

Managing Performance Signals Through Delay: Evidence from Venture Capital (Internet Appendix)

A Identifying failure dates

Most databases of venture capital financings do not include explicit dates for failed investments. Failure here involves the official dissolution of the firm in which all employees are terminated and any assets are sold off. We exploit three types of information to identify approximate dates of these events. The first is a status from VentureSource where they identify when the firm “ceased operations.” If this is unavailable, we then use a field that reveals the last time that they spoke to either an investor in the firm or a contact at the entrepreneurial firm itself. VentureSource aims to have at least one of these contacts each year. Finally, for a large percentage of the failed companies, we gathered their incorporation information from Delaware and California, two of the most popular states for incorporation. Both states require an annual fee to maintain status, so the last paid fee revealed on the website is a close approximation of the date the firm shut down. Any last incorporation filing that occurred prior to the previous two VentureSource dates is the primary failure date used.

How, if at all, could measurement error in this date impact the results? It is clear that each of these dates are all likely upper bounds on the true failure date. Any systematic delay in assigning failure would simply shift the estimated jump in write-off events back in time. Importantly, given the semi-annual surveys conducted by VentureSource and the annual taxes due in CA and DE, these failure dates are off by an average of six months and a maximum of one year. In unreported regressions, the results are unchanged if we adjust all failure dates that were found with the noisier incorporation information back by six months.

B Figures and tables

Figure B.1: Write-offs over the fund life-cycle

Notes: The figure reports the predicted rate of write-offs as a function of fund age from the follow linear probability regression:

$$\text{Write-off}_{ijt} = \beta_0 + \beta_1 \text{Fund Age}_{it} + \beta_2 \text{After close}_{it}(\text{Fund age}_{it} - A_i) + \hat{\beta}_3 X_{ijt} + \epsilon_{it}$$

where A_i is the age of fund i when the next fund closed. The solid lines report the predictions of the trend from the above regression (i.e. $\hat{\beta}_0 + \hat{\beta}_1 \text{Fund Age}_{it} + \hat{\beta}_2 \text{After close}_{it}(\text{Fund age}_{it} - A_i)$) while the dots represent the residual predicted write-off rate after de-meaning by the predicted $\hat{\beta}_3 X_{ijt}$. The solid vertical line is the mean fund age at the time of next fund closing.

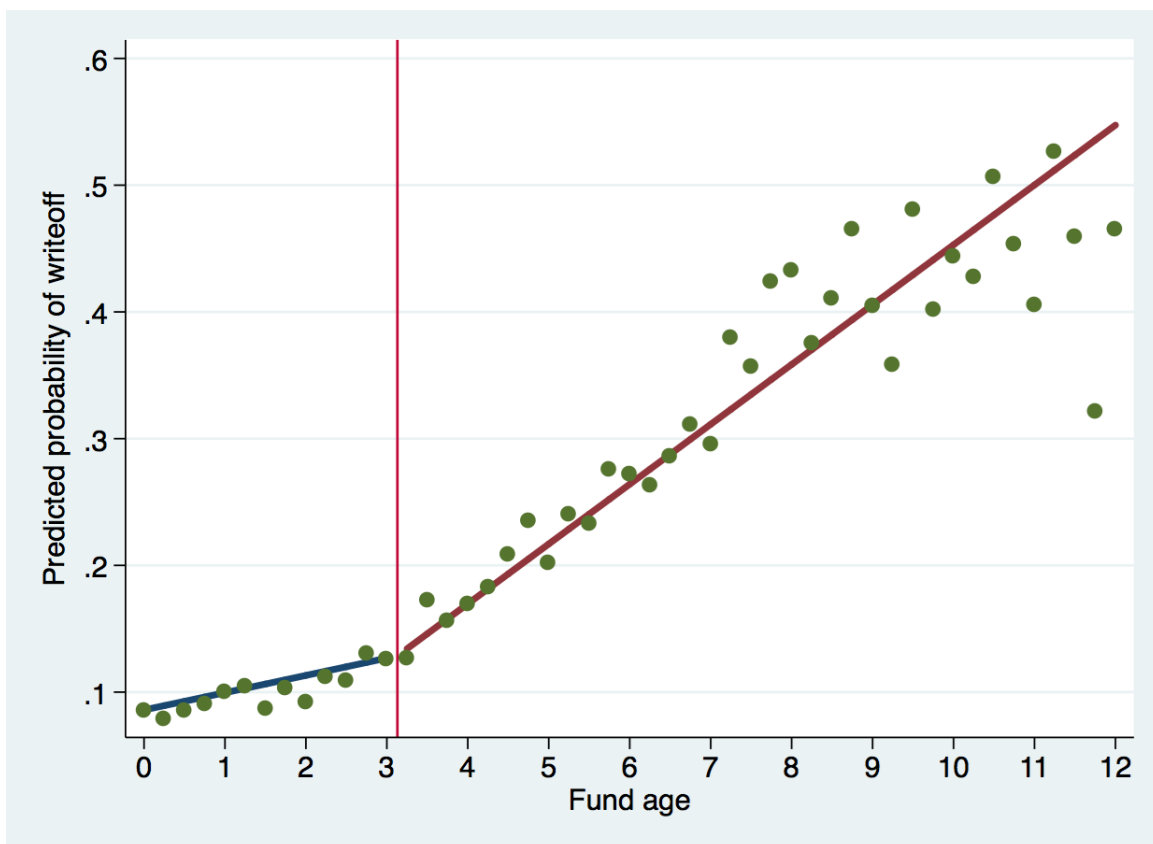


Table B.1: Alternative measures of reputation and write-off probabilities

Notes: Table reports the write-off hazard regressions found in Table 5 with alternative measures for reputation. The variables “Fund N” are dummy variables for each fund sequence for a VC firm (the excluded category is the 5th and greater fund if it exists). The variable “Fund 1 or 2” is a dummy for whether the fund in question is the first or second fund of the VC firm (the excluded category is all other fund numbers). The last column includes the variable “Fund 1,2 or 3” which is one if the fund is one of the first three for a VC firm. Additional control variables (not shown for space) are as included in Table 5. The baseline hazards in all models are stratified at the VC firm-level. Standard errors reported in parentheses with clustering at the entrepreneurial firm. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Fund age (yrs.)	0.188** (0.0793)	0.195** (0.0776)	0.197** (0.0778)	0.194** (0.0778)
Fund age squared	-0.0118 (0.00767)	-0.0111 (0.00748)	-0.0112 (0.00749)	-0.0111 (0.00748)
Fund 1 X After close	-0.147 (0.252)			
Fund 2 X After close	0.0172 (0.261)			
Fund 3 X After close	0.636** (0.302)			
Fund 4 X After close	0.157 (0.339)			
Fund 1	0.113 (0.164)			
Fund 2	0.267 (0.167)			
Fund 3	-0.164 (0.218)			
Fund 4	0.0466 (0.234)			
After fund close	0.229 (0.203)	0.393*** (0.109)	0.466*** (0.135)	0.281* (0.164)
VC's first fund		0.0201 (0.118)		
First fund X After Close		-0.321* (0.185)		
Fund 1 or 2			0.205* (0.117)	
Fund 1 or 2 X After close			-0.312* (0.176)	
Fund 1,2 or 3				0.104 (0.128)
Fund 1,2 or 3 X After close				0.0158 (0.191)
Spells	7813	7813	7813	7813
Pseudo- R^2	0.0566	0.0677	0.0677	0.0674
Number firms	3936	3936	3936	3936
Number VCs	609	609	609	609
Number funds	1118	1118	1118	1118
Controls?	Y	Y	Y	Y
Fin year. FE?	Y	Y	Y	Y
Industry FE?	Y	Y	Y	Y
Fin. year X Ind. FE?	Y	Y	Y	Y

Table B.2: Write-off probabilities around fundraising: syndicates in fund closing synch

Notes: Table presents the Cox proportional hazard regression of write-off events around VC fundraising. A unit of observation (i.e. spell) is an entrepreneurial firm financing event. The variable “Board / Lead investor” is equal to one if the investor (VC fund) has a board seat at the entrepreneurial firm or was ever a lead investor in a previous financing. The variables “Synched” and “Synched syndicate” are equal to one if the syndicate in the last financing event are all either pre-fundraising or post-fundraising. All other controls from Table 5 are included but not reported here. The baseline hazards in all models are stratified at the VC firm-level. Standard errors reported in parentheses with clustering at the entrepreneurial firm. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
After fund close	0.179 (0.159)	0.0374 (0.156)	
After close X Board / Lead investor	0.123 (0.185)		
Board / Lead investor	-0.452*** (0.127)		
After close X Synched		0.511*** (0.191)	
Synched syndicate		0.0427 (0.140)	0.167 (0.201)
3 years to closing			0.0422 (0.345)
2 years to closing			0.230 (0.254)
1 year after closing			0.178 (0.223)
2 years after closing			0.0176 (0.277)
3 years after closing			0.138 (0.270)
Synched X 3 years before closing			-0.331 (0.386)
Synched X 2 years before closing			-0.152 (0.289)
Synched X 1 years after closing			0.798** (0.361)
Synched X 2 years after closing			0.742* (0.382)
Synched X 3 years after closing			0.216 (0.263)
Spells	7813	7813	7813
Pseudo- R^2	0.0691	0.0568	0.0579
Number firms	3936	3936	3936
Number VCs	609	609	609
Number funds	1118	1118	1118
Controls?	Y	Y	Y
Fin. year FE?	Y	Y	Y
Industry FE?	Y	Y	Y
Fin. year X Ind. FE?	Y	Y	Y

Table B.3: Valuation around fundraising: fund age dummies

Notes: The table reports the estimates of both probit estimates for a regression of the change in the entrepreneurial firm valuation for VC fund investments on a set of observables. It is the same specification as Table 4 where we instead introduce dummies for the age of the fund, where all variables are defined. The dummy variables “Fund N years old” are indicators for each fund age of the current fund. The excluded category is the first year of the fund. Regressions include all the same controls as in Table 4, excluded here for space. Other control variables are defined in Table 1 (some unreported). Standard errors in parentheses, clustered at the VC firm-level. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

	Increase in valuation?				
	(1) Full	(2) Full	(3) [-2, 2]	(4) Full	(5) Full
Fund 2 yrs. old	0.110 (0.105)	0.130 (0.109)	0.132 (0.119)	0.130 (0.108)	0.124 (0.111)
Fund 3 yrs. old	-0.0239 (0.108)	0.00105 (0.112)	-0.00638 (0.127)	0.0114 (0.111)	0.00500 (0.115)
Fund 4 yrs. old	-0.00365 (0.111)	0.0233 (0.114)	0.116 (0.128)	0.0337 (0.108)	0.0383 (0.113)
Fund 5 yrs. old	0.0384 (0.122)	0.0612 (0.136)	0.104 (0.146)	0.0777 (0.121)	0.0883 (0.125)
Fund 6 yrs. old	-0.112 (0.141)	-0.101 (0.180)	-0.0526 (0.199)	-0.0753 (0.152)	-0.0622 (0.162)
Fund 7 yrs. old	0.0365 (0.157)	0.0409 (0.199)	0.174 (0.204)	0.111 (0.164)	0.0913 (0.172)
Fund 8 yrs. old	0.135 (0.234)	0.113 (0.270)	0.127 (0.259)	0.172 (0.227)	0.180 (0.233)
Fund 9 yrs. old	0.222 (0.234)	0.166 (0.263)	0.148 (0.268)	0.273 (0.221)	0.246 (0.234)
Fund 10 yrs. old	0.0527 (0.330)	0.00769 (0.411)	1.234** (0.515)	0.175 (0.361)	0.0990 (0.360)
After fund close		-0.0928 (0.0669)	-0.0949 (0.0725)	-0.323** (0.157)	-0.0873 (0.0784)
Had next fund?				-0.0256 (0.117)	
Had next fund? X After close				0.284 (0.174)	
First fund					0.0126 (0.135)
First fund X After Close					-0.00679 (0.131)
Observations	5441	5441	4331	5441	5441
Pseudo R^2	0.214	0.215	0.227	0.217	0.215
Num. VCs	411	411	397	411	411
Num funds	830	830	786	830	830
Num. firms	2487	2487	2187	2487	2487
Specification	Probit	Probit	Probit	Probit	Probit
Controls?	Y	Y	Y	Y	Y
Industry FE?	Y	Y	Y	Y	Y
Fin. year FE?	Y	Y	Y	Y	Y
Fin. year X Ind. FE?	Y	Y	Y	Y	Y
Stage FE?	Y	Y	Y	Y	Y

Table B.4: Write-off probabilities around fundraising: hazard models with fund age dummies and trend adjustments

Notes: The table presents the Cox proportional hazard regression of write-off events around VC fundraising. A unit of observation (i.e. spell) is an entrepreneurial firm financing event. It is the same specification as Table 5 where the fund age and its square are replaced by a set of dummies for each year of fund age (the first year as the excluded group). Columns (5) and (6) introduce alternative controls for the relationship between write-offs and fund age. The final column excludes all VC funds that were raised in the 3–4 year window after the previous fund closed. All other controls from Table 5 are included but not reported here. The baseline hazards in all models are stratified at the VC firm-level. Controls are unreported but are the same as found in Table 5. Standard errors reported in parentheses with clustering at the entrepreneurial firm. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fund 2 yrs.	0.0509 (0.572)	0.121 (0.573)	0.116 (0.574)	0.129 (0.577)			
Fund 3 yrs.	0.247 (0.571)	0.261 (0.572)	0.266 (0.573)	0.272 (0.576)			
Fund 4 yrs.	0.472 (0.572)	0.451 (0.573)	0.441 (0.574)	0.462 (0.577)			
Fund 5 yrs.	0.342 (0.582)	0.313 (0.582)	0.309 (0.583)	0.333 (0.587)			
Fund 6 yrs.	0.534 (0.587)	0.505 (0.587)	0.491 (0.588)	0.508 (0.592)			
Fund 7 yrs.	0.833 (0.593)	0.812 (0.593)	0.801 (0.594)	0.818 (0.597)			
Fund 8 yrs.	0.825 (0.627)	0.786 (0.628)	0.772 (0.630)	0.798 (0.633)			
Fund 9 yrs.	1.142* (0.634)	1.062* (0.636)	1.099* (0.636)	1.089* (0.641)			
Fund 10 yrs.	0.335 (0.741)	0.294 (0.746)	0.308 (0.746)	0.324 (0.749)			
After fund close		0.264*** (0.0929)	0.0210 (0.179)	0.355*** (0.109)	0.315* (0.173)	0.303** (0.125)	0.338*** (0.0986)
Had next fund?			-0.127 (0.119)				
Had next fund? X After close			0.333 (0.203)				
VC's first fund				0.0210 (0.118)			
First fund X After Close				-0.278 (0.186)			
Fund age (yrs.)					0.0757*** (0.0286)	0.0739*** (0.0227)	0.196** (0.0855)
After close X fund age					-0.00496 (0.0419)		
After close X (Fund age - age at close)						-0.00533 (0.0819)	
Spells	7814	7814	7814	7814	7813	7813	6223
Pseudo- R^2	0.0552	0.0560	0.0563	0.0564	0.0549	0.0548	0.0632
Number firms	3936	3936	3936	3936	3936	3936	3384
Number VCs	610	610	610	610	609	609	570
Number funds	1119	1119	1119	1119	1118	1118	951
Controls?	Y	Y	Y	Y	Y	Y	Y
Fin year. FE?	Y	Y	Y	Y	Y	Y	Y
Industry FE?	Y	Y	Y	Y	Y	Y	Y
Fin. year X Ind. FE?	Y	Y	Y	Y	Y	Y	Y