# ESG Incidents and Fundraising in Private Equity*

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**Abstract**

We present novel evidence on how environmental and social (E&S) incidents affect the capital raising ability of Private Equity (PE) firms. Using a sample of global buyout investments, we find that PE firms experiencing E&S incidents in their portfolio companies are less likely to raise a subsequent fund and the subsequent funds are smaller. The relative size of subsequent funds is 9%-12% smaller for PE firms experiencing above-median number of E&S incidents. The decrease in capital commitment does not seem to be related to fund performance, instead it is driven by E&S concerns of limited partners (LPs). LPs trade off their E&S concerns with cost of divestment and as a result the impact of E&S incidents is weaker for high reputation PE firms. PE firms relying on E&S-concerned LPs in turn engage with their portfolio companies to manage E&S risk. The threat of "exit" by E&S concerned investors incentivizes PE firms to exert "voice".

**Keywords:** private equity, fundraising, buyouts, limited partners, ESG, sustainability

**JEL Classification:** G10, G24, M14

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# 1 Introduction

There has been a notable surge in global interest towards responsible investment practices, where many institutional investors are integrating (or claiming to integrate) environmental, social, and governance (ESG) factors into their investment decisions (Gibson Brandon et al., 2022). Private market funds represent a substantial portion of institutional investors' portfolios (Ivashina and Lerner, 2018; Ewens and Farre-Mensa, 2022). A large body of academic literature has studied the implications of investors' ESG considerations for public market funds.[1] However, due to different market structure and regulatory scrutiny, the conclusions from research on responsible investment in public markets may not be easily generalized to private markets. In this paper, we provide, to the best of our knowledge, the first evidence on whether and how ESG considerations of private equity investors (limited partners, or LPs) affect the capital raising ability of Private Equity (PE) firms.[2]

It is a-priori unclear how ESG considerations affect capital flows in private market funds. On the one hand, due to lower disclosure and regulatory requirements, private markets may not be subject to the same mounting ESG pressures as public markets.[3] As a result, investors in private markets may not be as ESG-concerned as their public counterparts. Moreover, because of illiquidity and search costs of switching to another private market fund, the cost of divestment in the private market is large, which may prevent investors from incorporating their ESG considerations into their portfolios. On the other hand, the investment and ownership structure of PE funds allow them to exert more influence on portfolio companies' operations when compared to public equity (e.g., Gompers et al., 2020; Berk and Van Binsbergen, 2021; Gupta et al., 2024b). This potentially makes PE firms more likely to be held liable for "bad" ESG practices of their portfolio firms, which provides a rationale for ESG-concerned investors to tilt their capital to PE firms with better ESG-performing portfolio companies.

[1] See, for instance, Bollen (2007), Riedl and Smeets (2017), Hartzmark and Sussman (2019) and Ceccarelli et al. (2023) for mutual funds, and Liang et al. (2022) for hedge funds.

[2] Anecdotally, ESG considerations have aroused substantial interest in the private equity industry, in a survey conducted by PWC (2022), 63 % of Limited Partners (LPs) take into account ESG considerations when they allocate capital across General Partners (GPs), and more than 40% surveyed GPs claim to adopt ESG considerations when selecting and managing their investments

[3] For example, Duchin et al. (2024) show that public firms sells their most polluting assets to private firms that face lower ESG pressure.

In the absence of ESG scores and key ESG indicators such as carbon emissions for private firms, we rely on ESG-related incidents from RepRisk to mitigate the data limitation. RepRisk produces daily indicators for negative ESG-related incidents reported in the media and regulatory or commercial documents for both public and private firms. We combine RepRisk with data on buyout investments from Preqin to examine the outcomes of ESG incidents. We restrict our analysis to GPs specializing in buyout investments since buyout funds invest in larger companies for which we have better coverage by RepRisk.

We conjecture that ESG incidents of portfolio companies in a fund affect the capital raising of follow-up funds of the same PE firm.[4] We begin our empirical analyses by confirming our hypothesis in the data. First, we examine the impact of $E\&S$ incidents on the size of the follow-up funds (*intensive margin*).[5] We find that conditional on raising a follow-up fund, the follow-up funds are smaller for GPs experiencing E&S incidents in their portfolio companies. A one standard deviation increase in the average number of incidents lowers the relative size of follow-up funds by around 2.2%. Alternatively, compared to funds with no incidents in their portfolio, funds with above-median number of $E\&S$ incidents have 8.9%-12.6% smaller follow-up funds. This magnitude is equivalent to the size growth brought about by a scaling-up of fund performance by 1.6, which is economically large. Note that in the analyses we control for performance, size, series number and industry composition of the current fund of the GP, which suggests that the effect of E&S incidents does not come from funds' heterogenous skills, industry focuses or other characteristics. The result is also robust to using different performance measures as controls, including fund multiple, internal rate of return and different functional specifications. It is also robust to controlling for observable interim performance estimated using cash flow data (interim fund multiple and interim Kaplan-Schoar PME (Kaplan and Schoar, 2005) before fund $N + 1$ is raised.[6]

Next, we show that GPs experiencing $E\&S$ incidents in their portfolio companies are also less

[4]The current fund experiencing ESG incidents is unlikely to be affected as the capital is already committed when the fund is raised.

[5]We separately analyse governance (G) incidents as corporate governance has long been a focus area in the private equity market and governance issues likely affect PE firms in very different ways than environmental and social issues.

[6]Since we are not making an absolute performance claim, we estimate the Kaplan-Schoar PME using the S&P 500 index return as a benchmark. For discussion of different benchmarks see, for instance, Harris et al. (2014) and Phalippou (2014).

likely to raise a follow-up fund (*extensive margin*). We estimate a proportional hazards model and document that the hazard rate of raising a follow-up fund decreases with the number of E&S incidents in the current fund. Compared to a fund with no incidents, a fund with above-median average number of $E\&S$ incidents has a 32.09% lower hazard ratio of raising a follow-up fund in a given year. This effect is also economically large, as this is equivalent to the hazard rate of raising follow-up funds brought about by scaling-up of fund performance by 1.5. Again, in the analysis, we control for the performance, size, series number and industry composition of the current fund of the GP. We also control for market-level performance of buyout funds in a given year following Barber and Yasuda (2017). Estimates from the fitted failure function imply that 5 years after inception, funds that do not experience E&S incidents have a probability of raising a follow-up fund of 42.5%, whereas funds that experience above median number of incidents only have a probability of 31.3% of raising a follow-up fund.

We do not find a similar effect for governance (G) incidents, neither in terms of statistical significance nor economic magnitude. This is perhaps not surprising. G is quite different from $E\&S$ in nature as $E\&S$ is more related to social responsibility. Therefore, $E\&S$ incidents are likely viewed differently by investors of PE firms compared to G incidents.

Prior research has shown that reputation plays an important role in fund raising in private equity markets as it may help reduce agency costs between GPs and LPs (Gompers and Lerner, 1999; Ljungqvist et al., 2020). Following Barber and Yasuda (2017), we define low reputation PE firms as small, young and low-performing PE firms. We find that the negative effect of E&S incidents on fund raising is stronger for low-reputation PE firms. Low reputation PE firms bear the brunt of the costs of E&S incidents, both on the extensive and intensive margin.

The results above have important implications for PE firms. Since typically a large part of compensation in private equity (management fee) is tied to the size of the fund raised, successful fundraising is of paramount importance to PE managers.[7] Consequently, our findings indicate that experiencing environmental and social controversies may result in substantial financial repercussions for both the private equity firm and its fund managers. Our results highlight that $E\&S$ incidents are rather costly, especially for young, small or low-performing GPs.

[7]For example, Metrick and Yasuda (2010) find that successful general partners (GPs) can raise their per partner compensation sharply by raising a larger follow-up fund.

After documenting that E&S incidents hurt GPs' capital raising ability, we turn to the underlying mechanism. We propose two non-mutually exclusive channels. First, E&S incidents might be viewed as a negative signal of fund performance. This would lead purely financially motivated investors to divest from PE firms after observing an E&S incident. Alternatively, the effect could be driven by investors' E&S concerns. E&S concerned investors may divest from PE firms with bad E&S practices. Note that in both mechanisms the effect would be stronger for low reputation firms. If E&S incidents are signals of poor fund performance, additional signals of fund performance will have a limited effect on investors' belief update for high reputation PE firms (Barber and Yasuda, 2017). If the effect is driven by investors' E&S concerns, divesting from high reputation PE firms (better performers) is more costly in terms of financial return. Investors will therefore trade-off their E&S concerns with cost of divestment, and some LPs may prefer to not divest high-reputation GPs.

First, we examine the performance channel. We do not find evidence that E&S incidents are correlated with either current or future fund performance. At least in the short to medium run, experiencing environmental and social incidents does not seem to be strongly associated with the PE firm's performance. Given the limited time period of our sample, our data does not allow us to rule out the possibility that even profit-driven LPs may be concerned about long-term impact of ESG factors on performance.

We, then, test the investors' E&S concerns channel and find empirical support for it. Private markets are characterised by the existence of relationships between GPs and their investors.[8] Investors, especially E&S-concerned investors, may break such relationships following $E\&S$ incidents. We start by confirming the importance of relationships in private equity. Indeed, LPs who financed a past fund of a GP are significantly more likely to commit capital to the following fund raised by the same GP.

Next, we show that experiencing $E\&S$ incidents breaks such relationships. Using a LP-fund data structure, we find that LPs who had a relationship with a PE firm are less likely to re-

[8]For instance, due to variations in skill levels, style and the persistence of returns, certain General Partners (GPs) may be more favoured than others (Kaplan and Schoar, 2005; Harris et al., 2023). Simultaneously, due to their differing tolerance for illiquidity, some LPs become more desirable to certain GPs (Maurin et al., 2023).

commit to a follow-up fund if the current fund has $E\&S$ incidents. A one standard deviation increase in the number of incidents decreases the likelihood of re-commitment by relationship LPs by about 9.6%, which is economically meaningful. Our results suggest that the deterioration in fund-raising ability comes from the reluctance of relationship LPs to re-commit capital after E&S incidents (rather than the inability of GPs to attract new LPs).

Subsequently, we document that not all LPs react to $E\&S$ incidents to the same extent and the effect is stronger for investors with higher E&S concerns. We find that LPs in Europe, LPs in Democratic states in the US, and publicly listed LPs are more likely to end their relationship with GPs following $E\&S$ incidents. Institutional investors in Europe exhibit a higher interest in sustainability than their US counterparts (Gibson Brandon et al., 2022). Firms in Democratic states embrace social responsibility more than those in Republican states (Di Giuli and Kostovetsky, 2014). Public LPs who are under more scrutiny and disclosure pressure are presumably more E&S-concerned compared to private ones. The evidence suggests that the decrease in capital raising ability of GPs after E&S incidents can be attributed to ESG concerns of their LPs, who break existing relationships to avoid future incidents. These ESG concerns may stem from intrinsic preferences of LPs, but may also come from regulatory pressure or public market scrutiny.

We further test whether LPs trade-off their E&S concerns with the cost of divestment, proxied by PE reputation. We find that, following E&S incidents, both LPs with low and high E&S concerns divest from low reputation PE firms. In contrast, only LPs with high E&S concerns divest from high reputation PE firms. This evidence provides clear support to the mechanism that investors trade-off E&S concerns with cost of divestment. Due to high cost of divestment, high reputation PE firms suffer less and only lose capital from E&S concerned investors. Due to a lower cost of divestment, low reputation PE firms suffer more and this hampers their ability to raise follow-up funds. Moreover, we find moderate evidence that high reputation PE firms are able to substitute divested relationship LPs with non-relationship LPs, which is not the case for low reputation LPs. This provides another rationale for why capital decrease following E&S incidents is stronger for low reputation LPs.

Our evidence so far highlights that E&S incidents are costly for PE firms and impede their ability to raise capital, especially from E&S concerned investors. A natural question that arises is whether the threat from E&S concerned investors incentivizes PE firms to mitigate this cost.

We find that PE firms relying on E&S concerned investors actively engage with companies to manage E&S risk.[9] In a difference-in-differences setting, we find that portfolio companies exhibit lower risk of having E&S incidents after receiving investment from a PE firm with higher proportion of E&S concerned LPs, compared to its counterparts that receive investment from PE firms with a lower proportion of E&S concerned LPs. The results are robust to controlling for any time-varying ESG regulation risk at the geographical level, which highlights the role of E&S concerns of LPs (beyond ESG regulation risk).

This result is in line with the theoretical model by Broccardo et al. (2022), where investors can transmit their preferences to intermediaries such as PE firms by voting with their feet (a form of exit) to induce voice. Investors with E&S preferences threaten to exit (not recommit to the follow-up fund of the PE firm) and this in turn induces the PE firm to engage with its portfolio companies to achieve better E&S outcomes.

Our novel evidence in this paper highlights the materiality of ESG considerations in the private equity industry. Even in the absence of tight regulation, capital in the private market seems to flow away from GPs with high E&S risk, which is similar to public market funds. However, due to the unique structure of the private market, this capital flow happens in the form of a decrease in recommitment to follow-up funds of a GP, which is different from public market funds. This shift in capital allocation from ESG concerned LPs incentivize GPs to engage with their portfolio companies to improve ESG performance, which results in real impacts on the economy.

The rest of the paper proceeds as follows. Section 2 reviews related literature. Section 3 describes the data and our sample. Section 4 presents evidence on how incidents affect raising follow-up funds. Section 5 examines the economic mechanisms. Section 6 presents evidence on PE firms' engagement with portfolio companies. Section 7 concludes.

[9] In practice, PE firms can engage with their portfolio companies by providing advice, mandating compliance with internal guidelines, or influencing decision making through board seats. For a survey evidence for different types of engagement see Gompers et al. (2016).

## 2 Literature

Our primary contribution is to the nascent literature on ESG and asset management in the private market. Geczy et al. (2021) analyze LP-GP contractual terms of impact funds and do not find direct evidence of tying managerial compensation of the GP directly to impact. Instead, they seem to emphasize GPs giving its LPs more oversight over deal selection, due diligence, and other material processes. Barber et al. (2021) show that dual-objective VC funds (funds also aiming for positive social impact) have lower returns and Jeffers et al. (2022) analyze the risk and return of such funds. Cole et al. (2023) compare the investment patterns of impact and traditional private equity investors and find evidence that impact investors prioritize more geographically disadvantageous regions and emerging industries. Abraham et al. (2022) document the increasing voluntary ESG disclosure by PE firms and, subsequently, more environmental-friendly investment practices. Zhang (2022) studies whether impact investing helps VCs attract future startup deal-flow. Our primary contribution to this strand of the literature is providing novel evidence on the materiality of real portfolio level ESG incidents to GPs in the private equity industry. To the best of our knowledge, we are the first to document that ESG incidents negatively affect the capital raising ability of PE firms. Moreover, unlike previous work which either focuses on specialized impact funds (e.g., Geczy et al., 2021; Jeffers et al., 2022) or on specific industry (Bellon, 2022), we examine the materiality of ESG incidents to a broad class of buyout GPs.

We also contribute to the literature on the determinants of capital raising by private market intermediaries. A large body of literature starting with Kaplan and Schoar (2005) has studied the determinants of fund-raising in PE. Kaplan and Schoar (2005) document a high performance-flow sensitivity in the PE industry. Chung et al. (2012), Hochberg et al. (2014) and Barber and Yasuda (2017) find that interim performance affects the timing and likelihood of raising a follow-up fund. We contribute by showing that E&S incidents in portfolio companies is another determinant of capital raising ability, on top of the factors identified by prior work. We complement previous findings by showing that fund level E&S incidents affect fundraising at both the extensive margin and the intensive margin.

Another related paper is Bellon (2022), who finds that in oil and gas industry, PE ownership reduces pollution but only among firms in states with high environmental enforcement or

greater political risk. We provide evidence that ESG concerns of relationship LPs incentivize PE firms' engagement with portfolio companies to manage ESG risk, which holds after controlling for the level of liability risk. This complements Bellon (2022) by providing another incentive for PE firms to improve ESG performance beyond liability risk. This result also provides evidence related to theoretical models on exerting impact through private market investments (Broccardo et al., 2022; Gupta et al., 2024b). Our work also contributes to the vast literature on real impacts of PE ownership, including increased growth and profitability (Boucly et al., 2011), TFP gains (Davis et al., 2014), long-run innovation (Lerner et al., 2011), pay inequality (Fang et al., 2022), as well as real economic outcomes in specific industries (Bernstein and Sheen, 2016; Ewens et al., 2022; Gupta et al., 2024a).

We also contribute to the broad literature on investor demand for ESG-conscious financial products. Survey and experimental evidence show that investors exhibit social preferences when making investment decisions (Riedl and Smeets, 2017; Bauer et al., 2021). Prior research finds that public market fund investors' social preferences drive capital into better ESG-performing funds (Bollen, 2007; Renneboog et al., 2011; Riedl and Smeets, 2017; Hartzmark and Sussman, 2019; Liang et al., 2022; Ceccarelli et al., 2023). Hartzmark and Sussman (2019) show that investors react to sustainability labels that mutual funds receive. Liang et al. (2022) show that responsible hedge funds are able to attract additional flow and charge higher fees. In our paper, we contribute to this strand of the literature by documenting such a pattern for private market funds.

This paper is also related to a series of papers using RepRisk data for public firms. For instance, Gantchev et al. (2022) document divestment by responsible investors following negative E&S incidents. Gloßner (2021) show that RepRisk incidents predict negative future stock returns, and Derrien et al. (2021) document the negative analyst forecasts revision following such incidents. Duchin et al. (2024) document that firms sell pollutive assets after environmental incidents. von Beschwitz et al. (2022) study how mutual funds react to ESG incidents in their portfolio and Bisetti et al. (2023) show how U.S. firms (customers) react to E&S controversies of their international suppliers. We complement these studies by analysing ESG incidents of private firms.

# 3 Data and sample

This paper explores the effect of ESG incidents on PE firms. This requires detailed data on funds raised by a PE firm, portfolio companies invested in and ESG incidents of the portfolio companies. We use private equity data from Preqin and we employ data from RepRisk to measure ESG incidents. This section describes the datasets in more detail.

## 3.1 Preqin

We collect our private equity data from Preqin. We focus on buyout funds in North America and Europe. This is because buyout firms are in general larger and have better matching rates to RepRisk database. Though RepRisk covers private firms, it typically covers slightly larger private firms. By focusing on buyout funds in North America and Europe, we are able to achieve a reasonable match rate. We use Preqin data spanning from 2000 to August 2023. In addition, we only keep funds with non-missing size, fund multiple and fund series number. We supplement the fund level data with the Limited Partner module, which allows us to identify the LPs that invest in a given fund. We also require the funds to have information on at least one LP from the Preqin LP module.

## 3.2 RepRisk

Our ESG incidents data come from RepRisk. RepRisk produces daily indicators for negative ESG-related incidents that make it to the public domain at the firm level for both public and private firms. It does so via daily analysis of a large set of documents in 20 languages obtained from public sources. The data go back to January 2007. RepRisk classifies ESG incidents according to 28 distinct issues. Environmental issues include news about climate change, pollution, waste issues, etc. Social issues relate to child labor, human rights abuses, etc. Governance issues capture issues such as executive compensation, corruption etc. While prior research uses RepRisk incidents as negative shocks to ESG profiles of public firms (e.g., Derrien et al., 2021), we extend the analysis to private firms. Our RepRisk data spans from 2007 to 2022.

Figure 1 about here.

RepRisk covers ESG incidents for 155,519 firms worldwide, out of which 17,024 are public by 2022 and 138,495 are private. Figure 1 shows the average number of annual incidents over time.

For both public and private firms, the number of incidents increase over time, potentially due to the increasing attention to ESG issues of firms. Public firms have more incidents than private firms, as public firms attract more media attention. In 2022, public (private) firms experience 1.7 (0.2) ESG incidents per year. Figure 2 plots E/S/G incidents separately over time. The number of governance incidents is low at the beginning of the sample and increases to similar levels by 2022. Environmental incidents are the lowest among the three categories. Figure A1 plots the detailed distribution of issues. Public and private firms exhibit similar distributions, though there are slightly more fraud and money-related issues for private firms.

Figure 2 about here.

An illustrative example of an incident of a private firm in our sample is the following. In July 2019, BC Partners, via their BC European Cap X fund, acquired a controlling stake in GardaWorld Security Corporation, a private Canadian security contractor.[10] In 2021, GardaWorld in the capacity of a US government contractor was tasked with building and operating a center for unaccompanied migrant children crossing the US border. Subsequently on June 23, a BBC investigation finds allegations of sexual abuse, Covid and lice outbreaks, a child waiting hours for medical attention, a lack of clean clothes and hungry children being served undercooked meat.[11] This incident spreads through other media reports in the following months and is recorded in RepRisk as a social incident, with related issues "Human Rights Abuses", "Forced Labor" and "Poor Employment Conditions" .

### 3.3 Sample construction and summary statistics

As there are no unified identifiers for private firms between Preqin and RepRisk, we match portfolio companies of PE funds from Preqin to firms in RepRisk using a fuzzy matching algorithm on firm names. We then manually verify the matches using other firm information (e.g., firm location, website, industry etc). We are able to match 1515 portfolio companies, which correspond to 14% of all Preqin buyout deals (in US and Europe after filtering on existence of fund information) and around 1% of RepRisk firms. The low matching rate reflects the low overlap between RepRisk and Preqin, as inclusion of a firm in each database is based on different criteria.

[10] Official statement for the investment can be found on BC Partners' website official website.

[11] The BBC report can be accessed here.

The 1515 firms are invested by 727 funds from Preqin, raised by 385 PE firms and committed by 2165 LPs. Figure 3 shows the distribution of vintage years of these funds. Out of the 385 PE firms in our sample, 123 are from Europe and 262 are from North America. As of 2023, PE firms in our sample have raised 3,763 billion US dollars in buyout funds, which accounts for 62% of buyout funds AUM in Preqin. The average number of buyout funds per PE firm in our sample is 6.2 and the average age is 28 years as of 2023, which is higher than that for the full Preqin buyout universe (2.6 funds and 20 years). The PE firms in our sample are larger and older, which is probably not surprising. If anything, this selection would work against our results as larger and older PE firms are more adept at fundraising. LPs in our sample on average invest in 41 buyout funds and 15 PE firms in our sample, which is also higher than the full Preqin LP universe (5 PE firms and 15 funds).

We only keep the buyout funds that have at least one portfolio company covered by RepRisk during the life of the fund. We, then, aggregate portfolio company level incidents to fund level. Because we do not observe the precise exit date of portfolio companies, we assume a holding period of 5 years from the deal year of each portfolio company, which is the average holding period for buyout funds.[12]

For our analysis, we focus on E&S related incidents. There are two reasons that we separate E&S incidents and G incidents. This follows prior work on ESG incidents (e.g., Gantchev et al., 2022; He et al., 2023) due to the fact that E&S incidents and G incidents are quite different in nature. Moreover, governance issues in the private equity market have already been extensively studied, and therefore are likely to affect PE firms in a different way than E&S incidents. To do so, we follow a two step procedures. First, we divide the total number of incidents of a fund in a year by the number of portfolio companies of the fund covered by RepRisk in that year. We normalise the incidents by RepRisk coverage to account for the size effect, i.e., larger PE funds have more firms covered by RepRisk and thus, may have more incidents. Second, throughout the analysis of the paper, when we accumulate incidents over multiple years, we also take an average across years. This is to avoid any mechanical effect that a longer holding period leads to more cumulative incidents.

[12]Kaplan and Strömberg (2009) provides statistics on average holding period, the median firm exits after 5 years. Recent holding periods seem to have increased to a median of 6 years i.e. Joenväärä et al. (2021). We make the assumption that the average holding period is 5 years during our sample period.

We define follow-up funds as funds in the same series ($fund\_series\_id$ in Preqin) that have adjacent fund series number. In most cases, these funds have unified names. For example, *Kinderhook Capital Fund II* is the follow-up of *Kinderhook Capital Fund I*, and *Kinderhook Capital Fund III* is the follow-up fund of *Kinderhook Capital Fund II*. Such a definition allows us to better compare the size of similar funds, as funds in the same series usually have a similar strategy and comparable size (Fraser-Sampson, 2011). Out of 727 funds, 505 raise a follow-up fund.

In the analysis in which we investigate the change of relative fund size, we construct a fund pair dataset, in which each observation is a Fund N - Fund N+1 pair. This structure allows us directly test how relative size of fund N+1 and fund N is affected by the ESG incidents at fund N. Panel A of Table 1 shows the summary statistics for this data structure. On average, each fund has 2.64 portfolio companies that are covered by RepRisk. In this analysis, we focus on the average number of incidents 2 years before a follow-up fund is raised. Each year a fund experiences around 0.48 ESG incidents, 0.29 of them are E&S incidents and 0.20 are G incidents. This is larger than the full RepRisk private firms sample, likely because we only managed to match larger firms, which attract more media attention. Fund N has an average multiple of 1.86, average series number of 4.25, and average size of $2.93 billion. On average fund N+1 is 1.31 times (exp(0.27)) larger than fund N. In more than 75% of the sample, fund N+1 is larger than fund N. It takes on average 4.32 years to raise a follow-up fund. On average, a fund is invested by 29 LPs, but this varies a lot across funds.

Table 1 about here.

In addition, we also organise the data in the form of a fund-year panel. This data structure allows us to investigate the likelihood and timing of raising a follow-up fund. A fund exists in the sample until a follow-up fund is raised, as we estimate a hazard model. If, no follow-up fund is raised for a fund, it remains in the sample for 10 years since inception. In this sample, following Barber and Yasuda (2017), we restrict our sample to funds raised no later than 2018, to allow enough time to raise a follow-up fund. In the spirit of Barber and Yasuda (2017)'s interim fund performance measure, we construct our measure of E&S incidents by taking the average number of incidents from fund inception year till date. In addition, to control for aggregate

time-variation of fund raising, we also control for year-level multiple for all buyout funds. Panel B of Table 1 shows the summary statistics for this data structure. The distribution of variables are similar to Panel A.

To investigate a LP level effect, we also construct a fund-LP dataset using the LP module from Preqin. Preqin contains information on LPs of the fund for most of the funds in our sample. The 505 funds and follow-up funds in our sample are invested by 2083 unique LPs. The data is structured in the form of a fund sequence with each observation representing a fund-LP pair with information on the follow-up fund raised. Therefore, in this data structure we have 1,051,915 ($505 \times 2083$) observations. To capture the relationship between the PE firm and its LPs, we also construct a measure of how many previous buyout funds a LP has invested in for a given PE firm. The summary statistics are presented in Panel C of Table 1. As expected, in the fully expanded LP-fund data, only a small proportion (around 1%-2%) of LPs invest in a given fund. Around 1% of LPs have ever invested in a previous fund of a given PE firm. The distribution of incidents, fund size, fund multiple and fund series number are the same as in the fund sequence data structure in Panel A. On average, a LP invests in 12 funds in our sample.

Among all the LPs, 64% are based in North America and 28% are in Europe.[13] Among LPs in the US, 74% are based in Democratic states and 26% are based on Republican states based on 2016 election results. 8% of the LPs are publicly listed, out of which 30% are insurance companies, 19% are banks, 7% are asset managers, and 6% are listed fund of fund managers.

# 4 ESG incidents and follow-up funds

GPs charge an annual management fee that is calculated as a percentage of committed capital. This links the compensation of the GP directly to its ability to raise capital via a follow-up fund. Failure to fund raise therefore presents a substantial cost for GPs. In this section, we study whether incidents at a fund hamper the ability of a GP to raise a follow-up fund. We test the impact of incidents on fund raising on both the *intensive* and *extensive* margin.

[13]The rest of LPs are based in Asia (3%), Middle East (2%), Australia (1%), and less than 1% in Latin America and Africa.

### 4.1 Intensive Margin

We start with the impact on the intensive margin. In other words, we ask the question: Conditional on raising a follow-up fund, are follow-up funds smaller following ESG incidents? Following prior work (e.g., Gantchev et al., 2022; He et al., 2023), we split incidents into E&S incidents and G incidents as they are quite different in nature. In this analysis, we organise the data into a fund N-fund N+1 pair structure, in which each observation is a pair of fund N and follow-up fund, fund N+1. We investigate how the relative size of fund N+1 is associated with ESG incidents of fund N. The summary statistics of this sample are exhibited in Panel A of Table 1.

Specifically, we estimate the following equation:

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

where $i$ denotes a fund N-fund N+1 pair. $N$ indexes the current fund and $N+1$ indexes the follow-up fund in the same series raised by the same PE firm. The dependent variable is the natural logarithm of ratio of size of fund N+1 and fund N, which captures the size growth of the follow-up fund. $E\&S\ incidents_{N,i}$ is the average number of incidents two years ($[t-2, t-1]$) before fund N+1 is raised.[14] The coefficient of interest is $\beta$, which captures the effect of E&S incidents on the size growth of fund N+1. We add multiple control variables to the regressions. $log(multiple)_{N,i}$ is the natural logarithm of the multiple (performance) of fund N. $log(size)_{N,i}$ is the natural logarithm of size of fund N. $log(series)_{N,i}$ is the natural logarithm of the series number of fund N. $IndustryControls_{N,i}$ denotes the ratio of investments of fund $N$ in each industry before fund $N+1$ is raised.[15] $Vintage_{N,i} \times Vintage_{N+1,i} \times Region_i$ denotes the interaction of {fund N vintage year, fund N+1 vintage year, PE region} fixed effects. We double cluster the standard errors by PE firm and by pairs of vintage years to correct for correlation of standard

[14] We define the variable $num\ E\&S\ incidents = (\frac{\#\text{E\&S incidents}_{t-1}}{\#\text{Reprisk covered firms}_{t-1}} + \frac{\#\text{E\&S incidents}_{t-2}}{\#\text{Reprisk covered firms}_{t-2}})/2$, where $t$ indicates the year fund $N+1$ is raised. We take the average, instead of sum, to have a fair comparison between funds with high vs. low number of firms covered by RepRisk.

[15] Essentially, $IndustryControls_{N,i}$ is a vector of 10 (10 industries), where each entry is the number of investments in a specific industry divided by total number of investments.

errors within PE firms and within vintage years (e.g. variation of capital supply).

We include granular vintage year of fund $N$ and $N+1$ and PE Region fixed effects to control for capital supply effects, i.e. the fact that the availability of capital from investors tends to vary over time and across regions. We include the control variables to isolate the effect of $E\&S$ incidents from the performance, size, series number. For instance, without the control for performance the number of $E\&S$ incidents may be correlated with the quality of the GP's fund (e.g., GPs who are worse at managing there investments may be more likely to both have a lower performance and more incidents). Along the same lines, we control for fund $N$ size since larger funds may attract more attention and hence experience more $E\&S$ incidents. Since the industry composition as well as the degree of specialization of fund $N$'s portfolio may affect the likelihood of E&S incidents and as well as the growth in size, we also control for the industry composition of fund $N$'s portfolio.[16] Intuitively, coefficient $\beta$ captures the difference in fund size growth, comparing two funds located in the same region, who have raised their fund $N$ and $N+1$ in the same vintage years, but one experiences E&S incidents and the other does not.

Table 2 about here.

The results are presented in Table 2. The coefficients of all the control variables are as expected: Larger funds and funds in older series grow less and there is a strong performance-flow relationship (e.g., Kaplan and Schoar, 2005). In column 1, we present the results with only vintage year fixed effects and PE region fixed effects. We find the negative and significant association between E&S incidents and the relative size of funds. This negative association is robust to interacting PE region fixed effects with vintage year fixed effects (column 2). The result is also robust and becomes economically stronger when we control for industry composition of fund $N$'s portfolios (column 3). The economic magnitude of the coefficient is meaningful. A 100% increase in number of incidents decreases the size of follow-up funds by 8.3% (column 3). Alternatively, a one standard deviation increase in the log average number of incidents (0.27) leads to around 2.2% smaller follow-up funds. To better understand the magnitude, we categorize funds experiencing incidents into two groups based on the median number of incidents, and replace the independent variable with dummies indicating high vs. low number of incidents

[16] For instance, funds that are more specialized and invest in an industry that is more likely to experience a high level of incidents may grow less.

(the baseline is therefore the funds with no incidents). Relative to funds with no incidents, funds with above-median incidents have 8.9% - 12.6% smaller follow-up funds (column 4-6). This effect is economically large. For example, to compensate for the 12.6% decrease in size from having above-median number of incidents, the PE firm would have to increase its current fund performance by a scale of 1.6 (0.126/0.211), which is of considerable magnitude for a fund manager.

Our results are robust to using alternative measures. In Table A1, we change the horizon at which we accumulate incidents from 2 years to 1-6 years. Our results remain robust and the effect is weaker as we expand the window of incidents, which implies that incidents closer to fund raising have a stronger impact on the size of follow-up funds. In Table A2, we replicate the same regressions while controlling for different functional forms of fund multiple to take into account any non-linear effects of (log) fund multiple. Our result remains robust across specifications. Furthermore, our result is also robust to using IRR as the measure of fund performance (column 1-2 in Appendix Table A3). Another concern is that fund performance may not be fully observable when the follow-up fund is raised. Following Harris et al. (2014), we use Preqin cash flow data to construct interim fund multiple and Kaplan-Schoar public market equivalent (PME). Our result is robust to controlling for the observed fund multiple or PME at the time of raising a follow-up fund (column 3-6 in Appendix Table A3).

In Table A4, we estimate the same specification as in Equation (1), replacing E&S incidents with G incidents. We do not find any effect on fund size from experiencing portfolio level governance incidents. This is not surprising as corporate governance has already been a focus area in the PE industry and governance incidents likely affect PE firms in a different way than E&S incidents.[17]

In summary, we find that $E\&S$ incidents for the current fund affect the subsequent fund size growth. The effect increases by number of incidents and is particularly strong for funds experiencing an above median number of incidents, while the same does not hold for $G$ incidents.

[17]For instance, survey evidence by Gompers et al. (2016) finds that GPs are particularly focused on adding value through improving governance.

### 4.2 Extensive Margin

We, then, test the impact of E&S incidents on fund raising on the extensive margin. In other words, we ask the question: Do E&S incidents affect the likelihood of raising a follow-up fund? Since the probability of raising a follow-up fund varies over the lifespan of a fund the life of a fund - it is initially low, peaking mid way and then declining, we follow Barber and Yasuda (2017) and employ a proportional hazard model to study the timing of raising a follow-up fund.

We start by plotting the Kaplan-Meier survival graph that depicts the cumulative survival probabilities, i.e., probability of not having yet raised a follow up fund. Figure A2 depicts the survival probability up to ten years from inception of the current fund. Number at risk represents the number of funds that have not yet raised a follow-up fund. We can see from the graph that most fundraising events occur between year 3 and year 8 since current fund inception, which is consistent with the results of Barber and Yasuda (2017). By 10 years since fund inception, about 75% of funds in our sample raise a follow-up fund.

We, then, estimate a hazard model, in which a "failure" event for a given fund $N$ is defined as raising a follow-up fund. Fund $N$ remains in the sample from inception for up to 10 years or until it raises a follow-up fund. We estimate the hazard rate using a Weibull proportional hazard model, which takes the following form:

$$\begin{aligned} h(t) &= h_0(t)exp(x_t\beta) \\ x_t\beta &= \alpha + \beta_1 log(1 + E\&S\ incidents_t) + \beta_2 log(multiple) + \beta_3 log(size) + \beta_4 log(series) \\ &+ \beta_5 log(buyout\ multiple)_t + Industry\ Controls_t, \end{aligned} \tag{2}$$

where $x_t$ is a vector of covariates; $h_0(t)$ is the baseline hazard rate equal to $pt^{p-1}$ with $p$ as the shape parameter. Time $t$ is measured in years since inception of fund $N$. $E\&S\ incidents_t$ is the average number of $E\&S$ incidents up to year $t-1$.[18] Similar to the intensive margin analysis, we also divide the incidents into $Low\ E\&S\ Incidents$ ($High\ E\&S\ Incidents$), which indicates below (above) median number of $E\&S$ incidents for each vintage year until year $t-1$ in the fund-year panel, conditional on an incident. As a result, the omitted category is funds with no E&S incidents. Similar to Equation 1, we include logarithm of fund size, fund multiple and

[18]Note that we normalize the number of incidents by the number of years before a follow-up fund is raised as described in Section 3. Therefore, the number of incidents do not increase with the number of years a fund exists in the sample.

fund series as control variables. $Industry\ Controls_t$ denotes separate controls for the proportion of investments in each industry sector at time $t$. In addition, since we cannot control for year fixed effect in the hazard model, we follow Barber and Yasuda (2017) and control for log of net multiple of all active buyout funds in a given year to control for the hot market effect (timing of raising a fund with respect to overall market performance).

Table 3 about here.

Table 3 reports the results. In column (1), the coefficient on $log(1 + E\&S\ incidents_t)$ is negative and statistically significant, which implies a lower likelihood of raising a follow-up fund following incidents.[19] In column (3), we re-estimate the model including *Industry Controls*. Intuitively, this controls for the fact that funds with a given industry composition may be more likely to raise a follow-up fund (for instance, if they happen to specialize in an industry that is doing particularly well). Funds are more likely to fundraise when they perform better, if they have raised a larger fund in the past or if the buyout industry performs better. The magnitude on the log coefficients measures the percentage increase (decrease) in the hazard rate for a percentage increase (decrease) in the coefficient. In specification (3), we find that a 10% increase in the number of E&S incidents decreases the hazard rate by around 4.8 %.

In Columns (2) and (4), we estimate Equation (2) using a categorical variable for number of $E\&S$ incidents. $Low\ E\&S\ Incidents$ ($High\ E\&S\ Incidents$) takes a value 1 for below (above) median number of $E\&S$ incidents until year $t-1$ for each vintage year cohort for each region. The variable takes the value 0 for funds that do not experience any incidents until year $t-1$. Funds that experience incidents are less likely to raise a follow-up fund in the next year compared to fund that do not experience incidents. In terms of economic magnitude, the hazard ratio of raising a follow-up fund for below median number of incidents is 0.764 (exp(-0.269)). This implies that funds that experience below median number of incidents have a 23.56% (1-0.764) lower hazard rate of raising a follow-up fund in the next year compared to funds that do not experience any incidents. Similarly, funds that experience above median number of incidents have a 32.09% lower hazard rate of raising a follow up fund in the next year compared to funds

[19] Since we cannot control for fixed effects in the hazard estimation, we demean log average number of incidents to remove the trend in number of incidents to make it consistent with the categorical variables used in columns 2 and 4. This is also consistent with the intensive margin regression with fixed effects in Equation (1).

that do not experience any incidents. This effect is also economically large, as this is equivalent to the hazard rate of raising follow-up funds brought about by a scaling-up of fund performance by 1.5 (0.375/0.694).

Figure 4 about here.

To visualize the effect and make the economic magnitude more intuitive, we then proceed to plot the post-estimation fitted failure function that corresponds to the probability of raising a follow-up fund in Figure 4. The function is evaluated at overall means of covariates at each duration (number of years since inception of the fund). We can see from the figure that the conditional probability of raising a follow-up fund ("failure") for funds that do not experience an incident is higher than the probability of raising a follow-up fund for funds that experience below or above median number of incidents. Estimates imply that 5 years after inception, funds that do not experience incidents have a probability of raising a follow-up fund of 42.49%, whereas funds that experience above median number of incidents have a lower probability of 31.32% of raising a follow-up fund.

One potential concern of endogeneity in our analysis could be about media attention. As larger firms attract more media coverage, it is plausible that larger private equity (PE) firms or those with investments in high-profile companies tend to experience a higher number of E&S incidents. However, larger PE firms or those invested in "superstar" firms should find it easier to secure follow-up funding due to increased visibility. This contradicts our findings that E&S incidents are associated with a lower likelihood of raising a follow-up fund. Moreover, to further mitigate this concern, we control for fund performance and size in all our specifications. Our results suggest that E&S incidents actually reduce the ability to raise subsequent funds, indicating that media attention does not account for our findings.

### 4.3 GP reputation and impact of E&S incidents

Prior research (e.g., Gompers and Lerner, 1999; Ljungqvist et al., 2020) has shown that reputation plays an important role in the PE industry. For instance, GPs who are young and raise their first fund have a hard time attracting capital from investors, whereas GPs with longer and better

performance history typically have a much easier time fundraising (Demiroglu and James, 2010).

We postulate that the high reputation of the private equity (PE) firm moderates the impact of E&S incidents on subsequent fund-raising ability. Given the variability in skill levels, historical capital-raising abilities, and track records among different general partners (GPs), some GPs may enjoy preferential treatment. For investors, not committing to the follow-up fund managed by these GPs could entail significant costs. Alternatively, investors may perceive GPs with established track records and a longer history as better equipped to address portfolio-related incidents. These arguments suggest that a firm's reputation can alleviate some of the adverse consequences of environmental and social incidents on follow-up fund-raising.

Table 4 about here.

Following existing literature, such as Barber and Yasuda (2017), we categorize PE firms based on their age, size and performance. Specifically, we define a PE firm as low reputation if (i) if number of funds raised is in the bottom three quartiles of all PE firms, (ii) if total AUM raised in the past is in the bottom three quartiles, and (iii) if the PE firm has no top-quartile performing funds that are more than five years old. We also generate a combined measure of low reputation if (i), (ii), and (iii) hold at the same time.

We then estimate equations similar to Equation 1 and 2 but split the coefficients of interest into high and low reputation groups based on different reputation measures. The results are presented in Table 4, where Panel A presents the results for intensive margin and Panel B for extensive margin. The negative effect of E&S incidents mostly concentrate among smaller PE firms (column 1), younger PE firms (column 2) and worse-performing PE firms (column 3). This is also consistent with the combined reputation measure (column 4). This result supports our hypothesis that high PE firm reputation can attenuate the impact of E&S incidents.

Overall, the results suggest that for funds experiencing E&S incidents, it is harder to raise follow-up funds and the follow-up funds are smaller. This effect mainly comes from the low-reputation PE firms. Raising a follow-up fund is an outcome that GPs care about to a great extent since it is directly linked to their compensation. These results indicate that $E\&S$ incidents are material for GPs.

# 5 Economic Mechanism

Our results indicate that E&S incidents are overall costly for GPs, particularly low reputation GPs. In this section we investigate the underlying reasons. We propose two economic mechanisms that could drive this result and provide empirical evidence to disentangle them.

***Performance Channel:*** The first channel is investors learning about fund performance. Prior research has shown that E&S incidents hurt the financial and operating performance of public firms (e.g., Glo$\beta$ner, 2021; Derrien et al., 2021). E&S incidents may make PE firms harder to exit a portfolio company and, therefore, E&S incidents may be interpreted as a bad signal for PE firms' performance. This would lead purely financially motivated investors to divest from PE firms after observing an E&S incident. In this framework, one would expect the effect to be stronger for low reputation PE firms. As investors have more precise priors for high reputation PE firms (from a long and positive performance and fundraising history), additional signals regarding fund performance will have a limited effect on the updating of investors' beliefs (Barber and Yasuda, 2017).

***E&S Concerns Channel:*** The second channel is investors' E&S concerns, i.e., disutility from holding firms with E&S issues. Even if E&S incidents are not signals about fund performance, investors who care about their portfolio's E&S footprint, i.e. E&S-concerned investors, may still divest due to higher disutility from holding portfolios with E&S issues. In this framework, one would also expect the effect to be stronger for low reputation PE firms. This is because high reputation PE firms are better performers and divesting from them is more costly.[20] As a result, even for E&S concerned investors, there is a trade-off between their disutility from bad E&S practices and cost of divestment. This predicts a stronger impact on fundraising for low reputation firms, for whom the cost of divestment is lower.

## 5.1 E&S incidents and fund performance

We start with testing the fund performance channel. In particular, we analyse whether E&S incidents are correlated with fund performance. In other words, can LPs (with imperfect information

[20] Since there is performance persistence in private market funds (e.g., Kaplan and Schoar, 2005; Harris et al., 2014), by divesting from high reputation PE firms LPs may sacrifice more future performance.

on fund performance) learn about fund performance by observing negative E&S incidents? We start by testing whether the performance of funds is correlated with the *same* fund's level of E&S incidents. Note that full performance of the current fund is typically not fully realized and not available to LPs when the follow-up fund is raised (see, e.g., Phalippou, 2019). Specifically, we test this hypothesis by estimating the following regression:

$$\begin{aligned} Perf_{N,i} = \alpha + \beta\, log(1 + E\&S\ incidents_{N,i}) \\ + Controls_{N,i} + Vintage_{N,i} \times Vintage_{N+1,i} \times Region_i, \end{aligned} \tag{3}$$

where $Perf_{N,i}$ is the performance of fund N, measured by the natural logarithm of the fund's net multiple or IRR. We use the same measure of environmental and social incidents, set of control variables and fixed effects as in Equation (1).

Table 5 about here.

The results are reported in Table 5. In columns (1) to (4) we measure performance using the fund multiple of invested capital. In columns (5) - (8) we measure performance using IRR. First, we confirm a negative relationship between fund size and performance, which is consistent with previous findings (e.g, Kaplan and Schoar, 2005; Lopez-de Silanes et al., 2015). The number of observations in columns (5) - (8) is lower since the coverage of fund IRR as a performance metric for our sample is lower than fund multiple. Across all specifications, we do not find a robust significant correlation between the level of E&S incidents and fund performance. Funds with high and low incidents raised in the same region and in the same vintage year do not seem to differ in performance.

In appendix Table A8 we extend the analysis above using a full set of funds not conditional on raising a follow-up fund. In columns (3) - (8) we still do not find a robust significant correlation using standard performance measures in the PE literature. To address the potential performance reporting bias in Preqin,[21] similar to Andonov et al. (2021) we proxy performance by the fraction of successfully exited investments ten years since fund inception. Again, we do not find evidence that E&S incidents correlate with fraction of successful exits in a larger sample

[21] For instance, Brav et al. (2023) report a finding that funds with better performance are more likely to have performance measure available in Preqin.

unconditional on observing a performance measure in Preqin.

Even though the current fund's performance seems uncorrelated with incidents, experiencing an incident may be correlated with future fund performance. For instance, LPs may believe that experiencing a high number of incidents may hurt the GP's future performance, through affecting its deal flow, i.e., the ability to source future deals.[22]

Table 6 about here.

Alternatively, LPs may expect fund manager turnover following E&S incidents, which affects performance of future funds. We estimate a cross-sectional regression similar to Equation (3) and replace the dependent variable as performance of fund N+1. In the regression, we control for performance of fund N to control for persistence in performance at the GP level. Table 6 presents the results. In specifications (1)-(4), we use the follow-up fund's multiple and in specifications (5)-(8) we use the follow-up fund's IRR as measures of performance. First, note that over our sample period we confirm a strong performance persistence, which has been documented by prior work for buyout funds (e.g., Kaplan and Schoar, 2005; Korteweg and Sorensen, 2017; Harris et al., 2023). The coefficients of E&S incidents are significantly negative when using IRR as performance measure. However, this relationship does not exist when using multiple as the measure. This significance may be driven by the smaller sample size and potentially some extreme value in the IRR measure. Therefore, we conclude with the absence of robust and significant correlation between the level of E&S incidents and the performance of follow-up funds.

Overall, we do not find a strong correlation between E&S incidents and the performance of the current or the follow-up fund. This suggests that at least in the short run, incidents do not seem to be strongly correlated with performance. We acknowledge the possibility that LPs may be concerned that over the long run, due to high likelihood of ESG regulation, the performance of GPs facing E&S incidents cannot be sustainable, in which case they may prefer to exit early. However, we do not have a long enough period to test this hypothesis. Another caveat of this analysis is that we may not have enough statistical power due to limited sample size. In general,

[22]Several papers have argued that deal flow is an important factor in determining venture capital and private equity performance (e.g., Ewens and Rhodes-Kropf, 2015; Fuchs et al., 2021; Korteweg and Sorensen, 2017). For instance, in an experimental setting and in the VC context, Zhang (2022) finds that impact VCs focused on social issues are favoured by certain founders.

we conclude that we do not find significant evidence that E&S incidents could be interpreted as a signal for fund performance.

## 5.2 Investors' E&S Concerns

Since E&S incidents do not seem to correlate negatively with fund performance, we turn to examine the investors' E&S concerns channel. First, we document that the decrease in capital raised is driven by a reluctance of relationship LPs to commit capital to the follow up fund of the GP, as opposed to failure of the GP to attract new investors.

### 5.2.1 Divestment by Relationship LPs

Unlike the public market, the private market is characterised by the existence of relationships between GPs and their investors. LPs who invested in a past fund of a GP are more likely to participate in future funds raised by the same GP.[23] Given that we have documented an effect of E&S incidents on future fund raising, in this section we explore whether this decrease in capital commitments comes from the GP's failure to maintain its existing LP base (i.e., relationship LPs) or failure to attract investments from new LPs.

It is important to note that losing a relationship LP, i.e. failure to get an LP recommitting to new funds, is rather costly for the GP. In Appendix Table A6, we show that relationship LPs on average commit more capital to the GP than other LPs. Therefore, it's not easy for a GP to substitute the capital loss with new LPs. Moreover, non-relationship LPs may interpret the loss of a relationship LP as a negative signal and may be reluctant to invest in the GPs' follow-up funds.

This motivates us to first examine whether E&S incidents affect the LP-GP relationship. In the spirit of the relationship banking literature (e.g., Chodorow-Reich, 2014), we structure the data as a fund N+1 - LP network structure, where each observation is a pair of fund N+1 and

[23]For instance, due to variations in skill levels, style and the persistence of returns, certain General Partners (GPs) may be more favoured than others (Kaplan and Schoar, 2005; Harris et al., 2023). Simultaneously, due to their differing tolerance for illiquidity, some Limited Partners (LPs) become more desirable to certain GPs (Maurin et al., 2023).

LP. We include all LP-fund pairs in the sample. We, then, estimate the following regression:

$$\begin{aligned} D(Invest)_{l,N+1} = \alpha &+ \beta Relationship\ LP_{l,N+1} \times E\&S\ incidents_N \\ &+ \theta Relationship\ LP_{l,N+1} + \psi E\&S\ incidents_N \\ &+ Controls_N + \\ &+ \gamma_{l,vintage,region} + \varepsilon_{l,N}, \end{aligned} \tag{4}$$

where $l$ denotes an LP, $N$ denotes current fund, and $N$+1 denotes the follow-up fund. $D(Invest)_{l,N+1}$ is a dummy variable indicating LP $l$ invests in fund $N+1$. $Relationship\ LP_{l,N+1}$ is a dummy variable which equals 1 if LP $l$ invested in any other fund of the PE firm before fund $N+1$ is raised. $\gamma_l$ denotes the LP $\times$ fund raising year $\times$ region fixed effects. This is to control for supply of capital at the investor level that may cause LPs to invest more or less (or to specialise) in certain regions in certain years. Coefficient $\theta$ captures the persistence of the LP-GP relationship, i.e., the likelihood of investing in a fund if LP has an relationship with the GP. $\beta$ captures how E&S incidents affects this relationship.

Table 7 about here.

First, in columns (1) and (2) in Table 7 confirms existence of the LP-GP relationship. Column (1) suggests that after controlling for LP average market share, an LP who has had a prior relationship with the GP is 31.0 percentage points more likely to invest as a LP in the follow-up fund of the GP. In column (2), we include fund FE, which absorbs underlying fund characteristics such as size, performance and series of a fund and overall GP style focus. The relationship still remains.

In column (3), we add log number of incidents in the equation where we do not observe any significant overall effect. In column (4), the interaction between $Relationship\,LP$ and $E\&S\,incidents$ is negative, which suggests the having E&S incidents lowers the likelihood that relationship LPs re-invest in a follow-up fund. This effect remains robust to controlling for fund fixed effects (column 5). It is also robust to controlling for the interaction between relationship LP and fund performance. In terms of economic magnitude, a one standard deviation increase in the number of incidents implies a 9.6% ($0.27\times0.120/0.336$) decrease in the re-investment propensity. Another interesting observation is that the coefficient of log number of incidents is weakly significantly positive in column (4), which implies that the PE firms substitute loss of

relationship LPs with non-relationship LPs.

### 5.2.2 E&S-Concerned Relationship LPs

Our analysis indicates that E&S incidents reduce the likelihood of reinvestment by already existing investors. We next examine which subgroups of investors react more strongly to E&S incidents. We hypothesize that LPs with higher E&S concerns are more likely to end their relationship with GPs following E&S incidents.[24] First we classify LPs into a broad regional classification *European*, *NorthAmerican* and *Others* based on the headquarters of the LPs. Since institutional investors in Europe exhibit more sustainability interests than their US counterparts (Gibson Brandon et al., 2022), we expect European LPs are more E&S-concerned than US LPs, and are more likely to cut their relationship following E&S incidents. Moreover, within US LPs, we categorize LPs into Democratic and Republican based on the political leaning of the state where they are headquartered. We define Republican and Democratic states based on the 2016 presidential election results.[25] Di Giuli and Kostovetsky (2014) show that firms located in Democratic-leaning states invest more in corporate social responsibility and have higher E&S scores. We expect LPs in Democratic states to be more E&S concerned and are more likely to end relationship with GPs following E&S incidents.[26] We also categorize LPs into public and private LPs based on LPs' listing status. We hypothesize that public LPs are more ESG-concerned due to disclosure requirements and public market pressure compared to private LPs.

Table 8 about here.

Figure 5 about here.

We run regressions similar to Equation 4 but split the LP coefficients into subgroups based on definitions above. Table 8 presents the regression results and Figure 5 plots the key coefficients of interests. In column 1 of Table 8 and subfigure (a) of Figure 5, the results show that

[24] These E&S concerns can be arise from inherent LP preferences or induced by regulation or scrutiny pressure.

[25] Our results are robust to excluding swing states in our analysis.

[26] Recently, some Republican leaning states (e.g. Texas and Florida) have adopted anti-ESG legislation limiting ESG considerations in public asset allocation (Garrett and Ivanov, 2022).

European LPs are more likely to break the relationship with GPs following E&S incidents. The economic magnitude for European LPs is more than 5 times larger than North American LPs. LPs based in other regions have a propensity of ending relationship that is between Europe and US.[27] Within US, LPs located in democratic states are more than three times more likely to cut relationship than LPs located in republican states following E&S incidents (column 2 and subfigure b). Finally public LPs are more than three times more likely to cut relationship compared to private LPs (column 3 and subfigure c).

In Appendix Figure A3 Panel (a) we repeat the estimation of democratic and republican LPs but removing "swing" states, i.e. states that have changed their voting patten during our sample period.[28] In Figure A3 panel (b) we split the coefficients by whether the LP is a PRI-signatory. The PRI-signatories and non PRI-signatories have similar tendency to end their relationship with GPs following E&S incidents.

Overall, the results show that LPs with presumably higher ESG concerns are more likely to end their relationship with GPs following E&S incidents. This result also provides rationale on why E&S incidents decreases the size of follow-up funds as shown in section 4. The decrease comes from the fact that ESG-concerned LPs stop recommitting to follow-up funds of PE firms.

### 5.2.3 The Trade-off between E&S Concerns and Cost of Divestment

In the previous subsection we showed that investors with higher E&S concerns are more likely to divest following E&S incidents. In this section, we investigate whether investors trade-off their E&S concerns with the cost of divestment, proxied by PE firm reputation. As discussed at the beginning of Section 5, high reputation PE firms are better performers and divesting from them is more costly in terms of future financial performance.

Table 9 about here.

To test this, we run regressions similar to those in Table 8 but estimate the regressions sep-

[27]The top countries (regions) that LPs in *Others* category are: Australia, Israel, Japan, South Korea, Taiwan, Hong Kong SAR. In total they account for 62% of number of LPs in the *Others* category.

[28]States that have changed their voting pattern in our sample are: Arizona, Florida, Georgia, Iowa, Michigan, Ohio, Pennsylvania and Wisconsin.

arately for low and high reputation PE firms, defined as young, small and low-performing PE firms as in Section 4.3. The results are presented in Table 9. As can be seen, for low reputation firms, investors with both low and high E&S concerns divest following E&S incidents (column 1, 3 and 5). In contrast, for high reputation firms, only investors with high E&S concerns divest following E&S incidents (column 2, 4 and 6). This result provides clear evidence that, following E&S incidents, investors optimally choose a divestment strategy while trading-off their E&S concern with the cost of divestment. When the cost of divestment is low, both low and high ESG concerned investors divest. However, when divestment is costly, LPs with low E&S concerns choose to not divest because the cost of divestment is too large compared to their E&S concerns. As a result, only LPs with high E&S concerns (European, Democratic and Public) divest from high reputation PE firms.

Moreover, in Table 9, the coefficient on $log(1 + num.E\&S\ incidents)$ is positive and statistically significant only for high reputation PE firms. This suggests that it's easier for high reputation PE firms to replace a relationship LP with a non-relationship LP to compensate for the divested capital. But this is not the case for low reputation PE firms. This finding provides another rationale for the heterogeneous effect of capital decrease by PE reputation in Table 4. E&S incidents have a larger impact on low reputation PE firms first because investors do not find it costly to divest from them. Moreover, even though some E&S-concerned relationship LPs divest from high reputation PE firms, these PE firms find it easier to find substitutes for the divested capital.

Overall, we do not find evidence supporting the performance channel. Our results are more consistent with an economic mechanism where the impact of E&S incidents on fundraising derives from investors' ESG concerns. Relationship investors are less likely to re-commit to a follow-up fund of the GP if the current fund experiences E&S incidents, and higher E&S concerned investors react more strongly. Due to high cost of divestment, high reputation PE firms suffer less as investors trade off their E&S concerns with cost of divestment. High reputation PE firms lose capital only from E&S-concerned relationship LPs, and are able to find substitutes for them. Due to low cost of divestment, low reputation PE firms suffer more and this in turn hampers their ability to raise a follow-up fund.

# 6 PE Firms' Engagement

We have established that incidents are costly for PE firms and impede their ability to raise capital. E&S concerned investors are less likely to recommit capital to follow-up funds of a GP following an E&S incident. In this section, we investigate whether PE firms that rely primarily on E&S concerned investors strive to mitigate this cost. Specifically, we test whether GPs with a significant base of E&S concerned investors engage with their portfolio companies on E&S issues post-investment, aiming to achieve better E&S outcomes.

We structure the data to a portfolio company-year panel, where each year we can observe the number of E&S incidents and the RepRisk Index of the portfolio company. The RepRisk Index reflects the risk of a firm having future incidents. It ranges from 0 to 100 where 0 indicates lowest risk. We employ a standard difference-in-differences specification to test whether portfolio companies of GPs with E&S concerned investors decrease E&S risk post-investment, compared to portfolio companies of other GPs. Portfolio companies of GPs with above median proportion of E&S investors (Europe, Democratic-state and public LPs) are considered to be "treated" and those of GPs with below median proportion of E&S investors form the control group. In this analysis we restrict the window to be $[-2, 6]$ years around the PE investments. We estimate the following specification in the portfolio company-year panel:

$$\begin{aligned} Y_{i,t} = \beta \, (&\text{Post-investment}_{i,t} \times \text{High proportion of E\&S concerned LPs}_i) \\ &+ \theta_{\text{deal year} \times t} + \gamma_i + \epsilon_{i,t}, \end{aligned} \tag{5}$$

where $Y_{i,t}$ is $log(1 + E\&S\ incidents_{i,t})$ at portfolio company $i$ in year $t$ or RepRisk index of portfolio company $i$ in year $t$. $Post-investment_{i,t}$ is a dummy variable that takes the value 1 in all years after investment by a PE firm, 0 otherwise. High proportion of E&S concerned LPs is a dummy variable that takes the value 1 for PE firms with an above median proportion of E&S concerned relationship LPs one year before the investment. E&S concerned LPs are defined as LPs headquartered in Europe, LPs headquartered in a democratic leaning state of the US or LPs that are publicly listed. $\gamma_i$ indicates portfolio company fixed effects which control for time-invariant characteristics at the portfolio company level. $\theta_{\text{deal year} \times t}$ indicates the deal-year $\times$ year fixed effects. Intuitively, we compare the change of E&S risk of two portfolio companies (before

and after receiving PE investment) that receive PE investment in the same deal year, where one portfolio company (treated) receives PE investment from a GP with high E&S concerned LPs, and the other (control) from a GP with low proportion of E&S concerned LPs. In other words, if there is any effect on E&S risk brought about by PE investment in general, it will be absorbed by the deal-year × year fixed effects, as it will affect both our treated and control group.

Table 10 about here.

The results are presented in Table 10. Columns 1-3 of Table 10 report the results with $log(1 + E\&S\ incidents_{i,t})$ as the dependent variable and columns 4-6 report the results with RepRisk index as the dependent variable. The results indicate that there is a decrease in E&S risk post-investment by GPs with E&S concerned investors. The coefficient in column 1 implies that post-investment by a GP with E&S concerned LPs, there is a 3.4% decline in the number of E&S incidents. The result is robust to different specifications and the magnitude of the coefficient remains virtually unchanged as we add further controls. Industry × year FE control for aggregate shocks at the industry level that may lead to higher incidents in an industry in a given year. Column 3 controls for country/state × year FE, in addition to industry × year FE.[29] This specification controls for country or state specific regulatory changes that may incentivize PE firms to engage with their portfolio companies as in Bellon (2022). We show that PE firms with E&S concerned LPs engage with their portfolio companies to improve E&S outcomes over and above the effect that may come from state specific regulation.

In columns 4-6, we run the same specification using RepRisk index and find similar results. RepRisk index is an index developed by RepRisk that captures the risk exposure of a company to ESG issues.[30] We find that post-investment by GPs with above median proportion of E&S concerned investors, the RepRisk index of portfolio companies significantly decreases. The effect is economically significant. The coefficient in column 4 implies a decrease of 0.77 in the RepRisk index post-investment by GPs with E&S concerned LPs, which represents a decrease of 20.84% relative to the mean RepRisk index of 3.70. The result is robust to including industry × year FE and country/state × year FE. The coefficient remains very stable across different

[29]The country/state variable is defined as the respective country for countries outside the US and as the respective state for the US.

[30]RepRisk index ranges from 0 to 100 and 100 indicates highest risk.

specifications. Appendix Table A10 shows that our results are robust to alternative specifications of the dependent variable including IHS (inverse hyperbolic sine) transformation of E&S incidents and log(1+RepRisk index).

Figure 6 about here.

Figure 6 presents the dynamic results in event time. There is no pre-trend before PE investments, and there is a decline in the number of E&S incidents at portfolio companies after receiving investment from PE firms with a high proportion of E&S concerned LPs. It takes some time for the effect to show up and we see a decline starting year 3 from the year of the investment. Our interpretation is that it takes time to put in place policies and procedures to change E&S outcomes at portfolio companies. Along similar lines, we see a decline in the RepRisk index in the dynamic specification in event time in Panel B of the Figure. Appendix Figure A4 presents the results of the dynamic specification for the alternative specifications of the dependent variable and results are similar.

We attribute the decrease in E&S risk at portfolio companies of GPs with E&S concerned LPs to engagement by the PE firm on E&S issues. In practice, PE firms can engage with their portfolio companies by providing advice, mandating compliance with internal guidelines, or influencing decision making through board seats. We acknowledge that we cannot fully rule out the possibility of a screening channel, i.e., PE firms with high proportion of E&S concerned LPs screen investments based on firms' expected future decrease of E&S risk. Our results are more consistent with an engagement channel, especially given the fact that the decrease in E&S risk takes some time to emerge. This evidence is consistent with the vast literature on PE firms' engagement with portfolio companies to add value (e.g., Boucly et al., 2011; Davis et al., 2014; Lerner et al., 2011).

Overall, the evidence suggests that PE firms with E&S concerned relationship investors engage with their portfolio companies to improve E&S related outcomes. This result is in line with Broccardo et al. (2022) where investors can transmit their preferences to intermediaries such as PE firms by voting with their feet (a form of exit) to induce voice. This is an effective mechanism as it works via shrinking the asset base of the PE firm and is thereby material to the PE firm. LPs with E&S concerns threaten to exit (not recommit to the next fund raised by the

PE firm) and this induces the PE firm to engage with its portfolio companies to improve their E&S outcomes.

# 7 Conclusion

This paper examines the impact of environmental and social incidents on the capital raising ability of Private Equity (PE) firms. Using a sample of global buyout investments, we document a negative effect of experiencing environmental and social incidents on PE firms' ability to raise capital in the future both on the extensive and intensive margin. PE firms who experience environmental and social incidents lose valuable relationship LPs, especially ESG-concerned LPs. LPs trade off their ESG concerns with the cost of divestment. As a result, higher reputation PE firms, those for whom LPs face higher divestment costs, are impacted less by environmental and social incidents. PE firms with ESG-concerned relationship LPs respond to this threat of exit by engaging with their portfolio companies to achieve better E&S outcomes. Our results highlight the materiality of environmental and social incidents in the private equity industry and how the ESG concerns of PE capital can generate real effects on portfolio companies.

## References


**Abraham, Jefferson Kaduvinal, Marcel Olbert, and Florin P Vasvari**, "ESG Disclosures in the Private Equity Industry," *Available at SSRN*, 2022.

**Andonov, Aleksandar, Roman Kräussl, and Joshua Rauh**, "Institutional investors and infrastructure investing," *The Review of Financial Studies*, 2021, *34* (8), 3880–3934.

**Barber, Brad M, Adair Morse, and Ayako Yasuda**, "Impact investing," *Journal of Financial Economics*, 2021, *139* (1), 162–185.

_ **and Ayako Yasuda**, "Interim fund performance and fundraising in private equity," *Journal of Financial Economics*, 2017, *124* (1), 172–194.

**Bauer, Rob, Tobias Ruof, and Paul Smeets**, "Get real! Individuals prefer more sustainable investments," *The Review of Financial Studies*, 2021, *34* (8), 3976–4043.

**Bellon, Aymeric**, "Does private equity ownership make firms cleaner? the role of environmental liability risks," *Working Paper, University of North Carolina*, 2022.

**Berk, Jonathan and Jules H Van Binsbergen**, "The impact of impact investing," 2021.

**Bernstein, Shai and Albert Sheen**, "The operational consequences of private equity buyouts: Evidence from the restaurant industry," *The Review of Financial Studies*, 2016, *29* (9), 2387–2418.

**Bisetti, Emilio, Guoman She, and Alminas Zaldokas**, "ESG Shocks in Global Supply Chains," 2023.

**Bollen, Nicolas PB**, "Mutual fund attributes and investor behavior," *Journal of financial and quantitative analysis*, 2007, *42* (3), 683–708.

**Boucly, Quentin, David Sraer, and David Thesmar**, "Growth lbos," *Journal of financial economics*, 2011, *102* (2), 432–453.

**Brandon, Rajna Gibson, Simon Glossner, Philipp Krueger, Pedro Matos, and Tom Steffen**, "Do responsible investors invest responsibly?," *Review of Finance*, 2022, *26* (6), 1389–1432.

**Brav, Alon, Guy Lakan, and Yishay Yafeh**, "Private Equity and Venture Capital Fund Performance: Evidence from a Large Sample of Israeli Limited Partners," *European Corporate Governance Institute–Finance Working Paper*, 2023, (930).

**Broccardo, Eleonora, Oliver Hart, and Luigi Zingales**, "Exit versus Voice," *Journal of Political Economy*, 2022, *130* (12), 3101–3145.

**Ceccarelli, Marco, Stefano Ramelli, and Alexander F Wagner**, "Low carbon mutual funds," *Forthcoming, Review of Finance, Swiss Finance Institute Research Paper*, 2023, (19-13).

**Chodorow-Reich, Gabriel**, "The employment effects of credit market disruptions: Firm-level evidence from the 2008–9 financial crisis," *The Quarterly Journal of Economics*, 2014, *129* (1), 1–59.

**Chung, Ji-Woong, Berk A Sensoy, Lea Stern, and Michael S Weisbach**, "Pay for performance from future fund flows: The case of private equity," *The Review of Financial Studies*, 2012, *25* (11), 3259–3304.

**Cole, Shawn, Leslie Jeng, Josh Lerner, Natalia Rigol, and Benjamin N Roth**, "What Do Impact Investors Do Differently?," Technical Report, National Bureau of Economic Research 2023.

**Davis, Steven J, John Haltiwanger, Kyle Handley, Ron Jarmin, Josh Lerner, and Javier Miranda**, "Private equity, jobs, and productivity," *American Economic Review*, 2014, *104* (12), 3956–3990.

**de Silanes, Florencio Lopez, Ludovic Phalippou, and Oliver Gottschalg**, "Giants at the gate: Investment returns and diseconomies of scale in private equity," *Journal of Financial and Quantitative Analysis*, 2015, *50* (3), 377–411.

**Demiroglu, Cem and Christopher M James**, "The role of private equity group reputation in LBO financing," *Journal of Financial Economics*, 2010, *96* (2), 306–330.

**Derrien, François, Philipp Krueger, Augustin Landier, and Tianhao Yao**, "ESG news, future cash flows, and firm value," *Swiss finance institute research paper*, 2021, (21-84).

**Duchin, Ran, Janet Gao, and Qiping Xu**, "Sustainability or greenwashing: Evidence from the asset market for industrial pollution," *Journal of Finance Forthcoming*, 2024.

**Ewens, Michael and Joan Farre-Mensa**, "Private or Public Equity? The Evolving Entrepreneurial Finance Landscape," *Annual Review of Financial Economics*, 2022, *14* (1), 271–293.

_ **and Matthew Rhodes-Kropf**, "Is a VC Partnership Greater than the Sum of its Partners?," *The Journal of Finance*, 2015, *70* (3), 1081–1113.

_ **, Arpit Gupta, and Sabrina T Howell**, "Local journalism under private equity ownership," Technical Report, National Bureau of Economic Research 2022.

**Fang, Lily H, Jim Goldman, and Alexandra Roulet**, "Private equity and pay gaps inside the firm," 2022.

**Fraser-Sampson, Guy**, *Private equity as an asset class*, John Wiley & Sons, 2011.

**Fuchs, Florian, Roland Füss, Tim Jenkinson, and Stefan Morkoetter**, "Winning a deal in private equity: Do educational ties matter?," *Journal of Corporate Finance*, 2021, *66*, 101740.

**Gantchev, Nickolay, Mariassunta Giannetti, and Rachel Li**, "Does money talk? Divestitures and corporate environmental and social policies," *Review of Finance*, 2022, *26* (6), 1469–1508.

**Garrett, Daniel and Ivan Ivanov**, "Gas, guns, and governments: Financial costs of anti-ESG policies," *Jacobs Levy Equity Management Center for Quantitative Financial Research Paper*, 2022.

**Geczy, Christopher, Jessica S Jeffers, David K Musto, and Anne M Tucker**, "Contracts with (social) benefits: The implementation of impact investing," *Journal of Financial Economics*, 2021, *142* (2), 697–718.

**Giuli, Alberta Di and Leonard Kostovetsky**, "Are red or blue companies more likely to go green? Politics and corporate social responsibility," *Journal of financial economics*, 2014, *111* (1), 158–180.

**Gloßner, Simon**, "Repeat Offenders: ESG Incident Recidivism and Investor Underreaction," *Working Paper, Federal Reserve Board*, 2021.

**Gompers, Paul A, Will Gornall, Steven N Kaplan, and Ilya A Strebulaev**, "How do venture capitalists make decisions?," *Journal of Financial Economics*, 2020, *135* (1), 169–190.

**Gompers, Paul and Josh Lerner**, "What drives venture capital fundraising?," 1999.

**_ , Steven N Kaplan, and Vladimir Mukharlyamov**, "What do private equity firms say they do?," *Journal of Financial Economics*, 2016, *121* (3), 449–476.

**Gupta, Atul, Sabrina T Howell, Constantine Yannelis, and Abhinav Gupta**, "Owner incentives and performance in healthcare: Private equity investment in nursing homes," *The Review of Financial Studies*, 2024, *37* (4), 1029–1077.

**Gupta, Deeksha, Alexandr Kopytov, and Jan Starmans**, "The pace of change: Socially responsible investing in private markets," *Working Paper*, 2024.

**Harris, Robert S, Tim Jenkinson, and Steven N Kaplan**, "Private equity performance: What do we know?," *The Journal of Finance*, 2014, *69* (5), 1851–1882.

**_ , _ , _ , and Ruediger Stucke**, "Has persistence persisted in private equity? Evidence from buyout and venture capital funds," *Journal of Corporate Finance*, 2023, p. 102361.

**Hartzmark, Samuel M and Abigail B Sussman**, "Do investors value sustainability? A natural experiment examining ranking and fund flows," *The Journal of Finance*, 2019, *74* (6), 2789–2837.

**He, Yazhou Ellen, Bige Kahraman, and Michelle Lowry**, "ES risks and shareholder voice," *The Review of Financial Studies*, 2023, *36* (12), 4824–4863.

**Hochberg, Yael V, Alexander Ljungqvist, and Annette Vissing-Jørgensen**, "Informational holdup and performance persistence in venture capital," *The Review of Financial Studies*, 2014, *27* (1), 102–152.

**Ivashina, Victoria and Josh Lerner**, "Looking for alternatives: Pension investments around the world, 2008 to 2017," *Unpublished working paper. Harvard University*, 2018.

**Jeffers, Jessica, Tianshu Lyu, and Kelly Posenau**, "The risk and return of impact investing funds," *Available at SSRN 3949530*, 2022.

**Joenväärä, Juha, Juho Mäkiaho, and Sami Torstila**, "Prolonged private equity holding periods: six years is the new normal," *Available at SSRN 2872585*, 2021.

**Kaplan, Steven N and Antoinette Schoar**, "Private equity performance: Returns, persistence, and capital flows," *The journal of finance*, 2005, *60* (4), 1791–1823.

_ **and Per Strömberg**, "Leveraged buyouts and private equity," *Journal of economic perspectives*, 2009, *23* (1), 121–146.

**Korteweg, Arthur and Morten Sorensen**, "Skill and luck in private equity performance," *Journal of Financial Economics*, 2017, *124* (3), 535–562.

**Lerner, Josh, Morten Sorensen, and Per Strömberg**, "Private equity and long-run investment: The case of innovation," *The Journal of Finance*, 2011, *66* (2), 445–477.

**Liang, Hao, Lin Sun, and Melvyn Teo**, "Responsible hedge funds," *Review of Finance*, 2022, *26* (6), 1585–1633.

**Ljungqvist, Alexander, Matthew Richardson, and Daniel Wolfenzon**, "The investment behavior of buyout funds: Theory and evidence," *Financial Management*, 2020, *49* (1), 3–32.

**Maurin, Vincent, David T Robinson, and Per Strömberg**, "A theory of liquidity in private equity," *Management science*, 2023, *69* (10), 5740–5771.

**Metrick, Andrew and Ayako Yasuda**, "The economics of private equity funds," *The Review of Financial Studies*, 2010, *23* (6), 2303–2341.

**Phalippou, Ludovic**, "Performance of buyout funds revisited?," *Review of Finance*, 2014, *18* (1), 189–218.

_ , *Private equity laid bare*, Ascent Audio, 2019.

**PWC**, "EU Private Markets: ESG Reboot," *Technical Report*, 2022.

**Renneboog, Luc, Jenke Ter Horst, and Chendi Zhang**, "Is ethical money financially smart? Nonfinancial attributes and money flows of socially responsible investment funds," *Journal of Financial Intermediation*, 2011, *20* (4), 562–588.

**Riedl, Arno and Paul Smeets**, "Why do investors hold socially responsible mutual funds?," *The Journal of Finance*, 2017, *72* (6), 2505–2550.

**von Beschwitz, Bastian, Fatima Zahra Filali Adib, and Daniel Schmidt**, "Becoming Virtuous? Mutual Funds' Reactions to ESG Scandals," *Mutual Funds' Reactions to ESG Scandals (November 18, 2022)*, 2022.

**Zhang, Ye**, "Does Impact Investing Help VC Funds to Attract Startups? Experimental Evidence," *Experimental Evidence (August 31, 2022)*, 2022.

# 8 Figures

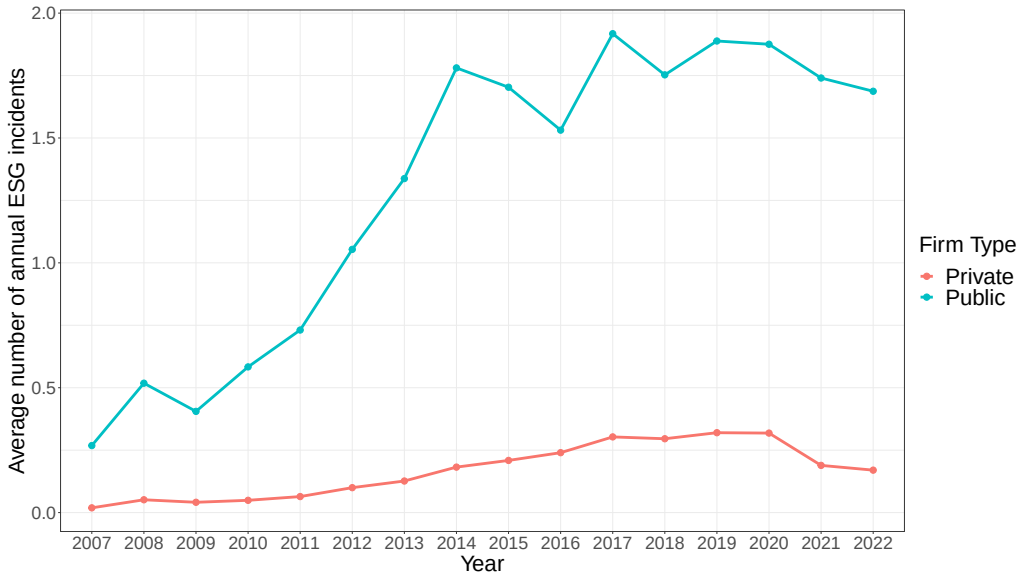
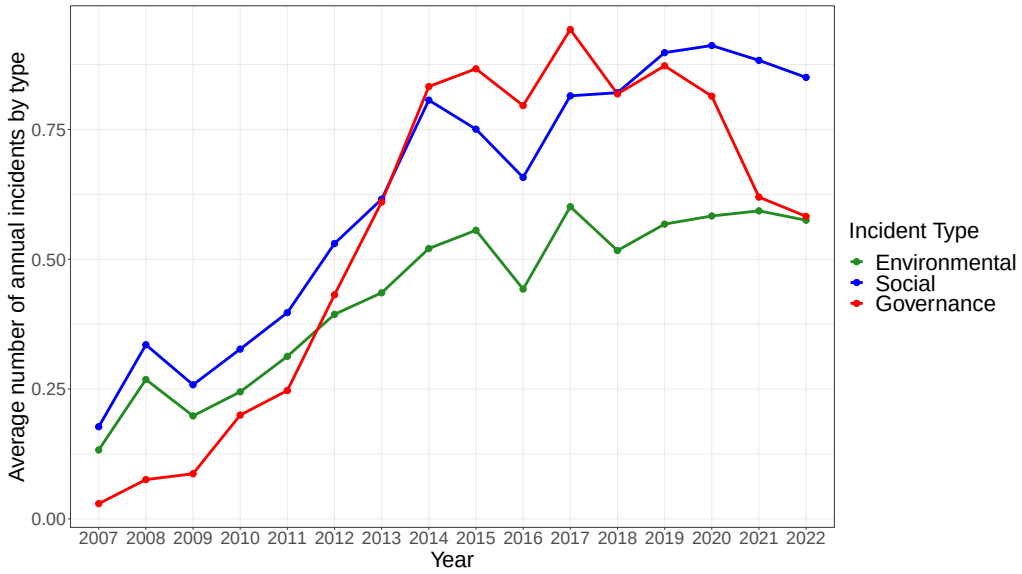



Figure 1: **Average number of RepRisk ESG incidents by time**: This figure plots the average number of incidents per year for public and private firms in RepRisk. This plot includes all firms covered by RepRisk. The blue line represents public firms and red line represents private firms.

(a) Public Firms




(b) Private Firms

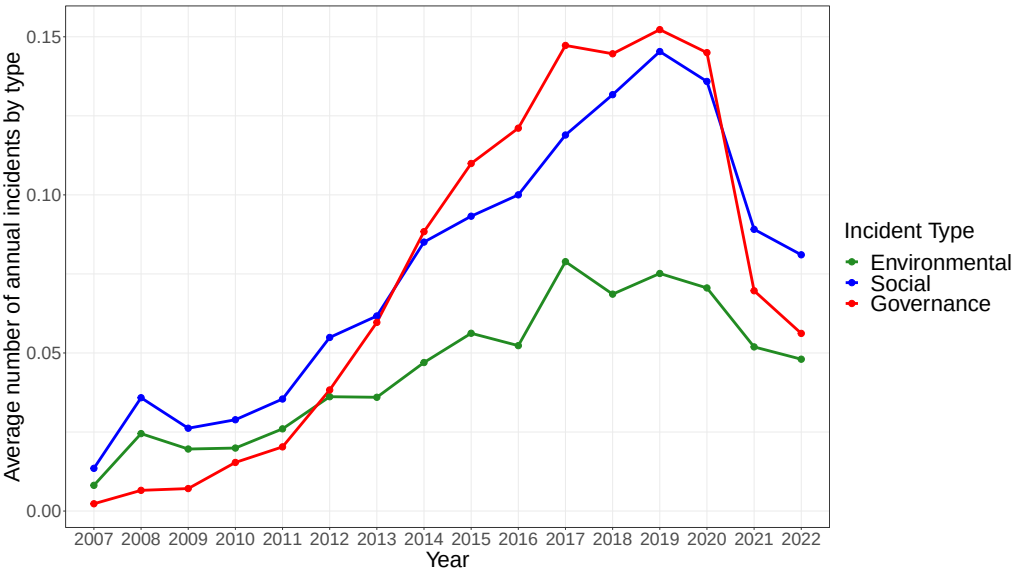



Figure 2: **Average number of incidents by incident type**: This figure plots the number of annual incidents by E/S/G types per year. This plot includes all firms covered by RepRisk. Green, blue and red lines correspond to environmental, social and governance incidents respectively. Subfigure (a) plots the trend for public firms and subfigure (b) plots the trend for private firms.


Figure 3: **Number of funds by vintage year:** This figure plots the number of funds per vintage year in the sample. The sample includes funds with at least one RepRisk firm coverage.

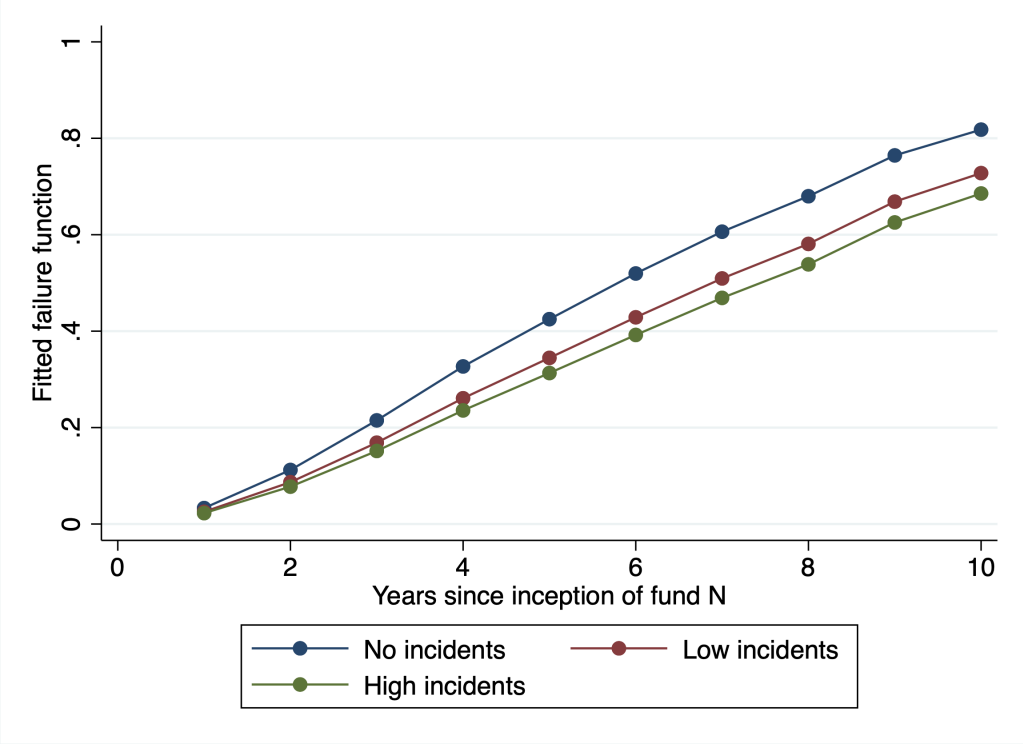
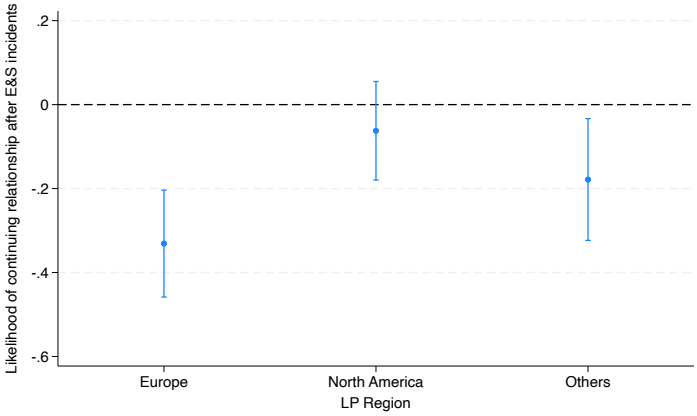
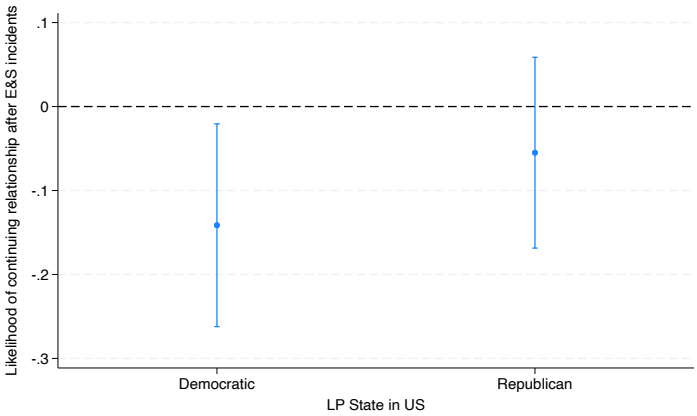



Figure 4: **Fitted Failure Function:** The figure depicts the fitted failure function i.e., probability of raising a follow-up fund for funds that experience above median (high), below median (low) and no E&S incidents. Failure corresponds to raising a follow-up fund and a higher value of the fitted failure function implies a higher probability of raising a follow-up fund. The function is evaluated at specified values of the selected covariate and overall means of other covariates at each duration (number of years since inception of the fund).

(a) By Investor Region




(b) By Investor State (US)




(c) By Listed Status

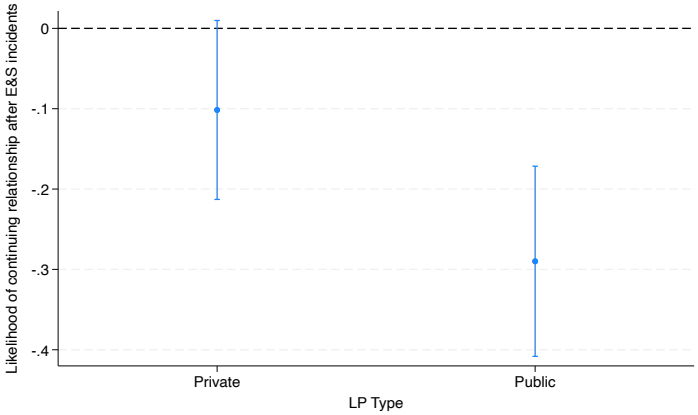
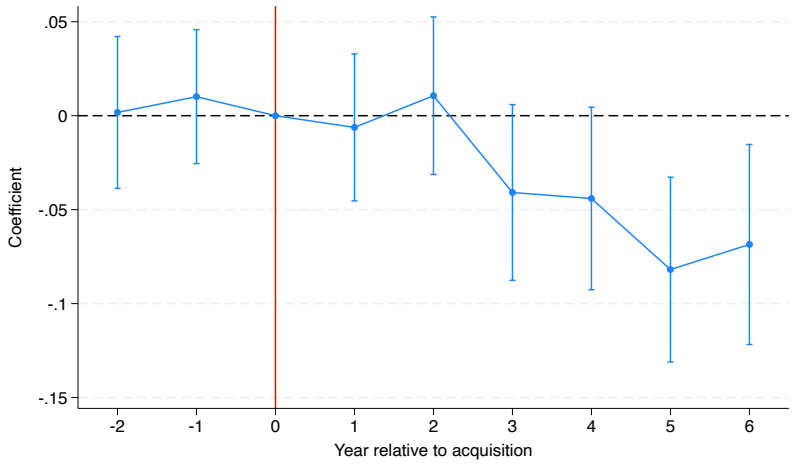



Figure 5: **Likelihood of continuing relationships after ESG incidents for different investor types**: This figure plots the coefficients of the estimation in Table 8. Panel (a) plots the coefficient estimates from column (1) Table 8 where Europe indicates a relationship LP headquartered in Europe, North America indicates a relationship LP headquartered in North America and Other indicates a relationship LP headquartered in all other regions. Panel (b) plots the coefficient estimates from column (2) in Table 8 where Democratic indicates a relationship LP headquartered in a state that voted Democrat in the 2016 presidential election, Republican indicates a relationship LP headquartered in a state that voted Republican in the 2016 presidential election. Panel (c) plots the coefficient estimates from column (3) in Table 8 where Private indicates a non-listed relationship LP and Public indicates a listed relationship LP. The bars indicate 95% confidence interval.

(a) log(1+E&S incidents)




(b) RepRisk Index

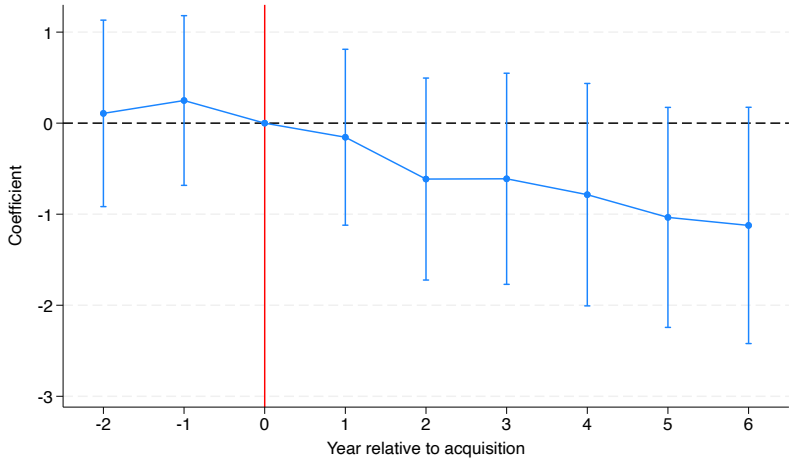



Figure 6: **Dynamic Plot of E&S Risk of Portfolio Companies after PE investments:** The figure depicts E&S outcomes at portfolio companies of PE firms with a high proportion of E&S concerned LPs compared to those of PE firms with a low proportion of E&S concerned investors post-investment. Event time for a portfolio company is the defined based on the year it received investment from the PE firm. High proportion of E&S concerned investors is defined as above median proportion of LPs based in Europe, LPs in democratic leaning states of the US or publicly listed LPs. The dependent variable in Panel (a) is log(1+num. E&S incidents) and the dependent variable in Panel (b) is RepRisk index. The bars indicate 95% confidence interval.

# 9 Tables

**Panel A: Fund N+1 - Fund N data structure**

| | 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 |

**Panel B: 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 |

**Panel C: Fund N+1 - Fund N - LP data structure**

| | 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 |

Table 1: **Summary statistics**: This paper reports the summary statistics of main variables used in the analysis. Panel A presents the summary statistics of variables in the fund N+1 - Fund N data structure, in which each observation is a fund N+1 - fund N pair. *Number of RepRisk firms* is the number of firms covered by RepRisk in funds' portfolio companies. *Avg. num. ESG* $(E\&S, G)$ *incidents* is the average number of ESG (E&S,G) incidents two years before fund N+1 is raised. $Years\ btw.\ fund\ N\ and\ N+1$ is defined as the gap between the vintage years of fund N and fund N+1. *Number LPs* is the average number of LPs that have committed to a fund. Panel B presents a fund-year panel data structure. $Years\ since\ fund\ N\ is\ raised$ is the number of years from fund N inception year and year $t$. *Cum. num. E&S incidents* is the average number of incidents from fund inception year until year $t$. *Buyout multiple* is the year-level aggregate multiple for buyout funds. Panel C presents the an fund N-Fund N+1-LP data structure. $D(LP\ invest\ in\ fund\ N)$ is a dummy indicating one if the LP invests in fund N. $Num.\ of\ previous\ funds\ an\ LP\ has\ invested$ denote the number of funds that an LP invests in the same PE firm before fund N+1 is raised. $D(an\ LP\ has\ invested\ in\ previous\ funds)$ is a dummy indicating $Num.\ of\ previous\ funds\ an\ LP\ has\ invested$>0. $Avg.\ num\ .of\ fund\ N\ an\ LP\ invests$ denotes average number of funds that an LP invest in the sample.

| | 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 |

Table 2: **Effect of E&S incidents on relative size of follow-up funds:** This table reports the results of regression of fund size growth on previous fund's E& S incidents. The dependent variable in columns (1)-(6) is the fund size growth defined by $\log(\frac{Size_{N+1}}{Size_N})$, which is committed capital to fund $N+1$ over committed capital to fund $N$. In columns (1)-(3), $log(1 + num.\, E\&S\, incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. In column (4) -(6), $Low\, E\&S\, incidents$ ($High\, E\&S\, incidents$) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. The omitted category is the ones with no incidents two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. Columns (1) and (4) includes Fund $N$ × Fund $N+1$ vintage year fixed effects and PE Region FE. Columns (2) and (5) includes Fund $N$ × Fund $N+1$ vintage year × PE Region FE fixed effects. In Columns (3) and (6) Industry Controls includes separate controls for the fraction of investments made by fund $N$ in each industry sector one year prior to raising fund $N+1$. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01.

| | 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 |

Table 3: **Effect of E&S incidents on the probability of raising a follow-up fund:** This table presents the effect of E&S incidents on the likelihood of raising a follow-up fund. The analysis is done in a fund-year panel, in which each fund exists in the sample until raising a follow-up fund or the sample end. The dependent variable is the hazard rate of raising a follow-up fund in a given year for fund $N$. In columns (1) and (3) , $log(1 + cum\,num.\,E\&S\,incidents)$ is demeaned log cumulative average number of incidents from fund $N$ inception till year $t-1$. The variable is demeaned by each vintage year of fund, year and PE firm region. In columns (2) and (4), $Low\,cum\,E\&S\,incidents$ ($High\,cum\,E\&S\,incidents$) are dummy variables indicating below (above) below median cumulative average number of incidents from fund $N$ inception till year $t-1$, conditional on any incidents happen in this period. The omitted category is funds with no incidents from fund $N$ inception till year $t-1$.. $log(fund\,size)$ is the natural logarithm of AUM of fund N. $log(fund\,multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\,series)$ is natural logarithm of the sequence number of fund N of a given series. $log(buyout\,multiple)$ is the natural logarithm of overall performance of buyout funds of each year. In columns (3) and (4) we include separate industry controls for the fraction of investments by fund $N$ at $t-1$ in each industry sector. Standard errors reported in parentheses are clustered by fund. * p<.10; ** p<.05; *** p<.01.

**Panel A: 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) |
| log(fund N size) | -0.063*** | | -0.062*** | | -0.062*** | | -0.062*** | |
| | (0.020) | | (0.021) | | (0.020) | | (0.020) | |
| log(fund N multiple) | 0.219*** | | 0.207*** | | 0.210*** | | 0.209*** | |
| | (0.066) | | (0.066) | | (0.066) | | (0.066) | |
| log(fund N series number) | -0.108*** | | -0.103*** | | -0.106*** | | -0.105*** | |
| | (0.034) | | (0.034) | | (0.035) | | (0.035) | |
| Fund N Vintage Year × Fund N+1 Vintage Year × PE Region FE | ✓ | | ✓ | | ✓ | | ✓ | |
| Industry Controls | ✓ | | ✓ | | ✓ | | ✓ | |
| Observations | 505 | | 505 | | 505 | | 505 | |
| $R^2$ | 0.54 | | 0.54 | | 0.54 | | 0.54 | |

**Panel B: 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) |
| log(fund N size) | 0.271*** | | 0.255*** | | 0.270*** | | 0.261*** | |
| | (0.052) | | (0.056) | | (0.051) | | (0.053) | |
| log(fund N multiple) | 0.672*** | | 0.671*** | | 0.681*** | | 0.681*** | |
| | (0.135) | | (0.135) | | (0.134) | | (0.135) | |
| log(fund N series number) | –0.065 | | -0.045 | | -0.069 | | -0.067 | |
| | (0.105) | | (0.101) | | (0.104) | | (0.103) | |
| log(buyout multiple) | 6.180*** | | 6.314*** | | 6.327*** | | 6.258*** | |
| | (1.697) | | (1.697) | | (1.691) | | (1.702) | |
| Observations | 3114 | | 3114 | | 3114 | | 3114 | |
| Industry Controls | ✓ | | ✓ | | ✓ | | ✓ | |

Table 4: **Intensive and Extensive margin effects of E&S incidents for Low and High Reputation PE firms: Panel A** reports reports the results of regression of fund size growth on previous fund's E&S incidents splitting the coefficient by different measures of PE firm reputation. The dependent variable in columns (1)-(8) is the fund size growth defined by $\log(\frac{Size_{N+1}}{Size_N})$, which is committed capital to fund $N+1$ over committed capital to fund $N$. The independent variables *Low E&S incidents* (*High E&S incidents*) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. **Panel B** presents the effect of E&S incidents on the likelihood of raising a follow-up fund. The independent variables are *Low cum E&S incidents* (*High cum E&S incidents*) are dummy variables indicating below (above) below median cumulative average number of incidents from fund $N$ inception till year $t-1$, conditional on any incidents happen in this period. In column (1) Young is a dummy variable equal to 1 if the PE firm is in the bottom three quartiles in terms of the number of funds raise. In column (3) Small is a dummy variable equal to 1 is the PE firm is in the bottom three quartiles in terms of total AUM raise. In column (5) Low-perf is a dummy variable equal to 1 if the PE firm has no top quartile performing funds old more than 5 years one year prior to new fund fundraise. In column (7) Low-reputation is a dummy variable taking on value 1 if the PE firm is Young, Small and Low-pef. Industry Controls includes separate controls for the fraction of investments made by fund $N$ in each industry sector one year prior to raising fund $N+1$. Standard errors reported in parentheses in Panel A are clustered by PE firms and by fund vintage year pairs. Standard errors reported in parentheses in Panel B are clustered by fund. * p<.10; ** p<.05; *** p<.01.

| | 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 |

Table 5: **Association of current fund performance with E&S incidents:** This table reports the results of a regression of fund performance on E& S incidents. The dependent variable in columns (1)-(4) is the fund performance measured by natural logarithm of net multiple of funds. The dependent variable in columns (5)-(8) is the fund performance measured by natural logarithm of the internal rate of return (IRR) of funds. In column (1),(2),(5) and (6), $log(1 + num.\, E\&S\, incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. In column (3), (4), (7) and (8), $Low\, E\&S\, incidents$ ($High\, E\&S\, incidents$) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. The omitted category is the ones with no incidents two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. In all columns we include fund $N$ vintage year × PE Region fixed effect. In all specifications Industry Controls includes separate controls for the fraction of investments made by the fund in each industry sector. Standard errors reported in parentheses are clustered by PE firms. * p<.10; ** p<.05; *** p<.01.

| | log(Fund N+1 Multiple) | | | | log(Fund N+1 IRR) | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| log(1 + num. E&S incidents) | -0.060 | -0.064 | | | -0.245** | -0.251** | | |
| | (0.044) | (0.045) | | | (0.096) | (0.097) | | |
| Low number of E&S incidents | | | -0.030 | -0.049 | | | -0.021 | 0.001 |
| | | | (0.036) | (0.037) | | | (0.087) | (0.090) |
| High number of E&S incidents | | | -0.047 | -0.059 | | | -0.425*** | -0.429*** |
| | | | (0.048) | (0.050) | | | (0.135) | (0.136) |
| log(Fund N Multiple) | 0.203*** | 0.211*** | 0.202*** | 0.213*** | | | | |
| | (0.071) | (0.072) | (0.072) | (0.072) | | | | |
| log(Fund N IRR) | | | | | 0.104 | 0.100 | 0.090 | 0.084 |
| | | | | | (0.067) | (0.068) | (0.068) | (0.069) |
| log(fund N size) | | 0.022 | | 0.029 | | -0.018 | | -0.015 |
| | | (0.019) | | (0.020) | | (0.034) | | (0.035) |
| log(fund N series number) | | -0.031 | | -0.030 | | -0.029 | | -0.035 |
| | | (0.040) | | (0.040) | | (0.071) | | (0.071) |
| Fund N Vintage Year × Fund N+1 Vintage Year × PE Region FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry Controls | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Observations | 424 | 424 | 424 | 424 | 329 | 329 | 329 | 329 |
| $R^2$ | 0.49 | 0.49 | 0.49 | 0.49 | 0.38 | 0.39 | 0.39 | 0.39 |

Table 6: **Association of E&S incidents with follow-up performance:** This table reports the results of a regression of follow-up fund performance on E& S incidents of current fund. The dependent variable in columns (1)-(4) is the follow-up fund performance measured by natural logarithm of net multiple of funds. The dependent variable in columns (5)-(8) is the follow-up fund performance measured by natural logarithm of the internal rate of return (IRR) of funds. In column (1),(2),(5) and (6), $log(1 + num.\, E\&S\, incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. In column (3), (4), (7) and (8), $Low\, E\&S\, incidents$ ($High\, E\&S\, incidents$) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. The omitted category is the ones with no incidents two years prior to raising a follow-up fund. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple current fund (fund N), and $log(fund\ N\ IRR)$ is the natural logarithm of IRR of current fund (fund N). $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. All columns include the interaction of Fund vintage year $N$ × Fund $N+1$ vintage year × PE region fixed effects. In all specifications Industry Controls includes separate controls for the fraction of investments made by the fund in each industry sector. Standard errors reported in parentheses are clustered by PE firms. * p<.10; ** p<.05; *** p<.01.

| | 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) |
| log(fund N series number) | -0.000 | | -0.000 | 0.000 | |
| | (0.001) | | (0.001) | (0.001) | |
| log(fund N size) | 0.004*** | | 0.004*** | 0.004*** | |
| | (0.001) | | (0.001) | (0.001) | |
| log(Fund N Multiple) | 0.005*** | | 0.005*** | 0.005*** | |
| | (0.001) | | (0.001) | (0.001) | |
| 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 |

Table 7: **LP-GP relationship and E&S incidents**. This table reports the results of a regression of the propensity of LP to finance fund $N+1$ and how this propensity changes with the number of E&S incidents. This analysis is done in an LP-fund N data structure. The dependent variable is a dummy variable taking a value 1 if a given LP invests in fund $N+1$ and 0 otherwise. *Relationship LP* is a dummy variable indicating that an LP has invested in other funds of a given PE firm before fund $N+1$ is raised. $log(1+$ *num. E&S incidents*$)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. $log($*fund N size*$)$ is the natural logarithm of AUM of fund N. $log($*fund N multiple*$)$ is the natural logarithm of net multiple of fund N. $log($*fund N series*$)$ is natural logarithm of the sequence number of fund N of a given series. In columns (1), (3) and (4) we include Fund $N+1$ vintage year × PE Region × LP fixed effects. In columns (2) and (5) we include Fund $N+1$ vintage year × PE Region × LP fixed effects and Fund $N+1$ fixed effects. Industry Controls includes separate controls for the fraction of investments made by fund $N$ in each industry sector one year prior to raising fund $N+1$. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01.

| | 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) |
| log(fund N series number) | -0.000 | 0.001 | 0.000 |
| | (0.001) | (0.001) | (0.001) |
| log(fund N size) | 0.004*** | 0.004*** | 0.004*** |
| | (0.001) | (0.001) | (0.001) |
| log(Fund N Multiple) | 0.005*** | 0.006*** | 0.005*** |
| | (0.001) | (0.002) | (0.001) |
| Fund N+1 Vintage Year × PE Region × LP FE | ✓ | ✓ | ✓ |
| Industry Controls | ✓ | ✓ | ✓ |
| Observations | 1051915 | 636,805 | 1051915 |
| $R^2$ | 0.31 | 0.33 | 0.31 |

Table 8: **Heterogeneity on LP reaction and E&S incidents**. This table reports the results of a regression of the propensity of LP to finance fund $N+1$ and how this propensity changes with the number of E&S incidents. This analysis is done in an LP-fund N data structure. The dependent variable is a dummy variable taking a value 1 if a given LP invests in fund $N+1$ and 0 otherwise. *Relationship LP* is a dummy variable indicating that an LP has invested in other funds of a given PE firm before fund $N+1$ is raised. $log(1 + num.\, E\&S\, incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. $Relationship\, LP, EU$, $Relationship\, LP, NA$, $Relationship\, LP, Other$ are indicators taking a value of 1, if the LP is headquartered in the European Union, North America or in other regions respectively. $Relationship\, LP, Democratic$ and $Relationship\, LP, Republican$ are indicators taking a value of 1 if the LP is headquartered in a Democratic or Republican state respectively. $Relationship\, LP, Public$, $Relationship\, LP, Private$ are indicators taking a value 1 if the LP is Public or Private respectively. In all specifications we include Fund $N+1$ × Vintage Year × PE Region × LP fixed effects. Industry Controls are separate controls for the fraction of investments by fund $N$ at $t-1$ in each industry sector. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01.

| | 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) |
| log(fund N series number) | -0.001 | 0.003 | -0.000 | 0.004* | -0.001 | 0.003* |
| | (0.001) | (0.002) | (0.002) | (0.002) | (0.001) | (0.002) |
| log(fund N size) | 0.003*** | 0.004*** | 0.003*** | 0.004*** | 0.003*** | 0.004*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| log(Fund N Multiple) | 0.001 | 0.010*** | 0.002 | 0.013*** | 0.001 | 0.010*** |
| | (0.001) | (0.003) | (0.002) | (0.003) | (0.001) | (0.003) |
| 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 |

Table 9: **Heterogeneity on LP reaction and E&S incidents for Low and High Reputation PE firms**. This table reports the results of a regression of the propensity of LP to finance fund $N+1$ and how this propensity changes with the number of E&S incidents for different LP types and for Low and High Reputation PE firms. This analysis is done in an LP-fund N data structure. The dependent variable is a dummy variable taking a value 1 if a given LP invests in fund $N+1$ and 0 otherwise. *Relationship LP* is a dummy variable indicating that an LP has invested in other funds of a given PE firm before fund $N+1$ is raised. $log(1 + num.\,E\&S\,incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. $Relationship\,LP, EU$, $Relationship\,LP, NA$, $Relationship\,LP, Other$ are indicators taking a value of 1, if the LP is headquartered in the European Union, North America or in other regions respectively. $Relationship\,LP, Democratic$ and $Relationship\,LP, Republican$ are indicators taking a value of 1 if the LP is headquartered in a Democratic or Republican state respectively. $Relationship\,LP, Public$, $Relationship\,LP, Private$ are indicators taking a value 1 if the LP is Public or Private respectively. In columns (1), (3), (5) we estimate the regression for Low Reputation PE firms. Low Reputation PE firms are PE firms that are in the bottom three quartiles in terms of number of funds raised, bottom three quartiles in terms of AUM raised and without a top quartile performing fund. In columns (2), (4) and (6) we estimate the regression for High Reputation PE firms. High Reputation PE firms are PE firms that are not Low Reputation PE firms In all specifications we include Fund $N+1$ × Vintage Year × PE Region × LP fixed effects. Industry Controls are separate controls for the fraction of investments by fund $N$ at $t-1$ in each industry sector. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01.

| | log(1+E&S incidents) | | | RepRisk Index | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Post-Investment × High prop. ESG-concerned Rela. LPs | -0.034*** (0.012) | -0.034*** (0.013) | -0.033** (0.014) | -0.765** (0.301) | -0.795*** (0.304) | -0.737** (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 |

Table 10: **E&S Risk of Portfolio Companies after PE investments:** The table reports E&S outcomes at portfolio companies of PE firms with a high proportion of E&S concerned LPs compared to those of PE firms with a low proportion of E&S concerned investors post-investment. The data are structured at a portfolio company-year level. Post-investment for a portfolio company is defined based on the year it received investment from a PE firm. High proportion of E&S concerned investors is defined as above median proportion of LPs based in Europe, LPs in democratic leaning states of the US or publicly listed LPs. The dependent variable in columns (1)-(3) is log(1+num. E&S incidents) and the dependent variable in columns (4)-(6) is RepRisk index. In columns (1) and (4), we include Firm FE and Year × Deal year FE. We add stricter set of fixed effects in subsequent columns. Columns (2) and (5) include Industry × Year FE in addition to Firm FE and Year × Deal year FE. Columns (3) and (6) include Country/State × Year FE in addition to the previous set of fixed effects. Standard errors reported in the parentheses are clustered at the portfolio company level. * p<.10; ** p<.05; *** p<.01.

# Appendix

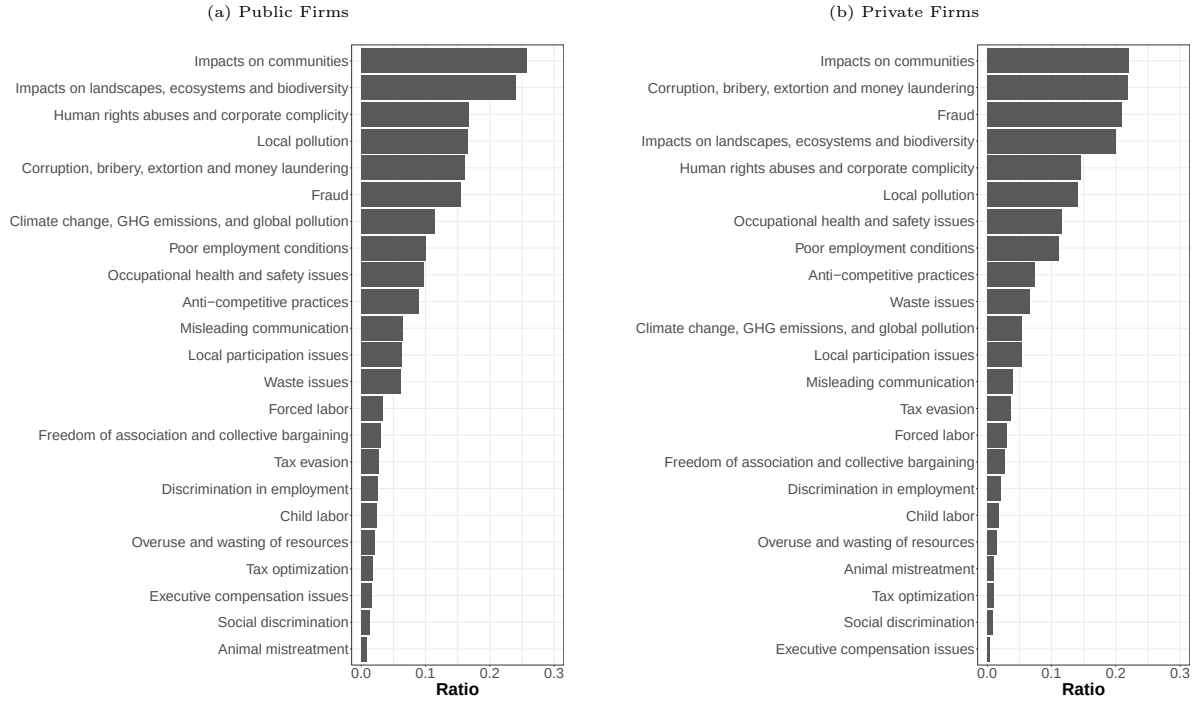



Figure A1: **Distribution of ESG issues**: This figure plots the distribution of ESG issues for public and private firms. Note that one incident can be associated with multiple issues so the distribution does not sum to 1. The y-axis shows the issue names and x-axis is the ratio of incidents related to a particular issue our of total incidents. Subfigure (a) plots the distribution for public firms and subfigure (b) plots the distribution for private firms.

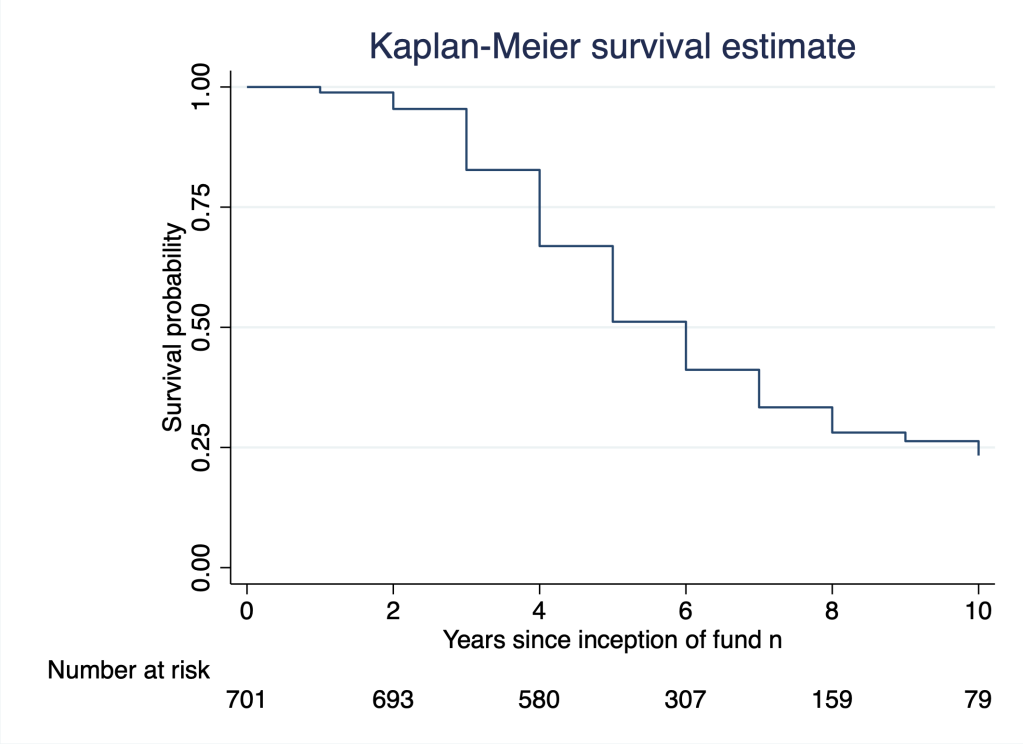
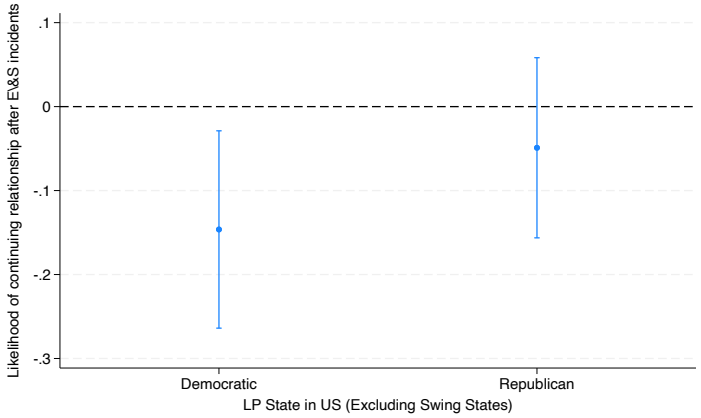



Figure A2: **Kaplan-Meier survival probability:** The figure depicts the survival probability, the probability that a follow-up fund has not been raised by years since fund $N$ is raised. Number at risk represents the number of funds at risk, i.e., the number of funds that have not yet raised a follow-up fund and have not been censored.

(a) By Investor State (US) - excluding swing states




(b) By PRI Singatory

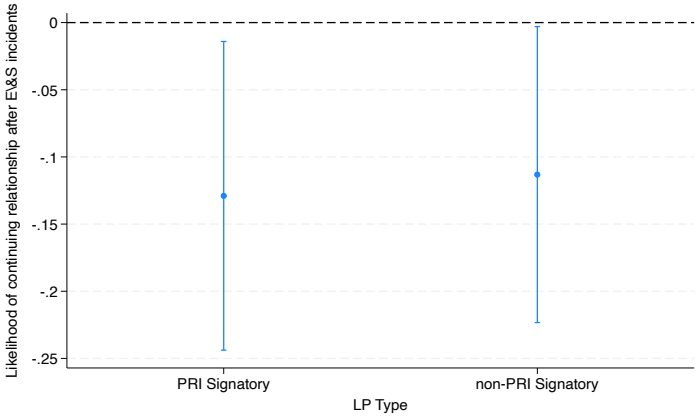
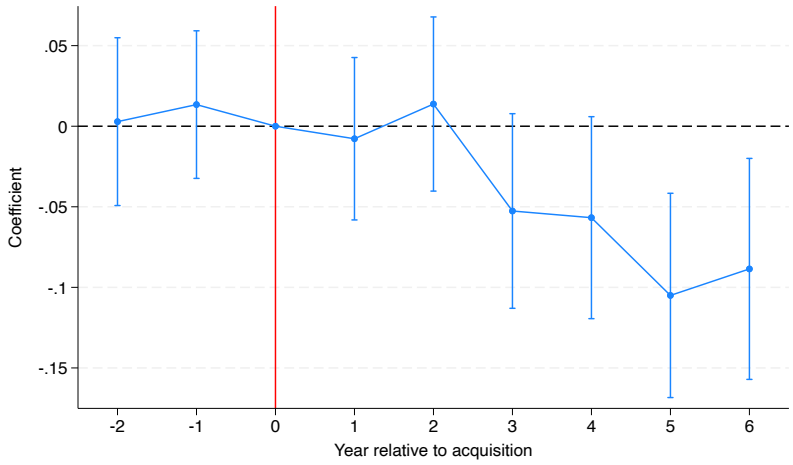



Figure A3: **Likelihood of continuing relationships after ESG incidents for different investor types robustness to excluding swing states and split by PRI Signatory**: This figure plots the coefficients of the estimations similar to Table 8 but under different classification of LPs. Panel (a) plots the coefficient estimates where Democratic indicates a relationship LP headquartered in a state that voted Democrat in all presidential elections in the period 2008-2022, Republican indicates a relationship LP headquartered in a state that voted Republican in all presidential elections in the period 2008-2022. LPs in swing states which change voting patterns during 2008-2022 are dropped. Panel (b) plots the coefficient estimates splitting LPs based on whether the LP is a PRI Signatory, where PRI Signatory indicates a relationship LP that has ever signed the PRI, non-PRI Signatory indicates a relationship LP that has not yet signed the PRI. The bars indicate 95% confidence interval.

(a) IHS(E&S incidents)




(b) log(1+RepRisk Index)

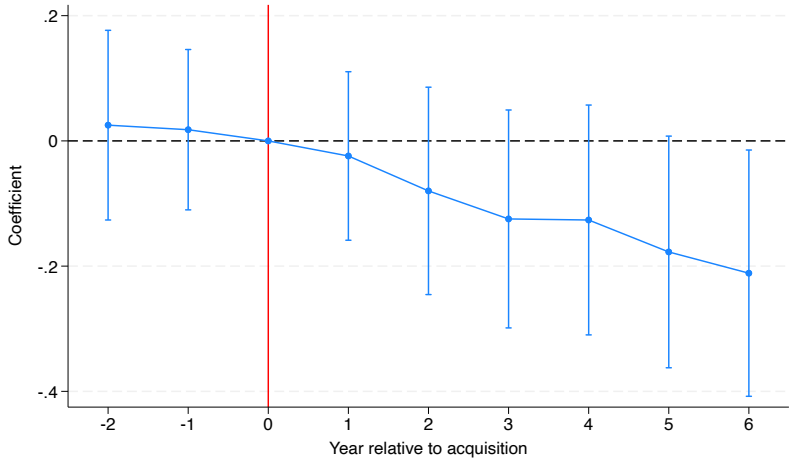



Figure A4: **Engagement robustness:** The figure depicts E&S outcomes at portfolio companies of PE firms with a high proportion of E&S concerned LPs compared to those of PE firms with a low proportion of E&S concerned investors post-investment. Event time for a portfolio company is the defined based on the year it received investment from the PE firm. High proportion of E&S concerned investors is defined as above median proportion of LPs based in Europe, LPs in democratic leaning states of the US or publicly listed LPs. The dependent variable in Panel (a) is IHS(num. E&S incidents) and the dependent variable in Panel (b) is log(1+RepRisk index).

| | 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 |

Table A1: **Effect of E&S incidents on relative size of follow-up funds, with different horizon to accumulate incidents:** This table reports the results of regression of fund size growth on previous fund's E& S incidents by varying the window to accumulate incidents. The dependent variable in columns (1)-(6) is the fund size growth defined by $\log(\frac{Size_{N+1}}{Size_N})$, which is committed capital to fund $N+1$ over committed capital to fund $N$. $log(1 + num.\, E\&S\, incidents)$, $[t-s, t-1]$ indicates log of one plus the average number of E&S incidents of the previous fund (fund N) in the $s$ years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of size of fund N. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. All columns include the interaction of Fund vintage year $N$ × Fund $N+1$ vintage year × PE region fixed effects. Industry Controls includes separate controls for the fraction of investments made by fund $N$ in each industry sector one year prior to raising fund $N+1$. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01.

| | 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 |

Table A2: **Effect of E&S incidents on relative size of follow-up funds: robustness to non-linear effect of fund multiple** This table reports the results of regression of fund size growth on previous fund's E& S incidents, controlling for different form of fund multiple of fund N. e dependent variable in columns (1)-(6) is the fund size growth defined by $\log(\frac{Size_{N+1}}{Size_N})$, which is committed capital to fund $N+1$ over committed capital to fund $N$. In columns (1), (3) and (5), $log(1 + num.\, E\&S\, incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. In columns (2), (4) and (6), $Low\, E\&S\, incidents$ ($High\, E\&S\, incidents$) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. The omitted category is the ones with no incidents two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of size of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. $fund\ N\ multiple$ is the net multiple of fund N. $Quartile\ of\ fund\ N\ multiple$ are dummies indicating quartiles of fund N multiple. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $Squared\ log(fund\ N\ multiple)$ is the square of natural logarithm of net multiple of fund N. All the regressions include Fund $N \times$ Fund $N+1$ vintage year $\times$ PE Region fixed effects. All the regressions also include separate controls for the fraction of investments made by fund $N$ in each industry sector one year prior to raising fund $N+1$. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01 * p<.10; ** p<.05; *** p<.01.

| | 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 |

Table A3: **Effect of E&S incidents on relative size of follow-up funds: robustness to alternative performance measures** This table reports the results of regression of fund size growth on previous fund's E& S incidents, controlling for alternative measures of fund performance. The dependent variable in columns (1)-(6) is the fund size growth defined by $\log(\frac{Size_{N+1}}{Size_N})$, which is committed capital to fund $N+1$ over committed capital to fund $N$. In columns (1), (3) and (5), $log(1 + num.\, E\&S\, incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. In columns (2), (4) and (6), $Low\, E\&S\, incidents$ ($High\, E\&S\, incidents$) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. The omitted category is the ones with no incidents two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of size of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. $log(fund\ N\ IRR)$ is the natural logarithm of IRR of fund N. $log(Observed\ fund\ N\ PME,\ before\ fund\ N+1\ is\ raised)$ is the natural logarithm of the public market equivalence of fund N's performance one year before fund N+1 is raised. $log(Observed\ fund\ N\ multiple,\ before\ fund\ N+1\ is\ raised)$ is the interim fund multiple one year before fund N+1 is raised. All the regressions include Fund $N$ × Fund $N+1$ vintage year × PE Region fixed effects. All the regressions also include separate controls for the fraction of investments made by fund $N$ in each industry sector one year prior to raising fund $N+1$. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01 * p<.10; ** p<.05; *** p<.01.

| | 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 |

Table A4: **Effect of G incidents on relative size of follow-up funds:** This table reports the results of regression of fund size growth on previous fund's G incidents. The dependent variable in columns (1)-(6) is the fund size growth defined by $\log(\frac{Size_{N+1}}{Size_N})$, which is committed capital to fund $N+1$ over committed capital to fund $N$. In columns (1)-(3), $log(1 + num.\,G\,incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. In column (4) -(6), $Low\,G\,incidents$ ($High\,G\,incidents$) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. The omitted category is the ones with no incidents two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of size of fund N. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. Columns (1) and (4) include Fund $N$ × Fund $N+1$ vintage year fixed effects and PE Region FE. Columns (2) and (5) includes Fund $N$ × Fund $N+1$ vintage year × PE Region FE fixed effects. In columns (3) and (6) Industry Controls includes separate controls for the fraction of investments made by fund $N$ in each industry sector one year prior to raising fund $N+1$. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01.

| | Duration since fund inception | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Low cum num. G incidents | | -0.045<br>(0.130) | | -0.048<br>(0.131) |
| High cum num. G incidents | | -0.050<br>(0.143) | | -0.083<br>(0.148) |
| log(1+ cum num. G incidents) | -0.020<br>(0.259) | | -0.095<br>(0.270) | |
| log(fund multiple) | 0.669***<br>(0.133) | 0.669***<br>(0.133) | 0.683***<br>(0.135) | 0.684***<br>(0.135) |
| log(fund size) | 0.263***<br>(0.045) | 0.269***<br>(0.047) | 0.242***<br>(0.047) | 0.248***<br>(0.050) |
| log(buyout multiple) | 5.991***<br>(1.629) | 6.097***<br>(1.646) | 5.581***<br>(1.642) | 5.713***<br>(1.660) |
| log(fund series) | -0.040<br>(0.102) | -0.041<br>(0.102) | -0.042<br>(0.104) | -0.042<br>(0.103) |
| Observations<br>Industry controls | 3114<br>No | 3114<br>No | 3114<br>Yes | 3114<br>Yes |

Table A5: **Effect of G incidents on the probability of raising a follow-up fund:** This table presents the effect of G incidents on the likelihood of raising a follow-up fund. The analysis is done in a fund-year panel, in which each fund exists in the sample until raising a follow-up fund or the sample end. The dependent variable is the hazard rate of raising a follow-up fund in a given year for fund $N$. In columns (1) and (3) , $log(1 + cum\,num.\,G\,incidents)$ is demeaned log cumulative average number of incidents from fund $N$ inception till year $t-1$. The variable is demeaned by each vintage year of fund, year and PE firm region. In columns (2) and (4), $Low\,cum\,G\,incidents$ ($High\,cum\,G\,incidents$) are dummy variables indicating below (above) below median cumulative average number of incidents from fund $N$ inception till year $t-1$, conditional on any incidents happen in this period. The omitted category is funds with no incidents from fund $N$ inception till year $t-1$.. $log(fund\,size)$ is the natural logarithm of AUM of fund N. $log(fund\,multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\,series)$ is natural logarithm of the sequence number of fund N of a given series. $log(buyout\,multiple)$ is the natural logarithm of overall performance of buyout funds of each year. In columns (3) and (4) we include separate industry controls for the fraction of investments by fund $N$ at $t-1$ in each industry sector. Standard errors reported in parentheses are clustered by fund. * p<.10; ** p<.05; *** p<.01.

| | USD (Mill.) committed to a fund | | | log(USD committed to a fund) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Relationship LP | 36.512***<br>(3.596) | 27.613***<br>(2.703) | 14.834***<br>(1.731) | 0.583***<br>(0.040) | 0.350***<br>(0.025) | 0.166***<br>(0.017) |
| Vintage Year × PE Region FE | ✓ | | | ✓ | | |
| Vintage Year × PE Region × LP FE | | ✓ | ✓ | | ✓ | ✓ |
| Fund FE | | | ✓ | | | ✓ |
| Observations<br>$R^2$ | 16,139<br>0.11 | 13,195<br>0.66 | 12,230<br>0.79 | 16,139<br>0.17 | 13,195<br>0.80 | 12,230<br>0.90 |

Table A6: **Association of LP relationships and size of Capital Commitment** This table reports the results of a regression of LP - fund commitment on whether the LP is a Relationship LP. The dependent variable is the amount in USD (Mill) committed by a given LP to a given fund. $Relationship\,LP$ is a dummy variable indicating that an LP has invested in other funds of a given PE firm before fund $N+1$ is raised. In columns (1) and (4) we include Vintage Year × PE Region FE. In columns (2) and (5) we include Vintage Year × PE Region FE × LP fixed effects. In columns (3) and (6) we include Vintage Year × PE Region FE × LP fixed effects and Fund fixed effect. Standard errors are clustered by PE firms. * p<.10; ** p<.05; *** p<.01.

| | Dummy(Invest in Fund N+1) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Low number of E&S incidents | -0.003*** | -0.001 | |
| | (0.001) | (0.001) | |
| High number of E&S incidents | -0.001 | 0.002 | |
| | (0.001) | (0.001) | |
| Low number of E&S incidents × Relationship LP | | -0.106*** | -0.107*** |
| | | (0.023) | (0.023) |
| High number of E&S incidents × Relationship LP | | -0.103*** | -0.104*** |
| | | (0.027) | (0.027) |
| Relationship LP | 0.311*** | 0.363*** | 0.367*** |
| | (0.032) | (0.037) | (0.036) |
| log(fund N series number) | 0.000 | 0.000 | |
| | (0.001) | (0.001) | |
| log(fund N size) | 0.005*** | 0.004*** | |
| | (0.001) | (0.001) | |
| log(Fund N Multiple) | 0.007*** | 0.007*** | |
| | (0.001) | (0.001) | |
| Fund N+1 Vintage Year × PE Region × LP FE | ✓ | ✓ | ✓ |
| Fund N+1 FE | | | ✓ |
| Observations | 1051915 | 1051915 | 1051915 |
| $R^2$ | 0.31 | 0.31 | 0.32 |

Table A7: **LP-GP Relationship and ESG Incidents** This table reports the results of a regression of the propensity of LP to finance fund $N+1$ and how this propensity changes with the number of E&S incidents. This analysis is done in an LP-fund N data structure. The dependent variable is a dummy variable taking a value 1 if a given LP invests in fund $N+1$ and 0 otherwise. *Relationship LP* is a dummy variable indicating that an LP has invested in other funds of a given PE firm before fund $N+1$ is raised. *Low E&S incidents* (*High E&S incidents*) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. In columns (1) and (2) we include Fund $N+1$ vintage year × PE Region × LP fixed effects. In column (3) we include Fund $N+1$ vintage year × PE Region × LP fixed effects and Fund $N+1$ fixed effects. Standard errors reported in parentheses are clustered by PE firms and by fund vintage year pairs. * p<.10; ** p<.05; *** p<.01.

| | (1) Fund N Fraction Exits | (2) Fund N Fraction Exits | (3) log(Fund N Multiple) | (4) log(Fund N Multiple) | (5) log(Fund N IRR) | (6) log(Fund N IRR) | (7) log(Fund N PME) | (8) log(Fund N PME) |
|---|---|---|---|---|---|---|---|---|
| log(1 + num. E&S incidents) | -0.034 | | 0.064 | | 0.173** | | 0.073 | |
| | (0.028) | | (0.051) | | (0.073) | | (0.055) | |
| Low number of E&S incidents | | 0.033** | | 0.062** | | 0.106* | | 0.097*** |
| | | (0.015) | | (0.028) | | (0.060) | | (0.037) |
| High number of E&S incidents | | 0.000 | | 0.043 | | 0.170*** | | 0.061 |
| | | (0.018) | | (0.034) | | (0.064) | | (0.041) |
| log(fund N size) | 0.011* | 0.007 | -0.009 | -0.015 | -0.039 | -0.056** | 0.025 | 0.014 |
| | (0.006) | (0.006) | (0.012) | (0.013) | (0.026) | (0.028) | (0.016) | (0.018) |
| log(fund N series number) | 0.001 | 0.003 | 0.026 | 0.026 | 0.015 | 0.016 | 0.015 | 0.015 |
| | (0.010) | (0.010) | (0.021) | (0.021) | (0.047) | (0.047) | (0.032) | (0.032) |
| Fund N Vintage Year × PE Region FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry Controls | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Observations | 1356 | 1356 | 1006 | 1006 | 919 | 919 | 694 | 694 |
| $R^2$ | 0.290 | 0.292 | 0.204 | 0.207 | 0.193 | 0.196 | 0.231 | 0.237 |

Table A8: **Association of current fund performance and E&S incidents broad sample**. This table reports the results of a regression of fund performance on E&S incidents. The dependent variable in columns (1)-(2) is fraction of successfully exited investment by Fund N in the first ten years since fund inception. The dependent variable in columns (3) and (4) is the fund performance measured by natural logarithm of the internal rate of fund N multiple. The dependent variable in columns (5) and (6) is the fund performance measured by natural logarithm of the internal rate of return (IRR) of funds. The dependent variable in columns (7) and (8) is the fund performance measured by natural logarithm of the Kaplan Schoar PME of fund N. In column (1),(3),(5) and (7), $log(1 + num.\, E\&S\, incidents)$ is log of one plus the average number of E&S incidents of the fund N averaged across the first ten years since fund N inception. In column (2), (4), (6) and (8), $Low\, E\&S\, incidents$ ($High\, E\&S\, incidents$) are dummy variables indicating fund $N$ has had an below (above) median average number of incidents (conditional on having incidents) across the first ten years since fund inception. The omitted category is the ones with no incidents in the first ten years since fund inception. $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. In all columns we include fund $N$ vintage year × PE Region fixed effect. In all specifications Industry Controls includes separate controls for the fraction of investments made by the fund in each industry sector. Standard errors reported in parentheses are clustered by PE firms. * p<.10; ** p<.05; *** p<.01.

| | Dummy(Invest in Fund N+1) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Relationship LP | 0.378*** (0.030) | 0.383*** (0.028) | 0.378*** (0.030) | 0.397*** (0.034) | 0.403*** (0.032) |
| log(1 + num. E&S incidents) | | | -0.001 (0.005) | 0.005 (0.004) | |
| Relationship LP × log(1 + num. E&S incidents) | | | | -0.114* (0.059) | -0.120** (0.056) |
| log(fund N series number) | 0.001 (0.003) | | 0.001 (0.003) | 0.001 (0.003) | |
| log(fund N size) | 0.012*** (0.002) | | 0.012*** (0.002) | 0.012*** (0.002) | |
| log(Fund N Multiple) | 0.018*** (0.004) | | 0.018*** (0.004) | 0.018*** (0.004) | |
| Fund N+1 Vintage Year × PE Region × LP FE | ✓ | ✓ | ✓ | ✓ | ✓ |
| Fund N+1 FE | | ✓ | | | ✓ |
| Observations | 352,983 | 352,983 | 352,983 | 352,983 | 352,983 |
| $R^2$ | 0.32 | 0.33 | 0.32 | 0.32 | 0.33 |

Table A9: **LP-GP relationship and E&S incidents, robustness to active LP sample:**. This table reports the results of a regression of the propensity of LP to finance fund $N+1$ and how this propensity changes with the number of E&S incidents. This analysis is done in an LP-fund N data structure. This sample is conditional on LP who invests in at least one fund in a given year. The dependent variable is a dummy variable taking a value 1 if a given LP invests in fund $N+1$ and 0 otherwise. *Relationship LP* is a dummy variable indicating that an LP has invested in other funds of a given PE firm before fund $N+1$ is raised. $log(1+num.\ E\&S\ incidents)$ is log of one plus the average number of E&S incidents of the previous fund (fund N) in the two years prior to raising a follow-up fund. $log(fund\ N\ size)$ is the natural logarithm of AUM of fund N. $log(fund\ N\ multiple)$ is the natural logarithm of net multiple of fund N. $log(fund\ N\ series)$ is natural logarithm of the sequence number of fund N of a given series. In columns (1) - (5) we include Fund $N+1$ vintage year × PE Region × LP fixed effects. In columns (2) and (5) we include Fund $N+1$ vintage year × PE Region × LP fixed effects and Fund $N+1$ fixed effects. Standard errors reported in parentheses are clustered by PE firms. * p<.10; ** p<.05; *** p<.01.

| | ihs(Num. E&S Incidents) | | | log(1+RepRisk Index) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Post-Investment × High prop. ESG-concerned Rela. LPs | -0.044*** (0.016) | -0.044*** (0.016) | -0.043** (0.019) | -0.123*** (0.046) | -0.129*** (0.047) | -0.118** (0.052) |
| 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 | 0.40 | 0.41 | 0.47 |

Table A10: **Engagement robustness:**. The table reports E&S outcomes at portfolio companies of PE firms with a high proportion of E&S concerned LPs compared to those of PE firms with a low proportion of E&S concerned investors post-investment. The data are structured at a portfolio company-year level. Post-investment for a portfolio company is defined based on the year it received investment from a PE firm. High proportion of E&S concerned investors is defined as above median proportion of LPs based in Europe, LPs in democratic leaning states of the US or publicly listed LPs. The dependent variable in columns (1)-(3) is ihs(num. E&S incidents) and the dependent variable in columns (4)-(6) is log(1+RepRisk index). In columns (1) and (4), we include Firm FE and Year × Deal year FE. We add stricter set of fixed effects in subsequent columns. Columns (2) and (5) include Industry × Year FE in addition to Firm FE and Year × Deal year FE. Columns (3) and (6) include Country/State × Year FE in addition to the previous set of fixed effects. Standard errors reported in the parentheses are clustered at the portfolio company level. * p<.10; ** p<.05; *** p<.01.