The Effect of Litigation on Venture Capitalist Reputation

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Abstract: A large literature examines how contractual terms protect VCs against misbehavior by entrepreneurs. But what constrains misbehavior by VCs? We provide the first systematic analysis of how alleged VC misconduct affects VC reputation using a hand-collected sample of 296 lawsuits involving 221 venture capitalists during the period 1975-2007. We first estimate an empirical model of the propensity of VCs to get involved in litigation. We find that older VCs and VCs with more deal flow and larger funds under management are more likely to litigate; however, the effect is concave. In addition, early-stage VCs and VCs with past litigation history are more likely to participate in litigation. We then analyze the relationship between litigation and VC fundraising, deal flow and network centrality. We find that litigation does not go unnoticed: in subsequent years, VCs involved in litigation as defendants raise significantly less capital than their peers (matched on age, size and performance), invest in fewer and lower quality deals, and syndicate with fewer VC firms. The biggest losers are VCs who participate as defendants in multiple lawsuits.

Reputation often serves as a disciplining device in settings with incomplete contracts and informational asymmetries.[1] For example, Crocker and Reynolds (1993) and Banerjee and Duflo (2000) find that reputation has a significant influence on contractual design and outcomes. The negative consequences of losing reputation due to misconduct could be quite severe. In a recent study of Indian business groups, Gopalan, Nanda, and Seru (2007) find that the first bankruptcy in a business group leads to reputational negative spillovers as evidenced by the drop in the amount of external finance raised, investments and profits, and an increased likelihood of bankruptcy of other healthy members of the group. In the finance literature there has been a stream of studies trying to quantify reputational losses due to various types of corporate misconduct. Several papers attempt to measure the reputational loss from changes in product or service quality (Jarrell and Peltzman (1985), Rubin, Murphy, and Jarrell (1988), Mitchell and Mahoney (1989), Borenstein and Zimmerman (1989), Peltzman (1981)). Other studies document a decline in the market value of publicly traded firms resulting from involvement in various types of corporate fraud (Cutler and Sumers (1988), Karpoff and Lott (1993), Bhagat, Brickley, and Coles (1994), Bizjak and Coles (1995), Karpoff, Lee, and Martin (2008)). In a recent study, Fich and Shivdasani (2007) document that the reputational impact of corporate misconduct extends to the outside directors of the participating corporations.

Yet to the best of our knowledge, there is no empirical evidence on whether private equity investors who behave opportunistically in a repeated game setting with incomplete contracts (where reputation matters the most) suffer negative reputational consequences, and how big the negative effects are. Despite the growing importance of private equity over the years, all of the previous studies on the reputational effects of litigation focus on publicly traded firms. Our paper tries to fill this void in the empirical literature on reputation by investigating whether opportunistic behavior leads to reputational losses in the U.S. venture capital (VC) industry.

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[1] For a discussion on the value of reputation in a repeated game setting with information asymmetry see Kreps and Willson (1982), Milgrom and Roberts (1982), Shapiro (1983), and Diamond (1989).

We choose the VC industry because it represents an excellent example of a setting where repeat players enter into incomplete and systematically one-sided contracts. First, the industry is thoroughly covered with the web of repeated interactions. Among repeat players are not only venture capitalists and entrepreneurs, but also lawyers, accountants, bankers and other investment professionals; individuals and institutions that invest in venture capital funds; angel investors and other non-VC investors in VC-financed companies; professional managers and other later-stage employees of startups; established companies that often acquire VC-financed startups, and so forth. While not every participant in the system is a repeat player (e.g., individual founders are rarely "serial" entrepreneurs (Bengtson (2006)), the constant presence of repeat players shapes the flow of information about opportunistic behavior among all parties.

Second, the industry is full of severely incomplete contracts. VC investments in startup companies with limited track records and lack of proven products or technologies are plagued by uncertainty and information asymmetries. The pervasive uncertainty and informational asymmetries between VCs and entrepreneurs, and between VCs and their own investors, are managed with complex contracts and incentive structures, but contracts set in such an environment are necessarily incomplete (Williamson (1985)). Incomplete contracts can lead to ex post opportunism (Williamson (1985), Goldberg (1985), Masten (1988)) and/or ex ante investment distortions (Tirole (1986), Hart and Moore (1988)) if the problems are not mitigated through extra-contractual means.

Third, the contracts between VCs and entrepreneurs are not only incomplete, but notably one-sided. VCs have huge power over portfolio companies. Previous work examines the provisions of these contracts, and rationalizes them as protecting VCs against the risk of misbehavior by entrepreneurs (e.g., Hellmann (2001), Kaplan and Stromberg (2003) ("KS" hereafter)). In these studies, the VC is viewed as the principal, the entrepreneur is the agent, and the contract protects the principal. But what protects the entrepreneur against misbehavior by VCs? VCs are not saints. "[T]hese guys eat their own young" warns one entrepreneur on a popular website, referring to Sequoia Capital, one of the very top and presumably most reputable VC firms (Buckman (2007)).

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Perhaps this is why contracts between VCs and their investors provide significant protections to investors (Litvak (2006)). In contrast, the contracts between VCs and entrepreneurs do little to protect entrepreneurs against VCs; in important ways they might invite VC misbehavior.

The question of what constrains VCs has been all but ignored in the literature. Instead, good behavior is usually assumed. For example, KS 2003 explicitly state that VCs "receive few or no private benefits of control," while Black and Gilson (1998) assume a market for VC reputation, which constrains VCs to honor an unwritten implicit contract to let successful entrepreneurs take their company public and thus retain control. In the presence of such one-sided contracts, reputation is indeed one of the key mechanisms that can mitigate VC opportunism. The information provided by lawsuits offers one avenue for policing VC reputation. However, apart from a discussion of a few scenarios in a single paper (Cumming and Macintosh (2004)), there has been no examination of lawsuits involving VCs, their frequency, their outcomes, and how they may affect VC reputation.

We begin here to study VC litigation and its effect on the market for VC reputation. We hand-collect a sample of 296 lawsuits involving VCs, many filed by entrepreneurs, many making plausible claims of VC expropriation. The mere existence of this number of lawsuits and the fact that in the majority of lawsuits the VCs are defendants suggests that opportunistic VC behavior is a potential problem.[2] We use the hand-collected dataset of lawsuits to achieve two central goals. First, we ask what factors predict a VC's propensity to be involved in litigation. We document some important effects of VC reputation, deal flow, past performance, and investment stage focus on the probability of a VC to be a party to a lawsuit. More reputable VCs and VCs with larger deal flows are more likely to get involved in a lawsuit, although the likelihood is concave in both reputation and deal flow. Thus, for more reputable firms we document that the fraction of deals ending up in litigation decreases. One possible explanation for this result is that reputational losses are proportionally larger

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[2] Anecdotal evidence suggests that litigation involving VCs should be extremely rare. For example, a *Wall Street Journal* article from March 5, 2003 (Whitman (2003)), suggests that there are only a handful of such cases and most of the time potential disputes are settled out of court. From conversations with venture capitalists we repeatedly heard the same argument.

for this type of firms and they try to do everything to avoid litigation. Alternatively, it might be that more reputable VCs are better managers and they manage to resolve problems internally without the need to go to court. We also find a strong effect of repeat litigation – VCs that have participated in lawsuits in the past, especially as defendants, are significantly more likely to get involved in litigation in the future. In economic terms, the estimates suggest that having an additional lawsuit in the past increases the likelihood of a new lawsuit by roughly 30%. Lastly, we find that VCs focusing on early-stage firms are more likely to get sued.

Second, we study the effect of litigation on VCs fund raising, deal flow, and VC network centrality. Lawsuits are extreme events which result from a fundamental breakdown in communication or contractual arrangements. By looking at such extreme events, even if most lawsuits do not lead to any direct financial penalties for the VCs, limited partners, entrepreneurs, and other VCs may infer that something is wrong at the organizational level of the VC firm and hence avoid such VCs. We use three principal proxies for reputation. First, VCs raise a series of funds, and thus regularly return to investors to raise new capital. The size of future funds may proxy for the VC's reputation with investors. Second, the number and quality of deals which VCs invest in serve as proxy for the VC's reputation with entrepreneurs. Third, the VC's network centrality proxies for the reputation with other VCs (Hochberg, Ljungqvist, and Lu (2007a)).

We document that although VCs win a significant number of cases brought against them, being sued is associated with reputational consequences. VCs who have been involved as defendants in lawsuits raise significantly smaller funds after the lawsuits and invest in a smaller number of deals. Relative to a sample of carefully selected control firms the funds under management of VCs that are defendants and participate in a single lawsuit drop by 5.5%. Adding the effect of a second lawsuit, we find that the relative change in funds under management decreases to -7.5%. The deals in which they do invest after the lawsuits are of lower quality as measured by the proportion of successful exits. In addition, we find that the network centrality of VCs involved in litigation erodes significantly. They syndicate with fewer VCs and get invited by fewer VCs to join their syndicates as non-leading

members. The negative effects are especially strong when VCs: (1) are more reputable, or (2) are defendants to multiple lawsuits. We do not find any significant reputational effects for VCs involved as plaintiffs in litigation.

Some caveats and cautions. First, we can assess only association, not causation. One can tell a variety of non-causal stories which are consistent with our results. For example VCs who suffer an exogenous hit to their reputations could both attract lawsuits and raise smaller funds. Second, we do not assess here the merits of the lawsuits because almost half of the lawsuits have not reached a judicial resolution yet. Still, our evidence suggests that VC misbehavior is potentially a serious concern, and that lawsuits may be one means through which reputations are policed.

The remainder of the paper is organized as follows. Section I provides some background on VC litigation and VC reputation. Section II develops our hypotheses. Section III discusses the lawsuit data. We present the results of our litigation propensity models in Section IV and our pre-versus-post lawsuit analysis of VC fund raising, deal flow, and network centrality in Section V. Section VI concludes. Appendix A provides more details on the data manipulations.

I. Background on VC Litigation and Reputation

A. VCs and Litigation

A.1. Equity and Asset Tunneling

One common theme of VC litigation is the claim that VCs use financial transactions to siphon wealth from founders and other common shareholders to themselves. The defining feature of this oppressive technique termed equity tunneling by Atanasov, Black and Ciccotello (2007) is that in its extreme form, it affects only the ownership of portfolio companies, but not their other characteristics, such as profitability, size, types of assets, and so forth. Common examples include allegations of dilution and freeze-out, where VCs use their broad contractual powers to oust prior investors and founders and take over the company.

Equity tunneling (or at least allegations thereof) is an unsurprising byproduct of standard venture capital contracts, which give VCs significant formal and informal control over their portfolio firms. First, VCs sit on the board of directors, hold the majority of voting rights, routinely exercise anti-dilution rights, and retain the right of first refusal for subsequent securities offerings. These rights, taken together, give current VCs control over the identity of the firm's future investors, the size of each participant's stake in the company, and the timing and terms of future investments. Second, VCs often get a contractual right to replace founders, and they do so regularly (Hellmann and Puri (2002)). When a founder is replaced, the contract cancels founder's stock options and often gives VCs the right to repurchase founder's vested stock at a low price. These rights, taken together, give VCs control over the sharing of the ownership of a company with its founders. Third, the structure of VC investment, commonly in preferred shares with significant liquidation preferences and redemption rights, puts VCs in a superior position to common stockholders in acquisitions or liquidations. These rights, combined with board and voting control, give VCs control over the terms and timing of exit. No wonder some VCs are accused of acting in their own interest while exercising their legal rights; the question is what stops them from doing so all the time.

Another possibility involves expropriation of firm assets. VCs often hold stakes in a number of firms in the same or related industries. In addition, VCs tend to encourage their portfolio firms to enter into strategic relationships with one another, the so-called "Keiretsu network" (see Lindsey (2008)). Thus, they could engage in transfer pricing, by arranging for one portfolio firm to purchase intellectual property, services, or other assets from another portfolio company at an inadequate or excessive price. Following the classification of Atanasov, Black and Ciccotello (2007), we call such transactions "asset tunneling." If the VC holds different ownership stakes in different portfolio firms, it has an incentive to transfer assets from the firms with low ownership to the firms with high ownership. These incentives are very similar to those of the controlling shareholder of a business group (pyramid).

A.2. Bankruptcy Proceedings

VCs may also become involved in litigation when a portfolio firm goes bankrupt. A significant portion of VC-backed startups get liquidated. Creditor lawsuits against shareholders are common when a firm goes into bankruptcy, and VCs are a tempting deep-pocketed target.[3]

A.3. Securities Law Violations

In addition, VCs can be defendants in class-action lawsuits initiated by shareholders in VC-backed IPO firms. Typically, these class-action suits are directed towards underwriters and company directors and officers. However, sometimes VCs are also named as defendants.

A.4. Disputes with Other Large Repeat Players

VCs might initiate litigation if they feel they were victims of misbehavior of other VCs, large equity investors of their portfolio firms, or banks. VCs may also sue their limited partners for unfulfilled capital call obligations, as many partnership agreements give VCs the right to use courts to collect defaulted contributions. Finally, VCs can get involved as plaintiffs or defendant in intellectual property lawsuits.

B. Related Literature

The academic literature on litigation involving VCs is sparse. There are several theoretical papers that deal with the possibility of VC opportunistic behavior. Ueda (2004) models potential expropriation on the part of the VCs and suggests that banks could mitigate this conflict. Landier (2001) models a situation where both the VC and entrepreneur hold each other up. Yosha (1995) and Bhattacharya and Chiesa (1995) develop models where a financier has the incentive to support the spillover of interim knowledge across firms in her portfolio since that increases the likelihood of breaking even on each individual investment.

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[3] See Pontiff (2007) for an analysis of the effect of "deep pockets" on probability of litigation of publicly traded corporations in the US.

Cumming and MacIntosh (2004) offer a descriptive treatment of potential VC litigation and analyze a few scenarios related to boom and busts in the VC industry. There are also a host of practitioner articles, offering advice to VCs and their lawyers (see Bartlett and Garlitz (1995), Christopher (2001), Etzel (2002), Fellers (2002), and Padilla (2001)). The common thread in these articles is litigation arising from "down rounds" – financing rounds where the price per share is lower than in previous rounds. Down rounds, especially insider down rounds (where the only investors are VCs who have invested in previous rounds), usually create significant dilution of founders and other common shareholders. However, other transactions, including freeze-outs and asset transfers can also lead to lawsuits.

C. The Role of Reputation

VCs *could* behave opportunistically toward founders. Their formal contracts with entrepreneurs provide the ability to do so, and background legal rules add little to protect founders beyond whatever the contracts provide. Yet if opportunistic behavior were too widespread, venture capital could not flourish as it has, nor could formal contracts be written, in equilibrium, in the strongly pro-VC manner that one observes. So there must be some informal constraints on VC behavior. One central mechanism that limits opportunistic behavior by VCs is reputation -- with investors, other VCs, acquirers of VC-backed firms, investors in VC-backed IPOs, current and potential entrepreneurs, and current and potential employees of VC-backed firms.

C.1. Reputation with Investors in VC Funds

Because venture funds are organized as limited-term partnerships, VCs have to go back to investors to raise capital for new funds every few years. More reputable VCs are able to raise more capital, raise it faster, and negotiate better terms with their limited partners (for example, they might be able to charge higher management fees and/or take a bigger share of the profits of the fund).

The need to preserve reputation with investors, however, will not directly constrain VC opportunism directed at angel investors and founders. After all, what is good for the VC is generally

good for investors in the VC fund as well. Investors should care about VC mistreatment of entrepreneurs only if the VC's actions adversely affect profitability of future funds (e.g., by reducing future deal flow), or if the VC's actions reveal something unattractive about the VC that was not known before.

C.2. Reputation with Other VCs

VCs often syndicate investments with other VCs. A VC with a better reputation among other VCs will presumably find it easier to syndicate its own investments, and will receive better syndication offers from other "lead" VCs. For example, Lerner (1994) finds that reputable VCs tend to syndicate with other reputable VCs.

The need to preserve reputation with other VCs will constrain some VC activities that might harm entrepreneurs. Consider equity dilution. If all VCs from Round 1 participate pro rata in Round 2, all can happily set a low Round 2 price that dilutes common shareholders. However, if some Round 1 VCs do not participate in Round 2, or participate less than pro rata (call these "nonparticipating VCs"), they will be diluted too, and will be acutely aware of the fairness of the Round 2 price. The need to satisfy nonparticipating VCs on fairness will help to ensure fairness vis-à-vis common shareholders as well. The same is true for asset tunneling if, as will often be the case, different VCs have different stakes in the asset seller and the asset buyer.

However, the need to preserve reputation with other VCs will not always constrain VC opportunism directed at angel investors and founders. What is good for one VC is often good for other VCs who invest in the same company. In this situation, other VCs will object to mistreatment of entrepreneurs by a lead VC only if they will suffer a reputation loss with entrepreneurs or other VCs whose expected cost outweighs their gain in the current deal. An indirect channel is also possible -- if a VC deals opportunistically with an entrepreneur this time, other VCs may worry that they will suffer similar treatment the next time.

Finally, the tightness of VC community may play against a complaining founder, instead of against the misbehaving VC, if the merits of complaints are hard to estimate and if VCs tend to

support their own and distrust "trouble-makers." The "no lunch in this town" gossip one can often hear in founder circles indicates that the fear (warranted or not) of VCs' implicit collusion not to fund complaining founders may restrict the flow of information about VC misbehavior and thus induce more misbehavior.[4]

C.3. Reputation with Acquirers and IPO Investors

VCs exit from investments by selling them to acquiring companies or to public markets through an IPO. For both markets, a chief worry of buyers is the seller's superior information about the portfolio company's true value. A reputation for sharp dealing with entrepreneurs could spill over and affect a VC's ability to sell portfolio companies.

There is ample empirical evidence on the importance of reputation during VC exits through IPO. Brav and Gompers (1997) show that VC-backed IPOs do not suffer the long-run underperformance that is found in other IPOs. Ivanov, Krishnan, Masulis, and Singh (2008) find that IPOs backed by more reputable VCs enjoy better post-IPO long-run performance. Lin and Smith (1998), find that more reputable VCs are less likely to sell overpriced shares in an IPO. Baker and Gompers (2003) find that IPOs backed by reputable VCs have more independent boards and less powerful CEOs than non-VC-backed IPOs and IPOs backed by less reputable VCs. Wongsunwai (2007) finds that startups backed by high-quality VCs have more independent boards and after they go public they have lower abnormal accruals and are less likely to experience a financial restatement.

C.4. Reputation with Entrepreneurs

A reputation for dealing fairly with entrepreneurs can generate future high-quality deal flow or better financing terms. For example, Black and Gilson (1998) argue that a central part of VC contracting with entrepreneurs is an implicit contract to return control to a successful entrepreneur by exiting through IPO, rather than through selling the company, if both options are available. Hsu

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[4] The recently launched website, thefunded.com, gives some illustrations of founder gossip. Notably, founders are willing to share information only anonymously and in the way that makes it difficult to link a discussed VC to a particular online commentator.

(2004) shows that entrepreneurs are willing to accept lower valuations in order to secure financing from reputable VCs.

Another effect of VC reputation is proposed by Bachmann and Schindele (2006). In their model, entrepreneurs will be willing to expend more effort on developing their ideas if VC investors have a reputation for not stealing entrepreneurs' intellectual property. The extra entrepreneurial effort results in better startup performance. Trustworthy VCs may also be able to better resolve contentious issues that arise between entrepreneur and investors without the need to resort to litigation, which could be very costly for both the startup and the VCs.[5]

II. Testable Hypotheses about the Interactions between VC Reputation and Litigation

The market for VC reputation cannot work well unless there are mechanisms transmitting the information about VC behavior to future entrepreneurs and other contractual partners. Litigation by founders of VC-backed firms can be one such mechanism – we make no claim that it is the only one. Standard signaling theory posits that for a signal to be credible, it must be costly (Spence, 1973). Litigation against VCs is very costly for founders, who must incur legal expenses, emotional stress, the near-certainly that they will never again obtain VC funding for a future venture, and, for compact communities like the Silicon Valley or Route 128, possible difficulty in obtaining any employment in related field. Founders may wrongly feel aggrieved, simply because their business idea failed, without any fault on the VC's part. But there is a very good chance that they feel seriously aggrieved, or they would not sue, and a respectable chance that there is substance to their grievance. Thus, litigation has the potential to convey a signal to others -- entrepreneurs, employees, other VCs, and so on -- to be careful when dealing with the defendant VC.[6]

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[5] We thank Scott Stern for suggesting this possibility.

[6] Entrepreneurs will also likely informally share information about VC misbehavior, independent of litigation. VCs will similarly chat about behavior by other VCs. One can imagine an extreme case in which entrepreneurs and other VCs pay no attention to litigation in forming opinions about a VC's reputation. Litigation would then be a byproduct of VC misbehavior -- some founders will sue, others will only complain to their buddies. Litigation would then not directly send a signal of misbehavior -- that information would be communicated in other ways -- but would still be associated with misbehavior. More plausibly, both channels will operate.

The signal is surely noisy. The plaintiff's version of the facts is available in the court complaint, and will sometimes be persuasive by itself. In the internet era, realistic public access to complaints -- rather than theoretical access (if you know the case number and want to take a trip to the courthouse, obtain the file, and manually copy the complaint) -- is gradually becoming more common. Indeed, that access made this research project possible. But the other side of the story will often be harder to obtain from the public record. Sometimes entrepreneurs might file frivolous lawsuits. Also, plaintiff litigation success is surely a marker for VC misbehavior, but a plaintiff loss conveys much less. A complaint may be factually accurate, depict highly opportunistic behavior, and yet the plaintiff will still lose the case, perhaps at an early stage. Repeat litigation against the same VC will thus provide a stronger signal than a single suit.

Litigation by other parties does not send as clear a signal. When a firm fails and creditors sue, they often sue all of the shareholders, not only the VCs, and their complaints often do not involve the type of behavior that would compromise a VC's reputation with entrepreneurs or other VCs. Class action shareholder lawsuits after a company goes public typically claim faulty disclosure by the company, not tunneling by the VC.

We therefore formulate three hypotheses about VC reputation and litigation by entrepreneurs. Our first hypothesis is related to the probability of being sued. We conjecture that more reputable VCs will be less likely to engage in litigation. Reputation takes time and effort to build, but can be destroyed fairly quickly. Reputable VCs rely on their established relationships with (1) investors in VC funds for future funding, and (2) IPO and M&A investors for successful exits from future portfolio firms, and might be unwilling to compromise these by engaging in potentially damaging lawsuits. We anticipate that they will also be less likely to engage in tunneling-type activities, since they need high-quality startups to continue to generate good performance (Hsu (2004)). Also, we

Entrepreneurs and VCs will communicate informally, but litigation will be a subject of conversation, and will strengthen the credibility of informal complaints. Our empirical predictions are the same whether litigation directly conveys information about misbehavior, or is only associated with misbehavior that is communicated in other ways.

expect more reputable VCs to be better in managing their portfolio firms and their relations with other VCs and investors and thus better able to resolve litigious issues without the need to go to court. Based on our discussion of VC reputation, we test the following hypothesis:

Hypothesis 1: More reputable VCs are less likely to face lawsuits.

We expect litigation to have a negative effect on VC reputation. However, we expect this to be the case primarily when VCs are defendants in lawsuits. In cases where VCs are plaintiffs in lawsuits, we do not anticipate there to be any significant changes in reputation. We use several variables to measure reputation. First, following Kaplan and Schoar (2005), we use funds under management, appropriately scaled to account for the well-documented time variation in VC activity. A loss of reputation will be reflected in a significant reduction in fundraising after the lawsuit, all else equal. Second, we also use the deal flow as a proxy for reputation. We conjecture that both the quantity and the quality of deal flow will be negatively affected by litigation. The quality of deal flow is measured as the fraction of portfolio firms that go public. Third, we also consider VC network centrality as an additional reputational measure. A recent study by Hochberg, Ljungqvist, and Lu (2007a) shows that VC networks have a significant effect on VCs' performance. In addition, Hochberg, Ljungqvist, and Lu (2007b) present evidence that VC centrality could serve as a barrier to entry in local VC markets, thus improving VC bargaining power and driving down valuations at financing rounds. Therefore, we anticipate that one of the fall-outs of litigation could be a negative impact on a VC's network centrality.

Hypothesis 2: Lawsuits filed against VCs will be followed by a drop in VC reputation, which will be reflected in reduced fundraising, lower quantity and quality of deal flow, and eroded network centrality.

We also conjecture that some lawsuits will lead to bigger reputational losses than others. As mentioned earlier, there are various types of lawsuits in which VCs can get involved, and those have different degree of severity. For example, we expect the reputational loss from lawsuits alleging tunneling to be greater than that from class action lawsuits after the company goes public.

Hypothesis 3: The reputational losses will be greater for VCs that are defendants, VCs involved in multiple lawsuits, and lawsuits where the complaint alleges tunneling by the VCs.

These hypotheses are tested against the null that litigation has no effect on VC reputation. There are many reasons to expect no relationship between litigation and VC reputation. First, many lawsuits may be frivolous, filed by disgruntled entrepreneurs or other investors in search for deep pockets. Since most entrepreneurs are not repeat players,[7] reputational concerns may not prevent them from launching frivolous lawsuits. Second, even an appropriately behaving VC may be sued if founders seek to retain private benefits of control while a VC seeks to maximize the value of the company. Third, even meritorious lawsuits may not sufficiently damage VC reputation to have a measurable impact. For example, although Kleiner, Perkins, Caufield and Byers is a defendant in two lawsuits in our sample, this might not matter much given the stellar track.

III. Data and Summary Statistics of Lawsuits

To test for the effect of litigation on VC reputation, we use a sample of lawsuits involving VCs over the period 1975-2007. We collect lawsuits from Westlaw's databases that include both judicially-resolved cases (in databases containing judgments) and unresolved cases (in databases of complaints and other docket materials). We search by terms "venture" and "venture capital," alone and together with terms such as "dilution," "freeze out," "founder," and so forth. We also search by the names of venture capital firms identified by the National Venture Capital Association and cross-checked with VentureXpert. Our searches identify 364 lawsuits which have all available facts and the plaintiff's complaint and 258 lawsuits that have only partial information available such as case number, type of court (state or federal), names of defendants and plaintiffs, and the year of the lawsuit.

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[7] Bengtsson (2006), for example, finds that 92% of the entrepreneurs involved in early-stage firms that received first round VC financing in the period 1991-2003 are one-time entrepreneurs.

Using Westlaw's lawsuit database avoids the usual problem of collecting cases from PACER or Lexis.[8] The standard procedure of collecting cases from Lexis produces only judicially-resolved cases. Such searches do not include ongoing litigation, as well as cases that were voluntarily dismissed, settled, removed to a different court, and so forth. In contrast, we look at both resolved and unresolved cases, including very recent ones. Our searches are also superior to searches in PACER because PACER contains only federal cases.

A. *Lawsuits with Full Information*

We read each case and exclude those that do not involve litigation by or against a venture capital firm. The defendant's name is not dispositive, because some non-VC firms include the term "venture," "venture partners," or even "venture capital." We verify that each firm is indeed a venture capital firm. Consequently, we drop nine lawsuits which involve companies which are clearly not VCs.[9] We then match the firms involved in the remaining 355 lawsuits against the VentureXpert database (by hand, since many names are similar but not identical). Sometimes, this process leads to alternate VC firm names which let us match the firm with VentureXpert. We drop all lawsuits involving VC firms that are not covered by VentureXpert and are left with 248 lawsuits and 204 VC firms. We drop two lawsuits which include one particular company, 3i Group PLC, since it is publicly traded. In addition, we drop seven more VC firms which have missing data on their fund size before the year of litigation. The final full information sample has 239 lawsuits involving 196 VC firms and resulting in 280 unique VC firm-lawsuit combinations.

From VentureXpert, we collect data on VC age, investment and industry focus, number of funds, fund size and portfolio firms (see the Appendix for more details). To account for time-series variations in the VC industry, which are well documented in the literature (Gompers and Lerner

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[8] Information on the exact searches we ran is available from the authors on request. We ran some early searches on Lexis as well, but it turned out that once we had searched Westlaw, there was little need to search Lexis as well. We also searched court records in jurisdictions likely to have significant numbers of VCs and thus VC lawsuits, but this proved to be an extremely inefficient way to gather information.

[9] For example, "Mia Venture Capital" turns out to be a small "boiler room" brokerage", "Midwest Venture Partners" invests in real estate, and so on.

(2000)), we scale the size of VC funds by the total amount of committed VC capital in the year in which a particular fund is raised. For each firm in our sample we compute firm size as the sum of the scaled fund sizes in the pre-litigation years.

Even some very reputable firms, such as Kleiner Perkins, Charles River Ventures, Sevin Rosen Associates, and New Enterprise Ventures are involved in different litigation cases with some of their portfolio firms. Also, there are different types of VCs in our sample: traditional VCs (like Kleiner Perkins and Charles River Ventures), corporate VCs (E*Trade and Xerox Corporation), and venture arms of financial companies (J.P. Morgan Partners and Citigroup). The cases involve startups from various industries and geographical locations. Figure 1 plots the time distribution of the lawsuits in our sample (lawsuits with partial information also are included in the figure; see Section B below). Most of our cases are concentrated in the late 1990s and particularly the early 2000s.

[Figure 1 about here]

Panel A in Table I reports the main characteristics of the lawsuits with full information in our sample. We outline some interesting patterns in the discussion below.

[Table I about here]

Parties. When VCs are involved in litigation, they are usually defendants (77%, or 185 cases). Among parties who bring suits against VCs are: other equity investors of VC-backed startups (19 cases, or 10% of all suits where VCs are defendants); startups themselves (39 cases, or 21%) (these in effect consist of a blend of founders and other equity investors); non-founder employees of startups (16 cases, or 9%); founders alone (15 cases, or 8%); other VCs (19 cases, 10%); banks (7 cases, or 4%) (creditors of VC-backed startups), and limited partners of venture funds run by VCs (8 cases, or 4%).

When founders are involved in litigation, they are almost always plaintiffs. Only one case in our sample involves a defendant founder; that founder was closely affiliated with VCs and was sued together with VCs by another founder.

Allegations. About a third (31%) of all VC-related lawsuits involve allegations of tunneling. Within the universe of tunneling cases brought against VCs, most popular allegations are expropriation of profitable opportunities (20%); wrongful transfers of assets, conducted in a variety of creative ways (17%); sales of companies on terms unfavorable to founders and other equity investors (13%); dilution (2%), and freezeouts (2%). Nearly half (46%) involve hard-to-classify, creative tunneling schemes. This statistics suggests that VC rarely engage in extreme tunneling transactions.

Our data also includes 10 bankruptcy cases and 16 IPO-related class-action lawsuits. The remaining cases are a mixture of intellectual property, labor law, and other difficult to classify allegations.

Outcomes. Our sample contains 120 (50%) cases that reached judicial resolution and 119 cases (50%) that are either still ongoing or have been dropped or settled without ever reaching a judicial decision. In most cases, plaintiffs lose. If we remove cases that have not yet reached resolution, VCs win or partially win 44% of cases, while losing 21%. VCs are more successful in defending cases brought against them than in securing a victory for their own suits (winning or partially winning 20% of the resolved cases).

B. Lawsuits with Partial Information

Of the 258 lawsuits with partial information, we are able to match the names of VCs participating in 61 of them with VentureXpert. This results in 29 VC firms and 61 unique VC firm-lawsuit matches. For four of those cases we do not have information on funds raised by the VC from VentureXpert, so we drop them from the sample. This leaves us with 25 VC firms, 57 lawsuits, and 57 unique VC firm-lawsuit matches. Panel B of Table I presents the main characteristics of this sub-sample. The VCs are the defendants in 77% of the cases (44 lawsuits). Most of the cases (27) are filed in federal courts, and the majority of them are in states like New York (15), California (8) and Texas (4).

Table II presents summary statistics for the 221 (with full and partial information) VCs involved in litigation. The average VC firm is 16.5 years old and has raised 6.3 funds with a total of

$1,641.3 million dollars before the litigation. Consistent with findings in previous studies (for example, see Fenn, Liang, and Prowse (1998)), the majority of VC firms in our sample focus on in late-stage firms.

[Table II about here]

IV. Probabilistic Models of VC litigation

A. Probability of VC Involvement in a Lawsuit

In this sub-section we examine the likelihood that a VC will end up involved in litigation. We are interested in the characteristics of VCs that get sued, and more importantly whether reputation reduces the likelihood of a lawsuit, as Hypothesis 1 implies. To test Hypothesis 1, we employ a random effects probit model where the dependent variable is equal to one if at least one lawsuit occurred for VC firm i in year t and zero otherwise. This type of model, which has been extensively used in the literature on medical malpractice (see Gibbons, Hedeker, Charles, and Frisch (1994)), allows us to utilize the panel nature of the data.

To estimate the model we use the universe of U.S.-based VC firms as well as foreign VC firms that invest in the U.S. Our reason for including foreign VC firms is that those could be subject to litigation if they invest in the US-based startups. According to VentureXpert, there are a number of European, Asian, and Canadian VC firms that invest in U.S. startups and raise funds in the U.S. Our results remain unchanged if we use only US-based VC firms. Our sample covers the period 1970-2007 and consists of 5,023 VC firms of which 221 have one or more lawsuits during that period of time. To make sure that only active VC firms are included, we keep a firm in the database for five years after the last fund is raised.[10] Our full sample panel has 50,769 firm-year observations. Since different factors might affect whether a VC is a plaintiff or a defendant in a lawsuit, we estimate separately the probit model for the full sample and the sub-samples of VC defendants and VC plaintiffs.

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[10] We repeat the analysis using a 10-year cut-off and the results remain qualitatively the same.

In the random effects probit models we use two sets of control variables that may explain the likelihood of litigation – time-variant and time-invariant variables. Time-variant variables include the age of the VC firm (*VC age*), cumulative funds under management (*Funds under mgmt*), and deal flow (*Deal flow*) as proxies for VC reputation or size ("deep pockets") which may affect the probability of the VC being sued (Pontiff (2007)). To account for time variation in VC activity, we scale both *Funds under mgmt* and *Deal flow* by the total amount of VC commitments in the fund year and the number of portfolio firms financed by funds raised in the same year, respectively. We also add the fraction of portfolio firms that go public for the most recent fund raised (*Past performance*) as a performance measure. Hypothesis 1 posits that older VC firms and firms with more funds under management (in other words, more reputable firms) would be less likely to get involved in litigation. There is a concern that larger deal flow and years of existence may mechanically increase the probability of a VC being sued. Still, if reputational concerns matter we expect this positive relation to decrease with age, or in other words the relation between VC age or deal flow and probability of litigation to be concave. To control for this possibility, in some specifications we add the squared terms of *Funds under mgmt* and *Deal flow*. We also include a variable, *Prior lawsuits*, indicating in how many lawsuits the VC firm participated in previous years. The presence of multiple lawsuits against a given VC might reveal a particular type of behavior on the part of that VC towards entrepreneurs and other investors in its portfolio firms. Alternatively, it might be a sign that something is wrong at the organizational level of the VC firm. Thus, we expect firms that have participated in multiple lawsuits in the past to be more likely to get involved in a lawsuit in the future.

The set of time-invariable variables includes dummy variables for the stage and industry focus of our sample firms. *Stage* is a dummy equal to one if the VC firm specializes in early-stage firms, and zero otherwise. We expect that VCs focusing on early-stage firms will be more likely to get involved in litigation since uncertainty in those firms is higher, contracts are more incomplete, and the success rates are relatively low compared to more mature firms. In such an environment, the likelihood of VC opportunism (or the disagreement on whether VC's behavior constitutes

opportunism) might be very high. In addition, Fluck, Garrison, and Myers (2005) model the entrepreneur-VC relationship and one of the predictions from their model is that later stage syndication resolves the VC hold-up problem by assuring the entrepreneur more favorable terms in later rounds. Since there are fewer investors financing early-stage companies (and especially fewer other VC investors whose presence may deter potential misbehavior more strongly), VCs might be tempted to behave opportunistically. *Hi-tech* is a dummy variable equal to one if the VC firm focuses on hi-tech industries such as information technology, biotechnology, and medical/health/life sciences, and zero otherwise. Information on VC industry and stage preferences comes from VentureXpert.

[Table III about here]

Panel A of Table III presents the coefficient estimates of the random effects probit model of VC litigation for the full sample. The results in Model 1 suggest that VC firms with better past performance are less likely to get embroiled in a lawsuit, which provides some support for Hypothesis 1. Oddly, controlling for past performance, indirect measures of reputation (such as VC size and age) are positive predictors of litigation. The coefficients on *Funds under mgmt* and *VC age* are positive and significant at the 1% level. We also obtain similar results when we use *Deal flow* instead of *Funds under mgmt* (Model 3). These results may suggest that either past performance and VC size/age measure different features of VC quality, and some of those features predict litigation positively while others negatively; or the positive relationship between size/age and litigation may be due to a possible mechanical relation between number of deals and probability of litigation.

To address the second possibility, in Models 2 and 3 we include the quadratic terms of *Funds under mgmt* and *Deal flow*. The coefficients on the quadratic term is negative and significant, suggesting that, although more exposure to potential conflict (i.e., dealing with more founders, firms, outside investors, and so forth) predicts more litigation, the marginal increase in exposure to conflict is associated with a decline in propensity to litigate. One possible explanation for the concave effect is that more experienced or reputable VCs are better managers – either less likely to end up in a conflict in the first place or more able to resolve contentious issues without litigation. Another explanation for

concavity is that the reputational loss is more damaging for older and larger firms, and thus more reputable VCs work harder to avoid litigation. These findings are also consistent with the "no lunch in this town" explanation: as the VC grows older and larger, their adversaries may be more reluctant to start a legal war for the fear of repercussions from other industry participants.

We are also interested in whether and how participation in multiple lawsuits affects the likelihood of future litigation. In Models 4 and 5 we include the *Prior lawsuits* variable. Its coefficient estimate is 0.323 (Model 4) and is significant at the 1% level. This implies that VC firms that are involved in more lawsuits in the past are significantly more likely to get embroiled in a lawsuit in the future. In this model, the coefficients on *Funds under mgmt* and *VC age* remain positive and significant. However, once the prior lawsuit variable is included in the model, the coefficient on *Past performance* becomes insignificant. Lastly, in Model 5 we include the quadratic term of *Funds under mgmt* and the coefficient on *Prior lawsuits* remains positive and significant.

We also find that VC firms focusing on early-stage startups are more likely to get sued. This likely reflects the fact that uncertainty and information asymmetry are much higher for early-stage firms and hence there might be more opportunities for opportunistic behavior. In addition, early-stage firms have fewer repeat-player investors whose presence may constrain VC misbehavior. However, as mentioned before, the increased rate of litigation does not necessarily signal bad behavior. The uncertainty of early-stage investing may prompt litigation by increasing the chance that an entirely appropriate decision by the VC may appear bad-faith and expropriatory to the other party. Likewise, higher uncertainty may impede early pre-litigation settlements by increasing the divergence of outcomes that parties expect at trial.

Panel B of Table III reports the coefficient estimates for the subsample of VC defendants. The results are almost identical to those of the full sample, which is not surprising given the fact that most of the lawsuits involve VCs as defendants. Contrary to our Hypothesis 1, larger and older VC firms are more likely to be defendants in a lawsuit – the coefficient on *VC age* (Model 1) is 0.237 (t=5.60) and that on *Funds under mgmt* is 2.270 (t=5.14). Like in Panel A, the effect is concave – the

bigger the firm, the smaller the likelihood of being a defendant. *Past performance* has a negative and significant coefficient in the first three models, and its significance level is higher than in Table III Panel A. However, the coefficient becomes insignificant once *Prior lawsuits* is included. Like with the full sample, the effect of prior lawsuits seems to be particularly strong. In Model 4, the coefficient on *Prior lawsuits* is 0.316, which is significant at the 1% level. In economic terms, the estimates suggest that having an additional lawsuit in the past increases the likelihood of a new lawsuit by roughly 30%. In addition, firms making early-stage investments are more likely to end up being defendants – the coefficient on *Stage* is statistically significant in all model specifications.

Lastly, in Panel C we show the results for the sub-sample of VC plaintiffs. There are some significant differences compared to the results in Panels A and B. Here the coefficient of *Funds under mgmt* is not significant anymore. In addition, better performing firms are more likely to be plaintiffs, although the coefficient on *Past performance* is only marginally significant. Here as well we find a strong effect of the participation in lawsuits in the past on the probability of a lawsuit involvement in the future.

The results in Table III suggest that, contrary to Hypothesis1, larger and more reputable VC firms are more likely to get embroiled in litigation, although the effect is concave. Additionally, as the results in Panel B imply, repeat offenders are significantly more likely to get sued in the future. This suggests that there are VC firms that exhibit certain behavior towards founders or other investors which frequently lends them in court. We also expect those to suffer the largest reputational losses. We find a strong multi-lawsuit effect for plaintiffs as well. Our intuition for this result is that perhaps there are also VCs that are not able to manage conflicts with other parties well and end up going to court to defend their rights, or often allow themselves to be exploited by other parties. Like in the case of multiple defendants, this also suggests certain problems at the organizational level of those VC firms.

B. Robustness Checks

To test the robustness of our results, we use a continuous dependent variable, *Fraction of Lawsuits*, and two alternative econometric specifications. Our new dependent variable is constructed as follows:

$$Fraction \ of \ lawsuits_{i,t} = \frac{Number \ of \ Lawsuits_{i,t}}{Number \ of \ Portfolio \ Companies_{i,t}}$$

where for each VC firm *i Number of Lawsuits_t* is equal to the number of lawsuits the VC firm has had up to year *t*, and *Number of Portfolio Companies_t* is the number of portfolio companies financed by the firm's funds up to year *t*. This way the lawsuits per firm are scaled by number of investments, which allows for a more accurate comparison among firms. With this dependent variable we estimate two models: pooled cross-section time-series OLS regression with year fixed effects and standard errors robust to heteroscedasticity and VC firm clustering and a random effects GLS model.

[Table IV about here]

We report the results for the full sample in Panel A of Table IV. Models 1 and 2 are estimated using the pooled cross-section time-series regression. We find that older firms have a larger fraction of lawsuits, which is consistent with our findings in Table III and runs contrary to Hypothesis 1. On the other hand, the fraction of lawsuits is smaller the larger the firm is, where size is proxied by funds under management and deal flow. This result bodes well with our previous finding that the likelihood of a lawsuit increases at a decreasing rate with VC firm size. Models 3 and 4 present the results from a random effects GLS model. Most of the results mirror those in Models 1 and 2. The only exception is that the coefficient on *VC age* is not significant, while that on *Past performance* is positive and significant, suggesting that better performing firms have higher fraction of lawsuits. This finding is again inconsistent with Hypothesis 1.

Panel B of Table IV presents the results for the sub-sample of VC defendants. We document the same results as in Panel A – older firms have a larger fraction of lawsuits and larger firms have a smaller fraction of lawsuits. Unlike Panel A, *Past performance* is not significant in any of the model

specifications. In unreported regressions, we estimate the same models for the sub-sample of VC that are plaintiffs in lawsuits, but do not find any significant results.

V. Effect of Litigation on VC Reputation

We next examine the impact of litigation on the reputation and performance of the VCs involved in the lawsuits. Our Hypothesis 2 predicts that VCs involved in litigation would suffer reputational consequences and Hypothesis 3 asserts that consequences would be more severe when VCs are alleged to have engaged in more egregious conduct. As mentioned earlier, we use four measures for VC reputation in our analysis – (1) the size of funds raised; (2) the number of companies in which each VC invests (quantity of deal flow), (3) the fraction of portfolio firms that go public (quality of deal flow), and (4) VC network centrality. The fraction of portfolio firms going public can be also interpreted as a proxy for VC performance following the litigation.

We construct three network centrality measures following the methodology in Hochberg, Ljungqvist, and Lu (2007a) (see their Appendix). Our first measure is *Degree*, which is the number of unique VCs with which a VC in our sample has syndicated deals. Since this number tends to rise over time, we scale it by the maximum possible number of VCs that are potential syndication partners. We define a VC syndicate as the number of VC firms investing in single startup company. The second measure we use is *Indegree*, which measures the number of unique VCs in whose syndicates the sample VC has participated as a non-lead member. Our last centrality measure is *Outdegree*, which measures the number of unique VCs that have participated in syndicates where the sample VC is a lead member. To be consistent with Hochberg, Ljungqvist, and Lu (2007a), we designate a lead VC to be the VC with the largest investment in the portfolio company. If there are more than one VCs with the same amount of investment, we select the VC that came in the first round of financing as the lead VC.

We conduct a before-and-after analysis of these measures using a sample of litigating VCs and matching non-litigating VC firms. We match each of our litigating VCs to a VC firm of similar

age, funds under management, and past performance. Since VC fundraising varies through the years, we scale the dollars raised by each fund (for both litigating and non-litigating firms) by the total amount of VC dollars raised in the year in which the fund was established. Appendix A describes the matching procedure in more detail.

In robustness checks, we match only on age and fund size, or on age and performance, and obtain qualitatively similar results. Finally, we perform propensity score matching by matching each of the litigated VCs to a peer VC company that has not been involved in a lawsuit and has the closest litigation propensity calculated using the probit models in Table 3. This matching procedure also produces qualitatively similar results.

We use a difference-in-differences approach, where we compare the after-minus-before measures of VC reputation in a sample firm to the same difference in a matching firm. In unreported robustness checks, we adjust each reputation and performance variable by the value of the corresponding reputational or performance measure of the peer firm and test for significant differences between the post and pre litigation values of the adjusted measures. This approach yields qualitatively similar results.

For the tests in this section we use the sub-sample of lawsuits which commenced in or before year 2003. We do so to allow VCs time to raise new funds after the lawsuit. Since VCs raise new funds every two-three years (see Fenn, Liang, and Prowse (1998)), we stop at the end of year 2003. This yields a sample of 205 unique lawsuit-VC observations.

A. *Fundraising and Deal Flow Following Litigation*

Some litigating and peer VCs do not raise any new funds after the year of litigation. One possible reason (at least for litigating VCs) is the impact of the lawsuit, but there could be other reasons. This presents us with the dilemma of whether we should keep VCs who do not raise funds after litigation in the sample. We use two specifications to deal with this issue. In the first specification, we assign the value of zero to the "funds raised" variable if a VC does not have any funds after the litigation year. In the second specification, we repeat our analysis using only those

litigating and control firms that raised at least some funds after litigation. The results are presented in Table V.

[Table V about here]

The first two columns of Panel A in Table V presents the results for changes in dollars raised after the litigation. First, we find that on average VCs involved in litigation experience a significant decrease in the size of funds raised after the year of the lawsuit. The mean (median) difference for the whole sample is -0.014 (0.0001) which are significant at the 5% level. Next, we focus on the sub-sample of lawsuits in which VCs are defendants, which has 170 unique lawsuit-VC observations. We expect the impact of litigation to be stronger for those VCs. We find that the mean difference in funds raised for these VCs is larger (-0.017) than that of the full sample and also significantly smaller than zero. As a control sample, we also consider cases where the VC is a plaintiff. We do not find any differences between litigated and matching firms for VCs that are plaintiffs in a lawsuit. This finding provides strong support for Hypotheses 2 and 3. Being a defendant and being a plaintiff in a law suit are associated with very different consequences for a VC's ability to raise money. Involvement in litigation alone does not predict declines in fundraising; being a defendant a lawsuit does. This suggests that costs and hassles of litigation cannot fully explain the decline in fundraisings.

Since lawsuits in our sample involve different allegations of VC misconduct, we separately examine VC defendants when the suit alleges the most egregious behavior – tunneling. We find that the mean changes in funds raised for the litigated VCs are significantly smaller than zero, but the medians are not significantly different. Lastly, we separately investigate the cases where the VC is a defendant participates in multiple lawsuits. The results from Section IV suggest that litigation in the past has a particularly strong positive effect on the likelihood of a new lawsuit. Our goal here is to examine whether VCs that are defendants in multiple lawsuits suffer significant reputational losses. For this sub-sample, we find that there is a significant difference in both the means and medians of the Post-Pre changes in funds under management. The difference is particularly strong for VC

defendants with multiple lawsuits who engage in tunneling transactions. However, caution is needed when interpreting the last result given that the sample size is only 21.

We obtain similar results when using only firms that raise funds pre- and post-litigation. Panel B of Table V presents the results. Here we are only able to calculate differences for VC defendants and VC defendants and tunneling, because of the smaller sample size. For all sub-samples, the mean and median differences are significantly smaller than zero.

Next, we turn our attention to the effect of litigation on the deal flow of VCs in our sample. Hypothesis 2 asserts that the negative publicity associated with lawsuits will reduce the willingness of founders and syndicating VCs to accept financing from the VC involved in litigation causing such VCs to lose valuable deal flow. To measure changes in pre- and post-litigation deal flow, we compare the difference Post-Pre in the number of companies that receive financing from each litigated VC in our sample to the same difference for the control firms. Again, we scale these measures by the total number of companies financed by the whole universe of VCs during each year in which a particular VC in our sample raises a fund.

The results of the number of deals analysis are presented in the third and fourth column in Panel A of Table V. Similar to the fund raising results, the evidence suggests that VCs involved in litigation suffer significant decreases in deal flow. For example, the average change in the deal flow for the full sample is -0.034 (p-value is 0.00).The median test gives the same results – a negative and significant difference of -0.005. When we focus only on VCs that are defendants, we also find that these VCs experience a significant decline in deal flow. Unlike the analysis of funds raised, here the VCs that are plaintiffs also experience a decrease in deal flow. Turning to VCs that engage in tunneling-type transactions and multiple lawsuits, we find that all of them suffer a significant decrease in deal flow. For example, a VC that is a multiple defender experiences an average deal flow decrease of -0.062, and a median decrease of -0.039. The results in Panel B present a similar picture.

Besides quantity of deal flow, we also test for possible changes in the quality of VC deal flow after the year of litigation. Hypothesis 2 predicts that lawsuits will have a negative effect on the

quality of deals, not only their quantity. We measure deal flow quality by the control firm-adjusted fraction of portfolio firms that go public (we obtain qualitatively similar results when we use the fraction of portfolio firms that go public or get acquired as a measure of success). Again, we compare the difference Post-Pre for the litigated VC firms to that of the control group and test for significant differences.

The results of the quality of deal flow analysis are presented in the last two columns in Panel A of Table V. We find that the average Post-Pre differences are significantly smaller than zero. For example, the average Post-Pre difference in the fraction of IPOs for VC defendants is -0.032, which is significant at the 10% level. However, we do not find any significant difference for VC plaintiffs. When we consider the difference in medians we find that the Post-Pre medians are significantly negative only for the cases where the VC is defendant and engages in multiple lawsuits and tunneling. When we consider only firms that raise funds pre- and post-litigation, we obtain stronger results for both means and medians (Panel B).

Overall, the evidence on VC fund raising and quantity and quality of deal flow in Table V is consistent with the view that VCs involved in litigation as defendants suffer reputational consequences – they tend to raise smaller funds than their corresponding matching firms after the litigation, and invest in fewer and lower quality deals. This supports Hypotheses 2 and 3.

B. VC Network Centrality Following Litigation

The last measure of reputation that we investigate is the VC's network centrality. Hypothesis 2 asserts that VCs involved in litigation will experience significant negative changes in their network centrality, such as fewer syndication partners (*Degree*), fewer invitations to join syndicates as a nonlead VC (*Indegree*), and probably fewer VCs willing to join a syndicate where the litigated venture firm is a lead VC (*Outdegree*). At the same time, Hypothesis 3 states that the magnitude of these negative changes will be bigger the more severe the claim in the lawsuit is. We present the univariate evidence on VC network centrality in Table VI.

[Table VI about here]

The first two columns in Panel A of Table VI display the Pre – Post analysis of the *Degree* measure. Both the mean and median tests suggest that VCs involved in litigation experience a significant decline in their Degree, which means that after the lawsuits they syndicate with fewer VCs. This finding provides direct support for Hypothesis 2. Moreover, and consistent with Hypothesis 3, VCs that are defendants, engage in tunneling-type lawsuits, and participate in multiple lawsuits tend to suffer the most. For example, the Pre-Post median difference in Degree for VC defendants which take part in multiple lawsuits is -0.032. On the other hand, VCs that are plaintiffs in lawsuits do not experience any significant changes in *Degree*: the median change is -0.005, which is not statistically significant. As can be seen in Panel B of Table VI, the results for firms that raise funds pre- and post-litigation are similar. Both the means and medians are significantly smaller than zero.

We find analogous results when we examine the Pre-Post changes in *Indegree*. The third and fourth column in Panel A in Table VI present the results. Again, the findings indicate a significant decrease in *Indegree* following the litigation, especially for VCs that are defendants, participate in multiple lawsuits, and are involved in tunneling. Both the mean and median test show that the changes in *Indegree* for the plaintiffs group, although negative, are not statistically different from zero. These findings support Hypotheses 2 and 3. We obtain similar results when we use only firms with both pre-litigation and post-litigation funds.

Lastly, we also examine the changes in *Outdegree*; the results are presented in the last two columns in Panels A and B of Table VI. Unlike the previous two variables, we do not find any significant results for this network centrality variable for the full sample. The weak results for *Outdegree* are perhaps explained by the fact *Outdegree* is entirely within the control of the litigated VC, as it measures the number of other VCs that it invited to participate in its deals. A significant reduction in VC fundraising following litigation could force the VC to actually syndicate more deals and increase its *Outdegree* measure.

The results from this sub-section provide additional support for Hypotheses 2 and 3. We document that VC firms involved in litigation as defendants experience significant erosion in their network centrality – they syndicate with fewer VCs and fewer VCs extend an invitation to them to join their syndicates as non-lead members. We also find some limited evidence that the invitations that our sample VCs extend to other VCs decrease following the litigation. These results are consistent with our previous findings regarding the funds under management and the quantity and quality of deal flow.

C. Multivariate Analysis

Last, we try to determine the changes in fund size and quantity and quality of deal flow using a regression framework. In Table VII, we first regress the changes in our control firm-adjusted measures of reputation and performance on a set of control variables. Here use only the lawsuits in which VCs are defendants, which commenced by the end of 2003, and, in some of the models, for which we have complete information. That's why, in some of the specifications our sample size decreases from 170 to 135 unique VC-lawsuit pairs. As control variables we include a measure of firm reputation (*VC Age*), the number of lawsuits a VC has been engaged in the past (*Prior lawsuits*), a dummy variable for cases where the VC is engaged in tunneling (*Tunneling*), the average fraction of IPOs the VC firm has generated prior to the litigation (*Past performance*), preferred investment stage (*Stage*), and a dummy variable equal to one if the VC firm focuses on hi-tech industries (*Hi-tech*).

[Table VII about here]

Models 1 and 2 in Table VII present the results for funds under management. The coefficient on firm reputation (as measured by VC firm age) has a negative sign, suggesting that more reputable firms experience larger declines in funds under management after litigation. This finding is particularly important in the light of our null hypothesis which asserts that litigation might be just a drop in the ocean for reputable VCs. The results from Table VII suggest otherwise – being a defendant is associated with reputational loss even for the most prominent VC firms, and this loss is increasing with the degree of reputation.

Furthermore, being a repeat defendant leads to larger reputational losses. Those VCs that are defendants in multiple lawsuits tend to experience a significant decrease. When we include *Prior lawsuits* in Model 2, its coefficient is negative (-0.007) and statistically significant (t-stat=-3.49). Combined with our earlier finding that repeat litigators are significantly more likely to be embroiled in a lawsuit, this result suggest that some VCs exhibit a certain pattern of behavior towards founders and other investors which is severely penalized by the market. Thus, this result also indicates that market reacts not only to the mere fact of the lawsuit, but to the content of the lawsuit – repeat litigators are viewed with more suspicion.

We also use the coefficients from Model 2 and the underlying data to compute the predicted changes in funds under management (relative to the peer firms) from an additional lawsuit. The underlying data are the dummy variable in question (*Prior lawsuits*) and the mean of the other variables in the regression other than *Prior lawsuits*. Based on the coefficient estimates, the relative change in funds under management for VCs that are defendants and participate in only one lawsuit is -5.5%. Adding the effect of a second lawsuit, we find that the relative change in funds under management for VC firms with more than one lawsuit decreases to -7.5%.

Models 3 and 4 in Table VII present a regression of the control firm-adjusted change in deal flow quantity and quality on the same set of control variables. The results from the regression estimation suggest that prior firm reputation and performance have a negative impact on changes in the quantity of deal flow. The coefficient on *Prior lawsuits* in both models is negative and significant at the 1% level. Lastly, in Models 5 and 6 we examine the change in the quality of deal flow. Here the only significant variable is *Prior lawsuits*.

[Table VIII about here]

We then turn our attention to the VC network centrality proxies. Table VIII presents the results of a regression with dependent variables the control firm adjusted changes in *Degree*, *Indegree*, and *Outdegree*, and the same set of independent variables used in Table VII. Like our univariate analysis, the stronger and most interesting results appear to be associated with *Degree* and

Indegree. The coefficient on VC age is significant only for the *Degree* measure. However, the coefficient on *Past performance* is significant in most of the specifications, confirming our findings in Table VII that more reputable and better performing VCs suffer larger erosion in network centrality. Consistent with our prior findings, VCs that participate as defendants in multiple lawsuits tend to experience the worst reputational losses. For example, the coefficient on *Prior lawsuits* is -0.010 for the *Degree* measure and -0.025 for the *Indegree* measure (Model 4), statistically significant in both cases. Again, the coefficient on *Tunneling* is negative, but not significantly different from zero.

Overall, Tables VII and VIII present several interesting and important results. First, we document that more reputable firms tend to experience larger reputational losses following a lawsuit than less reputable firms. This finding provides indirect support for Hypothesis 2. In addition, we uncover some evidence supporting Hypothesis 3 – we find that venture firms that participate in multiple lawsuits tend to suffer significant reputational losses. Across the board we do not find any differential impacts of tunneling allegations -- the estimated coefficients on the *Tunneling* dummy have the signs predicted by Hypothesis 3 but are not significant.

VI. Conclusion

This paper makes several contributions to the literature. First, it presents the first systematic study of VC-related litigation, based on a hand-collected dataset of lawsuits. Contrary to the popular image of the VC industry as a self-governing community that uses informal means of dispute resolution and avoids litigation as means of redressing wrongs, we document that VCs are involved in litigation fairly often.

Second, this is the first study that seeks to document the downside of the current pattern of VC contracting, where VCs receive very large amount of discretion in exchange for a mere promise not to misbehave. We cannot measure the extent of VC misbehavior itself, but we can study the tip of the iceberg – litigation – showing allegations of VC opportunism.

Finally, we are first to investigate the channels through which legal and non-legal environments interact in reducing incentives for VC misbehavior. We show that while founders rarely succeed when suing VCs in court, their lawsuits have consequences far beyond the formal damages award. When VCs are sued, other industry participants react – defendant VCs experience difficulties in raising capital, finding sufficient number of high-quality new deals, and syndicating with other VCs. The reputational loss is larger for more reputable VCs and VCs participating in more lawsuits.

Overall, we present evidence that the VC industry uses a complex web of legal and non-legal mechanisms to ameliorate the possible abuse of contractual discretion by VCs. Neither law alone nor reputation alone is enough; it's the combination of the two that seems to give strength to the system. We cannot tell how well the system deters misbehavior, but we can tell that at least some misbehavior is punished.

Appendix: Data Manipulations – Full Information Sample

We start with the lawsuit data from Westlaw and manually match the names in the list of plaintiffs and defendants to the list of all VC firms in the VentureXpert database. Out of 339 identifiable VC parties in the 355 lawsuit sample, we match 215 VC firm names with the VentureXpert universe. This results in 248 lawsuits and 442 unique VC firm-lawsuit combinations.

Our analysis requires information on the year when a complaint is filed. Westlaw provides information on the filing year for 125 cases. The remaining 123 cases have data on disposition dates only. For these cases we assume that the filing date is two years before the disposition date. The reason we choose two years is because for the 125 cases where we have information on both filing and disposition year the average difference is 1.3 years and it is reasonable to expect that these cases are on average resolved quicker than the rest of the sample.

One deficiency of the VentureXpert dataset is that there are no numeric variables which uniquely identify a VC firm; only string variables containing the name of a VC firm or fund are available. The VC firm names are not consistent across time. For example Hambrecht and Quist (H&Q) is acquired by JP Morgan. Following the acquisition some H&Q funds are mapped to JP Morgan, some are still kept as funds of H&Q. To solve this problem for the VC firms in our lawsuit sample, we create our own meta-firm names which map different versions of a firm name to a single string. We then extract the funds which correspond to each version of a firm name with the meta-firm name and aggregate them.

After dealing with VC firm names, we then download date for the founding date of each VC firm company in the VentureXpert universe. We replace founding date with the date when first investment is made when founding dates is missing or the founding date is later than first investment date. We follow the same procedure for fund founding dates. Due to dubious data quality we drop all funds which are reported as founded earlier than 1960.

For the 215 VC firms appearing in our lawsuit sample which are also covered in VentureXpert, seven firms do not have any funds listed before the filing date of the lawsuit and we drop them from the pre-post lawsuit analysis. We also drop 3i Group PLC since it is a publicly-traded firm. We match each of the remaining 207 firms which appear in 239 lawsuits and result in 280 unique lawsuit-VC firm combinations to all remaining firms in the VentureXpert universe in order to find a suitable peer company. Following Kaplan and Schoar (2005) we find the best matching firm based on the age of the VC company (defined as year of filing of lawsuit minus year of founding), size (the cumulative size of funds under management from the year of founding of the firm to the year of filing of the lawsuit), and performance (the fraction of portfolio companies going public from the last fund before the year of litigation). The exact matching procedure is as follows:

1. Download all funds in VentureXpert database. For each year in the period from 1960 to 2007, calculate total fund size in a year as the sum of the assets of all funds which are founding in this year. This variable substitutes a variable in VentureXpert which measures the total dollar commitments to VC funds in a year. This variable is of poor quality in the earlier years and there are funds which have assets that are several times larger than the total funds committed to the industry in a year as measured by this variable. By calculating our own total fund size variable we ensure that no fund will have rescaled fund size larger than 1, where rescaled fund size equals fund dollar assets divided by the sum of the assets of all funds founded in the same year.

2. Take each firm-lawsuit observation of our 207 firm/280 firm-lawsuit sample. Compute firm age as (filing year – founding year).

3. Pull all funds which correspond to the same firm name in VentureXpert and calculate the cumulative assets under management of the firm pre-lawsuit as the sum of scaled fund sizes for all funds which were founded from the founding of the firm till the year of filing the lawsuit. We lose seven firms from our sample, because all of their funds pre-lawsuit have missing data on fund size and we cannot compute firm scaled size.

4. After calculating firm age and firm pre-lawsuit scaled size, we find all firms in the VentureXpert universe which are founded within five years of the sample firm, where we replace the founding year of all firms founded before 1960 to equal 1960.

5. Within this narrowed-down peer universe, we look at how many firms have the same founding year. If there are more than 20 such firms, we select the firms that are closest in scaled size (50%-150% of the scaled size of the litigated firm). If there are at least 20 such firms, we choose the best matching company to be the one closest in terms of performance. If there are fewer than 20 firms founded in the same year or within the 50%-150% size interval, we look at firms founded within one year. If there are more than 20 of them, we select the firms that are closest in scaled size. If there are at least 20 such firms, we choose the best matching firm as the firm closest in terms of performance. We repeat the procedure until we are able to select matches within five years of the sample firm. Last, if there are less than 20 companies founded within five years of the sample firm or within the 50%-150% size interval, we just take the closest firms in terms of age and scaled size and performance.

After finishing the matching procedure, we have 207 companies and 280 unique firm-lawsuit combinations. The matching procedure matched firm age and performance very well (the median difference between the age and the performance of the sample firms and the best matches is 0) and fairly well on size (the median matching firm is 8% smaller than the median sample firm).

The procedure for matching on age, size, and pre-litigation fund performance is the same for the sub-sample of VC lawsuits with partial information.

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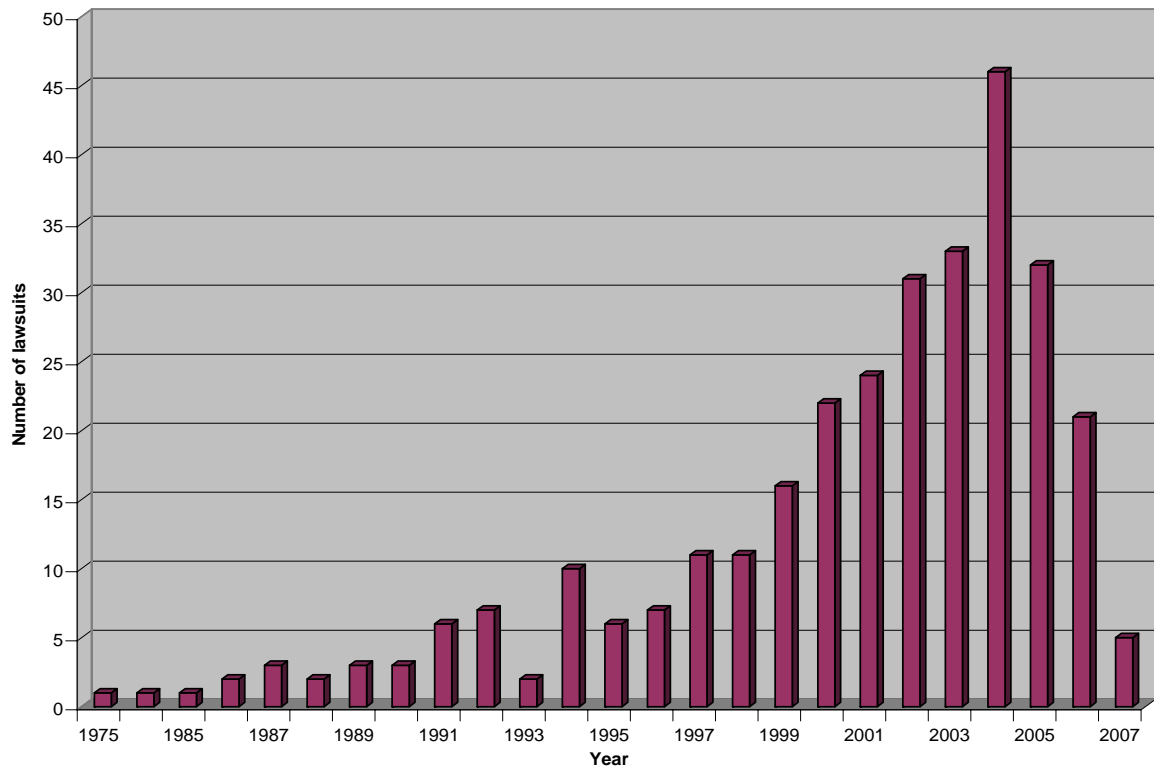
Figure 1. Time Series of the Number of Lawsuits Involving VCs

The figure plots the lawsuits in which 221 venture capital (VC) firms are involved as defendants or plaintiffs. The total number of lawsuits is 296 in the period 1975-2007.

Table I
Characteristics of lawsuits involving VCs

Panel A. Lawsuits with full information

We collect lawsuits by searches in West Law, business media, and PACER. The total number of lawsuits in this sub-sample is 239 in the period 1975-2007.

Characteristic		Number of lawsuits
Defendant/Plaintiffs Composition:	VCs Among Defendants	185
	Founders Among Defendants	2
	VCs Among Plaintiffs	54
	Founders Among Plaintiffs	54
Alleged Tunneling Method:	Freezout	5
	Dilution	4
	Acquisition on Unfavorable Terms	24
	Misappropriation of Business Opportunity	8
	Asset Transfer	33
Where Case Brought: (State Name/No. of Federal Suits):	CA	39
	DE	34
	NY	32
	MA	17
	FL	14
	TX	13
	IL	9
	PA	7
	All federal (no bankruptcy)	140
	All state	89
	Bankruptcy	10
Class Actions		16
Lawsuit Outcome:	VC Won at Trial or Pre-Trial Motion (Partly Won)	24 (29)
	VC Lost at Trial or Pre-Trial Motion	25
	Case Dismissed on Procedural Grounds	11
	Case Dismissed on Substantive Grounds	31
	Case settled	4
	Case Ongoing	106

Table I (Cont.)

Panel B. Lawsuits with partial information
We collect lawsuits by searches in West Law, business media, and PACER. The total number of lawsuits in this sub-sample is 57 in the period 1986-2006.

Characteristic		Number of lawsuits
Defendant/Plaintiffs Composition:	VCs Among Defendants	44
	VCs Among Plaintiffs	13
Where Case Brought: (State Name/No. of Federal Suits):	NY	15
	CA	8
	TX	4
	IL	3
	MI	3
	OR	3
	All federal (no bankruptcy)	27
	All state	26
	Bankruptcy	5

Table II
Summary statistics for sample VCs

The table presents summary statistics for the 221 VCs involved in 296 lawsuits, resulting in 337 unique VC firm-lawsuit combinations over the period 1975-2007. All the variables are measured at the time of the lawsuit. Information on stage preference and diversified industry preference is taken from VentureXpert. All dollar values are in converted into Year 2000 dollars.

Variables	Sample 1975-2007				
	Mean	Median	Std	Min	Max
Age (years)	16.5	13	15.5	1	94
Num. of funds pre-litigation	6.3	4	7.5	1	50
Fund size pre-litigation (mill.)	268.7	76.0	721.7	0.01	8,204.7
Aggregate fund size pre-litigation (mill.)	1,641.3	268.2	4,080.2	0.16	17,013.1
Stage preference (1 if early; 0 if late)	0.2	0	0.4	0	1
Hi-tech (1 if hi-tech; 0 otherwise)	0.2	0	0.4	0	1
Number of VC firm-lawsuit observations	337				

Table III
Probit model of VC litigation

The table presents the results of a random effects probit model of VC litigation. The sample includes a sample of 5,023 US and non-US VC firms, of which 221 are involved in lawsuits. The sample starts in 1970 and ends in 2007. The dependent variable is equal to one if VC firm i is involved in a lawsuit in year t, and zero otherwise. VC age is the age of the VC firm. Past performance is fraction of portfolio companies that go public for the most recent fund the firm has raised. Funds under mgmt is the dollar amount of all the funds raised in the past, scaled by the total amount of VC commitments in the year of each fund. Deal flow is the number of companies the VC firm's funds have invested in the past, scaled by the total number of VC backed companies in the year each fund was established. Prior lawsuits is equal to the number of lawsuits each firm had in the past. Stage is a dummy equal to one if the VC firm focuses on early-stage firms, and zero otherwise. Hi-tech is a dummy variable equal to one if the VC firm's industry focus is on hi-tech industries such as information technology, biotechnology, and medical/health/life sciences, and zero otherwise. Industry classification from VentureXpert is used. The models are estimated with robust standard errors. Robust t-statistics is in the parenthesis. *, **, *** denote significance at 10%, 5%, and 1% level, respectively.

Panel A. Probit Models for VC Litigation for All Lawsuits

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Log(VC age)	0.248 ***	0.221 ***	0.136 ***	0.212 ***	0.188 ***
	(6.21)	(5.45)	(3.22)	(5.86)	(5.15)
Past performance	-0.300 *	-0.297 *	-0.299 *	-0.176	-0.178
	(-1.81)	(-1.79)	(-1.78)	(-1.18)	(-1.19)
Funds under mgmt	2.062 ***	4.653 ***		1.707 ***	3.968 ***
	(4.96)	(4.66)		(4.72)	(4.62)
Stage	0.212 **	0.200 **	0.142 *	0.227 ***	0.220 ***
	(2.46)	(2.35)	(1.70)	(3.04)	(2.96)
Hi-tech	0.047	0.043	0.035	0.063	0.054
	(0.48)	(0.44)	(0.37)	(0.74)	(0.63)
Time trend	0.040 ***	0.040 ***	0.042 ***	0.032 ***	0.032 ***
	(7.78)	(7.84)	(8.12)	(6.88)	(6.97)
Funds under mgmt^2		-3.425 **			-3.077 ***
		(-2.56)			(-2.59)
Deal flow			11.789 ***		
			(6.36)		
Deal flow^2			-20.312 ***		
			(-3.47)		
Prior lawsuits				0.323 ***	0.320 ***
				(10.67)	(10.70)
Num. obs.	50,769	50,769	50,769	50,769	50,769
p-value of χ^2	0.000	0.000	0.000	0.000	0.000

Table III (Cont.)

Panel B. Probit Models for VC Litigation for Defendants

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
Log(VC age)	0.237	***	0.206	***	0.126	***	0.201	***	0.173	***
	(5.60)		(4.77)		(2.75)		(5.20)		(4.42)	
Past performance	-0.404	**	-0.400	**	-0.409	**	-0.267		-0.271	
	(-2.11)		(-2.08)		(-2.11)		(-1.56)		(-1.58)	
Funds under mgmt	2.270	***	5.685	***			1.869	***	4.838	***
	(5.14)		(4.22)				(4.68)		(4.48)	
Stage	0.268	***	0.258	***	0.198	**	0.275	***	0.269	***
	(2.90)		(2.81)		(2.22)		(3.44)		(3.41)	
Hi-tech	0.039		0.035		0.033		0.058		0.047	
	(0.37)		(0.33)		(0.32)		(0.63)		(0.51)	
Time trend	0.034	***	0.034	***	0.036	***	0.027	***	0.027	***
	(6.35)		(6.37)		(6.64)		(5.52)		(5.62)	
Funds under mgmt^2			-5.150	**					-4.734	**
			(-2.37)						(-2.44)	
Deal flow					11.974	***				
Deal flow^2					-21.401	***				
					(-3.22)					
Prior lawsuits							0.316	***	0.313	***
							(9.83)		(9.88)	
Num. obs.	49,882		49,882		49,882		49,882		49,882	
p-value of χ^2	0.000		0.000		0.000		0.000		0.000	

Table III (Cont.)

Panel C. Probit Models for VC Litigation for Plaintiffs

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Log(VC age)	0.505 ***	0.495 ***	0.460 ***	0.242 ***	0.234 ***
	(4.50)	(4.24)	(3.75)	(4.81)	(4.56)
Past performance	0.447	0.453	0.578 *	0.296 *	0.302 *
	(1.50)	(1.52)	(1.78)	(1.83)	(1.86)
Funds under mgmt	0.380	2.338		0.360	1.257
	(0.26)	(0.84)		(0.82)	(1.10)
Stage	-0.342	-0.319	-0.465 *	-0.146	-0.151
	(-1.35)	(-1.32)	(-1.72)	(-1.15)	(-1.18)
Hi-tech	0.140	0.147	0.097	0.097	0.094
	(0.61)	(0.64)	(0.41)	(0.84)	(0.82)
Time trend	0.073 ***	0.072 ***	0.078 ***	0.039 ***	0.039 ***
	(4.91)	(5.02)	(5.06)	(4.96)	(4.96)
Funds under mgmt^2		-2.142			-1.266
		(-0.56)			(-0.67)
Deal flow			10.659 ***		
			(-2.80)		
Deal flow^2			-18.880 *		
			(-1.66)		
Prior lawsuits				1.894 ***	1.887 ***
				(10.36)	(10.32)
Num. obs.	49,028	49,028	49,028	49,028	49,028
p-value of χ^2	0.000	0.000	0.000	0.000	0.000

Table IV
Models of VC Litigation – Robustness Checks

The table presents the results of several model of VC litigation. The sample includes a sample of 5,023 US and non-US VC firms, of which 221 are involved in lawsuits. The sample is an unbalanced panel that starts in 1970 and ends in 2007. The dependent variable is equal to the ratio of number of lawsuits over aggregate number of portfolio companies financed by the funds of a particular VC firm. VC age is the age of the VC firm. Past performance is fraction of portfolio companies that go public for the most recent fund the firm has raised. Funds under mgmt is the dollar amount of all the funds raised in the past, scaled by the total amount of VC commitments in the year of each fund. Deal flow is the number of companies the VC firm's funds have invested in the past, scaled by the total number of VC backed companies in the year each fund was established. Stage is a dummy equal to one if the VC firm focuses on early-stage firms, and zero otherwise. Hi-tech is a dummy variable equal to one if the VC firm's industry focus is on hi-tech industries such as information technology, biotechnology, and medical/health/life sciences, and zero otherwise. Industry classification from VentureXpert is used. The models are estimated with standard errors that are robust to VC firm clustering. Robust *t*-statistics is in the parenthesis. *, **, *** denote significance at 10%, 5%, and 1% level, respectively.

Panel A. Models for VC Litigation for All Lawsuits

Variables	Dep. var.: Ln(1 + (Num. of lawsuits/Num. of portfolio companies)		Dep. var.: Ln(1 + (Num. of lawsuits/Num. of portfolio companies)	
	OLS		GLS random effects model	
	Model 1	Model 2	Model 3	Model 4
Log(VC age)	0.001 ***	0.001 ***	0.0001	0.0003
	(2.62)	(2.65)	(1.13)	(1.22)
Past performance	0.000	0.000	0.002 **	0.002 **
	(0.11)	(0.09)	(2.25)	(2.09)
Funds under mgmt	-0.007 ***		-0.030 ***	
	(-3.25)		(-4.07)	
Stage	-0.002 **	-0.002 **	-0.003 **	-0.003 **
	(-2.13)	(-2.08)	(-2.41)	(-2.38)
Hi-tech	-0.001	-0.001	-0.002	-0.002
	(-1.04)	(-1.01)	(-1.23)	(-1.22)
Deal flow		-0.012 **		-0.048 ***
		(-2.00)		(-4.34)
Time dummies	Included	Included	Included	Included
Num. obs.	50,769	50,769		50,769
p-value of χ^2	0.000	0.000		0.000

Table IV (Cont.)

Panel B. Models for VC Litigation for Defendants

Variables	Dep. var.: Ln(1 + (Num. of lawsuits/Num. of portfolio companies)		Dep. var.: Ln(1 + (Num. of lawsuits/Num. of portfolio companies)	
	OLS		GLS random effects model	
	Model 1	Model 2	Model 3	Model 4
Log(VC age)	0.001 **	0.001 **	0.0004	0.0003
	(2.43)	(2.45)	(1.38)	(1.46)
Past performance	0.0001	0.0002	0.0005	0.0002
	(-0.15)	(-0.17)	(0.20)	(0.06)
Funds under mgmt	-0.006 ***		-0.026 ***	
	(-2.82)		(-3.63)	
Stage	-0.001	-0.001	-0.002 **	-0.002 **
	(-1.60)	(-1.57)	(-2.05)	(-2.03)
Hi-tech	-0.001	-0.001	-0.002	-0.002
	(-0.99)	(-0.97)	(-1.24)	(-1.24)
Deal flow		-0.011		-0.043 ***
		(-1.55)		(-3.90)
Time dummies	Included	Included	Included	Included
Num. obs.	49,882	49,882	49,882	49,882
p-value of χ^2	0.008	0.004	0.007	0.005

Table V
Changes in Fundraising and Quantity and Quality of Deal Flow Following Litigation

Univariate tests for changes in pre- and post-litigation funds. The sample includes only lawsuits that commence by the end of year 2003. For each sample VC we calculate three measures: (1) the aggregate funds raised before and after the year of litigation, where the dollar amount of each fund raised (pre- or post-litigation) is scaled by the total amount of VC commitments in the year of the fund; (2) total number of deals invested by the VCs funds founded before and after the year of litigation; and (3) the fraction of portfolio firms going public or being acquired in the VC's funds before and after the year of litigation. We calculate the (Post – Pre) difference of each measure as the difference between the post-litigation and pre-litigation value of the measure. We peer-adjust the (Post – Pre) difference by subtracting the (Post – Pre) value of the corresponding matching firms. Matching firms in are the closest firms without a lawsuit to each sample firm by age, funds under management and performance (measured as percent of investments going IPO of the last fund prior to litigation). Mean and Median denote the mean and median of this peer-adjusted difference. We report in parenthesis the p-values of *t*-tests for the means and Wilcoxon signed rank tests for the medians equaling zero.

Panel A. Full Sample

	# Obs.	Funds under Management		Quantity of Deal Flow		Fraction of Successful Exits	
		Mean	Median	Mean	Median	Mean	Median
All VCs	205	-0.0142	-0.0001	-0.0336	-0.0054	-0.0312	0.0000
		(0.01)	(0.02)	(0.00)	(0.00)	(0.06)	(0.10)
VC defendant	170	-0.0171	-0.0001	-0.0347	-0.0047	-0.0319	0.0000
		(0.00)	(0.05)	(0.00)	(0.00)	(0.09)	(0.19)
VC plaintiff	35	0.0000	-0.0003	-0.0283	-0.0101	-0.0273	-0.0091
		(1.00)	(0.14)	(0.05)	(0.00)	(0.30)	(0.30)
VC defendant and tunneling	95	-0.0172	-0.0001	-0.0319	-0.0059	-0.0559	0.0000
		(0.02)	(0.17)	(0.00)	(0.00)	(0.05)	(0.31)
VC defendant and multiple lawsuit	52	-0.0276	-0.0003	-0.0615	-0.0393	-0.0988	-0.0373
		(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
VC defendant and multiple lawsuit and tunneling	21	-0.0336	-0.0047	-0.0634	-0.0453	-0.1777	-0.0692
		(0.01)	(0.02)	(0.00)	(0.00)	(0.03)	(0.02)

Panel B. Only Observations where Litigated and Control VCs Have Nonzero Fundraising before and after the Year of Litigation

	# Obs.	Funds under Management		Quantity of Deal Flow		Fraction of Successful Exits	
		Mean	Median	Mean	Median	Mean	Median
All VCs	59	-0.0397	-0.0133	-0.0632	-0.0333	-0.0938	-0.0623
		(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
VC defendant	51	-0.0482	-0.0152	-0.0682	-0.0519	-0.0941	-0.0623
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)
VC defendant and tunneling	26	-0.0442	-0.0178	-0.0628	-0.0600	-0.1459	-0.0763
		(0.05)	(0.03)	(0.00)	(0.00)	(0.01)	(0.03)

Table VI
Changes in VC Network Centrality Following Litigation

The sample includes only lawsuits that commence by the end of year 2003. Degree is the number of undirected ties a VC firm has, normalized by the number of possible ties. Indegree is the number of unique VCs in whose syndicates the VC firm in question participated as a nonlead member. Outdegree is the number of unique VCs that have participated as nonlead members in syndicates led by the VC firm in question. We calculate the (Post – Pre) difference of each measure (Degree, Indegree, and Outdegree) as the difference between the post-litigation and pre-litigation value of the measure. We peer-adjust the (Post – Pre) difference by subtracting the (Post – Pre) value of the corresponding matching firms. Matching firms in are the closest firms without a lawsuit to each sample firm by age, funds under management and performance (measured as percent of investments going IPO of the last fund prior to litigation). Mean and Median denote the mean and median of this peer-adjusted difference. We report in parenthesis the p-values of t-tests for the means and Wilcoxon signed rank tests for the medians equaling zero.

Panel A. Full Sample

	# Obs.	Degree		Indegree		Outdegree	
		Mean	Median	Mean	Median	Mean	Median
All VCs	205	-0.0285	-0.0058	-0.0410	-0.0305	0.0198	0.0000
		(0.00)	(0.00)	(0.02)	(0.01)	(0.59)	(0.57)
VC defendant	170	-0.0320	-0.0064	-0.0395	-0.0424	-0.0029	0.0000
		(0.00)	(0.00)	(0.04)	(0.01)	(0.94)	(1.00)
VC plaintiff	35	-0.0115	-0.0049	-0.0483	-0.0065	0.1297	0.0556
		(0.19)	(0.16)	(0.28)	(0.77)	(0.10)	(0.17)
VC defendant and tunneling	95	-0.0287	-0.0046	-0.0559	-0.0486	-0.0296	-0.0037
		(0.00)	(0.00)	(0.03)	(0.01)	(0.59)	(0.64)
VC defendant and multiple lawsuit	52	-0.0633	-0.0325	-0.0520	-0.0597	0.0806	0.0000
		(0.00)	(0.00)	(0.11)	(0.02)	(0.24)	(0.56)
VC defendant and multiple lawsuit and tunneling	21	-0.0672	-0.0322	-0.1166	-0.0787	0.0531	0.0312
		(0.00)	(0.00)	(0.01)	(0.01)	(0.65)	(0.93)

Panel B. Only Observations where Litigated and Control VCs Have Nonzero Fundraising before and after the Year of Litigation

	# Obs.	Degree		Indegree		Outdegree	
		Mean	Median	Mean	Median	Mean	Median
All VCs	59	-0.0527	-0.0484	-0.0549	-0.0424	-0.1237	-0.0748
		(0.00)	(0.00)	(0.04)	(0.01)	(0.05)	(0.05)
VC defendant	51	-0.0593	-0.0599	-0.0601	-0.0486	-0.1363	-0.1176
		(0.00)	(0.00)	(0.03)	(0.00)	(0.05)	(0.05)
VC defendant and tunneling	26	-0.0459	-0.0404	-0.0984	-0.0828	-0.1014	-0.0596
		(0.00)	(0.00)	(0.00)	(0.01)	(0.28)	(0.34)

Table VII

Determinants of Peer-Adjusted Changes in Funds under Management and Quantity and Quality of Deal Flow

The table presents an OLS regression of changes in control firm-adjusted post-litigation fund size, deal flow and average (across funds) fraction of portfolio firms going public on a number of litigation and control variables. The sample includes 170 unique VC firm-law suit combinations where the VCs are defendants and the lawsuit commences prior to 2003. Of these 170 observations, 134 have full information available. Control firms are selected based on age and size (funds under management) prior to litigation and performance of the last fund prior to litigation. Past performance is measured as the average (across funds) percent of investments going public prior to litigation. VC age is the log of the age of the VC firm as of the year of litigation. Prior lawsuits is a variable measuring the number of previous lawsuits the VC firm has participated in. Tunneling is a dummy variable equal to one if the lawsuit alleges that the defendant VC firm engages in expropriation-type activities (this dummy is available only for the 134 full information observations). Stage is a dummy equal to one if the VC firm focuses on early-stage firms, and zero otherwise. Hi-tech is a dummy variable equal to one if the VC firm's industry focus is on hi-tech industries such as information technology, biotechnology, and medical/health/life sciences, and zero otherwise. Industry classification from VentureXpert is used. The models are estimated with robust standard errors. Robust *t*-statistics is in the parenthesis. *, **, *** denote significance at 10%, 5%, and 1% level, respectively.

	Changes in fund size				Changes in deal flow quantity				Changes in deal flow quality			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Ln(VC age)	-0.014	**	-0.016	**	-0.027	***	-0.029	***	0.016		0.013	
	(-2.27)		(-2.18)		(-4.80)		(-4.74)		(0.61)		(0.46)	
Past performance	-0.097	**	-0.054		-0.084	**	-0.061	*	-0.181		-0.278	*
	(-2.27)		(-1.32)		(-2.39)		(-1.87)		(-1.35)		(-1.68)	
Hi-tech	-0.026	*	-0.033*		-0.009		-0.007		-0.007		0.007	
	(-1.84)		(-1.91)		(-0.51)		(-0.31)		(-0.10)		(0.08)	
Stage	-0.01		-0.012		0.000		-0.001		0.033		0.013	
	(-0.72)		(-0.74)		(-0.06)		(-0.09)		(0.54)		(0.19)	
Prior lawsuits	-0.006	***	-0.007	***	-0.007	***	-0.007	***	-0.020	***	-0.025	***
	(-3.84)		(-3.49)		(-5.35)		(-4.55)		(-3.48)		(-2.99)	
Tunneling			-0.013				-0.009				-0.063	
			(-0.89)				(-0.76)				(-1.51)	
Constant	0.045	***	0.053	*	0.055	***	0.059	***	-0.032		0.026	
	(2.63)		(1.91)		(4.05)		(3.74)		(-0.52)		(0.34)	
Num. obs.	170		134		170		134		170		134	
Adjusted R^2	0.14		0.13		0.35		0.31		0.05		0.07	

Table VIII
Determinants of Changes in Network Centrality

The table presents an OLS regression of changes in control firm-adjusted post-litigation Degree, Indegree, and Outdegree on a number of litigation and control variables. Degree is the number of undirected ties a VC firm has, normalized by the number of possible ties. Indegree is the number of unique VCs in whose syndicates the VC firm in question participated as a nonlead member. Outdegree is the number of unique VCs that have participated as nonlead members in syndicates led by the VC firm in question. The sample includes 170 unique VC firm-law suit combinations where the VCs are defendants and the lawsuit commences prior to 2003. Of these 170 observations, 134 have full information available. Control firms are selected based on age and size (funds under management) prior to litigation and performance of the last fund prior to litigation. Past performance is measured as the average (across funds) percent of investments going public prior to litigation. VC age is the log of the age of the VC firm as of the year of litigation. Prior lawsuits is a variable measuring the number of previous lawsuits the VC firm has participated in. Tunneling is a dummy variable equal to one if the lawsuit alleges that the defendant VC firm engages in expropriation-type activities. Stage is a dummy equal to one if the VC firm focuses on early-stage firms, and zero otherwise. Hi-tech is a dummy variable equal to one if the VC firm's industry focus is on hi-tech industries such as information technology, biotechnology, and medical/health/life sciences, and zero otherwise. Industry classification from VentureXpert is used. The models are estimated with robust standard errors. Robust t-statistics is in the parenthesis. *, **, *** denote significance at 10%, 5%, and 1% level, respectively.

	Changes in Degree				Changes in Indegree				Changes in Outdegree			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Ln(VC age)	-0.016	***	-0.018	***	0.046*		0.043		0.023		0.036	
	(-3.36)		(-3.06)		(1.68)		(1.50)		(0.37)		(0.54)	
Past performance	-0.091	***	-0.070	**	-0.347	***	-0.312	***	-0.729	**	-0.560	
	(-2.70)		(-2.12)		(-3.56)		(-3.29)		(-2.26)		(-1.47)	
Hi-tech	0.010		0.017		0.224	***	0.143	**	0.059		0.057	
	(1.10)		(1.52)		(3.42)		(2.22)		(0.55)		(0.42)	
Stage	0.014	**	0.020	***	-0.047		-0.078		-0.061		0.050	
	(-2.31)		(-2.85)		(-0.99)		(-1.51)		(-0.57)		(0.42)	
Prior lawsuits	-0.009	***	-0.010	***	-0.018	***	-0.025	***	-0.015		-0.026	
	(-7.11)		(-5.52)		(-4.65)		(-5.08)		(-1.08)		(-1.38)	
Tunneling			-0.007				-0.049				-0.092	
			(-0.72)				(-1.33)				(-0.86)	
Constant	0.027	***	0.029	*	-0.099		-0.045		0.075		0.048	
	(2.84)		(1.82)		(-1.18)		(-0.50)		(0.38)		(0.20)	
Num. obs.	170		134		170		134		170		134	
Adjusted R^2	0.38		0.34		0.15		0.14		0.04		0.04	