (.23)	.27 (.23)
Net Fixed Assets/Assets	.19 (.17)	.18 (.17)	.20 (.17)	.23 (.17)	.27 (.17)
Merger Count	-.06 (.04)	-.06 (.04)	-.07 (.04)	-.08* (.04)	-.05 (.04)
Obs.	32308	29028	31821	24184	18937

**Table 9: Out of Sample Forecasts**

Table 9 reports on the success of forecasting by sorting firms each year by the Cox proportional hazards model forecast (or the corresponding logit model) and counting the fraction of going private firms over the next five years, that correspond with each decile of the model predicted hazard of going private. We use the first ten years of the sample (1980-1990) to develop the Cox proportional hazards (logit) model. Thus, the panel only considers firms going from 1991 to 2004, and it includes the fitted values of the hazard or logit model (model 2 from Table 5 and Table 7 Panel A, respectively) as predictors. The Cox (logit) model is then re estimated on a rolling basis each year as we move forward in time, using all available data till each year from 1980, and the resulting coefficients are used to form the predictors.

Time Period - 1991 - 2004.

30,617 firm-years, 407 going private transactions.

Decile	Cox	Logit
1-5	79.5	77.7
1-3	56.9	57.4
1	22.0	23.8

**Table 10 : Cox Proportional hazard models for time to go private - Sub sample Analysis** This table reports the results of Cox proportional hazard models with time varying covariates based on all variables. The dependent variable is time to private which measures the time between IPO of the firm and the time they go private. All specifications include Fama-French Industry classification controls. The table reports the coefficients and in parentheses, the standard errors. Variables are defined in appendix A. \*\*\*, \*\*, \*, † indicates significance at 1%, 5%, and 10% and 12% level respectively.

	(13e-3 filings +SDC Sample)			
	PE & Mgmt	PE	Mgmt	Operating
Log(Sales)	.09** (.04)	.14** (.06)	.07 (.05)	.09*** (.03)
Analyst Coverage	-.07*** (.02)	-.03 (.02)	-.11*** (.03)	-.05*** (.02)
R&D/Sales	-2.03** (.86)	-2.72* (1.48)	-1.95* (1.08)	.005 (.008)
Capital Expenditure/Sales	-1.61*** (.58)	-1.17* (.70)	-2.18** (.86)	-.19 (.14)
Dividend Dummy	.10 (.13)	-.007 (.18)	.19 (.16)	.07 (.11)
Turnover	-4.47*** (1.56)	-1.68 (1.69)	-7.47*** (2.41)	-12.68*** (1.66)
Market to Book	-.72*** (.10)	-.68*** (.13)	-.76*** (.14)	-.30*** (.06)
Free Cash Flow post-1990s	-.40 (.31)	.39 (.64)	-.64* (.34)	-.38** (.17)
Free Cash Flow pre-1990s	6.28*** (.65)	6.92*** (.88)	6.52*** (.75)	1.70** (.66)
Leverage	.53** (.26)	.79** (.35)	.42 (.35)	-.16 (.23)
Cash/Assets	1.62*** (.35)	1.34** (.52)	1.92*** (.43)	.61** (.29)
Net Fixed Assets/Assets	.40 (.28)	.17 (.38)	.62* (.35)	.47** (.22)
Merger Count	.02 (.04)	.03 (.04)	-.06 (.09)	-.09 (.06)
Obs.	32673	31640	31723	33474