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## Venture Capital Limited Partnership Agreements: Understanding Compensation Arrangements

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**Venture Capital Limited Partnership Agreements:  
Understanding Compensation Arrangements\***

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Draft 05/03/04. Preliminary and incomplete. Comments welcome: [klitvak@law.utexas.edu](mailto:klitvak@law.utexas.edu)

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## ABSTRACT

This paper offers in-depth, “lawyerly” study of partnership agreements in the US venture capital industry. I analyze 37 partnership agreements from 17 venture firms, for funds raised mostly in the late 1990s and early 2000s. Some of my main findings are surprising. First, contrary to a common academic belief, all elements of VC compensation vary significantly across funds, controlling for fund size and profitability. Second, VC compensation includes three central elements, rather than two (management fee and “carry” -- the VC's share of profits). The third essential element of VC compensation is the distribution rules that determine when VCs receive their share of profits. A shift from the most pro-investor to most pro-VC distribution regime can affect VCs’ compensation as much or more than common variations in management fee or carry percentage. Third, overall VC compensation, across all three elements, is strongly predicted by both fund size and fund number (measures of VC prominence). A broader measure of VC compensation, which includes fund size, is strongly predicted by fund number. Contrary to the only prior study, management fee and carry vary together, rather than inversely. Instead of raising one element of their compensation substantially above the industry norm, top VCs appear to raise all three elements, presumably by smaller amounts.

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# Venture Capital Limited Partnership Provisions: Understanding Compensation Arrangements

## I. Introduction

After an understandable lag behind economic trends, the academy has produced a voluminous literature on the venture capital industry. In-depth studies of US practices<sup>1</sup> were followed by similar work worldwide,<sup>2</sup> generating valuable cross-country comparisons and policy recommendations.<sup>3</sup>

This literature has two notable characteristics. First, the overwhelming majority of theoretical work and all (to my knowledge) empirical studies have come from economics and finance departments. As a result, the legal and regulatory environments in which the venture capital industry operates have been largely ignored. This is a serious deficiency because, unlike diamond dealers,<sup>4</sup> venture capitalists (“VCs”) operate in a highly complex legal environment, consisting of corporate, commercial, securities, tax, ERISA, and other laws.<sup>5</sup>

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<sup>1</sup> See Paul Gompers and Josh Lerner, *THE VENTURE CAPITAL CYCLE* (2002); Steven Kaplan and Per Stromberg, *Characteristics, Contracts, and Actions: Evidence From Venture Capitalist Analyses*, \_\_*Journal of Finance*\_\_ (forthcoming 2004), <http://ssrn.com/abstract=306381>; Steven Kaplan and Per Stromberg, *Financial Contracting Theory Meets the Real World: Evidence From Venture Capital Contracts*, \_\_*Review of Economic Studies* 281 (April 2003), <http://ssrn.com/abstract=218175>.

<sup>2</sup> See, e.g., Leslie A. Jeng and Philippe Wells, *The Determinants of Venture Capital Funding: Evidence Across Countries* (May 1998). <http://ssrn.com/abstract=103948>; Laura Bottazzi and Marco Da Rin, *Venture Capital in Europe and the Financing of Innovative Companies*, 17 *Economic Policy*, 229-269 (2002); Teresa Tykvoňa, *Venture Capital in Germany and Its Impact on Innovation* (August 2000) <http://ssrn.com/abstract=235512>; Katsushi Suzuki, *Conflicts of Interest between Venture Capital Firms and Debtholders: Evidence from Japan*, (September 12, 2003), <http://ssrn.com/abstract=461480>; Sophie Manigart, Keon Waele, Mike Wright, Ken Robbie, Philippe Desbrieres, Harry Sapienza, and Amy Beekman, *VCs, Investment Appraisal and Accounting Information: A Comparative Study of the US, UK, France, Belgium and Holland*, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=228799](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=228799); Douglas Cumming and Jeffrey G. Macintosh, *A Cross-Country Comparison of Full and Partial Venture Capital Exit Strategies* (2002), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=268557](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=268557).

<sup>3</sup> See, e.g., Ronald J. Gilson, *Engineering a Venture Capital Market: Lessons from the American Experience*, 55 *Stanford Law Review* 1067 (2003).

<sup>4</sup> The reference here is to Lisa Bernstein, *Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry*, 21 *J. Legal Stud.* 115 (1992).

<sup>5</sup> As an illustration: dozens of theoretical papers study the use of convertible preferred stock by VCs in financing portfolio companies. Since the Modigliani-Miller theorem tells us that in perfect markets, capital structure is irrelevant to firm value, economists rushed to explain the overwhelming choice of preferred stock as addressing informational and incentives problems, producing multiple sophisticated models. See, e.g., Eric Berglof, *A Control Theory of Venture Capital*, 10 *J.L. Econ. & Organization* 247 (1994); Thomas F. Hellmann, *IPOs, Acquisitions and the Use of Convertible Securities in Venture Capital*, (December 2000). <http://ssrn.com/abstract=257608>; Dirk Bergerman and Ulrich Hege, *Venture Capital Fundraising, Moral*

Second, almost all existing theoretical and empirical studies concentrate on the relationships between VCs and entrepreneurs who run young companies, rather than the relationships between VCs and investors in venture funds. That is, there is a wealth of knowledge on how the venture capital industry creates its product (young companies), but not on how it governs itself.

The inattention to the industry's governance practices is especially striking when we think of the growing academic and non-academic interest in corporate governance.<sup>6</sup> If the relationship between corporate governance and firm performance or market value deserves intense scrutiny, then, the governance of the basic firm of the venture capital industry – the venture fund – may yield important insights in understanding the VC industry. How do venture fund investors ensure that VCs operate in investors' interests? How well does the compensation system align VCs' interests with those of investors? How do investors monitor VCs and prevent misbehavior?

Some of these questions can be answered by looking at the broad structure of the industry's organization. For example, the limited term of venture funds' lives and VCs' need to periodically raise new funds are widely cited as governance mechanisms.<sup>7</sup> Another popular theme is the existence of social networks among industry participants, who can share information about VC quality and thus facilitate investor monitoring.<sup>8</sup>

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*Hazard, and Learning*, 22 J. Banking and F. 703 (1998); Andreas Bascha, VCs Reputation and the Decision to Invest in Different Types of Equity Securities, (April 21, 2001). <http://ssrn.com/abstract=267568>; Rafael Repullo and Javier F. Suárez Bernaldo De Quiros, *Venture Capital Finance: A Security Design Approach*, CEMFI Working Paper No. 9804. <http://ssrn.com/abstract=145134>; Eike Houben, *Venture Capital, Double-sided Adverse Selection, and Double-sided Moral Hazard* (December 2002). <http://ssrn.com/abstract=365841>. It took two legal academics to provide a simpler explanation (which is also the one that practitioners give when asked about their choice of securities) – convertible preferred stock has tax advantages. See Ronald J. Gilson and David M. Schizer, *Understanding Venture Capital Structure: A Tax Explanation for Convertible Preferred Stock*, 116 Harv. L. Rev. 874 (2003). Comparative empirical studies support the tax explanation; convertible preferred is universally used in the U.S. but is not universal in other countries, where similar tax advantages are not available. See, e.g., Cumming and Macintosh (2002), *supra* note xxx.

<sup>6</sup> In the last few years alone, dozens of papers have studied the impact of corporate governance and law on firm performance and value. See e.g., Rafael La Porta, Florencio Lopez de Silanes, Andrei Shleifer and Robert Vishny, *Investor Protection and Corporate Governance* (1999), <http://ssrn.com/abstract=183908>; Bernard Black, Hasung Jang and Woochan Kim, *Does Corporate Governance Affect Firms' Market Values? Evidence from Korea* (working paper 2003), <http://ssrn.com/abstract=311275>; Art Durnev and Han Kim, *To Steal or Not to Steal: Firm Characteristics, Legal Environment, and Valuation* (2002), <http://ssrn.com/abstract=318719>; Robert Daines, *Does Delaware Law Improve Firm Value?*, 62 J. Fin. Econ. 525 (2001); Guhan Subramanian, *The Disappearing Delaware Effect* (working paper 2003), <http://ssrn.com/abstract=345040>.

<sup>7</sup> See Bernard Black and Ronald Gilson, *Venture Capital and the Structure of Capital Markets: Banks Versus Stock Markets*, 47 J. Fin. Econ. 243 (1998); William A. Sahlman, *The Structure and Governance of Venture-Capital Organizations*, 27 J. Fin. Econ. 473 (1990).

<sup>8</sup> See Joseph Bankman and Marcus Cole, *The Venture Capital Investment Bust: Did Agency Costs Play a Role? Was It Something Lawyers Helped Structure?*, 77 Chi.-Kent L. Rev. 211, 217 (2001); Olav Sorenson and Toby Stuart, *Syndication Networks and the Spatial Distribution of Venture Capital Investments*, working paper (1999), <http://ssrn.com/abstract=220451>.

However, much of the governance work is done on the level of individual venture funds. Each venture fund operates under a complex document – a limited partnership agreement – that details the rights and responsibilities of VCs and investors. These micro-level governance structures have received little academic attention, in part because reading partnership agreements is a law-intensive and tedious endeavor, in part because these agreements are private documents and are zealously guarded by industry insiders. And yet, studying the governance of the venture capital industry without knowing the contents of partnership agreements is like studying corporate governance without knowing the contents of corporate charters.

Because there are virtually no current micro-level data on the governance of venture funds, academic papers often refer to old data and to “common knowledge” of uncertain origins. One popular belief, for example, is that the only important elements that define VCs’ cash-based compensation are management fees (base compensation, paid quarterly throughout a fund’s life) and “carried interest” or “carry” (VCs’ share of fund’s profits; the performance-based part of VCs’ compensation).

Another popular academic belief (practitioners know better) is that VC compensation is nearly uniform across funds, and that any differences are economically insignificant.<sup>9</sup> Many recent articles cite identical numbers (typically a 2.5% management fee and a 20% carry);<sup>10</sup> most do not question why differences in VC performance do not translate into differences in compensation.<sup>11</sup> Since the quality of VCs and the performance of their funds vary greatly,<sup>12</sup> the presumed uniformity of compensation creates a real puzzle, giving rise to speculations of collusion.<sup>13</sup>

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<sup>9</sup> The only empirical study of VC compensation conducted by academics is Paul Gompers and Josh Lerner, *An Analysis of Compensation in the US Venture Capital Partnership*, 51 J. Fin. Econ. 3 (1999), reprinted as Chapter 4 in Gompers and Lerner (2002), supra n.1. They study a large sample of relatively old agreements, dated from 1978 to 1992, but with almost 90% of agreements from 1987 or earlier. They find some variation in carry, but also a huge concentration at 20%. They also find modest differences in management fees across venture firms. However, as I discuss in Part II.C, their fee measurement has methodological problems.

<sup>10</sup> A quick Westlaw search produced a number of articles by legal academics citing the 20% carry figure, and none mentioning any other numbers. See, e.g., Gilson (2003), supra n. XXX, at 1072, 1089; Joseph Lemon, *Don’t Let Me Down (Round): Avoiding Illusory Terms in Venture Capital Financing in the Post-Internet Bubble Era*, 39 Tex. J. Bus. L. 1, 38 (2003); David Rosenberg, *Venture Capital Limited Partnerships: A Study in Freedom of Contract*, 2002 Colum. Bus. L. Rev. 363, fn.3 (2002).

<sup>11</sup> An exception is Steven Kaplan and Antoinette Schoar, *Private Equity Performance: Returns, Persistence and Capital Flows*, working paper (2003) at 4. They accept the conventional wisdom that there is little variation in VC compensation, and observe that it is “puzzling that [persistently high] returns to superior skill [of some VCs] are not appropriated by this scarce input factor in the form of higher fees and larger funds.”

<sup>12</sup> See Kaplan and Schoar (2003), supra note xxx (finding that venture funds in the 25<sup>th</sup> percentile show a cash flow IRR of 3% while the funds at the 75% percentile have IRR of 22% per year).

<sup>13</sup> See Michael Klausner and Kate Lityak, *What Economists Have Taught Us About Venture Capital Contracting*, in BRIDGING THE ENTREPRENEURIAL FINANCING GAP: LINKING GOVERNANCE WITH REGULATORY POLICY (Michael Whincop ed. 2001) <http://ssrn.com/abstract=280024>, at n.19.

I address these and other popular beliefs in a series of detailed “lawyerly” studies of micro-level governance structures of the VC industry. This paper, the first in this series, looks at the cash-based compensation of venture capitalists. In a second paper, now in progress, I study covenants and other elements of VCs’ in-kind compensation, including restrictions on the VCs’ ability to coinvest along with the fund, rules on reinvesting the fund’s profits and on investing in certain asset types, the requirement of mandatory minimum contribution of money by VCs’ into the fund, and so forth. In a third paper, also in progress, I look at internal governance mechanisms that have not been explored in the literature: the existence, membership, and functions of advisory boards; investor meetings and voting; and mechanisms for resolving valuation disagreements between VCs and investors. Finally, in the fourth paper, I study inter-investor governance mechanisms, such as penalties for investors who fail to contribute capital on time, which help to ensure steady supply of capital to funds.<sup>14</sup>

The studies are based on close reading of actual partnership agreements. The agreements come from many sources and involve a variety of venture capital firms, investors, and law firms. Most of the agreements are recent – they come from funds formed in the late 1990s and early 2000s. I also conducted numerous interviews of venture capitalists, venture capital attorneys, and institutional investors to get insiders’ views on particular provisions in the agreements and on general industry practices. Because of confidentiality restrictions, I cannot reveal the names of individual funds or of many of the interviewees; the interviewees who consented to be named are listed in the first footnote.

This paper reports several new findings. First, controlling for fund size and profitability, the compensation of VCs varies significantly across venture firms. There is some, but lesser, variation across different funds raised by the same venture firm. Management fees, measured by the net present value (NPV) of expected fees as a percentage of the amount of capital raised, vary from a low of around 7% to a high of almost 18% of capital raised. Carry varies from 12.5% to 30% of fund profit.

Second, there is one element of VC compensation, which substantially affects the total amount that VCs take home, that has never, to my knowledge, been studied in the academic literature. This element is the timing and other rules governing distribution of the VC's share of the fund's profits. Because all partnership agreements in my sample provide that limited partners and VCs do not pay each other interest for over- or under-payments during the life of the fund, the distribution provisions are equivalent to a set of rules determining when either the VC or the limited partners can take interest-free loans from each other. Depending on the fund's performance, the differences in the present value of VC compensation based on variation in the distribution rule can be comparable to the differences due to heavily negotiated variations in management fee or carry percentage. In one example scenario, the most pro-VC distribution provision would give the VC about 11 times as much money in NPV as the most pro-investor provision. A related finding is that

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<sup>14</sup> See Kate Litvak, *The Use of Restrictive Covenants in Venture Capital Partnership Agreements* (work in progress, 2004); Kate Litvak, *Governance Mechanisms in Venture Capital Partnerships* (work in progress, 2004); Kate Litvak, *Default Penalties in Venture Capital Partnership Agreements* (work in progress, 2004).



VCs can get a substantial payment from their supposedly performance-based carry even if the fund, in NPV terms, loses a large percentage of investors' money.

In other words, one core contribution of this paper is to document that our earlier views on the elements of VC compensation were incorrect. Merely studying management fee and carry as a percent of fund profits leaves out an essential element of compensation.

A third important finding is that better VCs earn higher compensation across the board. I have two available proxies for VC quality – fund size and fund sequence number.<sup>15</sup> Both proxies strongly predict overall VC compensation across all three elements (management fee, carry, distribution rule). A broader measure of VC power in the marketplace, which includes fund size and the three elements of compensation, is strongly predicted by fund number. Contrary to the only prior study, management fee and carry vary in the same direction rather than inversely. Instead of raising one element of their compensation far above the industry norm, top VCs raise all elements, presumably by smaller amounts.

Contrary to a popular practitioner belief that management fees, as a percentage of fund size, decline with fund size, I find that the NPV of the management fee *increases* with fund size, although insignificantly. There is a trend over time toward both lower management fees and larger funds. Controlling for this trend, larger funds do not charge lower fees.

Another belief popular among practitioners is that when the VC market is hot, VCs get higher share of profits because the supply of qualified VCs lags behind the overheated demand for their services. I find no support for this hypothesis. Market hotness separated from the time trend does not predict any element of VC compensation. Carry, in particular, is predicted only by fund size and fund number – my two proxies for VC quality.

As to distribution rules: contrary to practitioner belief, lawyers do not single-handedly determine the fund's distribution rules. Distribution rules drafted by the same law firm vary significantly across venture funds that use that law firm's services. The two best predictors of the VC-friendliness of a distribution regime are management fee and fund size.

The fourth finding, moving beyond this paper: my project illustrates the value of integrating legal expertise into studies of complex contracts. We know that the perfect Modigliani-Miller world is disturbed by transaction costs, information problems, and law (including taxes). In recent years, the finance and economics literature has paid a lot of attention to transaction costs and information problems. The law so far has been neglected. Treating the law with the same care as is afforded to transaction costs and information problems is essential to understanding institutional arrangements that are driven by the

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<sup>15</sup> Fund number indicates the number of funds that a particular venture firm has raised in the past. For example, a fund named Overthetop VI means that a venture firm called Overthetop has raised five funds in the past. The fund number, therefore, is a rough proxy for the age of the venture firm, as well as a proxy for sustained success over time because better-performing firms are better able to raise new funds, or raise them more often. Similarly, fund size is a good proxy for VC quality because VCs with better track records raise bigger funds.

interaction of law and finance. Finance scholars also face a comparative disadvantage in digging into the details of complex, convoluted contracts. This is presumably why distribution rules were not studied in prior work.<sup>16</sup>

The paper is organized as follows. In Part II, I discuss the limited empirical literature on venture capital partnership agreements and suggest that the findings of this literature should be taken with caution. In Part III, I present my main descriptive data findings. In Part IV, I present the results of regression analyses and correlations. The Conclusion summarizes the results and suggests avenues for future research.

Two important caveats. First, my sample size is small: 37 funds, raised by 17 venture firms. Also, given the sources of my agreements, I have likely oversampled funds raised by more prominent VCs. I am pursuing multiple sources to obtain additional agreements, and expect later versions of this paper to report results for a larger sample. For now, sample size limits my ability to find statistical significance for correlations among variables, or to run regressions with extensive control variables.

Second, many regression results are intended only to show correlations among compensation elements while controlling for various fund and market characteristics, not to establish causation. For example, when I say that the distribution rule is predicted by management fee, I do not mean that one causes another. Instead, it is likely that VC quality, which I cannot directly measure and can only imperfectly proxy for, affects both.

## II. The Existing Literature

To my knowledge, there is only one empirical paper studying in-cash compensation of venture capitalists on the basis of partnership agreements.<sup>17</sup> This is an important, "first-generation" study. However, it has significant problems.

Gompers and Lerner study management fees and carries across a sample of venture funds, mostly raised in the 1980s. They ask whether better and more established VCs earn a higher percentage carry and charge higher management fees than other VCs. As proxies for "better and more established," the authors use two highly correlated measures: age of a venture firm (years since the closing of a firm's first fund) and size, measured as the total amount of dollars raised by that firm in all of its prior funds. Gompers and Lerner find that "older and larger venture organizations" charge lower management fees than newer and smaller VC firms. I do *not* find consistent results in my sample: fund number and the age of the venture firm do not significantly predict the NPV of management fees.

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<sup>16</sup> The only mention of distribution rules by academics I know of is in two business school cases, by Steven Kaplan (*Accel Partners VII*, 1999), and Josh Lerner (*A Note on Private Equity Partnership Agreements*, 2000). Neither case discusses how the value of these rules changes across performance scenarios or how these rules vary across funds.

<sup>17</sup> Gompers and Lerner, *supra* n.1, at 57-95. There are also several industry studies performed by consulting firms, but they use self-reported data with low response rates and are much less reliable than the study of partnership agreements that Gompers and Lerner conducted.

The Gompers and Lerner's result may be driven by misinterpretation of contractual language. The authors observe that there are two basic types of management fees – they are calculated either as a percent of committed capital or as a percent of “fund's asset value.” Some agreements use combinations of the two main types. To calculate the net present value of management fees, the authors apply a 10% discount rate to fees calculated on the basis of committed capital, commenting that this reflects the non-risky nature of this compensation. They apply a 20% discount rate to fees calculated on the basis of “asset value,” to reflect “more uncertain compensation.”<sup>18</sup> Finally, to establish “asset value,” to which the percentage is applied, they assume that a venture fund's assets grow at 20% per year.<sup>19</sup> In other words, they seem to believe that “asset value” means “market value of fund's assets.”

Unless there has been a dramatic shift in the methods of calculating management fees (which I doubt, based on my interviews with practitioners and on reading form partnership agreements prepared by top law firms for their attorneys in the late 80s), Gompers and Lerner misunderstood at least some of their agreements. What they thought was “asset value” was most likely the cost basis of a fund's assets. Although I have heard that some venture funds use market value of fund's assets as the sole basis of management fee calculations, there are none in my sample, and such funds appear to be rare. When I asked practicing attorneys whether they have seen management fees based on the market value of fund's assets, a typical response was “you mean, the VC would say his fund is worth gazillions and get a management fee on that?”<sup>20</sup>

The actual language of these provisions varies, sometimes referring to other sections of the agreement, and often making it difficult to untangle the true definition. Among the definitions of that I've seen were “amount equal to capital commitments less cost basis of portfolio securities distributed” and “cost basis of partnership's assets.” On a few occasions, the agreements used the lesser of market value of assets and either committed capital or cost basis.<sup>21</sup> None of the agreements in my sample used the market value of a fund's assets as the sole basis for calculating management fees. Arrangements based on the cost basis of a fund's assets (often called “*managed capital*” -- the term that I will use in this paper) are common. But even here, no fund in my sample used managed capital as the sole basis for the management fee. Instead, fees based on managed capital are used in combination with fees based on committed capital, with the fee based on committed capital in the fund's early years and on managed capital in later years.

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<sup>18</sup> Id. at 70.

<sup>19</sup> “We assume that the venture fund's assets, before any deductions for fees, grow at one of three rates: 5, 20, or 35 percent. These values roughly correspond to the average returns and a one standard deviation range for funds active over the sample period.” Id at 92. :

<sup>20</sup> One top venture capital attorney put it this way in email correspondence: “unlike hedge funds you will never see the management fee based on [the asset value] of the [venture] fund. One of the many reasons for this is that the assets held by these funds are illiquid and difficult to value.” (January 2004).

<sup>21</sup> For example, the management fee is a percentage of “the lower of (x) cost basis of assets of partnership or (y) fair market value of all assets of partnership,” or “if the value of all Partnership portfolio assets shall be less than the amount of the Total Subscription [then the management fee is] 2.5% of the value of all partnership portfolio assets.”

The use of cost basis, rather than market value, as a base for calculating management fee, is sensible for both incentive and administrative reasons. As my interviewees immediately noticed, if VCs received a fee based on their view of what illiquid securities of young companies were worth years before these securities were sold, VCs would have incentives to inflate this value.<sup>22</sup> There is a vast difference between receiving a percentage of the fund's realized profit (through carry) and receiving a percentage of one's view on what the fund's assets are worth. Furthermore, VCs are not obliged to return the management fee if the fund suffers losses at the end of its life (unlike carry, which VCs must return under "clawback" provisions, to maintain their pre-set percent of profits). Thus, if agreements routinely provided for a market-value-based management fee, we would expect to see clawback provisions requiring VCs to return excess management fee payments if the true value turns out to be lower than their estimates. I have never heard of such provisions, and neither had my interviewees.

As a result of this error, Gompers and Lerner likely overstate the value of management fees for funds that pay management fees as a percentage of managed capital. They assume that the basis grows at a rate of 20% per year. In fact, once the fund is fully invested, this amount first remains constant and then declines when distributions are made. The authors then apply a high discount rate (of 20% instead of 10%) to those management fees because they consider them to be "risky." In reality, management fees based on managed-capital are not much riskier than fees based on committed capital. The higher discount rate only partly offsets the overstated basis on which the fee is computed. The net effect is still a large overstatement of the management fee for funds that compute this fee based on managed capital.

The overvaluation of fees paid under the managed-capital system may have driven one main finding of the Gompers-Lerner study – that larger and older venture organizations charge lower management fees.<sup>23</sup> The age of a venture firm affects its *approach* to the calculation of management fee, but, as I discuss in section IV.A, not the amount of the management fee. In my sample, older venture firms are more likely to base their fees on committed capital: both mean and median year of venture firm formation is lower for funds that use committed capital approach. See Table 1 below. That is, overvaluation of fees paid on the basis of managed capital means systematic overvaluation of fees paid to younger and less established venture firms, which may have created the result that Gompers and Lerner found.

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<sup>22</sup> Notably, the use of "lesser of" market value and committed/managed capital establishes a cap on management fees while also penalizing VCs for verifiably bad performance.

<sup>23</sup> This misreading could have also driven their second main finding – that the compensation of older venture firms is more sensitive to performance than the compensation of younger firms. Under the Gompers and Lerner reading, the base compensation of newer firms (which are more likely to base management fees on managed capital) is both sensitive to performance (in a way that a fee based on managed capital is not), and overstated. Both factors would increase these funds' apparent sensitivity of compensation to performance.

**Table 1: Attributes of funds with management fee based on managed capital**

Management fee based on:	%. of venture firms	Mean year of VC firm formation	Median year of VC firm formation
Combination of committed and managed capital	31.25	1986	1982
Committed capital	62.5	1980	1979
Specified dollar amount	6.25	1997	1997

The relationship between the age of the VC firm and its approach to calculating management fee may be a typical case of contractual stickiness. The “traditional” approach is the fee based on committed capital. Older venture firms that used this arrangement in early funds do not switch to another arrangement to follow new trends. Although fee provisions sometimes change across funds raised by the same venture firm, the changes typically affect the amount of the fee, but not the method of calculating the fee. In my sample, only one firm changed the method of calculation in later funds, and even there, the change involved different uses of a committed capital base, rather than a switch from committed to managed capital.

Another limitation of the Gompers-Lerner compensation study is that they do not control for several important characteristics of venture funds, including fund size and the size of other compensation elements. Including these variables affects analogous results for my sample. For example, Gompers and Lerner found that older and bigger venture organizations receive a higher carry. I obtain a similar result (using fund number to proxy for the age of the venture firm) when I do not control for fund size and management fee. However, when I control for those two factors, fund number becomes only marginally significant, while fund size becomes a strong predictor of carry.<sup>24</sup>

Finally, the Gompers-Lerner study does not consider one essential element of VC compensation – distribution rules determining *when* a fund’s profits are distributed to investors and VCs. As I discuss in Part III.E, these rules can have a large effect on VC compensation, holding constant the level of carry.

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<sup>24</sup> To remind: “fund size” and “size of venture organization” are not the same things. Fund size in my study is the dollar size of each separate venture fund. Size of venture organization in Gompers-Lerner study is the total amount of dollars raised by a venture firm in all of its funds. The two measures are not similar: if a new venture firm with a few prominent VCs raises a large first fund, “fund size” will be very big, but “size of venture organization” may be comparatively low. There were many such cases during the boom time.

### III: Basic Findings

#### *III.A. Data*

The sample consists of 37 venture fund agreements. All funds are US-based, and all specialize as venture capital funds, as opposed to other types of private equity, such as leveraged buyout or hedge funds. The funds were raised by 17 venture capital firms. I collect supplemental information, such as the location and the age of a venture capital firm, from a variety of other sources, such as firms' websites, Venture Economics (2003), and interviews with practitioners. As Appendix Panel 1 reports, both the funds and the venture firms in a sample are diverse. Some venture firms are young organizations; others have been in business for decades. The sequence number of the funds – ranging from 1 to 11 (mean = 5.1) – indicates this diversity. The oldest venture firm was created in 1969; the youngest in 2002, with the mean year being 1985.

My data set contains mostly recent agreements. The earliest fund "vintage year" (the year when the fund was raised) is 1987, the most recent is 2003, with the mean being 1998. Considerable heterogeneity exists in fund size, which ranges between \$20M and \$1250M (mean = \$356M). Eighty-one percent of agreements come from California-based funds, which partly reflects the dominance of the West Coast venture firms in the industry and partly reflects the sources from which I obtained the agreements. Sixteen percent come from Massachusetts, and 3 percent (one fund) from Washington. About 17 percent of venture firms are registered as California firms (either LLCs or corporations); the rest are registered in Delaware.

The data set contains seventeen "families" of funds; each family is raised by the same venture capital firm. The number of funds per family ranges from 1 to 6 (mean = 2.2). There are also five law-firm-based clusters of funds: funds whose agreements were written by the same law firm. The number of funds per law firm in my sample ranges from 1 to 9 (mean = 4.8). The number of venture *firms* per law firm ranges from 1 to 3 (mean = 2.2). All law firms are large firms with national reputations.

#### *III.B. Overview of VC Compensation*

Partnership agreements are complex and long contracts; they often come with appendices and make cross-references to other important documents, such as general partner's agreements, management company agreements, and so forth. Some of the provisions are boilerplate that is universal across all agreements, but there is a fairly high degree of customization across funds and especially across venture firms.

VCs' compensation consists of three main components: a non-risky portion which does not depend on the fund's performance (management fee), a risky portion, which is computed as a percentage of the fund's profit (carry), and distribution rules that determine when carry is paid and, if appropriate, repaid. Below, I address each element of VCs' compensation in turn.

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### *III.C. Management Fees*

There is substantial variation in management fees across venture funds. This is due both to different methods of calculating management fees, and different fee amounts, holding the calculation method constant.

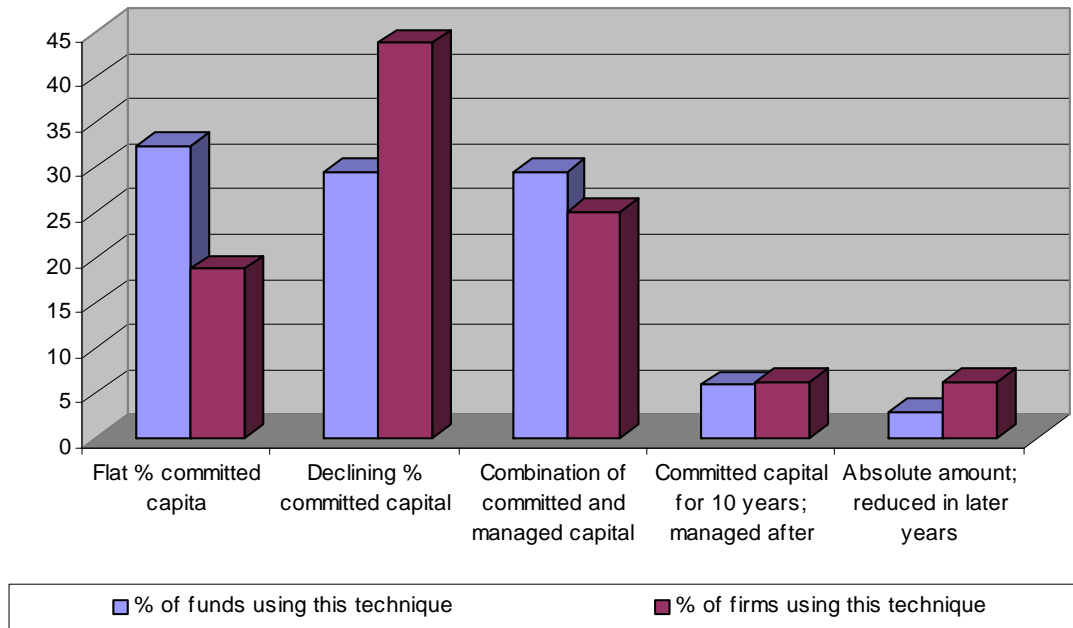
#### III.C.(1) Methods of Calculating Management Fees

The agreements in my sample used one of five basic methods of calculating management fees. Table 2 summarizes the frequency with which each is used. Figure A shows the frequency of each arrangement in chart form. I explain each below.

**Table 2: Management Fee Arrangements**

	Flat fee as percentage of committed capital	Fee as % of committed capital; % declines in later years	Combination: starts as % of committed capital, switches to managed capital	Committed capital until end of fund; switch to managed capital if fund life extended	Specified dollar amount; reduced in later years
% of <b>funds</b> using this technique	32.35	29.41	29.41	5.88	2.94
% of <b>VC firms</b> using this technique	18.75	43.75	25	6.25	6.25
mean year (standard deviation) of funds using this provision	1996.7 (4.69)	1998.3 (3.04)	1998.6 (3.30)	2001.7 (1.15)	2000 (n.a.)

**Figure A: Management Fee Arrangements**



Flat Fee Based on a Percentage of Committed Capital. Under this system, the fee is a pre-set percentage of committed capital -- the total amount that investors have agreed to contribute to the fund.<sup>25</sup> Since neither the percent nor the amount of committed capital changes through the fund’s life, this arrangement amounts to a flat fee. This is a traditional method, which appears to be losing popularity. In my sample, a flat fee was used only in a third of agreements in my sample, and by merely 19% of all venture firms. The mean vintage year of funds using this method is 1996 – substantially lower than the mean vintage year of funds using other methods.

In my interviews, practitioners opined that the flat fee has been losing its popularity because investors consider it “unfair” to pay VCs the same compensation in the early, most labor-intensive stage of a fund’s life, as they pay in later years, when most of the fund’s investments have been liquidated. Another popular objection to flat fee is that VCs do not “need” high fees at the end of a fund’s life because at that time, they receive compensation

<sup>25</sup> The following is a typical language from a partnership agreement: “The annual Management Fee rate shall be 2.5% of the Aggregate Capital Commitments of the Partners.” “Capital Commitments” are defined as follows: “Each Limited Partner, upon admission to the partnership, shall be deemed to have made a “Capital Commitment” equal to the amount specified as such in the Subscription Agreement relating to such Limited Partner. ... The Capital Commitment of a Partner: (i) shall represent the maximum aggregate amount of cash and property that such Partner shall be required to contribute to the capital of the Partnership; and (ii) shall not be changed during the term of the Partnership.” Another version: “The management fee for each fiscal quarter shall be an amount equal to the product of (x) the aggregate Capital Commitments of all Partners ... and (y) [the pre-set percentage].” “Capital Commitment” is defined in another section: “Capital Commitment of a Partner shall mean the amount that such Partner has agreed to contribute to the capital of the Partnership.”



from carry. In later years, VCs are also typically allowed to raise new funds, which gives them an alternative source of income via new management fees and thus also reduces the “need.”

Both the “unfairness” and the “need” views seem peculiar to me. If the management fee is a quasi-wage compensating VCs for their time and effort, it is not clear why this wage should fluctuate with the amount of work that VCs perform in each stage. After all, many conventional companies smooth employee incomes by paying them the same wage in busy and non-busy times. Moreover, if a flat fee reflects such income-smoothing, then a switch to a system that more closely matches fee to effort should be achieved by increasing the percentage of fee in the early years, not merely reducing it in later years. I don’t observe this pattern in my sample. The shift from a flat fee system to the declining fee system was not accompanied by an increase in early-stage fees.<sup>26</sup> In my interviews, practitioners confirmed this information: when a venture firm switches from a flat fee to a declining fee, it does not increase an early-years fee.

Thus, it seems that the real issue behind the declining popularity of flat fees is the total amount of fees, rather than the distribution of fees through the fund’s life. As I show in Part IV, the NPV of management fees, as a percent of fund assets, has declined in recent years. Apparently, industry participants found it easier to reduce management fees through switching from flat to declining fees, rather than reducing the flat fee percentage. In interviews, practitioners expressed the view that reducing the flat percentage could be viewed as a sign of VC desperation and thus hinder future fundraising. In contrast, introducing a declining fee schedule is viewed as investor-friendly. This maneuvering appears naïve, but not entirely implausible.<sup>27</sup>

Declining Fee Based on Percentage of Committed Capital. Under this method, the fee is also calculated as a percentage of committed capital, but the percentage declines in later years of fund’s life. This system was used by about 30% of funds in my sample, but, notably, by 44% of venture firms. That is, almost half of the venture firms now use the declining fee based on committed capital. Funds that use this method are generally younger than funds using flat fees: a mean fund with such arrangement was raised in 1998.

Declining Fee Based on Combination of Committed and Managed Capital. Under this arrangement, early-year fees are set as a percent of committed capital, while later-year fees are set as a percent of “managed capital,” or the cost basis of undistributed and

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<sup>26</sup> My sample contains only one agreement where VCs received declining fees that started with more than a typical 2.5% (in that case, it was 3%). That fund was raised in 1992, when most funds used a flat-fee arrangement. The next fund raised by that venture firm (in 1997) had a flat fee of 2.5%, and they retained that arrangement through their 2001 fund.

<sup>27</sup> This may be yet another illustration of VCs’ tendency to avoid deviating from the industry norm on separate measures of compensation. In Part IV, I suggest that the “no-deviation” norm could explain why VCs use the three elements of their compensation as complements, rather than substitutes, foregoing tax advantages of trading fee for carry when individual partners’ liquidity allows so: spreading above-average compensation across three elements helps VCs conceal the extent of the excess. Here, the same “no-deviation” norm forces VCs to conceal the *decreases* in their fees by employing a convoluted step-down system, rather than simply reducing flat rates.

unliquidated securities.<sup>28</sup> Unlike committed capital, which usually remains the same throughout the fund's life, "managed capital" varies through fund's life – it is low at first, before the fund has invested in portfolio companies; increases as the fund makes investments, then declines again as VCs distribute profits to investors. A combination of fees based on committed and managed capital produces a declining fee in the fund's later years. This method was used by about 30% of the funds and a quarter of the venture firms in my sample.

This arrangement is interesting because it shows how practitioners' beliefs about appropriate compensation may hinder funds' ability to construct an efficient compensation scheme. As mentioned above, the principal rationale for declining fee is that VCs should not be paid the same amount in busy and less-busy years. The declining-fee arrangement based on *committed* capital reduces management fees in later years, but in a seemingly arbitrary manner because the fee only roughly reflects the actual labor that VCs must put in. An arrangement that better fits the "fairness" sentiment would base the fee in later years on the actual amount of capital under management.<sup>29</sup>

However, basing management fees on managed capital creates an incentive problem. If VCs receive a fee on undistributed fund assets (typically securities of portfolio companies or cash proceeds from the sale of such securities), they have an incentive to delay distributing these assets to investors.<sup>30</sup> Delayed distributions may create costs for investors that go far beyond artificially beefed-up management fee. In particular, when a VC delays distribution and the stock appreciates during the delay, the VC is entitled to receive a share of appreciation of both profits and the base. If securities were distributed promptly, the VC would only get his share of profits appreciation.<sup>31</sup> The fee based on managed capital exacerbates VCs' incentives not to distribute promptly.<sup>32</sup>

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<sup>28</sup> There are many ways to draft this provision. One example: "The management fee shall be an amount equal to the product of (x) the cost basis of the Partnership's assets ... and (y) [the pre-set percentage]." Another version: "Management fee is equal to 2.4% of an amount equal to the aggregate Capital Commitments of the Partners less the cost basis of Portfolio Company Securities distributed, sold or written off for tax purposes." Here, "Capital Commitments" are defined as "a Partner's contribution made or required to be made pursuant [to subscription agreement], whether or not yet paid."

<sup>29</sup> "The rationale [for switching from committed capital to managed capital as a basis] is that [the VC] will incur greater expenses during the investment period, when the team is putting the money to work. Subsequently [the VC's] expenses related to this fund can be tied to the specific companies remaining in the portfolio, and should therefore be reimbursed accordingly." See Toll, *supra* n. XXX, at 42.

<sup>30</sup> Fund agreements typically give VCs substantial discretion as to the timing of distributions. Some agreements require VCs to distribute proceeds from the sale of securities as soon as practicable, but VCs still control the timing of the sale.

<sup>31</sup> Suppose investors contribute \$100 into a fund. The fund earns a profit of \$50, for total asset value of \$150. If a VC distributes securities to investors now, he will earn (let's assume) 20% of \$50, or \$10 worth of securities. After a year, his securities will be worth \$12, assuming a 20% appreciation. Now, suppose the VC does not distribute the securities, but keeps them in the fund. The entire \$150 will increase in value by 20%, to \$180. Now, the VC gets 20% of \$80 (profits), or \$16. The VC is better off delaying the distribution.

<sup>32</sup> To be sure, if the stock plummets in value before VCs distribute it and get a chance to hedge, VCs personally may suffer large losses. However, the lure of getting the share of the base appreciation is apparently stronger than the fear of losses from holding on to the stock, as evidenced by the language in

This incentive problem is not present if the fee is based on committed capital, either flat or declining. It seems that the “fairness” rhetoric have undermined the popularity of a more efficient arrangement based on committed capital.<sup>33</sup>

Fee Based Entirely on Managed Capital. Under this arrangement, the fees are calculated on the basis of “managed capital” throughout the life of a fund. Although some practitioners’ manuals mention this method as a possibility, my sample includes no agreements using it, and I doubt that it will become popular. Under this method, VCs receive lower fee not only late in fund’s life, but also in early years. Neither the “fairness” nor the “need” considerations mentioned above justify reducing VCs compensation in yearly years: early stages are labor-intensive, and the amount of managed capital may not reflect the amount of work that VCs do in investigating investment opportunities. Thus, the “fairness” proponents should not find this arrangement appropriate. Moreover, in early stages of a fund’s life, VCs have the least opportunity to earn income from sources other than management fees. They have not yet earned carry, and they are typically prohibited from raising new funds. Thus, those who view the management fee as an income-smoothing mechanism should also not like this method.

Moreover, a management fee based solely on managed capital exacerbates the incentives problem discussed above: it not only induces VCs to delay distributions in late years of fund’s life, but also induces them to invest too soon so that they can start receiving a management fee.

Combination: Fee Based on Committed Capital During Fund’s Normal Years; on Managed Capital During Extension Years. All agreements in my sample specify that the term of the fund is 10 years. After that, VCs may seek extensions, usually for up to 2 years. Practitioners advise me that extension requests are routinely granted. Investors often consider it “fair” to treat pre-extension and post-extension period differently for compensation purposes (presumably to discourage needless extensions). Five percent of funds in my sample use such a combination system.

Absolute Dollar Amount. One agreement in my sample specifies the management fee as a flat dollar amount, rather than as a percent of committed capital; this amount declined over time. This arrangement is similar to a fee based on percentage of committed capital, but provides a stronger lock on the amount of VC’s compensation. The fee size is determined in the partnership agreement, which is signed on the initial closing date. The final size of the fund may not be determined until 6 month later because VCs typically have the right to admit new limited partners within the first 6 months without seeking consent from existing investors. VCs can also admit new investors at later dates if existing

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many partnership agreements that strongly encourages VCs to distribute profits promptly. The practitioners’ literature often discusses ways of forcing VCs to distribute without unduly constraining their flexibility. See, e.g., Axelrad and Wright, *supra* nXXX.

<sup>33</sup> True, the fee based on committed capital creates another incentive problem – VCs can do nothing at all and still get management fee. This, however, is likely a much lesser danger than the danger created by managed-capital fee. Most of VCs’ compensation comes from carry, not fee, and thus VCs naturally want to invest. However, for the reasons explained in the preceding footnote, VCs may have strong incentives not to distribute promptly, and basing fee on managed capital only exacerbates the problem.

investors approve. Thus, under the percentage arrangement, VCs receive a higher fee if they admit more investors, while under the dollar-amount fee arrangement, VCs won't benefit from the increase in fund size (at least not through management fee). However, several practitioners in my interviews said that if fund size increases by a substantial amount after the original closing, the management fee percentage would probably be renegotiated.

Summary. My data indicates a shift from a flat fee based on committed capital to two alternative declining-fee systems: one based on committed capital with a declining percentage of fee and the other involving a switch from committed capital to managed capital as a base for fee calculation. The last row of Table 2 shows the dynamics of the change: a mean fund using the flat-fee approach is considerably older than a mean fund using either of the two declining fee approaches. The committed-capital declining-fee system is more efficient than the switch-to-managed-capital one, and it is used by almost twice as many venture firms in my sample.

### III.C.(2) The Size of Management Fees

To estimate the net present value (*NPV*) of management fees under different arrangements, I must make some assumptions. I assume a 10% discount factor, to reflect the low-risk nature of fee-based compensation. I assume an 11-year fund life (a one-year extension of the standard 10-year life). For funds where the fee is based on managed capital, I assume the schedule of investments and distributions presented in Appendix Panel 2. This schedule reflects the time that VCs need to invest fund's capital (hence first three years are below 100%) and distributions in later years (hence later years are below 100%).

As I discuss in Part II.C, all but two of my agreements that use the managed-capital approach in later years use the cost basis of undistributed (and unliquidated) securities as the basis of fee calculation. For agreements that use the lesser of committed capital or asset value during the extension years, I use committed capital reduced under the distribution schedule in Appendix Panel 2.

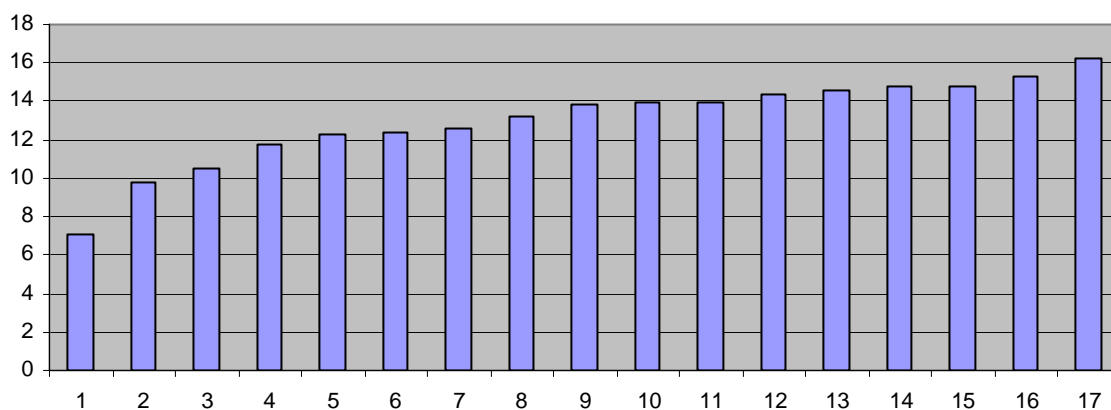
My results for NPV of management fees, as a percent of committed capital, are reported in Table 3. I present results both for funds and for VC firms. I present separately data for a 10-year and an 11-year fund. There are only modest differences based on fund life. All later results in this paper assume an 11-year fund life.

In Figure B, I present the distribution of management fees, for an 11-year fund, by VC *firm*. I use firm-level data, rather than fund-level, because venture firms typically use the same management fee arrangement across their funds. For the two venture firms in my sample that changed their management fees in later funds, I use the fee specified in the latest fund.

**Table 3: Net Present Values of Management Fees (% of committed capital)**

NPV of management fee over life of fund (% of committed capital)	Across VC Funds			Across VC Firms				
	No. of Obs.	Mean	Stand. Dev.	No. of Obs.	Mean	Stand. Dev.	Min.	Max.
11-year fund	37	13.85	2.26	17	13.41	2.24	7.12	17.68
10-year fund	37	13.65	2.12	17	13.03	2.45	6.8	17.16

**Figure B: NPV of Management Fees, by VC Firm (% of committed capital)**



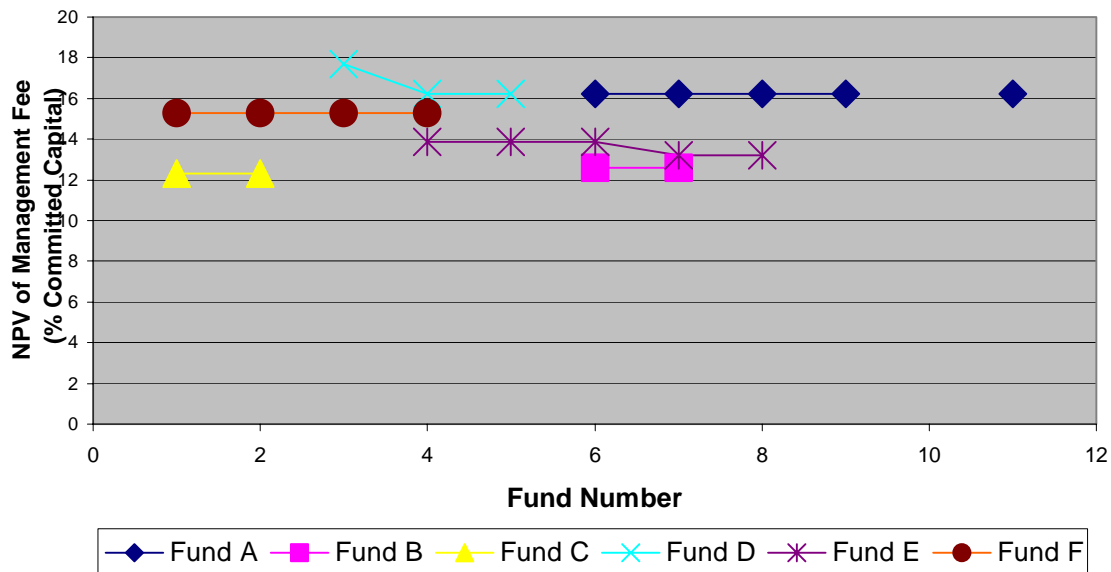
Contrary to a common academic belief, there is substantial variation in management fees, both across funds and across VC firms. For an assumed 11-year fund life, fees range from 7.12% of a fund’s committed capital to 17.68% (mean = 13.85%).

### III.C (3). Changes in Management Fee Within Fund Families

In this section, I ask whether the size of management fee remains constant across multiple funds raised by the same venture firms. I look at the dynamics of management fee changes for the six fund families in my sample. Figure C below presents the results. Four out six families did not change their fees across funds, but two did, and both reduced them.<sup>34</sup>

<sup>34</sup> The graph excludes two later-stage coinvestment funds. Later-stage funds are raised subsequent to the main fund because of the need for additional capital in the midstream of the main fund’s life. Later-stage partnership agreements differ in a number of ways from agreements for “regular” funds and typically provide for lower management fees. This is odd: if the VC firm had raised the same amount of money a year earlier, it likely would have received a “normal” high management fee on the additional amount; thus, we can’t explain this trend by economies of scale. This practice penalizes VCs for raising catch-up funds instead of raising larger funds originally. A better explanation is perhaps the need to discourage VC from asking for more money after the fundraising is closed, and threatening that the refusal to contribute more than the originally-agreed amount would jeopardize the original fund. The problem of throwing good money after bad

**Figure C: Dynamics of Changing in Management Fees Within Families of Funds Raised by the Same Venture Firm.**



To summarize: once a venture firm puts a management fee provision in its agreement, it rarely changes this provision in later funds. When the change occurs, the fee typically declines, not increases.

### III.D. Carry

#### III.D.(1) Methods of Calculating Carry

The second principal portion of VCs' compensation is performance-based: VCs receive a percentage of their funds' profits, that is called "carried interest" or "carry." One issue is whether carry is calculated net of management fees. Several industry insiders told me that there are funds where "profit" is computed before subtracting management fees; that is, VCs can receive carry even if the fund does not earn enough profits to cover their management fees.<sup>35</sup>

In my interviews, industry participants considered such arrangement unfair and unacceptable. Of course, any arrangement could be "fair" at a right price, and one can think of reasons for risk-averse VCs to seek to expand the definition of "profit," perhaps agreeing to reduce the management fee or the carry percentage in return. However,

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in an attempt to recover an earlier investment is pervasive in the venture capital industry, and addressed on many levels. See Kate Litvak, *Investor Passivity as a Commitment Device: The Costs and Benefits of Allocating Control Away from Outside Equity Investors in Venture Capital Funds* (draft Feb. 2003).

<sup>35</sup> See., e.g., Mark P. Tanoury, *Venture Capital Fund Formation Issues*, 1035 PLI/Corp 293 (1998).

insisting on such arrangement would send a bad signal to investors, suggesting that the VC is not confident the fund will be profitable. It is, therefore, unsurprising that such arrangements are rare. My sample does not contain any agreements with this expansive definition of profit.<sup>36</sup>

### III.D.(2) The Size of Carry

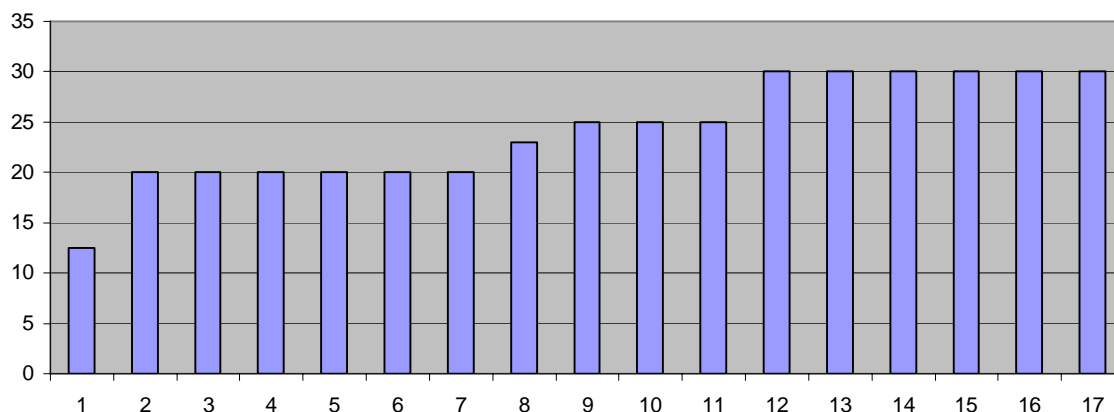
Table 4 summarizes the carry provisions for the funds and firms in my sample. Figure D illustrates the distribution of carry arrangements across venture firms. I use venture firm data, rather than fund data, because the VC firms in my sample typically have the same carry provisions across multiple funds. For venture firms that changed the carry percentage in their later funds, I use the carry for the latest fund in my sample.

**Table 4: Carry as Percentage of Fund Profit**

	Across VC Funds			Across VC Firms			Min.	Max.
	No. of Obs.	Mean	Stand. Dev.	No. of Obs.	Mean	Stand. Dev.		
Carry (% of fund profit)	37	23.5	4.2	17	24.3	5.2	12.5	30

**Figure D: Size of Carry (% of Fund's Profit)**

Carry for each VC *firm*, as a percentage of the fund's profit. When carry differs for different funds raised by the same VC firm, I use the carry for the most recent fund in my sample.



<sup>36</sup> As I discuss in Part III.E., the distribution rules are written to create many scenarios where VCs get a carry while investors lose money, in net present value terms. These scenarios, for some reason, remain unacknowledged in the industry.

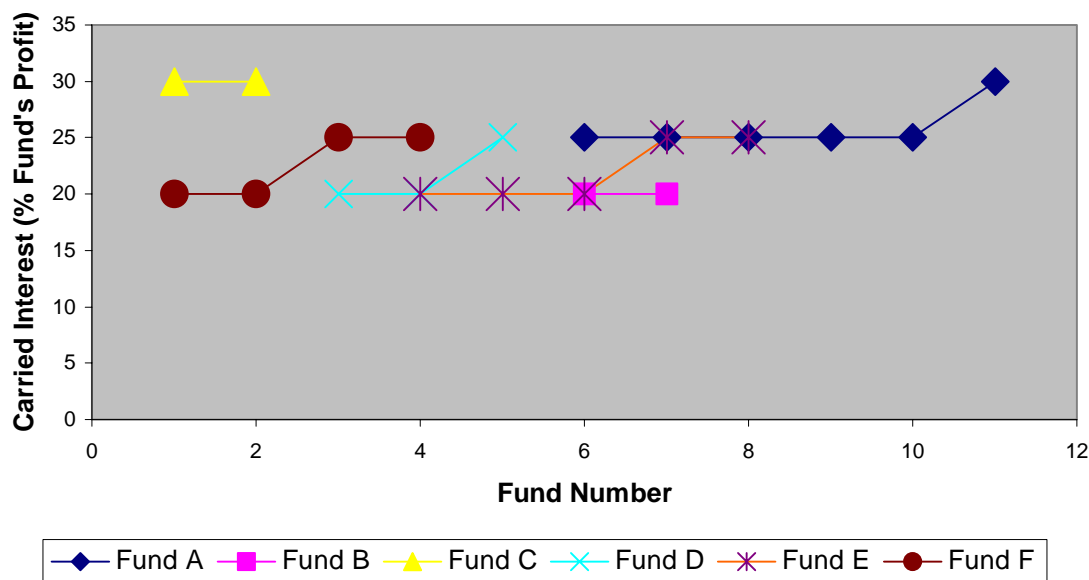
The general academic belief – again, based on old data – that the carry percentage is generally uniform, with most funds charging 20% carry, is not correct, at least for my sample. There is a substantial variation across both funds and firms. The lowest carry in my sample is 12.5%; the highest is 30%, with a mean across firms of 24.3%. Thus with the caveat that my sample size is limited, average carry percentage has increased significantly since the time of the Gompers and Lerner study of VC compensation (1978-1992 funds, but with almost 90% of their sample from 1987 or earlier), and become much less centered around the formerly "standard" 20% figure.

### III.D (3). Changes in Carry Within Fund Families

Figure E below looks at the dynamics of changes in carry within families of funds. Out of six families, four increased carry in later funds. Every family that had more than two funds experienced an increase in carry.<sup>37</sup> Unlike management fee, which changes rarely across funds raised by the same venture firm, carry changed in many fund families. Also unlike management fee, when carry changes, it usually increases, not declines.

**Figure E: Changes in Carry Across Fund Families**  
(% of Fund's Profit)

Carry for each VC *fund*, as a percentage of the fund's profit, across fund families (funds raised by the same VC firm). Funds raised by the same venture firm are denoted in the same color. Late-stage and coinvestment funds are excluded.



<sup>37</sup> For reasons discussed above, I do not consider late-stage coinvestment funds.



### *III.E. Distribution Provisions*

An essential piece of the VCs' compensation package is the method of distributing fund's profits. The distribution issue has been ignored in the academic literature; to my knowledge, no academic paper has studied it empirically, perhaps because the distribution rules are complex, spread across a number of different provisions of a typical partnership agreement, and often written in convoluted legalese.

#### III.E.(1). Why the Method of Profit Distribution Is Important

Overview. A major portion of VCs' compensation comes from their share of funds' profits. Each fund invests in multiple projects; projects are liquidated at different times throughout the fund's life, and the proceeds are distributed to investors at some point after profits are realized. Because the precise details of selling young companies are impossible to predict, VCs are typically granted substantial discretion on when to sell their investments and distribute proceeds to investors.

The issue then arises: when should profits be distributed to VCs? For investments that are sold early in fund's life, should VCs get their share of profits at the same time as investors get theirs? Should VCs not get anything until the end of the fund's life, when the final calculation of profits is complete? Or should there be an intermediate arrangement?

On the first look, this does not seem like an important question. In a Modigliani-Miller world, the timing of dividend payouts (which are conceptually equivalent to distributions) is irrelevant to firm value. The VC can distribute his share of profits to himself today, or he can borrow against his share of undistributed profits and purchase securities with the same expected rate of return. In a decently functioning credit market, the two arrangements could be structured to yield the same expected value for VCs. The lower present value of a slower distribution pattern could be offset through a change in the carry percentage.

Concerns Expressed By Industry Insiders. The world, of course, is full of information problems, incentive problems, and taxes, which could potentially make the distribution rules important. These are precisely the issues that practitioners raise when I asked them why distribution arrangements are so complicated.<sup>38</sup> The most common expressed concerns are (1) VCs' liquidity needs, which make early payouts to VCs important; (2) VCs' credit risk, which makes early payouts to VCs risky for investors; (3) VCs' ability to manipulate sales and distributions to accelerate cash flows to VCs, to the detriment of investors.

Liquidity needs, as I noted above, could be satisfied through borrowing rather than distributions; they are also mitigated by the payment of management fees. However, the concerns about VCs' credit risk (information problem) and about aligning VCs' interests with those of investors (incentives problem) at first sound persuasive. If a VC was paid his share of the fund's profits in the midstream of the fund's life, he may receive more than his

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<sup>38</sup> See., e.g., Jonathan Axelrad and Eric Wright, *Distribution Provisions in Venture Capital Fund Agreements*, *Venture Capital Review* (November 1997).

specified share of profits if the fund suffers a large loss at the end of its term. A VC would then have to return the excess distributions under a typical arrangement called “clawback.” If there is uncertainty as to whether VC would honor his return obligations, investors may be reluctant to pay carry to the VC prior to the end of the fund’s term.<sup>39</sup> Thus, information asymmetry as to the VC's ability and willingness to repay excess distributions may impact the choice of the distribution schedule.

The other concern expressed by practitioners is that delaying distributions until some pre-specified event may encourage VCs to accelerate the arrival of that event, at the expense of fund profitability. If, for example, investors must receive distributions of some pre-specified amount before a VC starts receiving his distributions, a VC may distribute prematurely (say, by selling securities of young companies before the companies are sufficiently mature, thus not capturing a full return on investment) to accelerate his own payouts. Because this strategy is not costless for VCs, only marginal cases may be affected.

What’s Odd About Concerns of Industry Insiders. These arguments have a puzzling feature: they ignore the possibility of charging interest on early payouts. Interest rates, paid by the VC to the fund, could compensate for the credit risk (thereby eliminating informational problems) and make VCs indifferent between early and late distributions (thereby eliminating incentive problems). However, in all agreements in my sample, no one pays interest to anyone for anything.<sup>40</sup>

This is an interesting phenomenon. Charging interest for early payments could simplify the distribution process, reduce agency costs, and remove a contentious issue from the negotiation table. Why is this simple, transparent practice not used? I posed this question to many practitioners. Two basic explanations emerged: (1) some VCs may not be interested in replacing the current, sometimes incomprehensible clauses with a simpler approach; and (2) symbolism and egos may prevent people from drafting optimal provisions.

As to the first: Charging interest would clarify the net present value of VCs’ compensation. Odd as it sounds, many industry participants claimed in interviews that they had only a vague idea about how “that legal stuff” in distribution clauses translates into real dollars. They knew that some arrangements are more investor-friendly than others, but nobody could estimate the magnitude of the difference.

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<sup>39</sup> The credit risk issue was not important before the burst of the dot-com bubble. Now, the industry is full of rumors about VC firms that owe \$40M and more in overpaid carry. Some of these firms have distributed this money to individual venture capitalists long ago; many of those individuals have since left the firm and moved out of the area, or left and formed a competing firm, or spent much of the money. One VC told me in an interview that his firm, which anticipates a large future clawback liability to investors, has sent return notices to former members and associates without waiting for the liquidation of their current fund. He was not optimistic about collecting the entire amount.

<sup>40</sup> A rare exception is direct borrowing by the fund from an investor or a VC. Interest on the borrowed funds, however, is a different issue from interest paid by VCs on, say, early overpayment of profits.

This is perhaps unsurprising. The distribution sections are long and complex, and tightly connected with other sections (allocation of profits and liquidation). All these provisions are highly tax-intensive, and economically significant parts are buried into clauses that provide for formalistic reshuffling of numbers on paper to satisfy certain IRS requirements.<sup>41</sup> Although everyone agrees that distribution methods matter, I suspect that calculating the effect of a distribution arrangement on net present value would be an eye-opening experience for many. Assigning interest rates on advance payments might induce industry participants to start estimating the value of different distribution provisions, which may not be in some parties' interests.<sup>42</sup>

As to the second: In an interview with a senior venture capitalist, I suggested that distributions to VCs could be treated as loans from the partnership, with an appropriate rate of interest attached. The VC immediately understood the idea, but replied that he wouldn't want his hard-earned carry to be called "a loan" because it's "his money" and he "really earned it."<sup>43</sup> He admitted that his argument was economically naïve, but said that the symbolism mattered to him.

### III.E.(2). Types of Distribution Methods

In this section, I briefly describe the distribution methods that I found in my agreements. The list is not exhaustive in principle: one can think of many other arrangements, and indeed the practitioners' literature is full of creative solutions. I list the arrangements in increasing order of VC-friendliness.<sup>44</sup>

Escrow, All Interest To Fund. Under this arrangement, as profits are distributed to investors throughout the fund's life, the VC's share of profits goes to a special escrow account. The interest that the money earns in that account is allocated to the partnership. When the fund is liquidated (after ten years, if there is no extension), the VC receives the

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<sup>41</sup> In particular, the "economic interest" requirement of I.R.C. § 704.

<sup>42</sup> One would think that sophisticated investors would understand such provisions. However, I found that even sophisticated investors can misinterpret complex legalese. For example, one agreement in my sample provides that the VC would get a 20% carry if the fund's internal rate of return (IRR) is below a certain threshold, but 25% carry if the fund achieves a threshold IRR over a specified time period. I asked the institutional investor who provided that agreement to me whether the carry would go down again if the IRR declines in later years. The investor replied that of course it would. I also asked an attorney from the firm that wrote the agreement whether the carry would go down. The attorney said of course not; that's what the plain language of the agreement states (a view consistent with my own reading). Evidently, the language was far from "plain" or the investor would have understood it correctly.

<sup>43</sup> This VC also compared my proposal to call carry a loan to the government's habit of calling tax cuts "treasury expenditures." "This is my money, not theirs, so they shouldn't be calling it expenditures as if they gave me something that otherwise wouldn't be mine."

<sup>44</sup> For a few funds in my sample, VCs were required to repay overpaid carry net of income tax. I ignore this complication in the discussion below and in my analysis of the VC-friendliness of distribution provisions. If included in the analysis, these net-of-tax provisions would further reinforce my main claim -- that distribution rules can significantly affect the NPV of the carry that VCs receive.

money from that account. This method eliminates credit risk and the risk that the VC will manipulate the distribution schedule.

Return All Capital Contributions First. Under this arrangement, the VC receives no distributions until investors get distributions equal to the amount of their capital contributions. Once investors are paid, the VC starts receiving his share of profits at each distribution.

In contrast to the “escrow” arrangement, the VC here often receives distributions in the midstream of the fund’s existence. This method eliminates VC credit risk: since all portfolio companies are corporations with limited liability, the most that the fund can lose is the amount it invested into those companies.<sup>45</sup> Thus, once the fund’s investors receive their money back, the VC will never receive more than his share of the fund’s profits, and will not have to repay anything. The method, however, creates misalignment of interests between VCs and investors: since VCs are not compensated for the delay in distributing profits, they may accelerate distributions to accelerate payouts to themselves.

125%, 120%, etc., Ceiling. Under this arrangement, the VC receives his share of profits only if the net assets value of the fund, after the distribution, is more than 125% (120%, etc.) of the cost value of fund’s securities. For example, investors put in \$100 into a fund. The fund makes an investment and receives a \$150 return. If a VC gets a 20% carry, he is entitled to \$10, and he gets a \$10 allocation on his capital account. However, this money is not distributed to him immediately. Under the 125% ceiling arrangement, the VC receives a distribution of his share of \$25 (\$5); for a 120% ceiling, the VC receives a distribution on his share of \$30 (\$6), and so forth. The undistributed portion of the VC’s share of profits is paid out at the time when the fund liquidates; the interest earned on the VC’s unpaid carry is allocated to the partnership. This method reduces credit risk by leaving a part of VC’s carry in the fund until liquidation. It has incentive problems similar to the “return capital contributions first” method.

Payback With No Interest Note. Under this arrangement, the VC receives a pre-specified percent (equal to carry) of each distribution. However, because the VC is not entitled to receive a share of repayments of capital, he must simultaneously contribute to the fund an amount equal to his share of repayment of capital. For example, assuming 20% carry, if the fund invests \$100 into a company and receives \$150 back, the VC would get 20% of \$150 (\$30), and would have to repay 20% of \$100 (\$20).

Most agreements in my sample that used this method specified that the repayment could be done in cash or in a no-interest-bearing note, secured by the VC’s interest in the fund, and payable at liquidation. In other words, the VC gets systematically overpaid (paid above carry) throughout the fund’s life, and returns the overpayment at liquidation without interest.

Practitioners often justify this arrangement by VCs’ liquidity constraints. Many distributions are made in shares rather than in cash, and it is a rare venture capitalist who can contribute cash equal to 20% of a \$1B fund. But this doesn’t explain why the VC

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<sup>45</sup> Assuming the risk of subsequent securities litigation against the fund or against the VC, who will be indemnified by the fund, or other unusual events, is low enough to be ignored.

should be able to effectively borrow from the fund up to 20% of the fund's contributed capital without paying interest. This arrangement introduces a high credit risk. It also strengthens the incentive for the VC to distribute too early because he not only receives his carry on profit earlier, but he also receives an interest-free loan at the time of the distribution, and early distribution increases the term of the loan.

This arrangement typically applies to distributions of securities, rather than cash.<sup>46</sup> It thus is also equivalent to allowing VCs to purchase the fund's best securities from the fund in return for a zero-interest loan equal to the cost basis of the investment.<sup>47</sup> There are several popular justifications for this. One is that "in-kind (as opposed to cash) distributions [are] unique investment opportunities in which the general partners should always be able to participate."<sup>48</sup> Some industry insiders told me that VCs prefer securities instead of cash because a dollar's worth of distributed securities is in reality worth more than a dollar. This is odd. If the securities are marketable, usually because a portfolio company has gone public, there is no reason to expect them to be undervalued. If the securities are not marketable, it is unclear why a VC, who virtually single-handedly assigns the value to these securities when they are distributed to investors, would underprice them to his own detriment, and then try to make up for the losses by buying those securities from the fund.

Second justification for the Payback system would have a pro-investor spin: the higher the VC's share of securities that have also been distributed to investors, the more incentives the VC has to improve the value of such securities, and the better off investors are. This would make sense for securities of private companies, but the distribution rules apply to shares in both public and private companies. Moreover, most partnership agreements in my sample require that only public securities are distributed, and none of my agreements bars the VC from selling shares in a post-IPO company. VCs commonly sell distributed securities over a period of time, which undermines the power of the "incentives" argument for the Payback method.

A third argument in support of this arrangement is that it encourages VCs to make in-kind distributions, rather than selling securities for cash and triggering recognition of taxable gain – which would affect taxable investors. This explanation seems more plausible to me. The practice of using the "Payback" method for in-kind distributions and another method for cash (only one fund in my sample uses the Payback method for both) has this effect – VCs get an interest-free loan for in-kind distributions, but not in-cash ones, and thus effectively receive a higher carry for in-kind distributions. Still, if it were indeed important for taxable investors to encourage in-kind distributions, they should have

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<sup>46</sup> Only one agreement in my sample, for a top-notch fund, used this method for both cash and securities distributions.

<sup>47</sup> "The best" because VCs are not required to make a distribution to themselves; if they think that distributed securities are overpriced, they can simply refuse to take securities at that distribution – an arrangement that all agreements in my sample allow. If VCs refuse a distribution, they receive a credit in their capital account, which will eventually be paid out of proceeds from the sale of other companies (albeit without interest).

<sup>48</sup> Axelrad and Wright, *supra* n. XXX at 7.

figured a simpler way of doing so, such as a higher explicit carry for these distributions, that reflects investors' tax savings.

### III.E.(3) Popularity of Different Distribution Methods

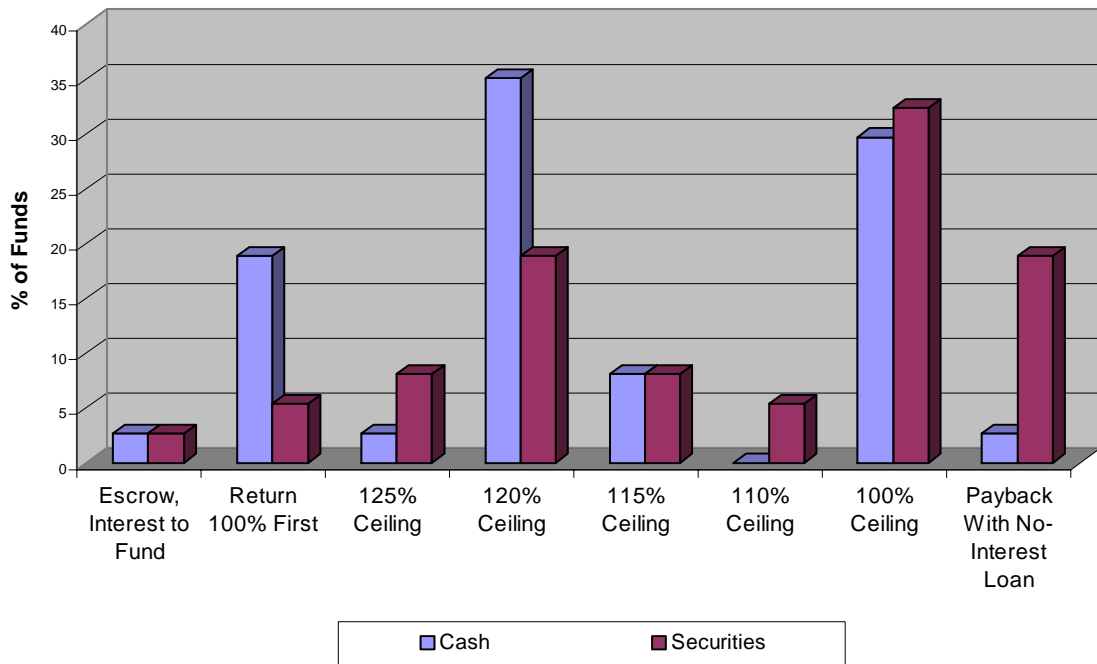
Table 5 below summarizes my findings on the frequency with which VC funds and VC firms use different distribution methods. Since venture firms use the same distribution arrangement in all their funds (in my sample, no firm changed its distribution arrangement), I provide data separately for funds and firms. Figures F and G provide a graphic illustration. As we see, venture firms use a wide variety of distribution arrangements. Most firms use different arrangements for cash and securities distributions. Very few firms use the most pro-investor approach, Escrow With Interest Going to Partnership. A significant percentage of firms use the Payback approach, but mostly for securities distributions, not cash.

**Table 5: Popularity of Distribution Methods, by Fund and VC Firm**

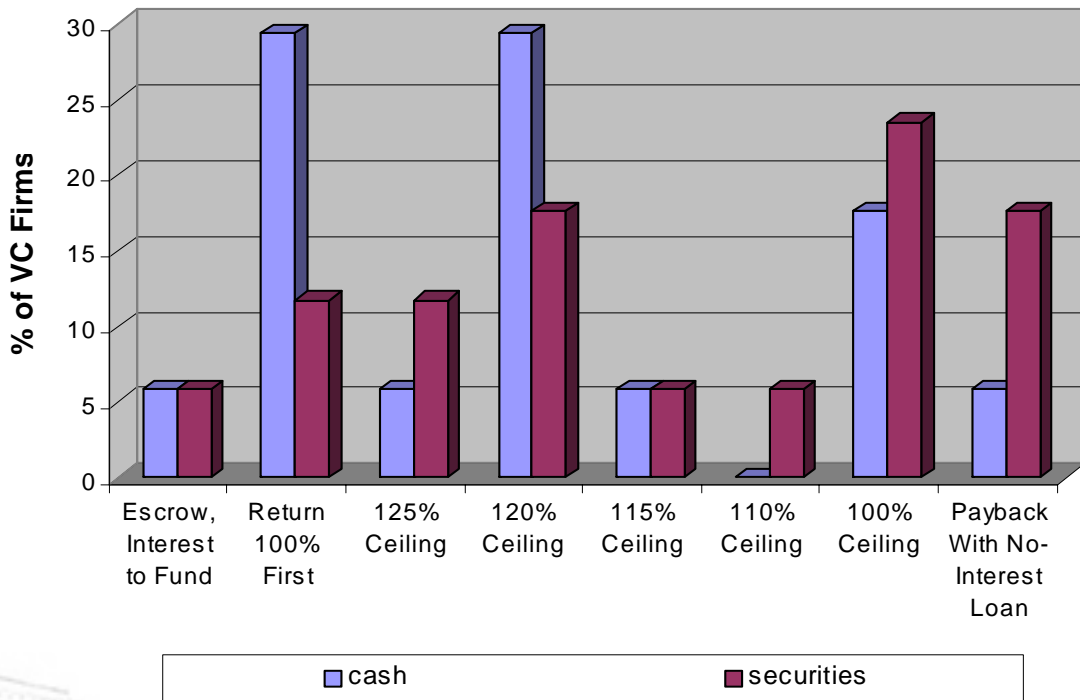
Percentages of VC funds and VC firms using different profit distribution methods, for distributions of cash and of securities. Distribution method choice was constant within fund families(different funds raised by the same VC firm). Sample is 37 funds, raised by 17 VC firms.

	By Fund		By VC Firm	
	Cash	Securities	Cash	Securities
escrow, interest to fund	2.70	2.70	5.88	5.88
return 100% first	18.92	5.41	29.41	11.76
125% ceiling	2.70	8.11	5.88	11.76
120% ceiling	35.14	18.92	29.41	17.65
115% ceiling	8.11	8.11	5.88	5.88
110% ceiling	0	8.11	0	5.88
100% ceiling	29.73	29.73	17.65	23.53
payback with no-interest note	2.70	18.92	5.88	17.65

**Figure F: Popularity of Distribution Methods by Fund (% of Funds)**



**Figure G: Popularity of Distribution Methods by VC Firm (% of Firms)**



### III.E.(4) The Impact of Distribution Method on VC Compensation

To estimate how distribution method affects the net present value of a VC firm's compensation, I construct a *distribution coefficient* as follows. I consider three hypothetical funds: a *low-profit* fund, a *medium-profit* fund, and a *high-profit* fund. For each fund, I consider an *early-profit* scenario, where most profits are made early in the fund's life, and a *late-profit* scenario, where most profits are made late in fund's life. I discount all loans by the fund to VCs at a rate of 10%, which seems reasonable for relatively low-risk borrowing by VCs.<sup>49</sup>

The low-profit fund is assumed to earn a 5% raw (undiscounted) returns over the life of the fund. Since venture capitalists receive carry only on raw profits, this scenario represents one of the lowest-performing funds where venture capitalists are still entitled to receive carry. This scenario has an important feature: because the fund earns less than the rate of return required to compensate for risk, the NPV of this fund's returns is negative, but VCs are still entitled to receive a positive carry. The medium-profit fund is assumed to earn a raw return equal to 3 times the amount invested (about 20% IRR to investors). The high-profit fund is assumed to earn a raw return equal to 15 times the amount invested (more than 60% IRR to investors). This is roughly the number that comes up in a popular press discussions of great (but not truly legendary) funds.

I make several simplifying assumptions. I assume 20% carry. I assume that each fund has \$100M in committed capital, and invests all of it at the end of the first year. I assume no VC contribution to the fund;<sup>50</sup> adding VC contribution does not change the results significantly. I assume no management fees. Each fund finances three companies (Company A, B, and C), and sells them in years 5, 7, and 9. In the early-profit scenarios, the most profitable company is sold first and the least profitable company is sold last. The reverse order is used for the late-profit scenarios. Each fund is liquidated after year 10, when all final balances are calculated and overpayments are paid back. Table 6 summarizes the scenarios by years and profits.

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<sup>49</sup> The VCs obligation to the fund is effectively secured by the VCs' interest in the fund's remaining assets. For money that has been distributed to the VC firm: often, this is then distributed to individual partners. Typically, individual partners are not jointly liable for the return of overpayment, and are obliged to return only their pro rata share. Still, reputational concerns, including the need to raise the next fund, are likely to make VCs relatively safe borrowers. The 10% discount rate is also the rate I use to compute the NPV of management fees.

<sup>50</sup> All agreements require VCs to contribute some portion of fund's capital, usually below 3%.



**Table 6: Details of the Four Scenarios**

The table below provides details on the four scenarios I construct to measure the impact of distribution rules on VC compensation.

	<b>High-Profit Fund: Early Gain</b>	<b>High-Profit Fund: Late Gain</b>	<b>Medium-Profit Fund: Early Gain</b>	<b>Medium-Profit Fund: Late Gain</b>	<b>Low-Profit: Early Gain, Late Loss</b>	<b>Low-Profit: Early Loss, Late Gain</b>
<i>All funds</i>	<i>All capital invested at end of year 1: Company A: \$20M; Company B: \$30M; Company C: \$50M</i>					
Year 5	Company C sold for \$800M	Comp A sold for \$300M	Comp C sold for \$150	Comp A sold for \$50	Comp B sold for \$65M	Comp C sold for \$10M
Year 7	Company B sold for \$400M	Comp B sold for \$400M	Comp B sold for \$100M	Comp B sold for \$100	Comp A sold for \$30M	Comp A sold for \$30M
Year 9	Company A sold for \$300M	Comp C sold for \$800M	Comp A sold for \$50M	Comp C sold for \$150	Comp C sold for \$10M	Comp B sold for \$65M
Year 10	<i>Fund is liquidated.</i>					

I then calculate the NPV of the VCs' carry for the eight distribution methods represented in my sample. The results are reported below in Table 7. Some of the results are striking. For example, in a low-profit, early gain fund, under the Payback method, the NPV of the VC's carry is \$3.53M because of the value of the no-interest loan that the VC receives after the sale of companies A and B. In contrast, the VC would take home only \$0.39M in NPV under the Carry to Escrow method. The method of distribution can make a large difference on the amount of money that VCs take home.

**Table 7: NPV of Carry in Each of the Four Scenarios**

	<b>High-profit fund: early gain</b>	<b>High-profit fund: late gain</b>	<b>Medium-profit fund: early gain</b>	<b>Medium-profit fund: late gain</b>	<b>Low-profit: early gain, late loss</b>	<b>Low-profit: early loss, late gain</b>
Carry to escrow; interest to fund	107.95	107.95	15.42	15.42	0.39	0.38
Return capital first	153.43	133.75	19.79	17.47	0.42	0.42
Ceiling 125%	152.25	132.57	21.33	18.87	1.32	0.49
Ceiling 120%	152.49	132.80	21.49	18.97	1.40	0.56
Ceiling 115%	152.72	133.04	21.65	19.08	1.60	0.63
Ceiling 110%	152.96	133.27	21.96	19.18	1.63	0.70
Ceiling 100%	153.43	133.75	22.15	19.39	1.74	0.85
Payback with no-interest note	158.14	138.45	25.42	21.48	3.53	2.75

Another way to assess the importance of distribution rules is to ask how much investors take home, in NPV terms, vis-à-vis VCs, under each arrangement. Table 8 below contains the results for the low-profit, early-gain; medium-profit, early gain; and high-profit, late gain scenarios. As Table 8 shows, in a low-profit early-gain fund scenario, investors, who put \$100M into a fund, lose over \$35M in net present value under the

Payback scenario (in NPV terms, they lose 39% of their investment), while the VC gets \$4.29M in net present value as supposedly performance-based compensation, in addition to management fees. In the most investor-friendly scheme, investors lose \$31M in net present value, while the VC receives a small carry, worth \$0.39M.

The results for the medium profit, early gain scenario also show a large difference in VC returns based on the distribution method. The NPV of the VC's carry ranges from \$15.42M to \$25.42M. The NPV of carry, as a percentage of the total NPV to the fund, ranges from 20.63% to 34.76%. The high profit, late gain scenario also shows significant differences in the NPV of the VC's carry based on the distribution rule. The NPV of the VC's carry ranges from \$108M to \$138M. The NPV of carry, as a percentage of total NPV to the fund, ranges from a low of 16.9% to a high of 21.6%. Thus, in all scenarios, distribution rules can substantially affect VC profit.

Still another interesting feature of Table 8: The NPV of carry, as a percentage of total NPV, can differ substantially from the VC's nominal carry, in all scenarios. While the calculations here are made on the assumption of a 20% carry, for the most part, the NPV of carry exceeds 20%. The only exception is the investor-friendly carry-to-escrow method for the high-profit, late gain scenario, where carry is less than 20%.

**Table 8: NPV of VC Carry and Investor Return**

	Carry to escrow	Return First	Ceiling 125%	Ceiling 120%	Ceiling 115%	Ceiling 110%	Ceiling 100%	Payback, no- interest note
<b>Low Profit, Early Gain Scenario</b>								
VC	0.39	0.42	1.71	1.90	2	2.1	2.29	4.29
Investors	-31.29	-31.33	-32.62	-32.81	-32.91	-33.00	-33.2	-35.2
Total	-30.9	-30.91	-30.91	-30.91	-30.91	-30.9	-30.91	-30.91
VC return (% of total)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Medium Profit, Early Gain Scenario</b>								
VC	15.42	19.79	21.33	21.49	21.65	21.96	22.15	25.42
Investors	59.34	54.97	53.43	53.27	53.11	52.8	52.61	49.34
Total	74.76	74.76	74.76	74.76	74.76	74.76	74.76	74.76
VC return (% of total)	20.63%	26.47%	28.53%	28.75%	28.96%	29.37%	29.63%	34.00%
<b>High Profit, Late Gain Scenario</b>								
VC	107.95	133.75	132.57	132.80	133.04	133.27	133.75	138.45
Investors	531.97	506.17	507.35	507.12	506.88	506.65	506.17	501.47
Total	639.92	639.92	639.92	639.92	639.92	639.92	639.92	639.92
VC return (% of total)	16.87%	20.92%	20.72%	20.75%	20.79%	20.83%	20.9%	21.64%

Finally, I construct a *distribution coefficient* – defined as the ratio of the NPV of carry that a VC receives in a particular distribution method to the NPV of carry that he would receive in the most investor-friendly method. The distribution coefficient tells us the factor by which a particular distribution method increases the NPV of carry, compared

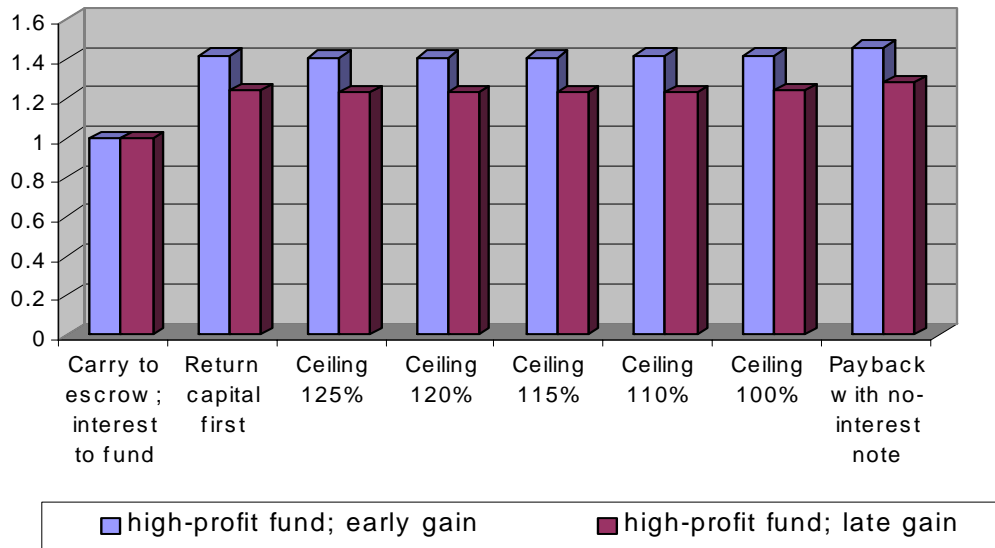
to the most pro-investor method. For example, in a low-profit, early-gain fund, a VC would receive 11.12 times as much carry under the Payback method as he would if the agreement provides for Carry to Escrow. In contrast, in a high-profit, late gain fund, the difference between the Payback and Carry to Escrow methods is only 1.28 (though the dollar differences are larger). The results are reported in Table 9. Figures H and I illustrate the divergent distribution coefficients graphically for high-profit and low-profit funds, respectively.

**Table 9: Distribution Coefficients of Each Distribution Method**

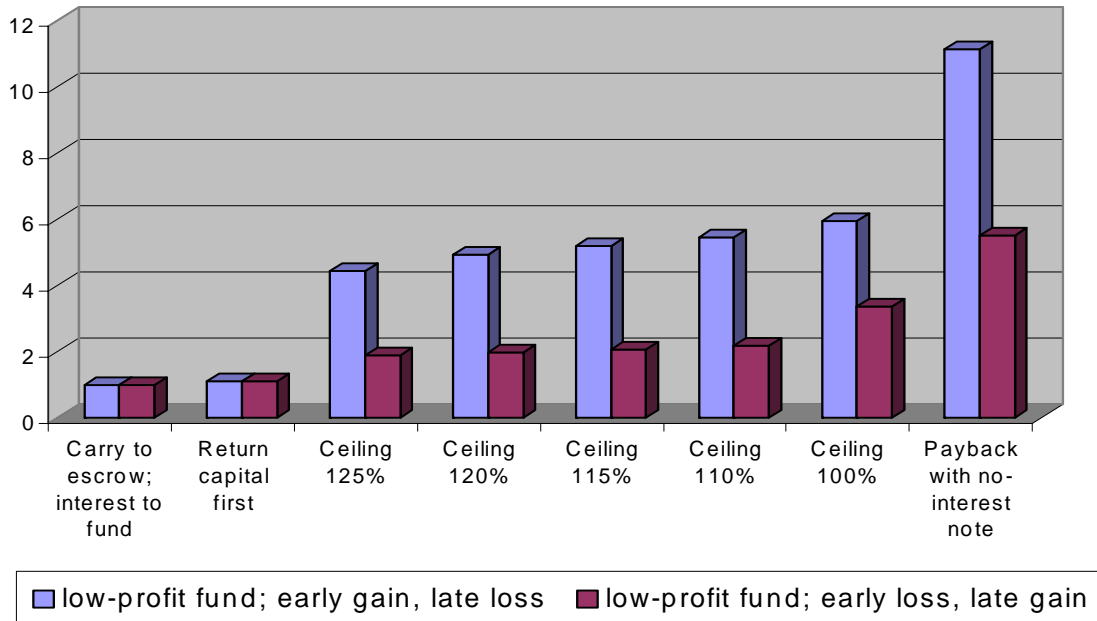
Computed distribution coefficients (ratio of NPV of VC's carry under indicated method to NPV of VC's carry under the carry to escrow method) for each distribution method and each profit scenario.

	high-profit fund; early gain	high-profit fund; late gain	medium-profit fund; early gain	medium-profit fund; late gain	low-profit fund; early gain, late loss	low-profit fund; early loss, late gain
Carry to escrow; interest to fund	1	1	1	1	1	1
Return capital first	1.42	1.24	1.28	1.13	1.1	1.1
Ceiling 125%	1.41	1.23	1.38	1.22	4.44	1.88
Ceiling 120%	1.41	1.23	1.39	1.23	4.94	1.97
Ceiling 115%	1.41	1.23	1.40	1.24	5.19	2.07
Ceiling 110%	1.42	1.23	1.42	1.24	5.44	2.17
Ceiling 100%	1.42	1.24	1.44	1.26	5.94	3.36
Payback with no-interest note	1.46	1.28	1.65	1.39	11.12	5.51

**Figure H: Distribution Coefficients, High-Profit Fund**



**Figure I: Distribution Coefficients, Low-Profit Fund**



### III.E.(5) How Much Does the Distribution Rule Matter?

Next, I ask whether the differences across distribution regimes translate into significant differences in dollars, compared to the other two principal elements of VC compensation - management fees and carry percentage. I study the hypothetical medium-profit, early gain fund described in the previous subsection. I compare the effect on VC compensation of switching from one common management fee to another, or from one common carry to another, to the effect of shifting from an intermediate (120% ceiling) to the most VC-friendly distribution regime, holding management fee and carry constant. I report results in Table 10 below.

An increase from a flat 2% management fee to a flat 2.5% management fee (a significant change and, according to industry insiders, heavily negotiated) increases the NPV of management fee by a factor of 1.25, or by \$2.88M in net present value, for a \$100 million fund. An increase from a 20% carry to a 25%, assuming a 120%-ceiling distribution regime, increases the NPV of carry by a factor of 1.25, or by \$5.33M. A shift from a 120% ceiling rule to the Payback rule increases the NPV of carry by \$3.93M (a factor of 1.18). Thus, the effect of a change in the distribution rule is of the same order as a change in the management fee or carry percentage. Moreover, a change from most-to-least investor friendly distribution rule changes the NPV of carry from \$15.42M to \$25.42M (a factor of 1.65). For a high-profit (low-profit) fund, the dollars affected by the distribution rule will increase (decrease) relative to the medium-profit scenario shown in this table, the importance of distribution rule relative to carry percentage will decrease (increase), and its importance relative to management fee will increase (decrease).

**Table 10: Changes in Compensation: Effect on NPV of VC Compensation**

Effect of changes in management fee, carry, and distribution rule on NPV of VCs' compensation, for \$100M medium-profit, early gain fund (defined in the previous section). Management fee is based on committed capital; carry calculation assumes a 120%-ceiling distribution method; distribution method calculation assumes 20% carry.

	NPV of Management Fee		NPV of Carry (120% Ceiling Distribution Rule)		Effect of Distribution Rule on NPV of Carry (20% Carry)		
	Flat 2%	Flat 2.5%	20%	25%	120% ceiling	Payback	Carry to Escrow
Values	\$11.52M	\$14.40M	\$21.33M	\$26.66M	\$21.49M	\$25.42	\$15.42
Difference	\$2.88M		\$5.33M		\$3.93M		
Ratio	1.25		1.25		1.18		
Difference							\$10M
Ratio							1.65

### III.E.(6) Investor-Friendliness for Cash and Securities Distributions

I next ask whether there is a difference in investor-friendliness between cash and securities distributions. Because venture firms in my sample use the same distribution method across all their funds, I look at firm-level data. I assign to each venture firm a cash

(securities) distribution coefficient that equals the mean of that firm's distribution arrangements for cash (securities) distributions, across four scenarios (two high-profit and two low-profit funds). I then compare the average cash and securities distribution coefficients.

The results are presented in Table 11. The average cash distribution coefficient is lower than the average securities coefficient. That is, cash distributions are more investor-friendly than securities distributions. The difference is mostly driven by the fact that the least investor-friendly arrangement – Payback With No-Interest Loan – is used primarily for securities distributions. This difference means that VCs systematically get higher compensation, in NPV, when they distribute securities rather than cash. This may create incentives for VCs to distribute in-kind, to the benefit of taxable investors.

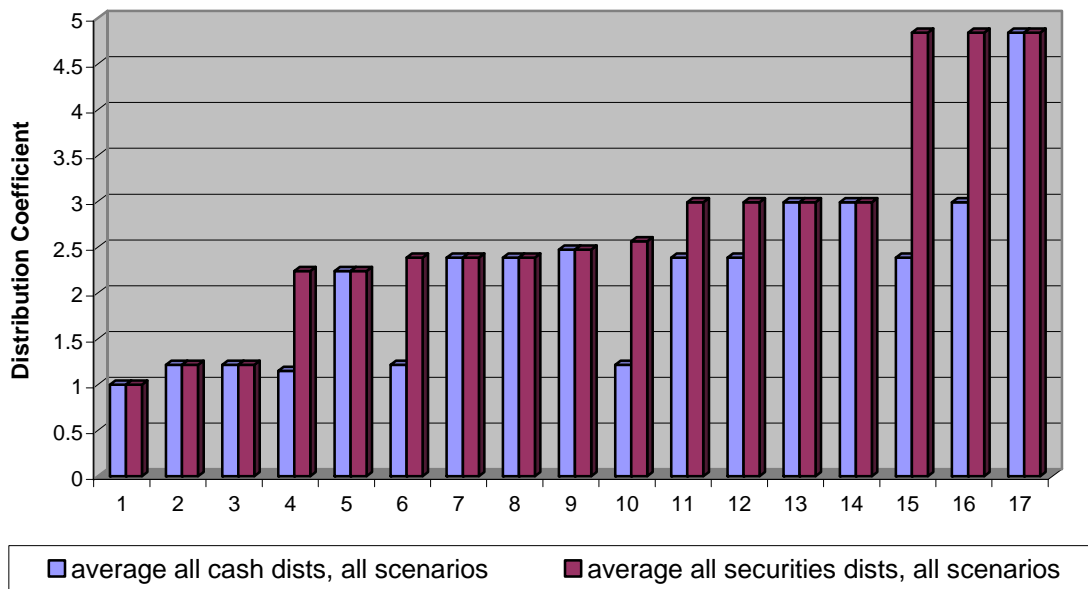
**Table 11: Average Distribution Coefficients: Cash vs. Securities Distributions**

Average distribution coefficients for cash distributions, and average for securities distributions, in each case across all six scenarios and across all funds. Sample size = 37.

	<b>Average Cash Distribution Coefficient</b>	<b>Average Securities Distribution Coefficient</b>
Mean	2.38	2.95
Standard Deviation	0.78	1.05
Minimum	1	1
Maximum	4.84	4.84

Figure K presents the average cash and securities distribution coefficients for all VC firms in my sample. As we see, most firms use different arrangements for cash and securities distributions. Each dual (red plus blue) bar represents one venture firm. Blue bars are coefficients for cash distributions; red bars are coefficients for securities distributions. For some firms, the distribution coefficients are identical for cash and securities. For several firms, the securities distribution coefficient is much higher; this drives the average results presented in Table 11. No venture firm has a higher coefficient for cash distributions than for securities distributions. In short, it pays to distribute securities.

**Figure K: Distribution Coefficients Across VC Firms, for Cash and Securities**



III.E.(7) Are Distribution Provisions Determined by Lawyers?

Because distribution provisions are law-intensive and often poorly understood by non-lawyers, it is possible that the choice of a distribution rule is left to lawyers, who simply reuse standard forms from one client to another. Even a correlation between distribution coefficient and the quality of the VC (or other fund characteristic) does not refute this “lawyer-made-me-do-it” hypothesis because more sophisticated law firms may service more prestigious VCs who raise larger funds and get higher overall compensation. That is, it’s possible that the best lawyers draft the most pro-VC distribution provisions for larger funds, which goes unnoticed (and unbargained-for) by VCs and investors. This hypothesis would predict that distribution rules drafted by the same law firms are substantially similar. A close look at agreements written by the same law firm does not support this hypothesis.

I have only partial data on which law firm drafted which agreement. The relevant subset of my data contains three clusters of agreements. In each cluster, one law firm wrote agreements for three VC firms; each VC firm used those agreements for several funds. I look at distribution provisions within each law firm cluster, across funds and firms, to see whether there is substantial variation. For each agreement, I look separately at cash and in-kind distribution provisions. I use firm-level data because in my sample, there is no variation across funds of the same venture firm. The results are reported in Table 12. The upper line in each cell is the distribution method for cash; the bottom line is the distribution method for securities.

**Table 12: Summary of Distribution Arrangements in Partnership Agreements Written by the Same Law Firms.**

The data set includes three law firms, each servicing three VC firms. Each VC firm has multiple fund agreements written by that law firm. Each partnership agreement has separate provisions for cash and securities distributions. Cash distribution provision are reported in top line of each cell; securities distribution, in bottom line.

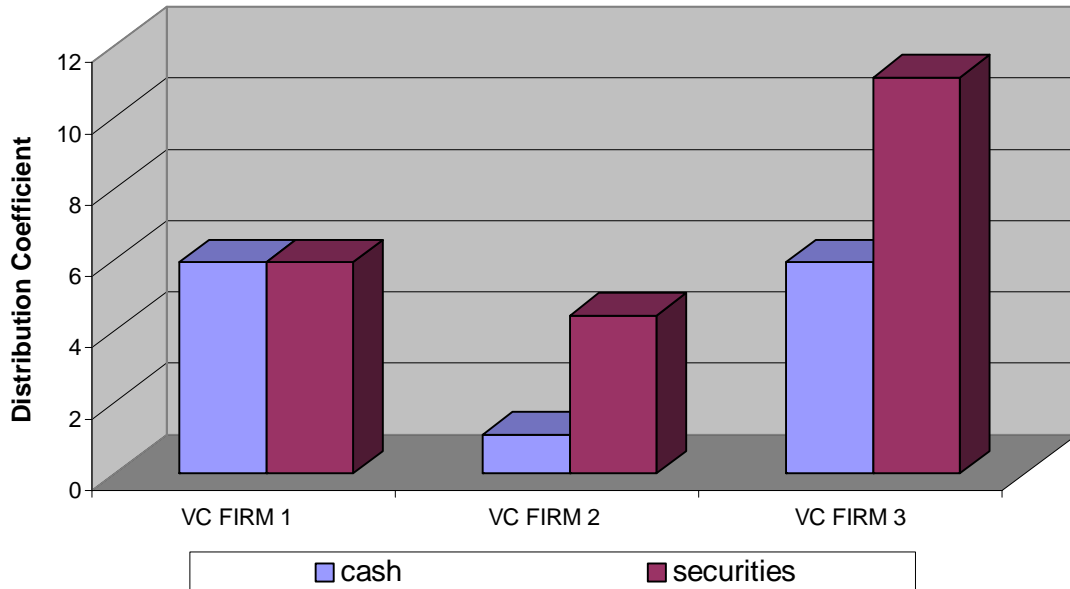
	First VC FIRM	Second VC FIRM	Third VC FIRM
Law Firm A	100% ceiling 100% ceiling	Return capital first 125% ceiling	100% ceiling payback no interest
Law Firm B	125% ceiling 125% ceiling	120% ceiling payback no interest	120% ceiling payback no interest
Law Firm C	120% ceiling payback no interest	Return capital Return capital	100% ceiling payback no interest

The least we can say from this table is that law firms do not blindly reuse the same standard set of distribution provisions for all clients: the same law firm drafts different provisions for different VC firms. None of the three law firms repeated the precise combination of distribution arrangements. For example, law firm B had the same arrangements for two of its VC firms, but a completely different for the third. Law firms A and C had different provisions for each of the three VC firms in my sample.

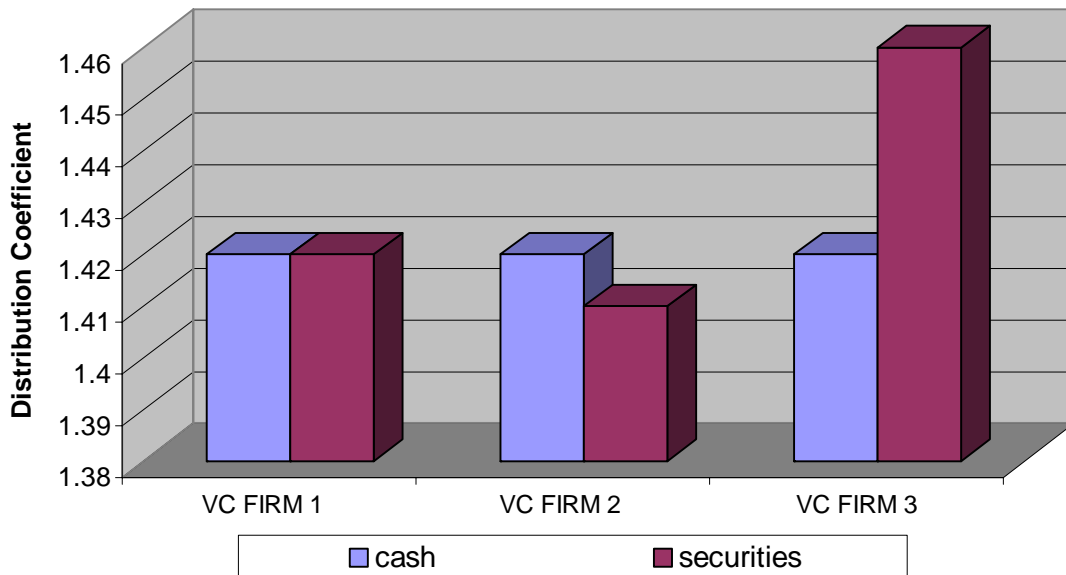
To illustrate visually whether the difference in distribution provisions across funds serviced by the same law firm has economic significance, I show below the corresponding distribution coefficients for the three VC firms served by law firm A. The results are reported in Figure L (for low-profit scenarios) and Figure M (for high-profit ones). The distribution coefficients differ substantially across venture firms served by the same law firm. For example, in two otherwise identical funds serviced by law firm A, in a low-profit state of the world, VC Firm 3 would get more than twice as much NPV from securities distributions and four times as much from cash distributions than VC Firm 2.



**Figure L: Distribution Provisions in Agreements of Three VC Firms, Same Law Firm. Low-Profit, Early Gain Scenario.**



**Figure M: Distribution Provisions in Agreements of Three VC Firms, Same Law Firm. High-Profit, Early Gain Scenario.**



This discussion cannot completely refute the hypothesis that lawyers determine distribution provisions because large law firms, like the ones in my sample, may have several top attorneys writing partnership agreements, and therefore may have several types of agreements in their libraries, which other attorneys then reuse as a boilerplate without consulting their clients. Still, the amount of heterogeneity is surprisingly high and suggests at least some customization.<sup>51</sup>

### *III.F. Correlations Among Compensation Elements*

This section contains a first look at the correlations among elements of cash-based compensation and other main fund characteristics, such as fund sequence number and size, the year when the fund was raised, and a measure of the “hotness” of venture capital market in the fund’s vintage year (the natural logarithm of total dollars raised by all venture capital funds in that year). Because the venture capital market grew strongly during the period when the funds in my sample were raised and peaked near the end of the sample period, year and market hotness are highly correlated ( $r = 0.79$ ). To separate the two effects, I regress fund’s vintage year against market hotness, and determine the residual, which I call “detrended market hotness.” I report results below for vintage year and detrended market hotness.<sup>52</sup>

For distribution coefficients, I compute the mean coefficient across all scenarios: two high-profit scenarios (early and late gain), across both cash and securities, and two low-profit scenarios (early and late gain), also across both cash and securities. To give equal weight to each scenario, I normalize the distribution coefficients as follows. I first compute a normalized coefficient for each individual scenario (two low-profit scenarios and two high-profit scenarios) and normalize coefficients to a mean of zero and a standard deviation of 1. I then compute the mean of these normalized coefficients across all scenarios funds. I will call this mean distribution coefficient “distribution coefficient.” Table 13 below summarizes the results.

Because of my small sample size, only strong correlations will emerge as statistically significant. Nonetheless, there are several important and statistically significant correlations. Management fee correlates negatively and significantly with fund’s vintage year, and positively and significantly with distribution coefficient. Management fee also positively correlates with carry and negatively with the year of venture firm formation, both at the 10% significance level. Carry correlates positively and significantly with fund number and fund size; it also correlates positively with management fee and distribution coefficient, and negatively with the year of venture firm formation, all at the 10% significance level.

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<sup>51</sup> None of the VC firms in my sample changed law firm across funds. Thus, the intra-firm differences cannot be explained by lawyers moving from one firm to another, and taking both their clients and agreements with them.

<sup>52</sup> As a robustness check, I also used an alternative measure of market hotness – the number of venture capital deals completed in the fund’s vintage year. The two measures are highly correlated ( $r = .0988$ ), and the regression results are similar.

Without controlling for other factors (a task that I undertake in Part IV): we can see that my proxies for VC quality – fund number, fund size, and the year of venture firm formation – predict higher VC compensation. Older (higher fund number and lower year of VC firm formation) venture firms receive higher carry and somewhat better distribution deals than younger and less prestigious firms. The year of venture firm formation negatively correlates with management fee as well; fund number correlates positively but not significantly. Larger funds give VCs higher carry and better distribution deals. Fund size also correlates positively, although not significantly, with NPV of management fees as a percentage of committed capital.

The overall picture is that all elements of VC compensation vary together with each other, and together with the available proxies for VC quality. Older venture firms raise larger funds, charge higher carry, and have more generous distribution rules. VCs running larger funds charge higher carry and somewhat higher management fees and have more generous distribution rules. There appear to be some powerful VC firms, which obtain higher compensation across the board, and some less powerful firms, which obtain lower compensation across the board.<sup>53</sup>

This is a new result, which was not obvious *ex ante* and is contrary to current academic beliefs. Different compensation elements could have been used as substitutes and thus correlated negatively. For example, higher carry could have been accompanied by lower management fees; indeed Gompers and Lerner report that risky and non-risky elements of VC compensation are substitutes.<sup>54</sup> Larger fund size could correlate with lower management fee, as many practitioners (incorrectly) believe, or with lower carry.

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<sup>53</sup> This result fits well with the Kaplan-Schoar finding that larger funds and funds that have higher sequence numbers have significantly higher returns. See Kaplan and Schoar, *supra* nXXX. Taken together, this paper and the Kaplan-Schoar paper suggest that better VCs are better compensated.

<sup>54</sup> Gompers and Lerner (2002), *supra* n.1, ch. 4.

**Table 13: Correlations: VC Compensation and Fund Characteristics**

Correlations among selected variables: fund sequence number; fund's vintage year; detrended market hotness; natural logarithm of fund size; carry as % of fund's profits; NPV of management fee as % of committed capital; distribution coefficients across all profitability scenarios, and the year of venture firm formation. Sample size is 37. Results significant at 5% level are shown in **boldface**. Results significant at 10% or higher level are denoted by an asterisk. *P*-values are shown under each correlation coefficient.

	Fund Number	Year	Detrended market hotness	Log fund size	Carry	Mgmt fee	Distrib. coefficient	Year VC firm formation
Fund number	1.0000							
Year	0.1660 0.3262	1.0000						
Detrended market hotness	-0.1014 0.5504	-0.0000 1.0000	1.0000					
Log fund size	0.2484 0.1383	<b>0.3735</b> <b>0.0228</b>	0.1294 0.4453	1.0000				
Carry percentage	<b>0.4241</b> <b>0.0089</b>	0.2114 0.2090	0.1832 0.2777	<b>0.6153</b> <b>0.0001</b>	1.0000			
NPV of mgmt fee	0.2508 0.1343	<b>-0.3836</b> <b>0.0191</b>	-0.2225 0.1856	0.1799 0.2866	0.3155 0.0572*	1.0000		
Distribution coeff	0.3139 0.0585*	0.0529 0.7560	<b>-0.3830</b> <b>0.0193</b>	<b>0.4494</b> <b>0.0053</b>	0.3206 0.0531*	<b>0.3524</b> <b>0.0324</b>	1.0000	
Year of VC firm formation	<b>-0.7065</b> <b>0.0000</b>	0.2367 0.1585	0.1002 0.5550	0.0043 0.9797	-0.3168 0.0561*	-0.2886 0.0832*	-0.0900 0.5964	1.0000

### III.G. Overall VC Compensation

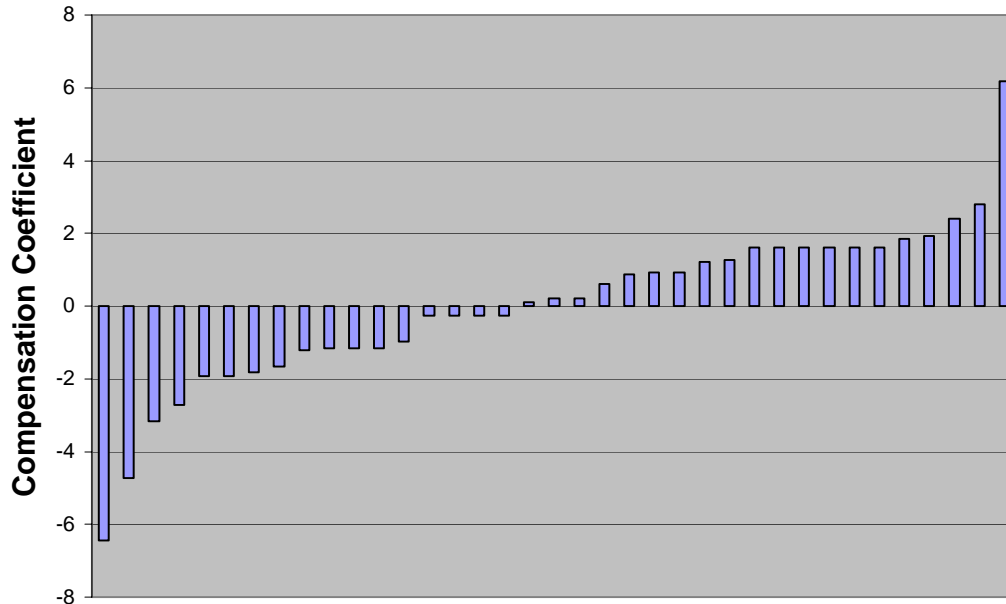
#### III.G.(1) VC Compensation Coefficient

In this section, I attempt to quantify the impression that some VC firms are more powerful than others and take higher compensation through a combination of management fees, carry, and distribution rules. I construct an overall VC "compensation coefficient", that combines the three elements of VC compensation: NPV of management fee as a percent of committed capital, carry as a percent of fund profit, and overall distribution coefficient. Each of these three elements is important. It is not obvious how they should be weighted. A simple approach, which I adopt here, is to give equal weight to each component. To do so, I normalize the NPV of management fee, the carry percentage, and the distribution coefficient to a mean of zero and a standard deviation of one. I then sum these normalized values.

The results are reported in Figure N below. We can see that there is a wide variation in the total compensation that different VCs get across funds.

### Figure N: Compensation Coefficient, by Venture Fund

Compensation coefficient for each venture fund, defined as the sum of normalized management fee, normalized carry, and overall normalized distribution coefficient. Sample size = 37. Mean = 7.20; St. Dev. = 2.25; min = -6.45; max = 6.18.



#### III.G.(2) VC Power Coefficient

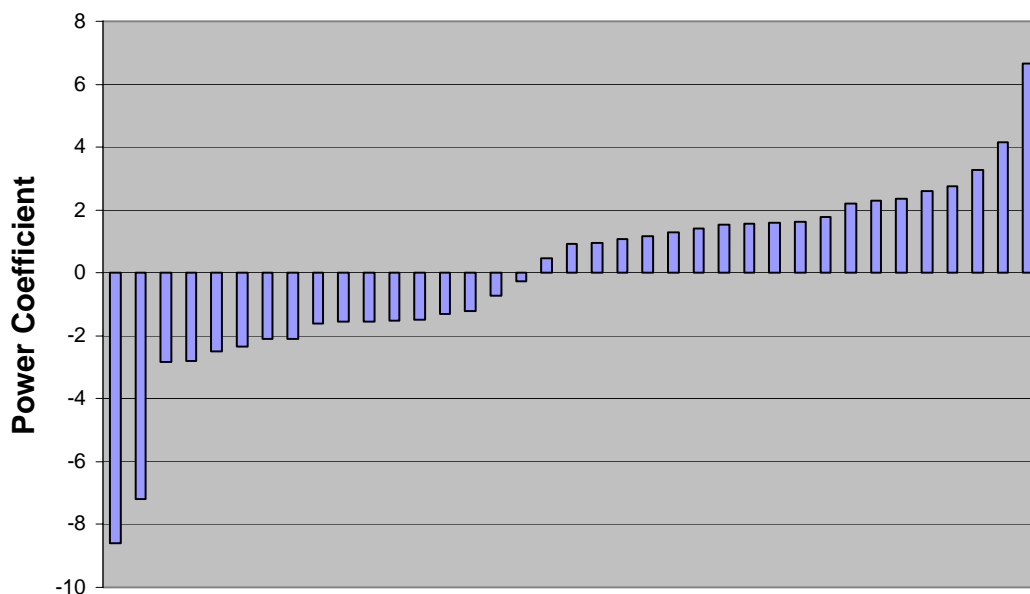
The compensation coefficient does not capture all aspects of a VC's power to extract compensation from investors. More powerful VCs are likely to also raise larger funds. Holding compensation coefficient and fund profitability constant, a larger fund implies more VC profit. Moreover, some fund expenses, such as office space, personnel costs, travel, equipment, etc., which for most funds are paid by the VC firm out of its management fee, do not increase in proportion to fund size. Thus, for a larger fund, VCs likely keep as pure profit a larger fraction of the management fee. Indeed, many investors believe that the management fee is intended to compensate VCs for these expenses and should decline as fund size increases. Some believe (incorrectly) that fee percentage in fact declines with fund size.

A better overall measure of VC power would combine VC's compensation, holding constant fund size, with fund size. Compensation elements give us a rough sense on how the market values the services of a particular VC, per dollar invested; fund size tells us how much money investors are willing to hand over to a particular VC. To compute such a measure, which I call a "power coefficient," I add the normalized values for management fee, carry, and distribution coefficient, plus normalized logarithm of fund size. I report data on the fund level, rather than venture firm level, because the same firm

may have different power in different stages of its operations (e.g., less in earlier funds). The results are reported in Figure O below. Again, there is wide variation.

**Figure O: Power Coefficient by Venture Fund**

Power coefficient for each venture fund, defined as the sum of normalized management fee, normalized carry, normalized distribution coefficient, and normalized natural logarithm of fund size. Sample size = 37. Mean = 2.32; St. Dev. = 2.9; Min = -8.6; Max = 6.65.



III.G.(3) Correlation Results: Compensation and Power Coefficients

I next ask whether the compensation and power coefficients are correlated with various venture fund and firm characteristics. The results are reported in Table 14 below. Without controlling for other factors (I do this in Part IV), the compensation coefficient is strongly and positively correlated with fund number, fund size, and strongly and negatively with the year of venture firm formation. These correlations may seem natural. However, it was not obvious ex ante that they would exist, just as it is not obvious ex ante that management fee would correlate positively (rather than negatively with fund size) or with other elements of VC compensation.

The power coefficient is strongly and positively correlated with fund number and fund size. As one might expect, VC firms that live long enough to raise multiple funds are better compensated overall. Less obviously, this difference arises both because their compensation packages, controlling for fund size, are significantly better than that of younger firms, and their funds are larger.

One might expect VC firms to be able to extract larger compensation in a hot market. However, neither the compensation coefficient nor the power coefficient correlates significantly with detrended market hotness.

**Table 14: Correlations Among VC Compensation and Fund Characteristics**

Correlations among Compensation Coefficient (measure of VC compensation based on equally-weighted management fee, carry, and distribution coefficient), Power Coefficient (measure of VC power, based on equally-weighted management fee, carry, distribution coefficient, and fund size); fund sequence number; fund size; detrended market hotness, and the year of venture firm formation. Sample size is 37. Statistically significant correlations (at 5% level or better) are shown in **boldface**. *p*-values are shown under each correlation coefficient.

	Power Coefficient	Compensation Coefficient	Fund Number	Log Fund Size	Detrended Mkt Hotness	Year
Power Coefficient (fund size, management fee, carry, dist coef)	1.0000					
Compensation Coefficient (management fee, carry, dist coef)	<b>0.9554</b> <b>0.0000</b>	1.0000				
Fund Number	<b>0.4435</b> <b>0.0060</b>	<b>0.4607</b> <b>0.0041</b>	1.0000			
Log Fund Size	<b>0.7476</b> <b>0.0000</b>	<b>0.5181</b> <b>0.0010</b>	0.2484 0.1383	1.0000		
Detrended Market Hotness	-0.0892 0.5997	-0.1724 0.3077	-0.1014 0.5504	0.1294 0.4453	1.0000	
Year	0.1009 0.5522	-0.0361 0.8321	0.1660 0.3262	<b>0.3735</b> <b>0.0228</b>	-0.0000 1.0000	1.0000
Year VC Firm Formation	-0.2601 0.1201	<b>-0.3367</b> <b>0.0415</b>	<b>-0.7065</b> <b>0.0000</b>	0.0043 0.9797	0.1002 0.5550	0.2367 0.1585

### III.H. Summary

Recent fund agreements demonstrate a wide variety of cash-based compensation forms. Management fees are calculated in many different ways, and their NPV varies substantially as a percent of committed capital. The size of management fee is negatively correlated with fund's vintage year and positively, at the 10% significance level, with carry.

The carry percentage varies considerably as well, with three main focal points being 20%, 25%, and 30%. There is a substantial change from an earlier pattern, discovered by Gompers and Lerner, where four-fifth of agreements provided for a 20-21% carry. Carry is significantly and positively correlated with fund size and fund number, and, at the 10% significance level, with management fee.

An important finding is that distribution rules, which are not studied at all in the previous academic literature, strongly affect total VC compensation. In one low-profit scenario, the shift from the most pro-investor to the most pro-VC distribution method

(holding everything else constant) increases the amount that VC takes home by a factor of more than 11. In one high-profit scenario, the distribution rule can change the NPV of the VC's carry, with an assumed 20% carry percentage, from 16.87% to 21.64% of overall fund NPV. For one medium-profit scenario, the VC's nominal 20% carry in fact translates into 20.63% to 34.00% of the NPV of the fund's investments, depending on distribution rule. Distribution methods vary widely across funds and firms, and between cash and securities distributions. The *distribution coefficient* (the ratio of the NPV of VC carry under the most VC-friendly rule to the NPV of VC carry under the rule that is actually used by a fund) correlates positively and significantly with fund size, and coefficients for high-profit and low-profit funds correlates significantly and positively with management fee and carry.

A second group of new findings is that all forms of VC compensation vary considerably, are correlated with each other, often significantly, and are predicted by fund number and fund size, both of which are plausible proxies for VC quality. A composite *compensation coefficient*, which combines management fee, carry percentage, and distribution rule, correlates with fund number and fund size. A composite *VC power coefficient* that includes both VC compensation and fund size correlates with fund number – older, more established firms are better compensated than younger ones.

## IV. Data Analysis

In this part, I seek to go beyond simple correlations, and seek to understand more fully what factors predict the different elements of VC compensation, and how these elements relate to each other. As mentioned above, many of the regressions are intended only to show correlations between two variables (say, management fee and carry), while controlling for other factors (such as market hotness and year), not to establish causation.

Because fund agreements used by the same venture firm are not independent from each other, I employ cluster regressions, in which different funds raised by the same venture firm are grouped together and treated as having correlated errors. This approach, however, has a drawback: my sample size is small to begin with, and the cluster regression procedure further reduces degrees of freedom. This makes it difficult for results to emerge as significant; I get many “borderline-significant” results with  $p$ -values from 0.100 to 0.150. While cluster regressions may reduce the risk of false positives, they may produce false negatives. Correspondingly, I report both the results of cluster and non-cluster regressions.

### *IV.A. Hypotheses*

There are several plausible hypotheses about how individual elements of VC compensation correlate with each other, with fund characteristics, and with outside conditions, such as market hotness and fund's vintage year. Some of these hypotheses point in different directions.



Hypothesis #1 (Uniform Compensation). Each element of VC compensation is roughly uniform across venture firms and funds; any differences are insignificant. One common explanation is that there is a sufficient pay differentiation despite uniform fee and carry percentages because better VCs run larger and more profitable funds. This hypothesis is known to be incorrect from Part III, but is included here for completeness.

Hypothesis #2 (Economies of Scale). Each element of compensation, and especially management fee, inversely correlates with fund size: as funds get bigger, the VC's absolute compensation may increase, but his share in the fund declines. In my interviews, many industry insiders expressed this belief as to management fee. The explanation here is economies of scale: a threefold increase in a fund size does not require a threefold increase in the effort to manage it, and thus it's "fair" to reduce the percentage of the management fee.<sup>55</sup> A similar story can be told about carry and distribution rules: successful VCs get better access to hot deals, more invitations to join prestigious financing syndicates, and better chance to recruit talented managers to run their startups – all of which reinforces initial performance differences between top and bottom VCs. As a result, it may take less than three times as much effort to achieve a threefold increase in fund's profitability, thus warranting a lower carry in larger funds.

Hypothesis #3 (Positive Correlation with VC Firm Quality). Each element of VC compensation (or at least the sum of all three) is positively correlated with the proxies for VC quality -- sequence number of venture fund, fund size, and the age of venture firm. This is so because better (older, bigger, and more established) VCs may be able to charge more for their services.

Hypothesis #4 (Simple Substitution Hypothesis; Inverse Correlation between Management Fee, Carry, and Distribution Coefficient). The size of management fee, as a percent of fund's committed capital, is inversely related to carry percentage, distribution coefficient, or both. The idea is that VCs and investors bargain for a total expected level of VC compensation, and may treat management fee, carry, and distribution rules as at least partly substitutable pieces of an overall compensation package. Thus, a lower management fee would be offset by a corresponding, risk-adjusted increase in carried interest or a more VC-friendly distribution arrangement.

Hypothesis #5 (Complex Substitution Hypothesis; Older VC Firms Get Lower Fees But Higher Carry). This is the hypothesis developed by Gompers and Lerner -- that older VC firms should have a higher proportion of risky compensation.<sup>56</sup> There are several possible explanations for this pattern. First, younger VC firms have stronger non-

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<sup>55</sup> In addition, management fee covers not only VCs' salaries, but all normal operating expenses of the fund – office space, personnel, equipment, VCs' travel expenses, and so forth. These expenses do not increase at the same rate as fund size, thus VCs running a larger fund get a higher percent of management fee as salary than VCs running a smaller fund. One private study reports that roughly 60% of management fee goes to VC salaries, on average. See David Toll, PRIVATE EQUITY PARTNERSHIP TERMS AND CONDITIONS, at 38 (7<sup>th</sup> Ed. 2003). This number, however, is based on self-reporting by VCs, who may understate it. Fund documents do not specify how much of the management fee is paid to VCs as salary and venture capitalists in my interviews were not willing to discuss this issue.

<sup>56</sup> See supra note XXX.

monetary incentives to perform (they need to establish reputations and attract investors), thus older VCs need more performance-sensitive compensation than younger VCs. Second, older and better VCs may seek more performance-sensitive compensation because they are more confident in their ability to run profitable funds. Third, older and better VCs are likely to already receive a stream of relatively safe management fees from prior funds, which could make them more risk-acceptant. The principals of older VC firms also may be richer and therefore more willing to accept a riskier compensation package.

Hypothesis #6 (Complementarity Hypothesis). All three elements of VC compensation correlate positively with each other because it may be easier for VCs to raise all elements by smaller amounts than to raise only one by a larger amount. In particular, VCs may manipulate their compensation to smooth the supply of capital to their funds. “Venture capitalists are not charging ‘what the market will bear’ and in return are requiring a certain degree of loyalty from their investors,”<sup>57</sup> by expecting investors to invest in each fund in sequence, even when market conditions seem poor. A large deviation from an industry norm in one piece of VC compensation may be seen by investors as violating an implicit smoothing contract, while a small deviation in all pieces of compensation may be treated as acceptable, even if the aggregate effect is the same. Distribution rules are opaque, and hence especially likely to escape investor scrutiny. If this is so, we can expect management fee, carry, and distribution coefficient to be positively correlated.

Hypothesis #7 (Market Hotness Hypothesis). Each element of VC compensation, or at least the sum of all compensation elements, correlate positively with the “hotness” of the venture capital market in the year when the fund is raised. This may be so because the supply of experienced venture capitalists lags behind the demand for their services; as a result, VCs can charge more in “hot” years.

Hypothesis #8 (Investor Sophistication Hypothesis). There is an inverse correlation between each element of VC compensation (or at least their sum) and a fund’s vintage year. As institutional investors become more important suppliers of capital to venture funds, and grow in sophistication, they gain the ability to press for lower compensation, changing industry-wide standards for fees across all funds, big and small.



<sup>57</sup> Bankman and Cole, *supra* n XXX, at 222.

## *IV.B. Regression Results for Individual Elements of VC Compensation*

### IV.B.(1) Regressions and Variables

To test these hypotheses, I look at the relationship between each element of VC compensation (NPV of management fee; carry as a percent of profits; distribution coefficient) and other characteristics of venture funds and venture firms. There are three main groups of relevant independent variables: (a) proxies for the quality of the VC; (b) the two remaining compensation elements; and (c) outside world conditions.

As proxies for the age and prominence of the venture capitalist, I use fund's sequence number and fund size. My third proxy – the year of venture firm formation – is highly correlated with fund number ( $r = -0.7065$ ;  $p$ -value = 0.0000) and cannot be included in regressions together with fund number. Because of my data limitations, the fund number information is more reliable than the age of the venture firm, and R-squared are higher in regressions with fund numbers. Thus, I use fund number and fund size as the two proxies for VC quality in regressions.

As proxies for important outside conditions, I use fund's vintage year and detrended market hotness (residual from regressing fund's vintage year against the natural logarithm of the total amount of dollars invested into all venture funds in that year).

Table 15 below reports regression results for management fee; Table 16 for carry, and Table 17 for distribution coefficient. To account for the importance of the time trend, I include fund's vintage year in every regression. In the first column of each table, I report simple correlations.

Regression (1) in each table uses as independent variables my measures of VC quality – fund number and size – and fund's vintage year. In regression (2), independent variables are the remaining measures of VC compensation and, again, vintage year. Regression (3) includes my proxies for VC quality together with the remaining measures of VC compensation, plus fund vintage year. Regression (4) switches to proxies for outside conditions, using as independent variables detrended market hotness and vintage year. Regression (5) in each table contains all proxies for VC quality and all proxies for outside conditions. Finally, regression (6) includes all proxies for VC quality, all alternative elements of VC compensation, and all proxies for outside conditions. I describe the results for each dependent variable separately.

I include the results of both cluster and non-cluster regressions. The first line in each regression cell is a correlation coefficient; the second line is a  $p$ -value in OLS regression with robust standard errors; the third line is a  $p$ -value in OLS regressions without clusters. The number of clusters is 17, based on the number of venture firms in the sample.

#### IV.B.(2) Management Fee

In simple correlation, fund's vintage year strongly predicts management fee, and this result survives and strengthens in all regressions. Distribution coefficient correlates positively with management fee in a simple correlation; this result survives all regressions except Regression (6), which may be the artifact of a small data set. In simple correlation, management fee positively correlates with carry at a 10% significance level; this relationship declines in cluster regressions, though mostly remains borderline significant.

Fund size is not a strong predictor of management fee in a simple correlation; this result remains broadly the same in all cluster regressions. Neither fund number nor market hotness strongly predicts management fee.

**Table 15: Correlation coefficients and regression analyses for NPV of management fee as % of committed capital.**

The sample consists of 37 venture funds raised between 1987 and 2003. Each cell contains: correlation coefficient (first line); *p*-value in OLS regressions with robust standard errors (second line); and *p*-value in OLS regressions without clusters (third line). The number of clusters is 17, based on the number of venture firms in the sample. The dependent variable is NPV of management fee as a percentage of committed capital. Independent variables include (a) the fund sequence number; (b) detrended market hotness; (c) natural logarithm of fund size, (d) carry as a percentage of fund profits, (e) fund's vintage year, and (f) year of venture firm formation. The first column contains correlation coefficients for the dependent variable with each independent variable; *p*-value is on the bottom line. Results significant at 5% level in cluster regressions are shown in **boldface**. Results significant at 10% or higher level are denoted by an asterisk. Results insignificant in cluster regressions, but significant at 10% or higher level in regressions without clusters are shown in *italic*.

	Correlation coefficients	Regrssn (1)	Regrssn (2)	Regrssn (3)	Regrssn (4)	Regrssn (5)	Regrssn (6)
<i>Dependent variable</i>	<i>NPV of Management Fee (% of fund's committed capital)</i>						
Fund number	0.245 0.156	0.2139 0.119 <i>[0.084]</i>		0.1169 0.529 <i>[0.376]</i>		0.1860 0.152 <i>[0.124]</i>	0.0899 0.591 <i>[0.486]</i>
Detrended mkt hotness	-0.223 0.186				-0.6814 0.121 <i>[0.157]</i>	-0.7545 0.113 <i>[0.089]</i>	-0.7798 0.152 <i>[0.096]</i>
Vintage year	<b>-0.384</b> <b>0.019</b>	<b>-0.3432</b> <b>0.003</b> <b>[0.001]</b>	<b>-0.2935</b> <b>0.001</b> <b>[0.002]</b>	<b>-0.3153</b> <b>0.004</b> <b>[0.003]</b>	<b>-0.2410</b> <b>0.008</b> <b>[0.018]</b>	<b>-0.3500</b> <b>0.002</b> <b>[0.001]</b>	<b>-0.3293</b> <b>0.004</b> <b>[0.001]</b>
Log fund size	0.180 0.287	0.7452 0.163 <i>[0.050]</i>		0.2057 0.630 <i>[0.666]</i>		0.7481 0.170 <i>[0.025]</i>	0.3264 0.617 <i>[0.487]</i>
Carry percentage	0.316 0.057*		0.1766 0.114 <i>[0.034]</i>	0.1278 0.264 <i>[0.222]</i>			0.1617 0.126 <i>[0.121]</i>
Distribution coefficient	<b>0.360</b> <b>0.032</b>		<b>0.7659</b> <b>0.008</b> <b>[0.069]</b>	0.6148 0.087* <i>[0.190]</i>			0.3597 0.443 <i>[0.449]</i>
R <sup>2</sup>		0.3327	0.3783	0.3959	0.1967	0.3911	0.4500
No. of funds	37	37	37	37	37	37	37

Turning to the hypotheses developed above, we see again that management fees are not uniform (hypothesis #1 is rejected).

Hypothesis #2 (inverse correlation with fund size) is also rejected. I find no support for the practitioners' belief that larger funds charge lower percentage management fees. The simple correlation coefficient between fund size and NPV of management fees, which is what practitioners might plausibly have a sense for, is positive ( $r = 0.18$ ) albeit insignificant; all the regression coefficients are also positive. One possible explanation for this misperception is that there are two separate time trends – increase in the size of venture funds and decline in management fees.<sup>58</sup> It is tempting to conclude that the two are causally related. As my analysis shows, this is not so. Calendar year is a strong negative predictor of management fee, but fund size is not. Management fees have declined in recent years, but this is an across-the-board pattern, perhaps caused by the increasing role and sophistication of institutional investors, rather than by economies of scale in managing larger funds. Calendar year predicts lower management fees for small and large funds alike.

Hypothesis #3 (positive correlation with venture firm's prestige) is also not supported. Fund number and size do not correlate significantly with management fee, although they both have correlation signs consistent with Hypothesis #3.

For the relationship between management fee and carry, Hypothesis #6 (complementarity among management fee, carry, and distribution coefficient) is supported, but weakly: correlation coefficients consistently have the right sign, but are not always significant. Non-robustness, again, might be attributable to a small sample size.

At the same time, the contrary hypotheses #4 and #5 (simple and complex substitution) are rejected. All correlation signs among compensation elements are positive, contrary to predictions of Hypotheses #4 and #5. The complex substitution hypothesis #5 is also not supported by the relationship between management fee and fund number, which is insignificant but *positive*, where a negative relationship was predicted.

Hypothesis #7 (market hotness) is rejected. Management fee correlates insignificantly but *inversely* with market hotness.

These data provide the strongest support for Hypothesis #8 (investor sophistication). The size of management fee and fund's vintage year strongly and negatively correlate in simple correlation and in all regressions, with clusters and without.

To summarize: For my sample, I do not replicate the Gompers-Lerner finding that older and more established venture firms have lower management fees. I also find no support for practitioners' belief that VCs running larger funds receive lower fees. The "complementarity" hypothesis receives some support, and the "substitution" hypothesis is rejected. I find no support for popular tales of indiscriminate investors who shower VCs

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<sup>58</sup> Management fee and fund's vintage year correlate strongly and negatively ( $r = -0.3836$ ,  $p$ -value = 0.0191, see Table 15). At the same time, the correlation between fund's vintage year and fund size is strong and positive ( $r = -0.3735$ ,  $p$ -value = 0.0228, see Table 13.).

with management fees as market heats up. To the extent market hotness affects management fees, it does so *negatively*, not positively.

Taken as a whole, the regression results provide the most support for the investor learning hypothesis: as time goes by, institutional investors are becoming more experienced and powerful and succeed in demanding lower management fees.

#### IV.B.(3) Carry

Table 16 below reports correlation and regression results for carry. In simple correlation, my proxies for VC quality -- fund size and fund number – strongly predict the size of carry. Fund size remains strongly significant across all specifications, in cluster and non-cluster regressions alike. Fund number loses some importance in cluster regressions, although it always remains borderline significant; the correlation is strong at a 5% level in non-cluster regression.

In a simple correlation, carry is also predicted by management fee and distribution coefficient, both at a 10% level. In OLS regressions, the importance of distribution coefficient declines substantially, but management fee remains borderline significant in most specifications. Market hotness and year do not correlate strongly with carry.

**Table 16: Correlation coefficients and regression analyses for carry**

The sample consists of 37 venture funds raised between 1987 and 2003. Each cell contains: correlation coefficient (first line);  $p$ -value in OLS regressions with robust standard errors (second line); and  $p$ -value in OLS regressions without clusters (third line). The number of clusters is 17, based on the number of venture firms in the sample. The dependent variable is carry as a percent of fund profits. Independent variables include (a) the fund sequence number; (b) detrended market hotness; (c) fund's vintage year; (d) natural logarithm of fund size, (d) NPV of management fee as a percent of fund's committed capital, (e) distribution coefficient, and (f) year of venture firm formation. The first column contains correlation coefficients for the dependent variable with each independent variable;  $p$ -value is on the bottom line. Results significant at 5% level are shown in **boldface**. Results significant at 10% level are denoted by an asterisk. Results significant at 10% or higher level are denoted by an asterisk. Results insignificant in cluster regressions, but significant at least at 10% level in regressions without clusters are shown in *italic*.

	Correlation coefficients	Regrssn (1)	Regrssn (2)	Regrssn (3)	Regrssn (4)	Regrssn (5)	Regrssn (6)
<i>Dependent variable</i>	<i>Carry (% of fund profit)</i>						
Fund number	<b>0.466</b> <b>0.005</b>	0.4420 0.087* [0.034]		0.3864 0.184 [0.081]		0.4726 0.064* [0.025]	0.3849 0.177 [0.077]
Detrended mkt hotness	0.183 0.278				1.0390 0.399 [0.274]	0.8275 0.331 [0.270]	1.1801 0.123 [0.148]
Year	0.211 0.209	-0.0538 0.737 [0.740]	<b>0.4116</b> <b>0.032</b> [0.042]	0.0618 0.728 [0.748]	0.2459 0.208 [0.208]	-0.0463 0.763 [0.775]	0.1214 0.377 [0.531]
Log fund size	<b>0.615</b> <b>0.000</b>	<b>2.4229</b> <b>0.017</b> [0.000]		<b>2.2821</b> <b>0.023</b> [0.003]		<b>2.3089</b> <b>0.022</b> [0.001]	<b>1.9152</b> <b>0.017</b> [0.013]
Mgmt fee	0.316 0.057*		0.7291 0.104 [0.034]	0.3734 0.242 [0.222]			0.4832 0.108 [0.121]
Mean dist coeff	0.320 0.053*		0.8497 0.406 [0.330]	-0.3676 0.744 [0.650]			-0.0397 0.974 [0.962]
R <sup>2</sup>		0.4588	0.2513	0.4852	0.0783	0.4793	0.5205
No. of funds	37	37	37	37	37	37	37

As to the hypotheses developed above: as with management fee, there is a substantial variation in carry across venture funds (hypothesis #1 is rejected). Hypothesis #2 (negative correlation with VC firm's prestige) is rejected. Fund size correlates *positively* with carry in all specifications.

Hypotheses #3 (positive correlation with venture firm prestige) is supported. Fund size is the single strongest predictor of carry, and fund number is a decent predictor as well; both have signs consistent with Hypothesis #3.



Hypotheses #4, and #5 (all variants of the substitution hypothesis) are not supported. Correlations between carry and fee and between carry and distribution coefficient are not significant and mostly positive.

Hypothesis #6 (complementarity) is not supported. Correlation coefficients between carry and management fee are always positive, but rarely significant, and correlations between carry and distribution coefficient are not significant and sometimes negative.

Hypothesis #7 (market hotness) is not supported. The coefficient is positive but insignificant in all regressions.

Finally, hypothesis #8 (investor sophistication) is not supported for carry, in contrast to management fee. Vintage year does not significantly correlate with carry in most OLS regressions and in simple correlation, and the sign switches twice. Thus, if investor sophistication explains the negative correlation between vintage year and management fees, this suggests that investors are pushing VCs toward a larger risk-based component of overall compensation, but not toward lower overall compensation.

To summarize: I find strong support for the Gompers-Lerner finding that more prominent venture capitalists receive higher carries, although this conclusion is mostly driven by fund size and not by fund number. There is no support for the practitioners' belief that the hotness of the VC market substantially inflates carry.

While investor sophistication seems to get translated into lower management fee, it has no predictive power as to carry. This is perhaps explained by the focus of institutional investors' attention. As I discussed in Part III, investors have been widely displeased with what they think is excessive management fee (especially in later years of funds' lives), but not with high carry (which they think is "fair" and effective as an incentive tool).

#### IV.B.(4) Distribution Coefficient

Table 17 below reports regression and correlation results. In simple correlation, distribution coefficient strongly and positively correlates with fund size and carry. The correlation with carry changes signs and disappears in OLS regressions. The correlation with fund size remains significant at 5% level through all specifications, but only in regressions without cluster analysis. In cluster regressions, this result declines dramatically. Although the sign remains the same (positive), *p*-values are only borderline significant in regressions with few variables and not significant in regressions with many variables. It is possible that a larger sample size would restore the significance of the fund size variable.

In simple correlation, distribution coefficient also positively correlates with management fee at a 10% level. This result survives in all cluster OLS regressions, except the one that involves six independent variables, which may take away predictive power from each other in this small sample.

Interestingly, market hotness correlates *negatively* (although not significantly) with distribution rule. This result survives in all OLS regressions. Vintage year has no predictive power here: correlation coefficients in regressions are not statistically significant and, moreover, change signs.

**Table 17: Correlation coefficients and regression analyses for distribution provisions**

The sample consists of 37 venture funds raised between 1987 and 2003. Each cell contains: correlation coefficient (first line); *p*-value in OLS regressions with robust standard errors (second line); and *p*-value in OLS regressions without clusters (third line). The number of clusters is 17, based on the number of venture firms in the sample. The dependent variable is distribution coefficient across all profitability scenarios. Independent variables include (a) fund sequence number; (b) detrended market hotness; (c) fund's vintage year; (d) natural logarithm of fund size, (e) carry as a percent of fund's profits; (f) NPV of management fee as a percent of fund's committed capital. The first column contains correlation coefficients for the dependent variable with each independent variable; *p*-value is on the bottom line. Results significant at 5% level are shown in **boldface**. Results significant at 10% level are denoted by an asterisk. Results significant at 10% or higher level are denoted by an asterisk. Results insignificant in cluster regressions, but significant at least at 10% level in regressions without clusters are shown in *italic*.

	Correlation coefficients	Regrssn (1)	Regrssn (2)	Regrssn (3)	Regrssn (4)	Regrssn (5)	Regrssn (6)
<i>Dependent variable</i>	<i>Distribution coefficient</i>						
Fund number	0.314 0.059*	0.0659 0.288 [0.150]		0.05494 0.418 [0.273]		0.0548 0.327 [0.217]	0.0458 0.480 [0.355]
Detrended mkt hotness	-0.231 0.552				-0.2518 0.299 [0.174]	-0.3013 0.166 [0.068]	-0.2594 0.311 [0.154]
Year	0.053 0.756	-0.0342 0.265 [0.350]	0.0339 0.306 [0.414]	-0.005 0.900 [0.916]	0.0118 0.703 [0.753]	-0.0369 0.256 [0.296]	-0.0183 0.668 [0.673]
Log fund size	<b>0.449</b> <b>0.005</b>	0.3739 0.124 [0.010]		0.3517 0.280 [0.046]		0.4154 0.144 [0.004]	0.3746 0.300 [0.032]
Mgmt fee	0.286 0.053*		0.1261 0.056* [0.069]	0.0892 0.077* [0.190]			0.0535 0.449 [0.449]
Carry	<b>0.352</b> <b>0.032</b>		0.0339 0.397 [0.330]	-0.0183 0.756 [0.650]			-0.0019 0.975 [0.962]
R <sup>2</sup>		0.2655	0.1896	0.3065	0.0563	0.3393	0.3527
No. of funds	37	37	37	37	37	37	37

Turning to the hypotheses developed above: we see again that there is substantial variation in distribution arrangements (Hypothesis #1 is rejected). Hypothesis #2 (inverse relationship with fund size) is rejected: fund size *positively* correlates with distribution coefficient.

As to the Hypothesis #3 (positive correlation with VC quality): the results are mixed. One proxy for VC quality – fund number correlates insignificantly, albeit with the predicted sign. Another proxy – fund size – correlates very strongly, but only in non-cluster regressions. In cluster regressions, the relationship weakens substantially, though the sign remains the same.

Hypotheses #4 and #5 (simple and complex substitution) is not supported: management fee correlates *positively* (at a 10% level) with distribution coefficient across most specifications. Carry does not correlate significantly and changes signs.

The contrary Hypothesis #6 (complementarity) is weakly supported. Management fee is a good predictor of distribution coefficient, but carry is not.

Surprisingly, market hotness and year again have no predictive power. Correspondingly, Hypothesis #7 (market hotness) and #8 (investor sophistication) are not supported. The coefficients do not have the predicted sign, and the *p*-value is too high to conclude that the correlation is not random.

To summarize: The VC-friendliness of distribution provisions is predicted by management fee in cluster regressions, thus providing some limited support for the complementarity hypothesis. Distribution rules are also predicted by fund size in regressions without clusters, providing some support for the VC quality hypothesis. Overall regression results are much weaker than results for management fee and carry.

These results could arise if distribution rules reflect a mix of several hypotheses. They could in part be random or reflect law firm choice, because some VC firms and investors do not pay attention to distribution rules. Yet they could also correlate with fund size and management fee because some VC firms and investors do pay attention. As discussed in Part III.E.(7), the “lawyer-made-me-do-it” hypothesis alone is not supported, but the lawyers’ choice may contribute to the pattern that we see today.

#### *IV.C. Overall VC Compensation*

I now ask which, if any, fund characteristics predict my composite measures of VC quality and power – the compensation coefficient and power coefficient developed in Part III.F. I report correlation and regression results in Table 18 below. The compensation coefficient is a measure of overall compensation relative to fund size. The power coefficient includes fund size to obtain a broader measure of VC compensation.

In both the correlations and the regressions, the compensation coefficient is strongly and positively correlated with fund size and fund number. In the regressions, the compensation coefficient also correlates strongly and *negatively* with year, and negatively and insignificantly with detrended market hotness.

The overall picture is one in which older, more established VC firms both raise larger funds and charge higher compensation (controlling for fund size). Controlling for fund number and fund size, the year of fund’s vintage predicts *lower* compensation, albeit insignificantly. This can be explained by the increasing sophistication of institutional investors.

Likewise, the power coefficient is strongly predicted by fund number. Market hotness and the fund's vintage year do not predict the values of power coefficient. Other things equal, older VCs receive substantially more overall compensation than younger VCs.

**Table 18: Regression analyses for compensation and power coefficients**

The sample consists of 37 venture funds raised between 1987 and 2003. Each cell contains: correlation coefficient (first line);  $p$ -value in OLS regressions with robust standard errors (second line); and  $p$ -value in OLS regressions without clusters (third line). The number of clusters is 17, based on the number of venture firms in the sample. The dependent variables are compensation coefficient for Regressions (1) – (3), and power coefficient for Regressions (4) and (5). Independent variables include (a) fund's sequence number; (b) detrended market hotness; (c) fund's vintage year; (d) natural logarithm of fund size. Results significant at 5% level are shown in **boldface**. Results significant at 10% level are denoted by an asterisk. Results insignificant in cluster regressions, but significant at least at 10% level in regressions without clusters are shown in *italic*.

	Correlation	Regression (1)	Regression (2)	Regression (3)	Correlation	Regression (4)	Regression (5)
<i>Dependent variable</i>	<i>Compensation coefficient</i>				<i>Power coefficient</i>		
Fund number	<b>0.460</b> <b>0.004</b>	<b>0.3781</b> <b>0.022</b> [0.005]	<b>0.306</b> <b>0.042</b> [0.007]	<b>0.282</b> <b>0.033</b> [0.012]	<b>0.444</b> <b>0.006</b>	<b>0.4528</b> <b>0.035</b> [0.010]	<b>0.4577</b> <b>0.040</b> [0.008]
Detrended mrkt hotness	-0.172 0.308	-0.3803 0.496 [0.418]		-0.643 0.240 [0.105]	-0.089 0.600	-0.1768 0.803 [0.775]	
Year	-0.036 0.832	-0.0809 0.409 [0.466]	<b>-0.187</b> <b>0.040</b> [0.038]	<b>-0.192</b> <b>0.041</b> [0.029]	-0.101 0.552	0.0232 0.833 [0.856]	0.0226 0.832 [0.858]
Log fund size	<b>0.518</b> <b>0.001</b>		<b>1.244</b> <b>0.016</b> [0.001]	<b>1.333</b> <b>0.029</b> [0.000]	<b>0.748</b> <b>0.000</b>		
R <sup>2</sup>		0.2407	0.4623	0.5053		0.1995	0.1974
Number of funds	37	37	37	37	37	37	37

#### IV.D. Fund Size

Finally, I treat fund size as the dependent variable and assess what factors predict fund size; in particular, whether older VCs raise larger funds. Table 19 shows correlation and regression results. Surprisingly, fund number is a weak predictor of fund size. All coefficients are insignificant. The simple correlation is positive, but this result weakens in the regressions, and reverses sign in regressions that include carry as an independent variable. Older, presumably more prestigious and successful funds charge higher compensation directly, through a combination of management fee, carry, and distribution rules, but do not also raise larger funds.

The lack of correlation between fund number and fund size may reflect the tendency for some newer VC firms, begun by top partners from older firms, to be able to raise large funds based on the track record of their prior firm. For example, one VC firm in my sample, launched by top venture capitalists from an older firm, raised \$650 million in its first fund and \$1.25 billion in its second fund.

The strong predictors of fund size are carry, fund's vintage year, and distribution coefficient. All predict fund size, both in simple correlation and in all regressions that include this variable. Management fee does not significantly correlate with size. We thus see again the positive connection between fund size, carry and distribution coefficient, but not between fund size and management fee.

Market hotness, which is a plausible predictor of fund size, in fact is not a strong predictor when it is separated from the time trend. At best, there seems to be a substantial lag between the state of the relevant market and the ability of venture capitalists to raise large funds.

**Table 19: Regression analyses for fund size**

The sample consists of 37 venture funds raised between 1987 and 2003. Each cell contains: correlation coefficient (first line);  $p$ -value in OLS regressions with robust standard errors (second line); and  $p$ -value in OLS regressions without clusters (third line). The number of clusters is 17, based on the number of venture firms in the sample. The dependent variable is natural logarithm of fund size. Independent variables include (a) fund's sequence number; (b) detrended market hotness; (c) fund's vintage year; (d) carry as a percent of profits; (e) NPV of management fee as a percent of committed capital; (f) distribution coefficient across all profitability scenarios. Results significant at 5% level are shown in **boldface**. Results significant at 10% level are denoted by an asterisk. Results insignificant in cluster regressions, but significant at least at 10% level in regressions without clusters are shown in *italic*.

	Correlation	Regression (1)	Regression (2)	Regression (3)	Regression (4)	Regression (5)	Regression (6)	Regression (7)
<i>Dependent Variable</i>	<i>Log Fund Size</i>							
Fund number	0.248 0.138	0.0723 0.213 [0.201]	-0.0121 0.800 [0.817]	0.0292 0.546 [0.600]	-0.0206 0.646 [0.697]	0.0248 0.550 [0.635]	0.0030 0.935 [0.954]	-0.0352 0.324 [0.484]
Detrended mrkt hotness	0.129 0.445	0.1970 0.399 [0.344]	0.0277 0.897 [0.878]	0.2995 0.212 [0.139]	0.0999 0.703 [0.603]	0.3201 0.175 [0.096]	0.3701 0.126 [0.053]	0.1852 0.534 [0.319]
Year	<b>0.374</b> <b>0.023</b>	<b>0.0911</b> <b>0.009</b> [0.039]	<b>0.0695</b> <b>0.018</b> [0.066]	<b>0.1387</b> <b>0.001</b> [0.004]	<b>0.095</b> <b>0.028</b> [0.034]	<b>0.0906</b> <b>0.004</b> [0.023]	<b>0.1233</b> <b>0.001</b> [0.006]	<b>0.0883</b> <b>0.045</b> [0.037]
Carry	<b>0.615</b> <b>0.000</b>		<b>0.1320</b> <b>0.003</b> [0.001]		<b>0.1134</b> <b>0.038</b> [0.006]			0.0979 0.079* [0.013]
Management Fee	0.180 0.287			<b>0.1745</b> <b>0.040</b> [0.025]	0.0823 0.306 [0.273]		0.1195 0.185 [0.105]	0.0498 0.521 [0.487]
Distribution Coef	<b>0.446</b> <b>0.006</b>					<b>0.5606</b> <b>0.000</b> [0.004]	<b>0.4686</b> <b>0.003</b> [0.016]	<b>0.3846</b> <b>0.040</b> [0.032]
R <sup>2</sup>		0.1976	0.4423	0.3165	0.4638	0.3856	0.4352	0.5411
No. of funds	37	37	37	37	37	37	37	37

## V. Conclusion

A close reading of venture capital partnership agreements reveals several interesting results. First, all elements of VC compensation vary substantially across funds. The rumors of market failure in VC compensation have been overstated.

Second, studying only management fee and carry gives an incomplete picture of the total compensation package that VCs receive. An important piece of VCs' compensation comes as an interest-free loan from investors; the size and timing of this loan depend on complex distribution provisions. Earlier empirical studies missed this element, perhaps because distribution provisions are often buried into law-intensive language that appears to shuffle numbers to satisfy IRS requirements.

Third, compensation elements vary in the same direction, not inversely. All three elements correlate positively with each other (although with different degrees of statistical significance). More prominent VCs appear to receive higher carry, more beneficial distribution rules, raise larger funds, but their management fees are only insignificantly higher. Fund number, an imperfect proxy for VC prominence, predicts a higher overall compensation coefficient, although not a larger fund size. Fund size, which may also imperfectly proxy for VC prominence, also predicts higher compensation coefficient.

A broader picture is that VCs tend to raise all elements of their compensation together, rather than increasing one element far beyond the industry norm, while accepting a corresponding reduction in others. An explanation can perhaps be found in an implicit contract that VCs have with their investors: VCs often undercharge investors for their services in managing a particular fund (hence the phenomenon of over-subscribed funds), but in exchange expect investors to continue to contribute to new funds, even when market conditions seem unfavorable. In this context, raising a single element of VC compensation by a large amount may be seen as violating an implicit contribution-smoothing contract with investors. Smaller deviations from the industry standard in each of the three compensation elements may be more acceptable to investors than a large deviation in a single element.

Finally, this study illustrates why legal and finance expertise can usefully be combined in studies of complex contracts. Venture capital agreements are highly complex contracts, deeply embedded in a web of externally-imposed rules – securities, tax, corporate, commercial, ERISA, and other laws. Legal expertise can be valuable both identifying where contractual language responds to legal constraints (transfer restrictions are an example) and where complex language may appear to be law-driven, but in fact contains finance substance (distribution provisions are an example).

## Appendix

### Panel 1: Selected Summary Statistics

Characteristics of VC funds and VC firms in my sample. The sample consists of 37 U.S. venture capital partnerships raised by 17 venture firms. Some characteristics were present in some fund agreements, but not all. Some data on law firms is missing.

	No. of Obs.	Mean	Stand. Dev.	Min.	Max.
Fund number	37	5.17	2.84	1	11
Fund vintage year	37	1998	3.6	1987	2003
Total US VC fundraising in fund's vintage year (\$M)	37	48611	40843	2262	106203
Log of total US VC fundraising in fund's vintage year	37	10.266	1.2	7.72	11.57
Number of deals in US in fund's vintage year	37	4783	2522	1256	8124
Fund size (\$M)	37	356	280	20	1250
Log of fund size	37	5.52	0.97	3	7.13
California fund	30	0.81		0	1
Massachusetts fund	6	0.16		0	1
Washington fund	1	0.027		0	1
Fund is CA LLP	12	0.32		0	1
VC firm is CA LLC/corporation?	3	0.17		0	1
Number of funds per family raised by same VC firm	17	2.18	1.63	1	6
Number of funds per law firm	24	4.8	3.6	1	9
Number of VC firms per law firm	11	2.2	1.1	1	3
Year when VC firm was created	14	1984.64	11.49	1969	2002

### Panel 2: Assumed schedule of investments and distributions

To compute the NPV of management fees, I assume a 10% discount rate and an 11-year life for the fund. For funds that use a fee based on managed capital, I assume the schedule of investments and distributions set forth below.

year	discount factor	Managed capital, as % of committed capital
1	0.909091	50
2	0.826446	70
3	0.751315	90
4	0.683013	100
5	0.620921	100
6	0.564474	100
7	0.513158	90
8	0.466507	80
9	0.424098	50
10	0.385543	30
11	0.350494	10





