ESG Incidents and Fundraising in Private Equity

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Motivation

- Global interest towards ESG in the asset management industry.
- Prior research primarily on public market funds, little attention on private markets.
- Private market has become a significant part of institutional investors' portfolios.

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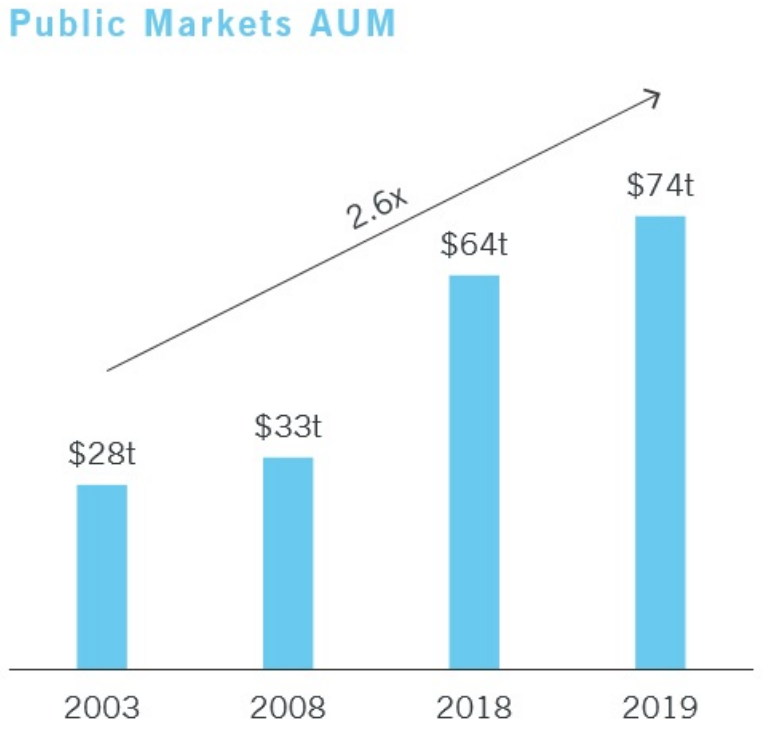

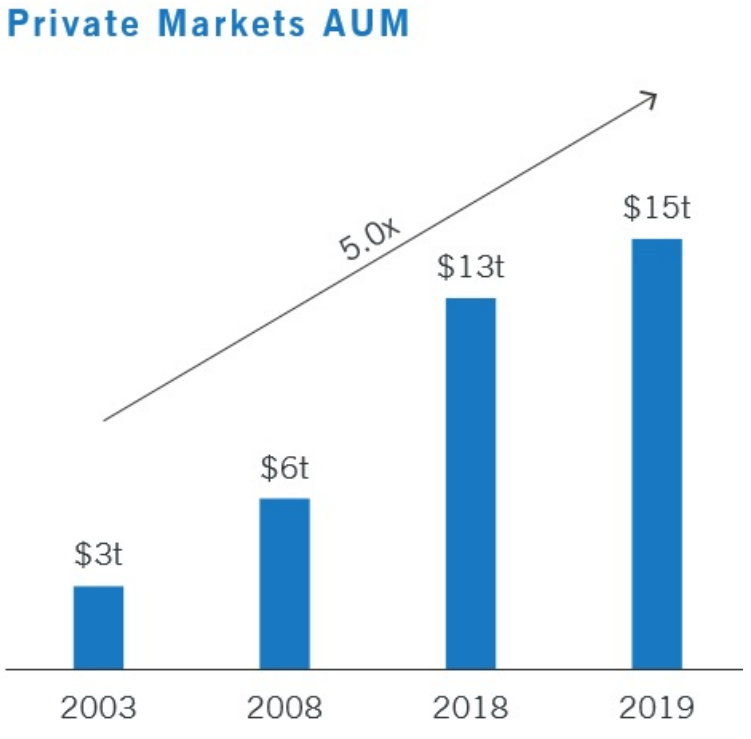

Source: BCG Global Asset Management 2020

Motivation

Results from public market not generalizable to private market funds b/c:

- Diff. levels of ESG pressure and scrutiny (Duchin, Gao and Xu, 2024)
- Illiquidity in private market $\rightarrow$ costly to "divest"
- Larger stakes in their portfolio companies $\rightarrow$ easier to engage $\rightarrow$ more liable for bad ESG practices?

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This paper:

- How ESG considerations affect capital raising ability of Private Equity (PE) firms? Why? Does this in turn have real impact on ESG outcomes of portfolio companies?

Preview of Results

- E&S incidents negatively affect raising **a follow-up fund** at both *intensive* and *extensive* margin.
- Mainly for low reputation (young, small, low-performing) PE firms.
- Why?
  - No evidence that the effect is driven by fund performance.
  - Driven by E&S concerns of relationship Limited Partners (LPs, the PE investors).
  - LPs trade-off their E&S concerns and cost of divestment (ending relationship).
- The E&S concerns of LPs incentivize PE firms to engage with portfolio companies to manage E&S issues.

Literature

- **ESG and asset management in private markets**: Barber, Morse and Yasuda, (2021); Geczy, Christopher, Jeffers, Musto, Tucker (2021); Jeffers, Lyu and Posenau (2022); Abraham, Olbert and Vasvari (2022); Bellon (2022)

  New evidence that real E&S events affect capital allocation for a broad class of buyout PE firms.

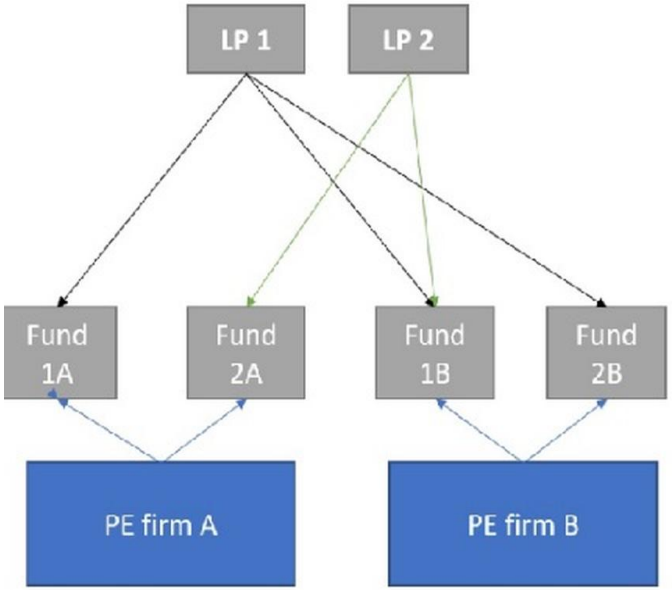
- **Determinants of capital raising by private market intermediaries**: Kaplan and Schoar (2005), Chung, Sensoy, Stern and Weisbach, Hochberg, Ljungqvist and Vissing-Jørgensen (2014), Barber and Yasuda (2017)

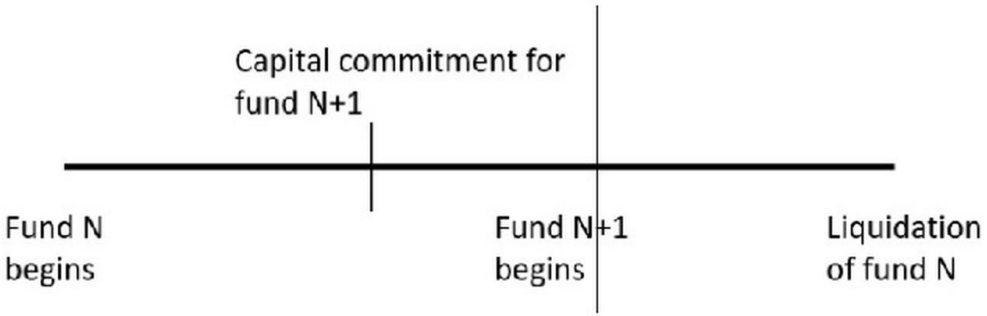
  New factor affecting capital raising ability of PE firms.

- **ESG preferences and capital allocation**: Bollen (2007); Renneboog, Horst and Zhang (2011); Riedl and Smeets (2017), Hartzmark and Sussman (2019); Andonov, Kräussl and Rauh (2021); Liang, Sun and Teo (2022)

  ESG consideration and capital allocation in private market funds.

Institutional Details of PE industry





Features of the PE industry:

- Searching and matching between LPs and PE firms.
- PE firms raise funds discretely with a few years gap.
- PE firms get the capital commitment from LPs first, then call and allocate capital.
- Performance of fund N sometimes not fully observable when fund N+1 is raised.

Data

- ESG incidents from RepRisk for private firms, 2007-2022.
- Preqin data on buyout funds and their portfolio companies, 2007-2023.
- Fuzzy matching on portfolio company names with manual verification.
- Sample:
  - 1515 portfolio companies
  - 727 funds raised by 385 PE firms, invested by 2165 LPs.
  - 505 out of 727 raised a follow-up fund.
  - Average fund size is $2.9B, invested by 29 LPs.

⏩ Summary Stat 1 ⏩ Summary Stat 2

Example

GardaWorld

Region: North America

Sector: Services & Industrials

Investment Year: 2019

Transaction Value: C$5.2 Billion

GARDAWORLD

BBC

Home News Sport Business Innovation Culture Travel Earth Video Live

'Heartbreaking' conditions in US migrant child camp

23 June 2021 Share

By Hilary Andersson, BBC News, El Paso, Texas

(BC Partners acquired majority stake in 2019)

Intensive Margin

- Conditional on raising a follow-up fund, does having E&S incidents in the current fund make the follow-up fund smaller?
- A fund N - fund N+1 data structure.

$$\log\left(\frac{Size_{N+1}}{Size_N}\right)_i = \alpha + \beta\ log(1 + E\&S\ incidents_{N,i}) + \gamma\ log(multiple)_{N,i} + \theta\ log(size)_{N,i} + \eta\ log(series\ num)_{N,i} + IndustryControls_{N,i} + Vintage_{N,i} \times Vintage_{N+1,i} \times Region_i,$$

- $E\&S\ incidents_{N,i}$: Number of E&S incidents divided by number of portfolio companies two years before fund N+1 is raised.
- Control for PE region and pairs of vintage years FE (control for capital supply).
- Control for fund N size, series number, fund multiple (performance), and industry allocation of fund N.
- Standard errors double clustered by PE firms and pairs of vintage years.

	log(Fund N+1 Size/Fund N Size)					
	(1)	(2)	(3)	(4)	(5)	(6)
log(1 + num. E&S incidents)	-0.073**	-0.077**	-0.083**			
	(0.033)	(0.036)	(0.039)			
Low number of E&S incidents				-0.005	-0.023	-0.035
				(0.037)	(0.034)	(0.036)
High number of E&S incidents				-0.089**	-0.101**	-0.126***
				(0.042)	(0.040)	(0.041)
log(fund N size)	-0.081***	-0.077***	-0.066***	-0.081***	-0.075***	-0.060***
	(0.017)	(0.017)	(0.018)	(0.019)	(0.019)	(0.020)
log(fund N multiple)	0.238***	0.231***	0.212***	0.234***	0.230***	0.211***
	(0.064)	(0.064)	(0.065)	(0.064)	(0.065)	(0.066)
log(fund N series number)	-0.065*	-0.085**	-0.103***	-0.064*	-0.084**	-0.104***
	(0.034)	(0.034)	(0.034)	(0.035)	(0.034)	(0.035)
Fund N Vintage Year × Fund N+1 Vintage Year FE	✓			✓		
PE Region FE	✓			✓		
Fund N Vintage Year × Fund N+1 Vintage Year × PE Region FE		✓	✓		✓	✓
Industry Controls			✓			✓
Observations	505	505	505	505	505	505
R^2	0.45	0.51	0.54	0.45	0.51	0.54

Compared to funds with no incidents, funds with above-median E&S incidents have 12% smaller follow-up funds, ≈ fund performance scaled by 1.6

Other Results

- Robust to controlling for other measures of fund performance, and to controlling for time-varying observable performance.

⏩ Reg 1 ⏩ Reg 2

- Incidents closer to fund N+1 raising have a stronger effect.

⏩ Reg

- No similar effect for G incidents.

⏩ Reg

Extensive Margin

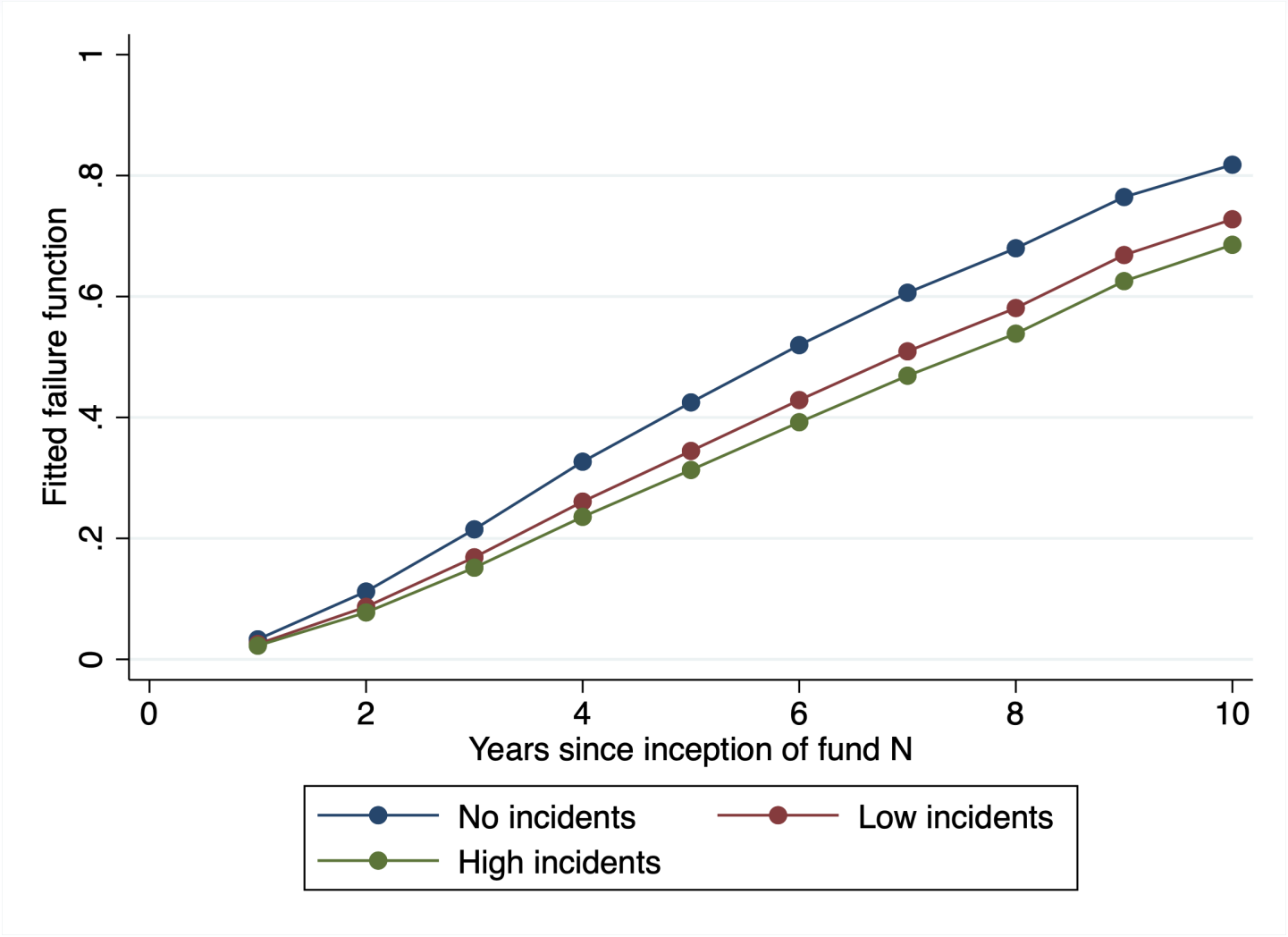
- Does having E&S incidents in the current fund make it less likely to raise a follow-up fund?
- Estimate a proportional hazards model in a fund N-year panel.

$$h(t) = h_0(t)exp(x_t\beta)$$
$$x_t\beta = \alpha + \beta_1 log(1 + E\&S\ incidents_t) + \beta_2 log(multiple) + \beta_3 log(size)$$
$$+ \beta_4 log(series) + \beta_5 log(buyout\ multiple)_t + Industry\ Controls_t,$$

- Same controls + control for aggregate performance of buyout funds (Barber and Yasuda, 2017)

	Duration since fund inception			
	(1)	(2)	(3)	(4)
Low cum num. E&S incidents		-0.269**		-0.253**
		(0.118)		(0.120)
High cum num. E&S incidents		-0.387***		-0.375***
		(0.144)		(0.142)
log(1+ cum num. E&S incidents)	-0.526*		-0.476*	
	(0.276)		(0.268)	
log(fund multiple)	0.670***	0.682***	0.685***	0.694***
	(0.133)	(0.133)	(0.135)	(0.135)
log(fund size)	0.283***	0.312***	0.259***	0.290***
	(0.046)	(0.048)	(0.049)	(0.050)
log(buyout multiple)	5.887***	6.518***	5.516***	6.079***
	(1.641)	(1.691)	(1.648)	(1.705)
log(fund series)	-0.042	-0.028	-0.043	-0.030
	(0.101)	(0.100)	(0.103)	(0.102)
Observations	3114	3114	3114	3114
Industry controls	No	No	Yes	Yes

Compared to funds with no incidents, funds with above-median E&S incidents have 0.375 lower hazard rates of raising a follow-up fund $\approx$ fund performance scaled by 1.5



5 years after fund N is raised: The probability of raising fund $N+1$ is 42.29% (no incidents) and 31.32% (high incidents).

Table: Intensive Margin

	log(Fund N+1 Size/Fund N Size)							
	(1) Young	(2) Old	(3) Small	(4) Large	(5) Low-perf	(6) High-perf	(7) Low-reputation	(8) High-reputation
Low number of E&S incidents	-0.071	0.030	-0.013	-0.049	-0.081*	-0.012	-0.037	-0.031
	(0.047)	(0.047)	(0.039)	(0.056)	(0.043)	(0.041)	(0.048)	(0.041)
High number of E&S incidents	-0.149***	-0.073	-0.175***	-0.063	-0.165**	-0.103**	-0.200***	-0.087*
	(0.054)	(0.050)	(0.053)	(0.063)	(0.070)	(0.048)	(0.063)	(0.047)
Controls	✓		✓		✓		✓	
N Vintage × N+1 Vintage × PE Region FE	✓		✓		✓		✓	
Industry Controls	✓		✓		✓		✓	
Observations	505		505		505		505	
R^2	0.54		0.54		0.54		0.54	

Table: Extensive Margin

	Duration since fund inception							
	(1) Young	(2) Old	(3) Small	(4) Large	(5) Low-perf	(6) High-perf	(7) Low-reputation	(8) High-reputation
Low cum. number of E&S incidents	-0.438***	0.022	–0.427***	-0.036	-0.476***	0.007	-0.524***	-0.076
	(0.154)	(0.172)	(0.152)	(0.174)	(0.161)	(0.160)	(0.187)	(0.150)
High cum. number of E&S incidents	-0.434***	-0.183	–0.464**	-0.192	-0.757***	0.008	-0.657**	-0.171
	(0.161)	(0.230)	(0.192)	(0.192)	(0.223)	(0.167)	(0.256)	(0.167)
Controls	✓		✓		✓		✓	
Observations	3114		3114		3114		3114	
Industry Controls	✓		✓		✓		✓	

Negative effect of E&S incidents mainly from low reputation PE firms

Potential Mechanisms

- Evidence so far suggests that E&S incidents have a negative effect on capital raising ability of PE firms, especially young, small, and low-performing PEs.

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- Two potential mechanisms (non-mutually exclusive):
  1. **Learning about fund performance from E&S incidents**
     - E&S incidents hurt firms' operating performance (Derrien et al., 2023; Li et al., 2024)
     - LPs may view incidents as negative signals of fund manager skills
     - Stronger for low-reputation PE firms b/c more belief update when prior is weaker (Barber and Yasuda, 2017)

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  2. **E&S concerns of LPs**
     - May be driven by LPs' E&S concerns when allocating capital
     - Stronger for low-reputation PE firms b/c divesting high reputation PEs is more costly

E&S incidents as fund performance signals?

	log(Fund N Multiple)				log(Fund N IRR)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(1 + num. E&S incidents)	0.018	0.028			0.107	0.118*		
	(0.030)	(0.026)			(0.070)	(0.065)		
Low number of E&S incidents			0.022	0.054*			0.100	0.163**
			(0.030)	(0.031)			(0.070)	(0.077)
High number of E&S incidents			-0.033	-0.011			-0.003	0.029
			(0.038)	(0.038)			(0.093)	(0.092)
log(fund N size)		-0.031**		-0.037**		-0.046		-0.062*
		(0.015)		(0.016)		(0.029)		(0.032)
log(fund N series number)		0.017		0.015		-0.006		-0.014
		(0.027)		(0.027)		(0.059)		(0.059)
Fund N Vintage Year × PE Region FE	✓	✓	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓	✓	✓
Observations	505	505	505	505	455	455	455	455
R^2	0.20	0.21	0.21	0.22	0.28	0.29	0.28	0.29

→ No evidence that E&S incidents correlate with fund performance.

Which investors not committing?

- The PE industry is characterised by persistence of LPs and PE relationship.
- Does the decrease in capital commitment come from loss of relationship LPs or inability to attract new LPs?
- Structure the data to a fund N+1 - LP pair.
(num obs. $=$ 505 funds $\times$ 2083 LPs)

$$\begin{aligned} D(Invest)_{l,N+1} = \alpha &+ \beta Relationship\ LP_{l,N+1} \times E\&S\ incidents_N \\ &+ \theta Relationship\ LP_{l,N+1} + \psi E\&S\ incidents_N \\ &+ Controls_N + \\ &+ \gamma_{l,vintage,region} + \varepsilon_{l,N}, \end{aligned}$$

- $D(Invest)_{l,N+1}$: Dummy indicating whether LP l commits capital to fund $N+1$.
- $Relationship\ LP_{l,N+1}$: Dummy indicating LP l invested any previous fund of the PE firm of fund $N+1$.
- $\gamma_{l,vintage,region}$: LP $\times$ PE Region $\times$ Vintage FE to control for capital supply
- Same set of fund controls as before.

	Dummy(Invest in Fund N+1)				
	(1)	(2)	(3)	(4)	(5)
Relationship LP	0.311***	0.314***	0.311***	0.331***	0.335***
	(0.032)	(0.031)	(0.032)	(0.036)	(0.035)
log(1 + num. E&S incidents)			-0.000	0.002*	
			(0.002)	(0.001)	
Relationship LP × log(1 + num. E&S incidents)				-0.116**	-0.120**
				(0.055)	(0.054)
Controls	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓
Fund N+1 FE		✓			✓
Industry Controls	✓	✓	✓	✓	✓
Observations	1051915	1051915	1051915	1051915	1051915
R^2	0.31	0.31	0.31	0.31	0.31

→ Confirm the existence of relationship between LP and PE.

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Controls	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓
Fund N+1 FE		✓			✓
Industry Controls	✓	✓	✓	✓	✓
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Relationship LP × log(1 + num. E&S incidents)				-0.116**	-0.120**
				(0.055)	(0.054)
Controls	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓
Fund N+1 FE		✓			✓
Industry Controls	✓	✓	✓	✓	✓
Observations	1051915	1051915	1051915	1051915	1051915
R^2	0.31	0.31	0.31	0.31	0.31

→ Confirm the existence of relationship between LP and PE.
→ Relationship LPs stop re-committing after E&S incidents.

	Dummy(Invest in Fund N+1)				
	(1)	(2)	(3)	(4)	(5)
Relationship LP	0.311***	0.314***	0.311***	0.331***	0.335***
	(0.032)	(0.031)	(0.032)	(0.036)	(0.035)
log(1 + num. E&S incidents)			-0.000	0.002*	
			(0.002)	(0.001)	
Relationship LP × log(1 + num. E&S incidents)				-0.116**	-0.120**
				(0.055)	(0.054)
Controls	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓
Fund N+1 FE		✓			✓
Industry Controls	✓	✓	✓	✓	✓
Observations	1051915	1051915	1051915	1051915	1051915
R^2	0.31	0.31	0.31	0.31	0.31

→ Confirm the existence of relationship between LP and PE.
→ Relationship LPs stop re-committing after E&S incidents.
→ PEs substitute relationship LPs with new LPs.

- We further investigate which subsets of relationship LPs stop re-committing after E&S incidents.
- We divide the relationship LPs based on region (EU/NA/Others), on states in US (Dem/Rep) and on listing status (Pub/Pri).

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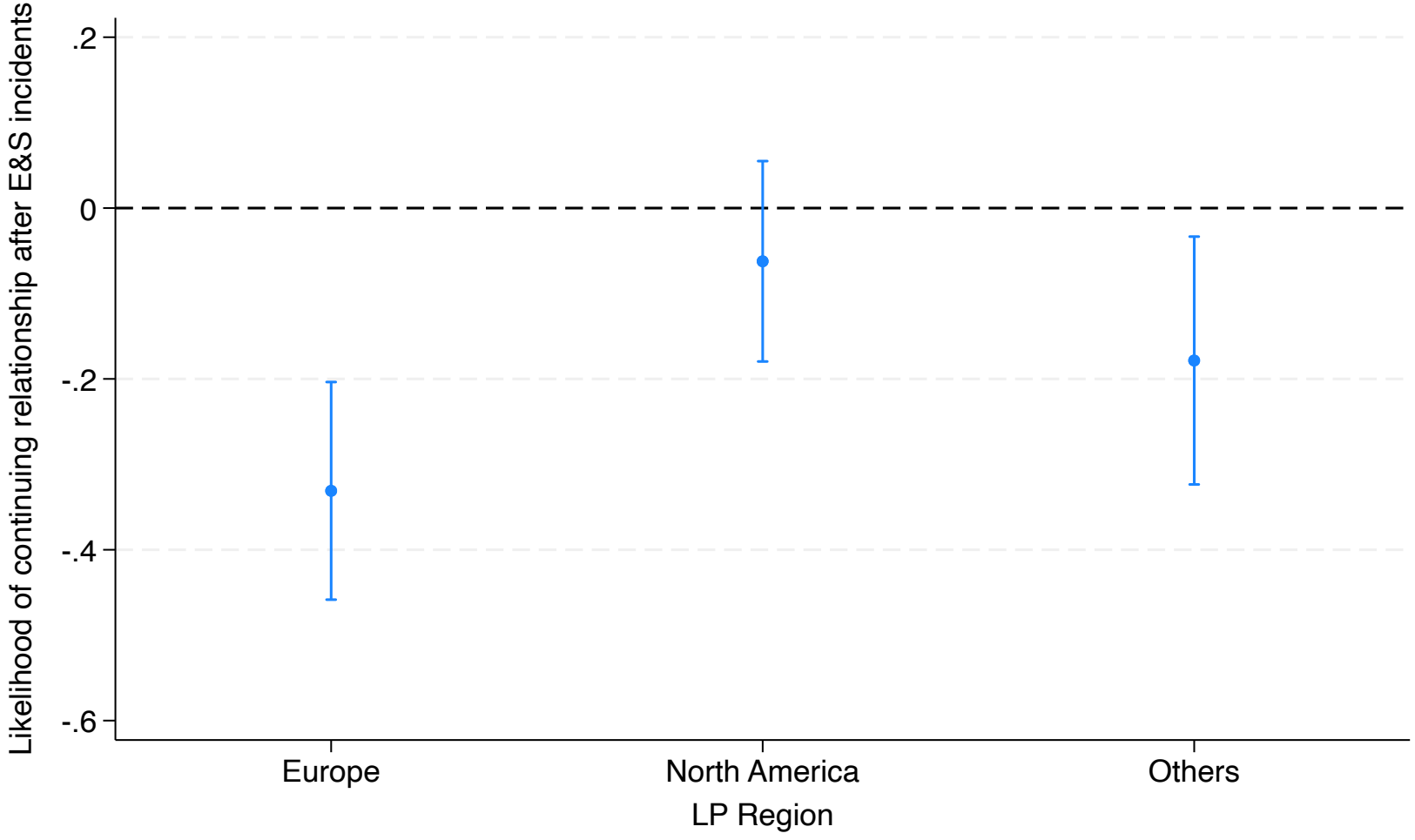
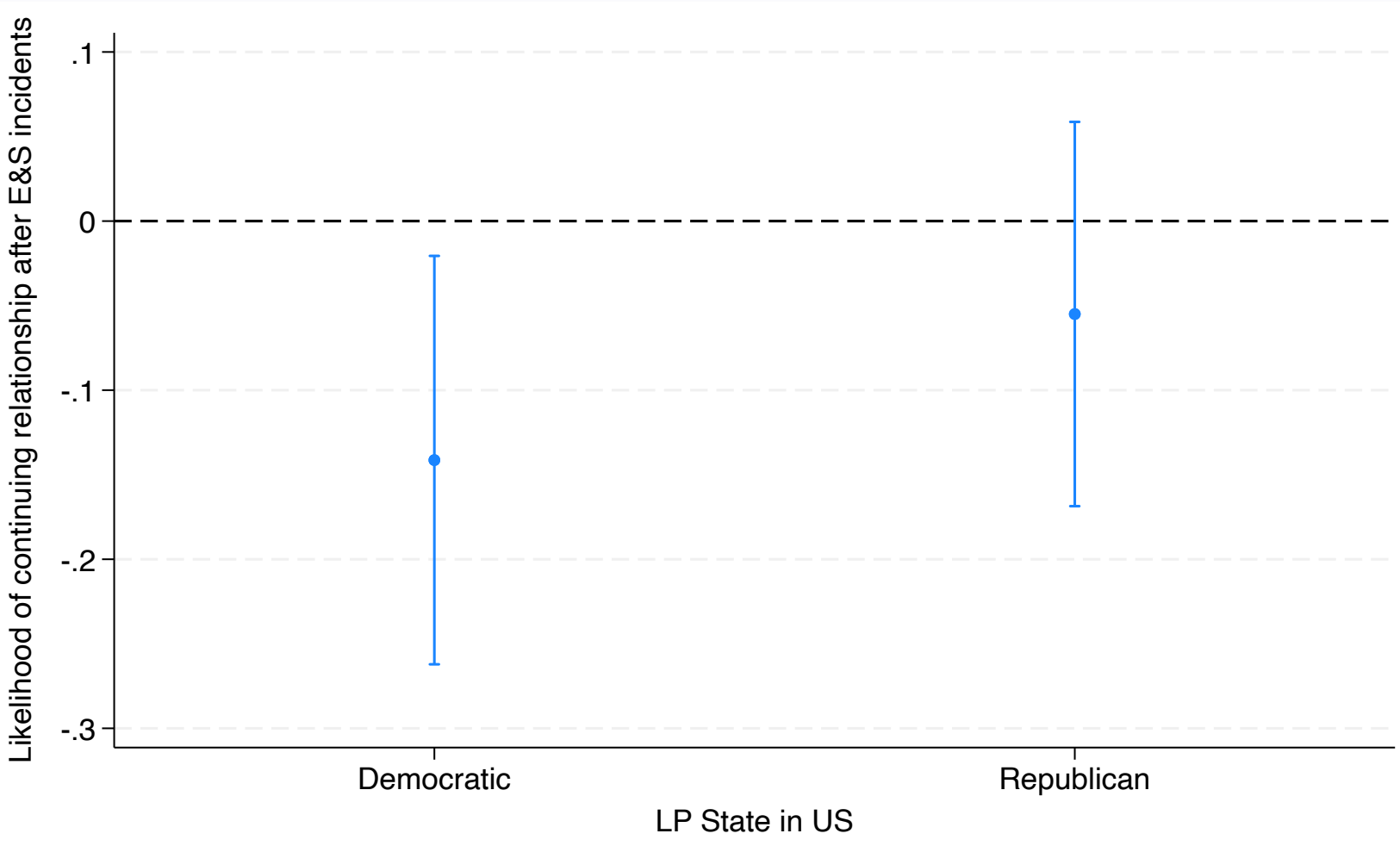
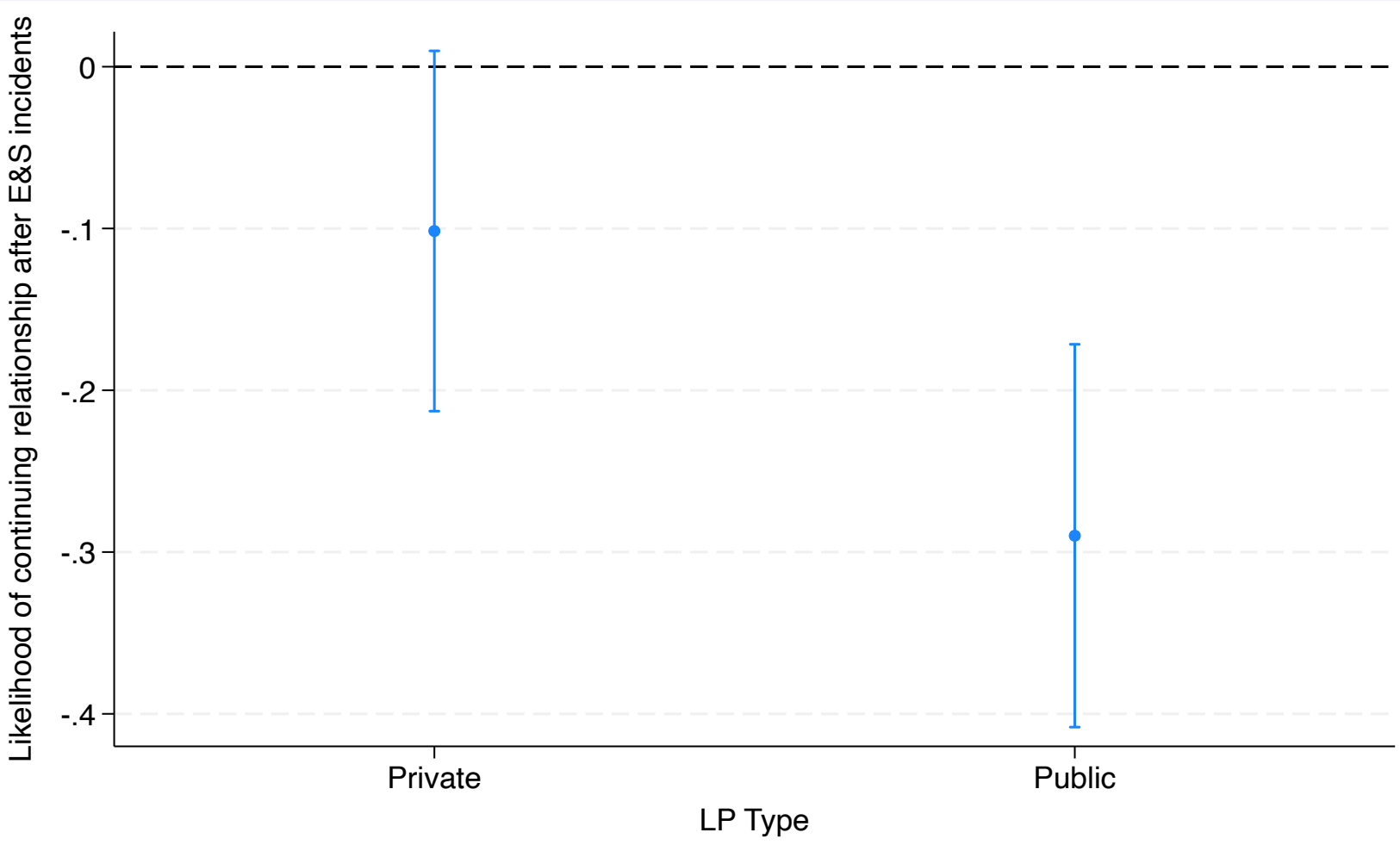
	Dummy(Invest in Fund N+1)		
	(1)	(2)	(3)
log incidents × Relationship LP, Europe	-0.331***		
	(0.064)		
log incidents × Relationship LP, NA	-0.062		
	(0.059)		
log incidents × Relationship LP, Others	-0.178**		
	(0.073)		
log incidents × Relationship LP, Democratic		-0.141**	
		(0.061)	
log incidents × Relationship LP, Republican		-0.055	
		(0.057)	
log incidents × Relationship LP, Private LP			-0.102*
			(0.056)
log incidents × Relationship LP, Public LP			-0.290***
			(0.059)
Relationship LP	0.332***	0.361***	0.332***
	(0.036)	(0.036)	(0.036)
log(1 + num. E&S incidents)	0.002*	0.003*	0.002*
	(0.001)	(0.001)	(0.001)
Controls	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓
Industry Controls	✓	✓	✓
Observations	1051915	636,805	1051915
R^2	0.31	0.33	0.31



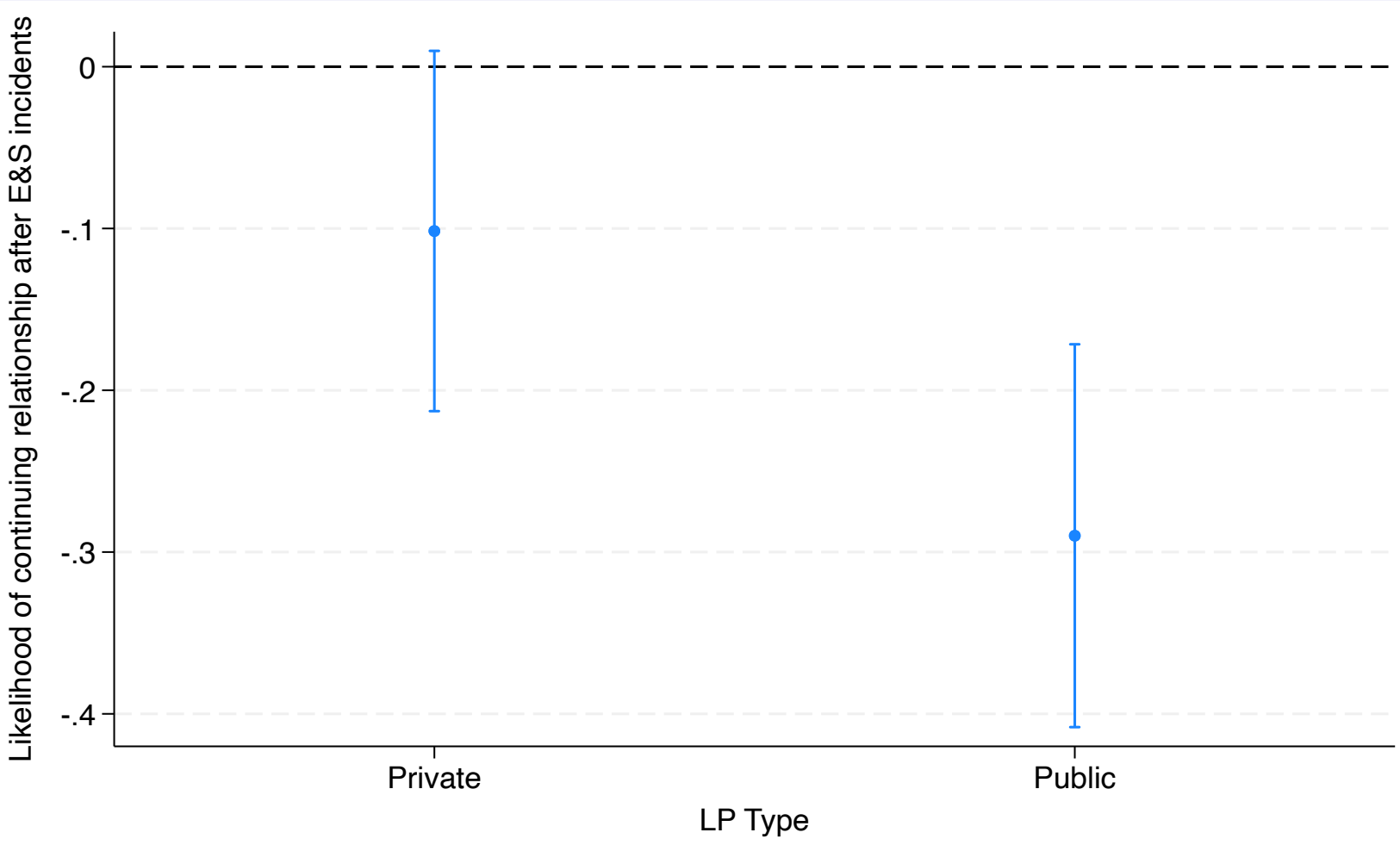
→ Mainly from relationship LPs based in Europe and other regions, weaker for LPs in North America.



→ Among US LPs, mainly from LPs based in democratic states, weaker for LPs in republican states.



→ Publicly listed relationship LPs are more likely to end relationship following E&S incidents (potentially due to higher ESG scrunity).



→ Publicly listed relationship LPs are more likely to end relationship following E&S incidents (potentially due to higher ESG scrunity).

→ LPs with higher E&S concerns (European, Democratic and Public) more likely to cut relationship following E&S incidents.

	Low Reputation	High Reputation	Low Reputation	High Reputation	Low Reputation	High Reputation
	(1)	(2)	(3)	(4)	(5)	(6)
log incidents × Relationship LP, Europe	-0.270*	-0.312***				
	(0.161)	(0.072)				
log incidents × Relationship LP, NA	-0.262**	-0.011				
	(0.099)	(0.058)				
log incidents × Relationship LP, Others	-0.417**	-0.120*				
	(0.163)	(0.070)				
log incidents × Relationship LP, Democratic			-0.256**	-0.108*		
			(0.097)	(0.064)		
log incidents × Relationship LP, Republican			-0.358***	-0.005		
			(0.112)	(0.054)		
log incidents × Relationship LP, Private LP					-0.252**	-0.054
					(0.098)	(0.055)
log incidents × Relationship LP, Public LP					-0.562***	-0.219***
					(0.131)	(0.058)
Relationship LP	0.387***	0.304***	0.391***	0.343***	0.387***	0.303***
	(0.065)	(0.037)	(0.067)	(0.037)	(0.065)	(0.037)
log(1 + num. E&S incidents)	0.001	0.004*	0.001	0.005*	0.001	0.004*
	(0.001)	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)
Controls	✓	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓
Observations	447,845	597,821	271,115	361,907	447,845	597,821
R^2	0.36	0.35	0.36	0.36	0.36	0.35

→ Low reputation PE firms divested by all types of LPs.

	Low Reputation	High Reputation	Low Reputation	High Reputation	Low Reputation	High Reputation
	(1)	(2)	(3)	(4)	(5)	(6)
log incidents × Relationship LP, Europe	-0.270*	-0.312***				
	(0.161)	(0.072)				
log incidents × Relationship LP, NA	-0.262**	-0.011				
	(0.099)	(0.058)				
log incidents × Relationship LP, Others	-0.417**	-0.120*				
	(0.163)	(0.070)				
log incidents × Relationship LP, Democratic			-0.256**	-0.108*		
			(0.097)	(0.064)		
log incidents × Relationship LP, Republican			-0.358***	-0.005		
			(0.112)	(0.054)		
log incidents × Relationship LP, Private LP					-0.252**	-0.054
					(0.098)	(0.055)
log incidents × Relationship LP, Public LP					-0.562***	-0.219***
					(0.131)	(0.058)
Relationship LP	0.387***	0.304***	0.391***	0.343***	0.387***	0.303***
	(0.065)	(0.037)	(0.067)	(0.037)	(0.065)	(0.037)
log(1 + num. E&S incidents)	0.001	0.004*	0.001	0.005*	0.001	0.004*
	(0.001)	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)
Controls	✓	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓
Observations	447,845	597,821	271,115	361,907	447,845	597,821
R^2	0.36	0.35	0.36	0.36	0.36	0.35

→ Low reputation PE firms divested by all types of LPs.
→ High reputation PE firms divested by only more E&S-concerned LPs (and more able to find substitutes)

	Low Reputation	High Reputation	Low Reputation	High Reputation	Low Reputation	High Reputation
	(1)	(2)	(3)	(4)	(5)	(6)
log incidents × Relationship LP, Europe	-0.270*	-0.312***				
	(0.161)	(0.072)				
log incidents × Relationship LP, NA	-0.262**	-0.011				
	(0.099)	(0.058)				
log incidents × Relationship LP, Others	-0.417**	-0.120*				
	(0.163)	(0.070)				
log incidents × Relationship LP, Democratic			-0.256**	-0.108*		
			(0.097)	(0.064)		
log incidents × Relationship LP, Republican			-0.358***	-0.005		
			(0.112)	(0.054)		
log incidents × Relationship LP, Private LP					-0.252**	-0.054
					(0.098)	(0.055)
log incidents × Relationship LP, Public LP					-0.562***	-0.219***
					(0.131)	(0.058)
Relationship LP	0.387***	0.304***	0.391***	0.343***	0.387***	0.303***
	(0.065)	(0.037)	(0.067)	(0.037)	(0.065)	(0.037)
log(1 + num. E&S incidents)	0.001	0.004*	0.001	0.005*	0.001	0.004*
	(0.001)	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)
Controls	✓	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓
Observations	447,845	597,821	271,115	361,907	447,845	597,821
R^2	0.36	0.35	0.36	0.36	0.36	0.35

→ Low reputation PE firms divested by all types of LPs.
→ High reputation PE firms divested by only more E&S-concerned LPs (and more able to find substitutes)

	Low Reputation	High Reputation	Low Reputation	High Reputation	Low Reputation	High Reputation
	(1)	(2)	(3)	(4)	(5)	(6)
log incidents × Relationship LP, Europe	-0.270*	-0.312***				
	(0.161)	(0.072)				
log incidents × Relationship LP, NA	-0.262**	-0.011				
	(0.099)	(0.058)				
log incidents × Relationship LP, Others	-0.417**	-0.120*				
	(0.163)	(0.070)				
log incidents × Relationship LP, Democratic			-0.256**	-0.108*		
			(0.097)	(0.064)		
log incidents × Relationship LP, Republican			-0.358***	-0.005		
			(0.112)	(0.054)		
log incidents × Relationship LP, Private LP					-0.252**	-0.054
					(0.098)	(0.055)
log incidents × Relationship LP, Public LP					-0.562***	-0.219***
					(0.131)	(0.058)
Relationship LP	0.387***	0.304***	0.391***	0.343***	0.387***	0.303***
	(0.065)	(0.037)	(0.067)	(0.037)	(0.065)	(0.037)
log(1 + num. E&S incidents)	0.001	0.004*	0.001	0.005*	0.001	0.004*
	(0.001)	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)
Controls	✓	✓	✓	✓	✓	✓
Fund N+1 Vintage Year × PE Region × LP FE	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓
Observations	447,845	597,821	271,115	361,907	447,845	597,821
R^2	0.36	0.35	0.36	0.36	0.36	0.35

→ Low reputation PE firms divested by all types of LPs.

→ High reputation PE firms divested by only more E&S-concerned LPs (and more able to find substitutes)

→ LPs trade-off their E&S concerns and cost of divestment.

Summary of mechanism

- No evidence that E&S incidents are signals of fund performance.
- Evidence suggests an LPs' E&S concerns channel.
  - The decrease in capital commitment comes from the lack of relationship LPs to re-commit capital after E&S incidents (rather than the inability to attract new LPs).
  - Driven by E&S concerned LPs (European, Democratic and Public LPs).
  - LPs trade-off E&S concerns with cost of divestment. LPs with low E&S concerns find it too costly to divest high reputation PE firms.
  - High reputation PE firms are also easier to find substitutes.
  - This explains why the fund size decrease concentrates in low reputation PE firms in the baseline.

Do PE firms internalize E&S concerns of LPs?

- We test whether E&S-concerned LPs incentivize PE firms to engage with portfolio companies on E&S issues
  - ▷ Large literature on PE's engagement with portfolio companies.
- We test this in a diff-in-diff setup in a portfolio company-year panel.

$$Y_{i,t} = \beta\,(\text{Post-investment}_{i,t} \times \text{High proportion of E\&S concerned LPs}_i) + \theta_{\text{deal year}\times t} + \gamma_i + \epsilon_{i,t},$$

- $Y_{i,t}$: RepRisk Index (0-100) or log number of E&S incidents of firm i in year t.
- $\theta_{\text{deal year}\times t}$: Deal year $\times$ year FE.
- High proportion of E&S concerned LPs$_i$: Dummy indicating company i is invested by a PE firm with an above-median proportion of E&S-concerned LPs (Europe, Democratic, Public) .
- Intuitively, we compare the change of E&S risk of two firms post PE investment (in the same year), invested by PEs with high vs. low prop. of E&S-concerned relationship LPs.

	log(1+E&S incidents)			RepRisk Index		
	(1)	(2)	(3)	(4)	(5)	(6)
Post-Investment × High prop. ESG-concerned Rela. LPs	-0.034***	-0.034***	-0.033**	-0.765**	-0.795***	-0.737**
	(0.012)	(0.013)	(0.014)	(0.301)	(0.304)	(0.339)
Firm FE	✓	✓	✓	✓	✓	✓
Year × Deal-Year FE	✓	✓	✓	✓	✓	✓
Industry × Year FE		✓	✓		✓	✓
Country/State × Year FE			✓			✓
Observations	13,693	13,693	13,693	13,693	13,693	13,693
R^2	0.55	0.56	0.61	0.42	0.43	0.49

→ E&S risk ↓ for firms invested by PE with high ESG LP base.

→ 3% ↓ in number of incidents or 0.7 ↓ in RepRisk index (∼ 20% of unconditional mean)

→ Robust to controlling for industry-year and state/country-year FE (controlling for policy and regulatory risk): complements Bellon (2022)

Figure: $log(1 + E\&S\ incidents)$

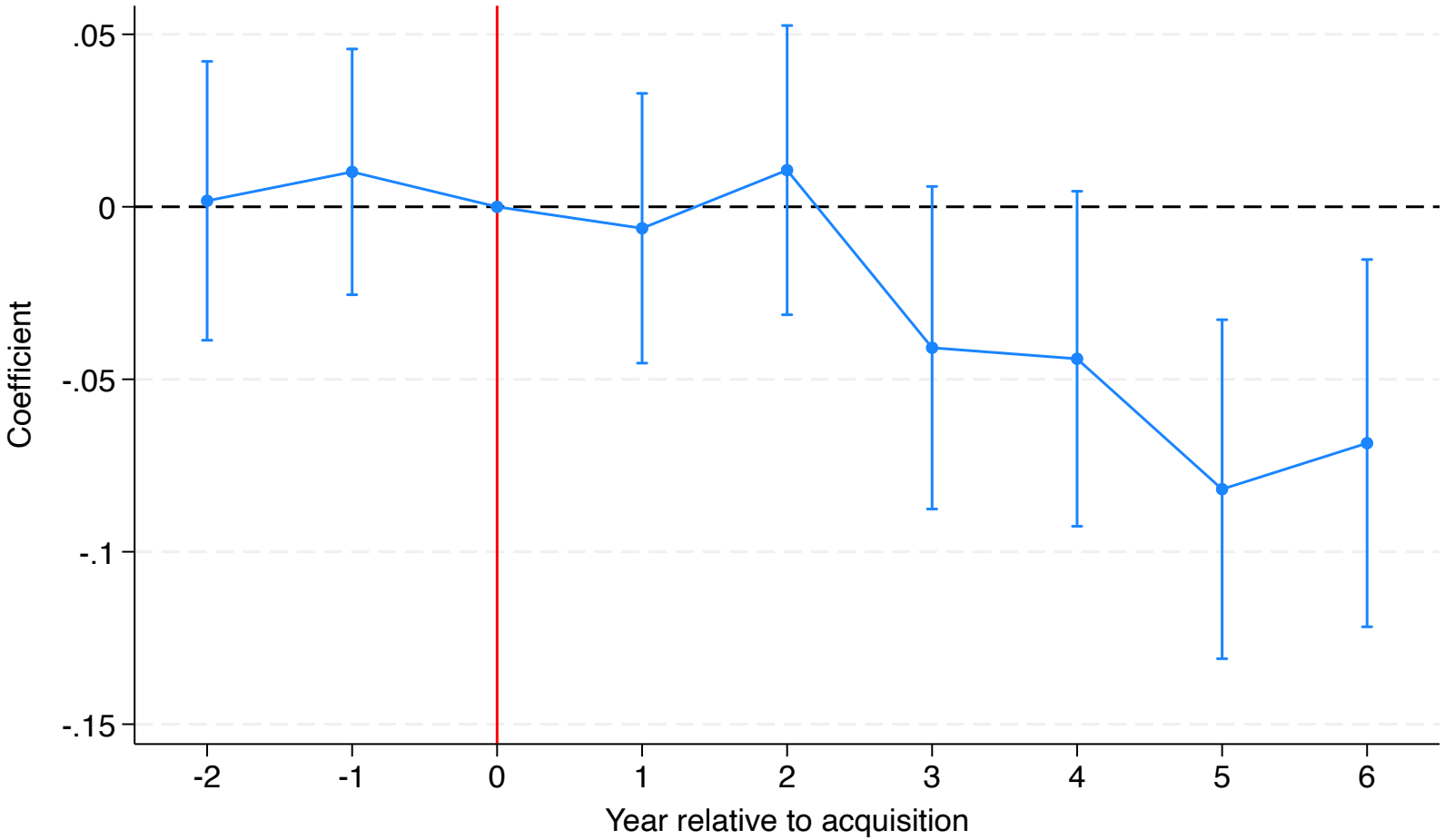
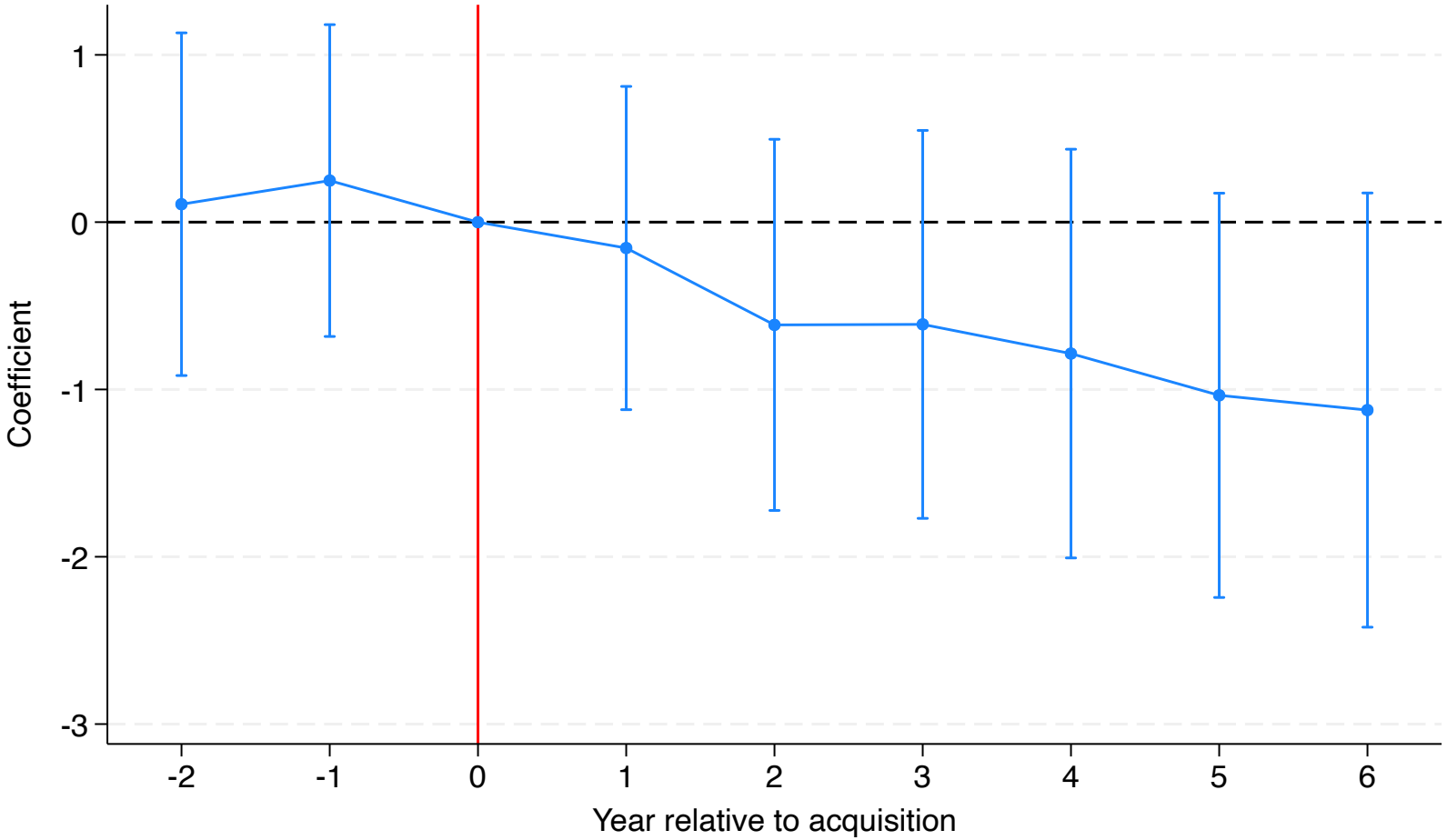


Figure: RepRisk Index



Conclusions

Novel evidence on how ESG considerations affect capital flow in private markets and the associated real impact

- E&S incidents negatively affect follow-up fund raising at both *intensive* and *extensive* margin.
- Not driven by fund performance, instead driven by E&S concerns of relationship LPs.
- LPs trade-off their E&S concerns and cost of divestment $\rightarrow$ impact is weaker for high reputation PE firms (where ending relationship is more costly).
- The threat of "exit" by E&S concerned investors incentivizes PE firms to exert "voice" (Broccardo, Hart, and Zingales, 2022).

Appendix

Summary Statistics 1

Table: Summary Statistics for fund N - fund N+1 data

	Obs	Mean	Sd	5%	25%	50%	75%	95%
Num. of RepRisk firms	505	2.64	2.56	1.00	1.00	2.00	3.00	8.00
Avg. num. ESG incidents	505	0.48	3.10	0.00	0.00	0.00	0.49	1.25
Avg. num. E&S incidents	505	0.29	2.14	0.00	0.00	0.00	0.17	1.00
Avg. num. G incidents	505	0.20	1.38	0.00	0.00	0.00	0.00	0.61
Fund N multiple	505	1.86	0.61	1.08	1.45	1.74	2.11	3.04
Fund N fund series number	505	4.25	2.49	1.00	2.00	4.00	6.00	9.00
Fund N size (billion USD)	505	2.93	4.10	0.19	0.50	1.20	3.50	11.94
Fund N+1 size (billion USD)	505	3.69	4.86	0.24	0.72	1.75	4.66	14.50
log(fund N+1 size / fund N size)	505	0.27	0.41	-0.47	0.09	0.30	0.51	0.81
Years btw. fund N. and N+1	505	4.43	1.54	2.00	3.00	4.00	5.00	7.00
Num. LPs fund N	505	29.06	27.60	3.00	10.00	19.00	37.00	88.00
Num. LPs fund N+1	505	22.69	23.23	1.00	7.00	15.00	31.00	72.00

Data

Summary Statistics 2

Table: Summary Statistics for fund N - year Panel

	Obs	Mean	Sd	5%	25%	50%	75%	95%
Years since fund N is raised	3,114	4.64	2.43	1.00	3.00	4.00	6.00	9.00
Cum. num. E&S incidents	3,114	0.12	0.30	0.00	0.00	0.00	0.08	0.67
Fund N multiple	3,114	1.79	0.67	0.94	1.38	1.68	2.06	3.06
Fund N size (billion USD)	3,114	2.15	3.41	0.14	0.39	0.81	2.18	8.82
Fund N fund series number	3,114	3.87	2.20	1.00	2.00	3.00	5.00	8.00
Buyout multiple	3,114	1.84	0.05	1.78	1.80	1.82	1.89	1.91

Table: Summary Statistics for fund N - LP pair data

	Obs	Mean	Sd	5%	25%	50%	75%	95%
D(LP invest in Fund N)	1051915	0.02	0.13	0.00	0.00	0.00	0.00	0.00
D(LP invest in Fund N+1)	1051915	0.01	0.12	0.00	0.00	0.00	0.00	0.00
Num. of previous funds an LP has invested	1051915	0.04	0.36	0.00	0.00	0.00	0.00	0.00
D(an LP has invested in previous funds)	1051915	0.02	0.14	0.00	0.00	0.00	0.00	0.00
Num. of E&S incidents	1051915	0.29	2.14	0.00	0.00	0.00	0.17	1.00
Fund N size (billion USD)	1051915	2.93	4.10	0.19	0.50	1.20	3.50	11.94
Fund N multiple	1051915	1.86	0.61	1.08	1.45	1.74	2.11	3.04
Fund N fund series number	1051915	4.25	2.48	1.00	2.00	4.00	6.00	9.00
Avg. num. of fund N an LP invests	1051915	9.16	23.57	0.00	1.00	3.00	7.00	37.00
Avg. num. of fund N+1 an LP invests	1051915	7.34	21.05	0.00	1.00	2.00	5.00	33.00

Data

	log(Fund N+1 Size/Fund N Size)					
	(1)	(2)	(3)	(4)	(5)	(6)
log(1 + num. E&S incidents)	-0.083**		-0.078**		-0.083**	
	(0.040)		(0.037)		(0.038)	
Low number of E&S incidents		-0.034		-0.032		-0.035
		(0.037)		(0.037)		(0.036)
High number of E&S incidents		-0.129***		-0.111**		-0.122***
		(0.042)		(0.045)		(0.042)
log(fund N size)	-0.067***	-0.061***	-0.069***	-0.064***	-0.067***	-0.062***
	(0.019)	(0.020)	(0.018)	(0.019)	(0.018)	(0.020)
log(fund N series number)	-0.100***	-0.101***	-0.103***	-0.104***	-0.109***	-0.110***
	(0.034)	(0.035)	(0.034)	(0.034)	(0.034)	(0.035)
fund N multiple	0.086***	0.085***				
	(0.027)	(0.027)				
Quartile of fund N multiple=2			0.125*	0.121*		
			(0.071)	(0.071)		
Quartile of fund N multiple=3			0.179***	0.174***		
			(0.053)	(0.053)		
Quartile of fund N multiple=4			0.156***	0.153***		
			(0.053)	(0.053)		
log(fund N multiple)					0.448***	0.441***
					(0.155)	(0.157)
Sqaured log(fund N multiple)					-0.199*	-0.194*
					(0.101)	(0.102)
Fund N Vintage Year × Fund N+1 Vintage Year × PE Region FE	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓
Observations	505	505	505	505	505	505
R^2	0.53	0.54	0.54	0.54	0.54	0.55

▶▶ Other Results

	log(Fund N+1 Size/Fund N Size)					
	(1)	(2)	(3)	(4)	(5)	(6)
log(1 + num. E&S incidents)	-0.085**		-0.071*		-0.065*	
	(0.041)		(0.036)		(0.037)	
Low number of E&S incidents		-0.047		-0.026		-0.021
		(0.038)		(0.042)		(0.042)
High number of E&S incidents		-0.126***		-0.114**		-0.107**
		(0.046)		(0.051)		(0.052)
log(fund N size)	-0.064***	-0.057***	-0.084***	-0.079***	-0.082***	-0.078***
	(0.018)	(0.020)	(0.020)	(0.021)	(0.020)	(0.021)
log(fund N series number)	-0.097**	-0.098**	-0.095**	-0.095**	-0.098**	-0.098**
	(0.037)	(0.038)	(0.043)	(0.043)	(0.044)	(0.043)
log(fund N IRR)	0.050*	0.049*				
	(0.029)	(0.029)				
log(Observed fund N PME, before fund N+1 is raised)			0.206***	0.201***		
			(0.076)	(0.075)		
log(Observed fund N multiple, before fund N+1 is raised)					0.192**	0.185**
					(0.077)	(0.075)
Fund N Vintage Year × Fund N+1 Vintage Year × PE Region FE	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓
Observations	456	456	367	367	367	367
R^2	0.53	0.53	0.56	0.56	0.55	0.56

▶▶ Other Results

	log(Fund N+1 Size/Fund N Size)					
	(1)	(2)	(3)	(4)	(5)	(6)
log(1 + num. E&S incidents) in year $[t-1, t-1]$	-0.086**					
	(0.037)					
log(1 + num. E&S incidents) in year $[t-2, t-1]$		-0.083**				
		(0.039)				
log(1 + num. E&S incidents) in year $[t-3, t-1]$			-0.079**			
			(0.039)			
log(1 + num. E&S incidents) in year $[t-4, t-1]$				-0.073*		
				(0.038)		
log(1 + num. E&S incidents) in year $[t-5, t-1]$					-0.068*	
					(0.038)	
log(1 + num. E&S incidents) in year $[t-6, t-1]$						-0.068*
						(0.038)
log(fund N size)	-0.063***	-0.066***	-0.066***	-0.067***	-0.067***	-0.067***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
log(fund N multiple)	0.211***	0.212***	0.211***	0.211***	0.211***	0.211***
	(0.065)	(0.065)	(0.065)	(0.066)	(0.066)	(0.066)
log(fund N series number)	-0.105***	-0.103***	-0.104***	-0.103***	-0.103***	-0.103***
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Fund N Vintage Year × Fund N+1 Vintage Year × PE Region FE	✓	✓	✓	✓	✓	✓
Industry Controls	✓	✓	✓	✓	✓	✓
Observations	499	505	505	505	505	505
R^2	0.52	0.54	0.54	0.54	0.54	0.54

Other Results

	log(Fund N+1 Size/Fund N Size)					
	(1)	(2)	(3)	(4)	(5)	(6)
log(1 + num. G incidents)	0.009	0.015	0.030			
	(0.043)	(0.048)	(0.046)			
Low number of G incidents				0.056	0.043	0.052
				(0.041)	(0.040)	(0.038)
High number of G incidents				0.003	0.014	0.038
				(0.066)	(0.064)	(0.058)
log(fund N size)	-0.083***	-0.080***	-0.069***	-0.089***	-0.085***	-0.076***
	(0.017)	(0.017)	(0.018)	(0.019)	(0.019)	(0.019)
log(fund N multiple)	0.238***	0.232***	0.211***	0.236***	0.230***	0.209***
	(0.064)	(0.065)	(0.066)	(0.062)	(0.064)	(0.065)
log(fund N series number)	-0.062*	-0.083**	-0.100***	-0.056	-0.079**	-0.095***
	(0.034)	(0.033)	(0.034)	(0.036)	(0.034)	(0.035)
Fund N Vintage Year × Fund N+1 Vintage Year FE	✓			✓		
PE Region FE	✓			✓		
Fund N Vintage Year × Fund N+1 Vintage Year × PE Region FE		✓	✓		✓	✓
Industry Controls			✓			✓
Observations	505	505	505	505	505	505
R^2	0.45	0.51	0.54	0.45	0.51	0.54

Other Results