

VENTURE CAPITAL CONTRACT DESIGN: AN EMPIRICAL ANALYSIS OF THE CONNECTION BETWEEN BARGAINING POWER AND VENTURE FINANCING CONTRACT TERMS

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ABSTRACT

This Article presents an empirical analysis of the connection between bargaining power and contract design using an original dataset of over 5,500 equity and debt venture financings from 2004–2015. Using the total supply of venture capital in the U.S. as a measure of relative bargaining power between entrepreneurs and investors, this Article finds that venture capital supply has a statistically significant relationship with price and non-price terms in both equity and debt financings. These results contradict one of three theoretical accounts of bargaining power and support the other two.

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INTRODUCTION

When parties negotiate a contract, how does their bargaining power affect the contract's design? This Article empirically examines this question using an original dataset of venture financing contracts.

The academic literature on the effect of bargaining power on contract design remains unsettled.¹ Under the traditional contractarian view of contract design put forth by law-and-economics scholars, bargaining power affects the distribution of value via the price term but does not have

1. See *infra* Part I (discussing alternative theories regarding if and how bargaining power impacts contract terms). This Article uses the term “contract design” to refer to the collection of non-price terms that make up the design of a contract. See Albert Choi & George Triantis, *The Effect of Bargaining Power on Contract Design*, 98 VA. L. REV. 1665–69 (2012) [hereinafter Choi & Triantis, *Bargaining Power*].

an effect on non-price terms.² According to this view, the parties will agree to the set of non-price terms that maximizes the total value of the deal. The parties will then divide up this value via the price term based on their relative bargaining power. In other words, bargaining power determines how the pie is sliced, but not the size or flavor of the pie. As a result, with respect to contract design, this view has been described as an “irrelevance” theory.³

This irrelevance theory of bargaining power, however, runs contrary to the views and experiences of practicing transactional attorneys and businesspeople. In the common conception of a business deal, the party with greater bargaining power will receive more favorable terms. Practitioners commonly assert that bargaining power has a direct effect on non-price terms and therefore is far from irrelevant with respect to contract design.⁴ According to practitioners, parties use their negotiating leverage to craft the terms of the deal in their favor, including non-price terms.⁵ While this is a view primarily advanced by practitioners, scholars have provided support for this direct effect theory.⁶

In recent years, Albert Choi and George Triantis have worked to theoretically reconcile the traditional irrelevance theory of bargaining

2. See ROBERT E. SCOTT & JODY S. KRAUS, *CONTRACT LAW AND THEORY* 58–60 (4th ed. 2007); Douglas G. Baird, *The Boilerplate Puzzle*, 104 MICH. L. REV. 933, 934–38 (2005); Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1668 n.4 and accompanying text; George L. Priest, *A Theory of the Consumer Product Warranty*, 90 YALE L.J. 1297, 1320–21 (1981); Alan Schwartz, *A Reexamination of Nonsubstantive Unconscionability*, 63 VA. L. REV. 1053, 1072–74 (1977); Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 YALE L.J. 541, 552–54 (2003); Alan Schwartz & Louis Wilde, *Product Quality and Imperfect Information*, 52 REV. ECON. STUD. 251, 251–52, 258 (1985); *infra* Part I.A (discussing the origins of the irrelevance theory and its key claims). This Article refers to price terms as terms that are solely or primarily distributional. The clearest example of a price term is the price in a simple purchase contract. Non-price terms, however, can also have distributional effects. See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1667 n.2.

3. Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1670. Choi & Triantis further divide the irrelevance theory into two irrelevance propositions: (1) the strong-form version, which states bargaining power has no effect on the non-price terms of a contract and (2) the weak-form version, which states bargaining power may affect non-price terms but does not affect the parties’ ability to reach the optimal non-price terms under the circumstances. *Id.*

4. See sources cited *infra* note 35.

5. See sources cited *infra* note 35.

6. See sources cited *infra* note 38.

power with the practitioner-supported direct effect theory.⁷ They propose a number of theories for how bargaining power might affect contract design, the most compelling of which is the indirect effect theory.⁸ According to this theory, bargaining power has a direct effect on the price of the deal, which in turn alters the likelihood of adverse selection and moral hazard.⁹ As discussed in greater detail below, worse prices for parties seeking financing lead to more severe adverse selection and moral hazard problems.¹⁰ The parties respond to these problems by altering the contract terms that address adverse selection and moral hazard, thereby changing the value-maximizing design of the contract.¹¹ Bargaining power therefore indirectly effects non-price terms by changing their optimal forms.

The irrelevance, direct effect, and indirect effect theories provide different predictions for whether and how bargaining power affects contract design and the mechanisms through which these effects occur. This Article empirically tests these competing theories using an original dataset of 5,564 venture financing contracts (both equity and debt) from 2004–2015. The Article analyzes how the relative bargaining power between entrepreneurs and investors relates to specific terms in the venture financing contracts they negotiate.

For many reasons, venture financing contracts are an effective context in which to examine the impact of bargaining power on contract design. First, venture contracts have received substantial attention in academic literature and the mechanisms through which they function are

7. See Choi & Triantis, *Bargaining Power*, *supra* note 1; Albert Choi & George Triantis, *Market Conditions and Contract Design: Variations in Debt Contracting*, 88 N.Y.U. L. REV. 51, 52–57 (2013) [hereinafter Choi & Triantis, *Market Conditions*].

8. See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1683–87.

9. *Id.* Adverse selection and moral hazard are problems that arise when there is asymmetric information between the contracting parties. Adverse selection broadly refers to the fact that the parties do not know everything about each other at the time of contracting. Moral hazard, on the other hand, refers to the fact that the parties cannot perfectly observe each other's behavior after they have entered into a contract. See Choi & Triantis, *Market Conditions*, *supra* note 7, at 53 n.6. The indirect effect theory requires the presence of asymmetric information. This is not a stringent requirement, however, because asymmetric information typically exists in some form in most contracting scenarios. *Id.* at 72.

10. Choi & Triantis, *Market Conditions*, *supra* note 7, at 72; see *infra* Part I.C.

11. See *infra* Part I.C.

generally well-understood.¹² Second, the terms in venture contracts are highly customizable and can take on a variety of different forms, which therefore enables the parties involved to modify the terms in response to changing incentives.¹³ Third, information asymmetry is prevalent during the negotiation of venture contracts, and as a result adverse selection and moral hazard are common problems that must be addressed by contract.¹⁴ Fourth, venture financing negotiations typically take place between sophisticated parties represented by legal counsel, and therefore both sides can generally be assumed to understand the contract terms and their implications.

Using the total supply of venture capital in the U.S. as a measure of the relative bargaining power between entrepreneurs and investors, this Article finds venture financing supply has a statistically significant relationship with price and non-price terms in both equity and debt financings. These results contradict the irrelevance theory of bargaining power and provide support for the direct and indirect effect theories.

This Article makes three primary contributions to the literature on bargaining power and contract design. First, the Article analyzes how the bargaining power theories apply to venture financings and develops empirical tests for each theory. Second, the Article provides an expansive empirical look into the design of thousands of venture financing contracts spanning over more than a decade. Third, the Article uses this empirical evidence to test the competing theories.

The Article's findings have significant practical implications for entrepreneurs, investors, and attorneys. They can draw upon these results to gain a deeper understanding of how bargaining power influences price and non-price terms in the contracts they negotiate, thereby enabling them to design more effective contracts.

The remainder of the Article proceeds as follows. Part I explores the three competing theories for the connection between bargaining power and contract design and discusses how they can be empirically tested. Part

12. See, e.g., Steven N. Kaplan & Per Strömberg, *Characteristics, Contracts, and Actions: Evidence from Venture Capitalist Analyses*, 59 J. FIN. 2177 (2004) [hereinafter Kaplan & Strömberg, *Characteristics, Contracts, and Actions*]; Steven N. Kaplan & Per Strömberg, *Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts*, 70 REV. ECON. STUD. 281–82 (2002) [hereinafter Kaplan & Strömberg, *Financial Contracting Theory Meets the Real World*]; see also *infra* Part II.

13. See sources cited *supra* note 12.

14. Venture financing contracts typically facilitate long-term investments in early-stage companies working with innovative technologies and business models.

II provides an overview of venture financings and discusses specific contract terms that will be empirically analyzed. Part III discusses the empirical methodology and describes the data. Part IV presents the empirical results and discusses them in the context of the three bargaining power theories. The Article ends with a short conclusion that discusses the implications of the results and opportunities for further research.

I. THE THEORETICAL CONNECTION BETWEEN BARGAINING POWER AND CONTRACT DESIGN

Three alternative theories have dominated the literature on bargaining power and contract design: the traditional contractarian irrelevance theory, the direct effect theory championed by practitioners, and the indirect effect theory advanced by Choi and Triantis. This Part explores if and how bargaining power is expected to affect contract design under these theories and describes how each theory can be empirically tested.

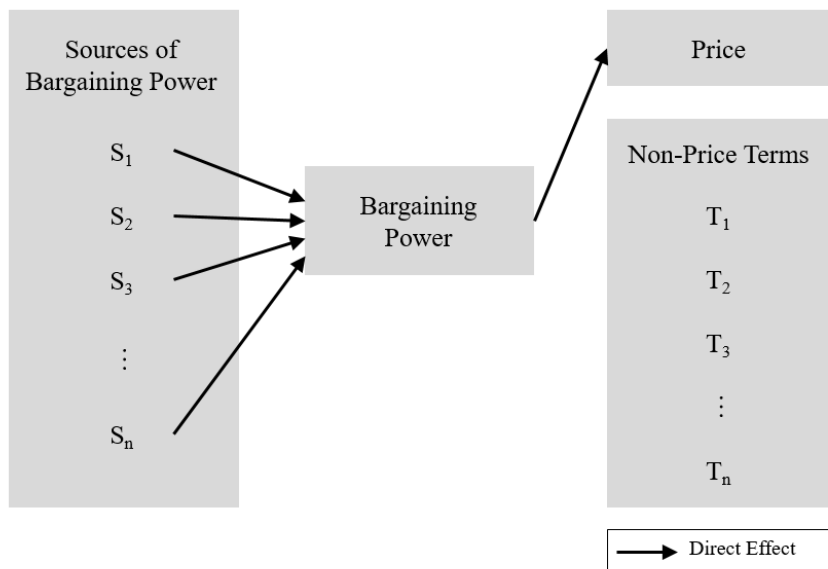
A. IRRELEVANCE THEORY

In its simplest form, the irrelevance theory of bargaining power states bargaining power does not have an effect on contract design, but rather merely influences the distribution of the contract surplus via the price term.¹⁵ While this irrelevance theory requires a number of demanding assumptions,¹⁶ the basic logic of the theory is compelling: if the parties have perfect information and negotiating costs are zero, the parties will design the contract in such a way that maximizes its total joint value. This is a contractarian application of the classic Coase Theorem.¹⁷ Once the parties have identified the value-maximizing design of the contract, they will divide up the surplus based on their relative bargaining power, typically through the price term. As a result, bargaining power has a distributional effect on the contract, but does not affect the contract's design. Figure 1 depicts the irrelevance theory.

15. See sources cited *supra* note 2 and accompanying text.

16. The most important assumptions are that the parties have perfect information and there are no transaction costs.

17. R. H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15–16 (1960); see Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1678 n.31.

Figure 1: Irrelevance Theory of Bargaining Power¹⁸

The irrelevance theory of bargaining power has its origins in discussions regarding the use of one-sided contracts by a monopolist.¹⁹ While some legal scholars had initially claimed a monopolist would use its superior bargaining power to force one-sided terms on its counterparty, law-and-economics scholars argued in response that a monopolist would use the same value-maximizing contract design as a seller in a competitive market.²⁰ The monopolist would then use its dominant bargaining position to extract the value created by the efficient contract design.²¹ In subsequent years, the irrelevance theory has been extended beyond monopolists and contracts of adhesion to include business negotiations

18. For a discussion of the sources of bargaining power, see *infra* Part III.A.

19. See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1667–68.

20. See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* § 4.9 (7th ed. 2007); Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1667–68 nn.1, 3 and accompanying text; Friedrich Kessler, *Contracts of Adhesion—Some Thoughts About Freedom of Contract*, 43 COLUM. L. REV. 629, 632 (1943); Richard A. Posner, *Natural Monopoly and Its Regulation*, 21 STAN. L. REV. 548, 584–85 (1969).

21. See sources cited *supra* note 20.

between sophisticated parties with both similar and differing bargaining positions.²²

A common response to the irrelevance theory is many non-price terms in a contract can have distributional effects as well, and therefore could be influenced by bargaining power.²³ Yet if the core assumptions of the theory hold true, it argues these terms will still take on their most efficient forms regardless of bargaining power.

A simple example can be illustrative. In this hypothetical, a buyer and seller are negotiating for the sale of a used car. The parties have reached a price of \$3,000 for the car. The final term to negotiate is the location of arbitration should any issues arise after the sale. For proximity reasons, the buyer prefers location A and the seller prefers location B. The buyer, however, is far more time constrained than the seller, so values the proximity of location A more than the seller values the proximity of location B. If the parties select location A, the buyer will receive the equivalent of \$20 of value and the seller will receive nothing, whereas if the parties select location B, the buyer will receive nothing and the seller will receive \$10. The arbitration selection clause has both efficiency and distributional effects. Yet regardless of which party has greater bargaining power, the parties will always select location A. If the buyer has greater bargaining power, it will clearly select location A. If the seller has greater bargaining power, the seller will still select location A because it maximizes the total value of the contract. The seller will agree to location A in exchange for a price increase of somewhere between \$10 and \$20.²⁴ Even though the arbitration selection term has a distributional effect, the relative bargaining power of the parties does not affect its optimal form.

22. See ROGER FISHER ET AL., GETTING TO YES: NEGOTIATING AGREEMENT WITHOUT GIVING IN 105 (2d ed. 1991); DAVID A. LAX & JAMES K. SEBENIUS, THE MANAGER AS NEGOTIATOR: BARGAINING FOR COOPERATION AND COMPETITIVE GAIN 129 (1986); JEFFREY Z. RUBIN & BERT R. BROWN, THE SOCIAL PSYCHOLOGY OF BARGAINING AND NEGOTIATION 217 (1975); Baird, *supra* note 2, at 941; Nina Burkardt et al., *Power Distribution in Complex Environmental Negotiations: Does Balance Matter?*, 7 J. PUB. ADMIN. RES. & THEORY 247, 252, 269 (1997); Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1679–80 nn.33–34 and accompanying text; Schwartz & Scott, *supra* note 2, at 554.

23. See sources cited *supra* note 2.

24. The size of the price increase within this range will depend on the relative bargaining power of the parties.

Scholars have empirically demonstrated a relationship between bargaining power and price in numerous contexts including consumer-facing contracts of adhesion and venture financings.²⁵ With respect to non-price terms and the irrelevance theory's core assertion that bargaining power does not affect these terms, the empirical evidence is mixed.²⁶

In the venture financing context, the irrelevance theory would be empirically supported by a finding that bargaining power is not connected to non-price terms in venture financing contracts.²⁷

B. DIRECT EFFECT THEORY

Unlike the irrelevance theory of bargaining power, the direct effect theory claims bargaining power not only influences the price of a contract, but the design of the contract as well. According to this theory, the party with greater bargaining power uses its superior negotiating position, not only to secure a good price, but also to extract value from its counterparty via non-price terms. This theory suggests a party with greater bargaining power may push for a non-price term that is advantageous from a distributional perspective even if the term does not maximize the total

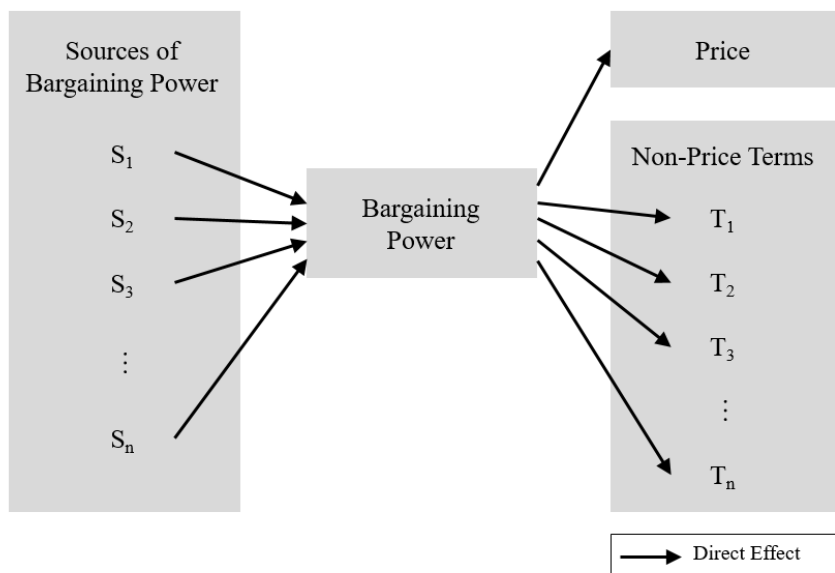
25. See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1669 n.6; Paul Gompers & Josh Lerner, *Money Chasing Deals? The Impact of Fund Inflows on Private Equity Valuations*, 55 J. FIN. ECON. 281, 283 (2000) (finding a positive relationship between valuations of venture capital investments and inflows to venture capital funds); Florencia Marotta-Wurgler, *Competition and the Quality of Standard Form Contracts: The Case of Software License Agreements*, 5 J. EMPIRICAL LEGAL STUD. 447, 451 (2008) (finding a connection between price and market share in end user license agreements).

26. For empirical evidence supporting the second assertion of the irrelevance theory, see Marotta-Wurgler, *supra* note 25, at 447–51; Priest, *supra* note 2, at 1297, 1320–21. But see Omri Ben-Shahar & James J. White, *Boilerplate and Economic Power in Auto Manufacturing Contracts*, 104 MICH. L. REV. 953, 959, 971 (2006); George G. Bogert & Eli E. Fink, *Business Practice Regarding Warranties in the Sale of Goods*, 25 ILL. L. REV. 400, 413–15 (1930); Antonio Cabrales et al., *Hidden Information, Bargaining Power, and Efficiency: An Experiment*, 14 EXPERIMENTAL ECON. 133, 135, 155–56 (2011); Paul Gompers & Josh Lerner, *The Use of Covenants: An Empirical Analysis of Venture Partnership Agreements*, 39 J.L. & ECON. 463, 489–96 (1996); Sharat Raghavan, *Essays in Entrepreneurial Finance and Strategy* 17–19, 52–56 (2012) (unpublished Ph.D. dissertation, University of California, Berkeley), http://digitalassets.lib.berkeley.edu/etd/ucb/text/Raghavan_berkeley_0028E_12579.pdf [<https://perma.cc/DB7H-QVGZ>]; see also Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1669 nn.5, 8 and accompanying text.

27. See *infra* Part II for a full discussion of price and non-price terms in equity and debt venture financings.

value of the contract. To revisit the used car example from Part I.A., if the seller has greater bargaining power, it may insist on using location B for arbitration even though location A increases the total value of the deal by \$10. This reasoning runs counter to the value-maximizing Coasean bargaining described by the irrelevance theory. Figure 2 depicts the direct effect theory.

Figure 2: Direct Effect Theory of Bargaining Power



Critics of the direct effect theory often question why the party with the superior bargaining power would not instead agree to the value-maximizing set of non-price terms and then extract its share of the increased surplus via the distributional price term.²⁸ Answers to this question can be found in the irrelevance theory's core assumption of perfect contracting conditions. As this demanding assumption is relaxed to better approximate real-world negotiations, parties are less likely to

28. See Choi & Triantis, *Market Conditions*, *supra* note 7, at 54–55; George G. Triantis, *Financial Contract Design in the World of Venture Capital*, 68 U. CHI. L. REV. 305, 319–21 (2001).

achieve the optimal contract design.²⁹ If parties do not have perfect information, then they may not be able to determine the value-maximizing form of a non-price term.³⁰ In addition, if there are steep transaction costs to negotiating non-price terms, then the value gained from identifying the optimal form of a given term may not be sufficient to justify the negotiating effort required.³¹ In the used car example, the seller may not know how much more the buyer prefers location A to location B, and as a result may prefer to push for location B to extract \$10 of value rather than try to negotiate a price increase in exchange for agreeing to location A. Real-world business negotiations also differ from the perfect contracting utopia of the irrelevance theory because many are negotiated in stages and through agents such as lawyers and bankers.³² If price is negotiated first by the business parties and then non-price terms are negotiated subsequently by lawyers, this bifurcation of the negotiation can lead to a breakdown of the perfect contracting conditions assumed by the irrelevance theory.³³ In the used car example, if the price of the car has been definitively set by the time the parties negotiate the arbitration location term, the seller will have no incentive to agree to location A because the seller will have no mechanism by which to extract value from

29. See OLIVER HART, FIRMS, CONTRACTS, AND FINANCIAL STRUCTURE 32–33 (1995); LAX & SEBENIUS, *supra* note 22, at 38–40, 245–46; ROBERT H. MNOOKIN ET AL., BEYOND WINNING: NEGOTIATING TO CREATE VALUE IN DEALS AND DISPUTES 9 (2000); Ian Ayres & Robert Gertner, *Strategic Contractual Inefficiency and the Optimal Choice of Legal Rules*, 101 YALE L.J. 729, 735–36, 742 (1992); Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1687–89; Oliver Hart & John Moore, *Property Rights and the Nature of the Firm*, 98 J. POL. ECON. 1119, 1132 (1990); Jason Scott Johnston, *Strategic Bargaining and the Economic Theory of Contract Default Rules*, 100 YALE L.J. 615, 615–16, 636–37 (1990).

30. See sources cited *supra* note 29.

31. See sources cited *supra* note 29.

32. See JAMES C. FREUND, ANATOMY OF A MERGER: STRATEGIES AND TECHNIQUES FOR NEGOTIATING CORPORATE ACQUISITIONS 53–55 (1975); MNOOKIN ET AL., *supra* note 29, at 129–35; Albert Choi & George Triantis, *The Design of Staged Contracting* 1–4 (Apr. 3, 2017) (unpublished manuscript), http://www.law.columbia.edu/sites/default/files/microsites/academicfellows/design_of_staged_contracting_with_abstract_170403.pdf [<https://perma.cc/M4LB-PC28>] [hereinafter Choi & Triantis, *Staged Contracting*]; Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1690–96; Cathy Hwang, *Deal Momentum*, 65 UCLA L. REV. (forthcoming 2017).

33. See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1690–96.

this more efficient form of the term.³⁴ Under imperfect contracting conditions, parties may be unable to reach the value-maximizing form of the contract assumed by the irrelevance theory, and as a result they may resort to using their bargaining power to extract value via distributionally favorable non-price terms as described by the direct effect theory.

The primary champions of the direct effect theory have traditionally been practicing attorneys and businesspeople. Practitioner support for the direct effect theory often comes in two forms: anecdotal evidence of parties with substantial bargaining power using their negotiating leverage to secure favorable terms and claims that as macroeconomic conditions shift to favor one class of deal participants over another, the average (or “market”) form of a particular non-price term moves accordingly.³⁵ Practitioner claims of bargaining power directly affecting contract terms appear in a wide variety of contexts including lending, corporate acquisitions, and venture capital.³⁶ For example, deal attorneys representing technology startups and venture capitalists note that “market” terms in venture financings shifted to favor investors following the dot com bust in the early 2000s.³⁷

34. The seller could potentially trade the arbitration location for a change in another non-price term that has a distributional benefit for the seller, but if this change is away from the value-maximizing form of the term then there remains an efficiency loss.

35. See ANA LAI & STEVEN M. BAVARIA, STANDARD & POOR’S RATINGSDIRECT, THE LEVERAGING OF AMERICA: COVENANT-LITE LOAN STRUCTURES DIMINISH RECOVERY PROSPECTS 2 (2007); NIXON PEABODY LLP, SEVENTH ANNUAL MAC SURVEY 2 (2008); Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1693 (discussing how material adverse change (MAC) definitions in merger agreements shift between seller-friendly and buyer-friendly forms); Choi & Triantis, *Market Conditions*, *supra* note 7, at 53–55 (discussing how lending covenants were primarily borrower-friendly from 2000–2007 and then shifted to be lender friendly after the financial crisis); Eric Goodison, *Covenant-Lite Loans: Traits and Trends*, PRAC. L.J., Sept. 2011, at 36, 37, www.paulweiss.com/media/105718/plj_sep11.pdf [<https://perma.cc/V5S3-WKP5>]; Joseph Bartlett, *Sea Change*, VC EXPERTS, <https://www.vcexperts.com/reference/buzz/63> [<https://perma.cc/ZP2Y-4F2U>] (last visited Oct. 3, 2017) (discussing how venture financing terms became much more investor-friendly following the dot com crash of 2000–2001); Knowledge@Wharton, *Private Equity Bidding Wars: When Capital-Rich Funds Compete, Intangibles Win the Deal*, U. PA. WHARTON SCH. (Apr. 26, 2007), <http://knowledge.wharton.upenn.edu/article.cfm?articleid=1721> [<https://perma.cc/FZG9-6V9E>]. See also Elisabeth de Fontenay, *Law Firm Selection and the Value of Transactional Lawyering*, 41 J. CORP. L. 393, 395–98, 405–13 (2015).

36. See sources cited *supra* note 35.

37. See Bartlett, *supra* note 35.

While the direct effect theory has been primarily advanced by practitioners, scholars have provided empirical evidence of a connection between bargaining power and non-price terms in multiple contracting contexts.³⁸ When explaining their findings that bargaining power has an effect on non-price terms, scholars often invoke some form of the direct effect theory. For example, in the context of venture financing contracts, in a 2012 study of equity venture financings, Sharat Raghavan finds evidence of a connection between bargaining power and certain venture financing terms.³⁹ Raghavan justifies this connection with the basic form of the direct effect theory: the party with more bargaining power gets better terms.⁴⁰

In the venture financing context, the direct effect theory would be empirically supported by the following two findings. First, a finding that bargaining power is broadly connected to non-price terms in venture financing contracts. If parties are using their bargaining power to push for more favorable non-price terms, we should expect to see a connection between bargaining power and a variety of non-price terms. Second, a finding that bargaining power is connected to non-price terms that do not have efficiency effects and are instead used by the parties to extract value alongside the primary price terms. As discussed in Part I.C, there are many non-price terms that enhance the overall efficiency of the deal by responding to adverse selection and moral hazard. Some non-price terms, however, do not have efficiency effects and are instead mechanisms through which the parties can extract value. The direct effect theory predicts a connection between bargaining power and these value-extraction terms. As discussed in Part II, venture financing contracts include value-extraction terms such as dividends and warrants.

C. INDIRECT EFFECT THEORY

The indirect effect theory advanced by Choi and Triantis works to bridge the gap between the irrelevance theory promoted by law-and-economics scholars and the direct effect theory championed by practitioners. According to this theory, bargaining power directly affects

38. See Ben-Shahar & White, *supra* note 26, at 953, 959, 971; Bogert & Fink, *supra* note 26, at 400, 413–15; Cabrales et al., *supra* note 26, at 133–35, 155–56; Gompers & Lerner, *supra* note 26, at 464, 489–96; Raghavan, *supra* note 26, at 17–19, 52–56.

39. Raghavan, *supra* note 26, at 17–19, 52–56.

40. *Id.* at 57.

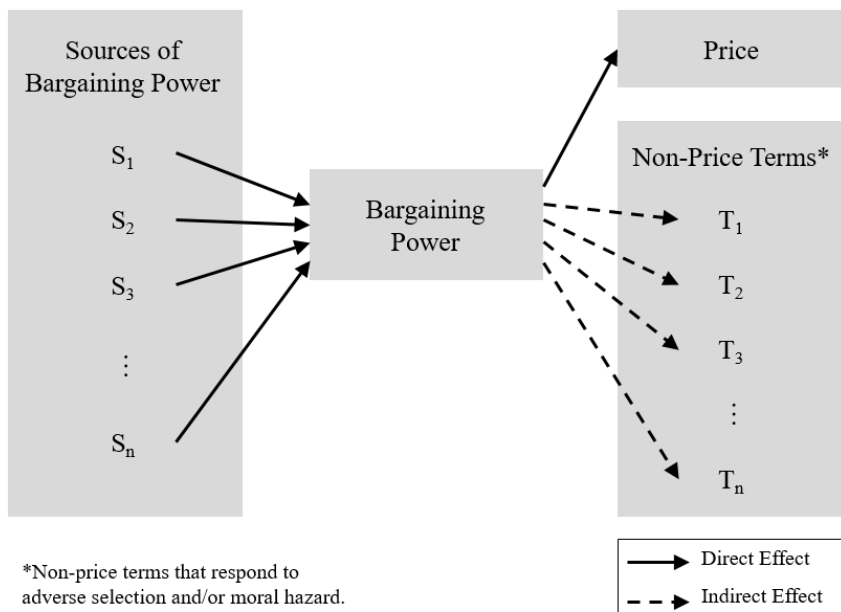
the price of the contract, which in turn alters the severity of adverse selection and moral hazard, and as a result indirectly modifies the optimal forms of the non-price terms that respond to these problems.⁴¹ Like the irrelevance theory, the indirect effect theory maintains that the set of non-price terms selected by the parties maximizes the overall value of the contract under the circumstances.⁴² Unlike the irrelevance theory, however, the indirect effect theory claims bargaining power has an impact on the value-maximizing contract design.⁴³ The indirect effect theory therefore agrees with the direct effect theory's conclusion that bargaining power affects non-price terms, but disagrees as to the mechanism through which this effect occurs. Whereas the direct effect theory claims that parties use their bargaining power to directly extract value via distributionally favorable but potentially inefficient non-price terms, the indirect effect theory argues that parties still reach the optimal contract design, but that this optimal design is altered by bargaining power. Figure 3 depicts the indirect effect theory.

41. See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1683–87; see also *supra* note 9 (discussing adverse selection and moral hazard). Choi & Triantis also propose an alternative version of the indirect effect theory in which a change in price alters a party's willingness to substitute price for non-price terms. For example, an entrepreneur who receives a high valuation for their company may be more willing to trade a decrease in valuation for better non-price terms. Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1681–83. This Article does not focus on this version of the indirect effect theory for two reasons. First, it assumes parties rationally substitute price for non-price terms, which is not clear in the venture financing context. Second, it is empirically difficult (or potentially impossible) to distinguish the effects of this theory from the direct effect theory.

42. See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1681. Even though the indirect effect theory contends that the parties select the optimal non-price terms given the presence of asymmetric information, it acknowledges that the total value of the contract would be higher if there was no information asymmetry. With perfect information and zero transaction costs, the indirect effect theory predicts the same contract design as the irrelevance theory.

43. *Id.* This assumes the presence of asymmetric information.

Figure 3: Indirect Effect Theory of Bargaining Power



Choi and Triantis develop the indirect effect theory primarily in the context of a basic lending market.⁴⁴ In this context, a macro-level increase or decrease in the supply of credit shifts bargaining power in favor of borrowers or lenders, respectively.⁴⁵ As a result, the interest rate (which serves as the price of the deal) rises when the supply of credit decreases and falls when the supply increases.⁴⁶ In the presence of asymmetric information, lenders are not able to perfectly identify the riskiness of a particular borrower.⁴⁷ If the interest rate increases due to a decrease in the credit supply, less risky borrowers will opt-out of the lending market, thereby increasing the percentage of riskier borrowers left behind.⁴⁸ This is a classic case of adverse selection. In order to screen between less risky and riskier borrowers, lenders can use non-price terms such as restrictive

44. See Choi & Triantis, *Market Conditions*, *supra* note 7, at 55–56.

45. *Id.*

46. *Id.*

47. *Id.*; see also Joseph E. Stiglitz & Andrew Weiss, *Credit Rationing in Markets with Imperfect Information*, 71 AM. ECON. REV. 393 (1981).

48. Choi & Triantis, *Market Conditions*, *supra* note 7, at 55–56.

covenants and collateral requirements.⁴⁹ These non-price terms are far less attractive to riskier borrowers, and therefore less risky borrowers can credibly signal their quality by agreeing to the more stringent terms.⁵⁰ As shifts in bargaining power move the interest rate up and down, the severity of adverse selection will increase and decrease, respectively, and consequently the optimal form of the non-price terms will change accordingly.⁵¹ Bargaining power therefore has an indirect effect on the optimal contract design.

Moral hazard also plays a role in the lending market example. As greater bargaining power on the part of the lender pushes the interest rate up, the borrower's share of the proceeds from the deal decreases due to an increased debt overhang.⁵² As a result, the borrower is incented to pursue riskier projects and/or squander the assets through misbehavior because the borrower receives a smaller payoff from a successful project due to the lender's debt position.⁵³ This moral hazard problem exacerbates the misalignment of post-borrowing incentives between the

49. See *id.* at 55–56, 58; Cem Demiroglu & Christopher M. James, *The Information Content of Bank Loan Covenants*, 23 REV. FIN. STUD. 3700, 3705 (2010); Nicolae Gârleanu & Jeffrey Zwiebel, *Design and Renegotiation of Debt Covenants*, 22 REV. FIN. STUD. 749, 749 (2009); Alan Schwartz, *Security Interests and Bankruptcy Priorities: A Review of Current Theories*, 10 J. LEGAL STUD. 1, 14–21 (1981); George G. Triantis, *Secured Debt under Conditions of Imperfect Information*, 21 J. LEGAL STUD. 225, 252–58 (1992).

50. Triantis, *supra* note 49, at 252–58; see also Choi & Triantis, *Market Conditions*, *supra* note 7, at 62–64.

51. See Choi & Triantis, *Market Conditions*, *supra* note 7, at 66–68.

52. *Id.* at 55–56, 68. For example, if a borrower borrows \$100 to complete a project that is worth \$200, the borrower will retain more of the surplus if the interest is \$10 versus \$20.

53. *Id.* For example, assume a borrower borrows \$100 and has to choose between two projects. Project A has a 100% chance of paying \$200. Project B has a 50% chance of paying \$290 and a 50% chance of paying \$0, for a total expected value (EV) of \$145. From a value-maximizing standpoint, Project A is superior to project B; it has a higher EV and is less risky. Assume the lender has no recourse if the borrower cannot repay the loan. If the interest on the loan is \$10, the borrower will receive a net EV of \$90 for Project A (\$200 - \$110) and \$90 for Project B $((\$290 - \$110) / 2)$ and will therefore be indifferent between the two. If the interest is \$20, however, the borrower will receive a net EV of \$80 for Project A (\$200 - \$120) and \$85 for Project B $((\$290 - \$120) / 2)$ and will therefore prefer Project B assuming the borrower is risk neutral. As the interest rate increases, the borrower has a greater incentive to pursue riskier projects.

lender and the borrower.⁵⁴ The lender can respond by including covenants that constrain the borrower's behavior after the loan is made.⁵⁵ As the interest rate fluctuates due to changes in bargaining power, the moral hazard problem will increase and decrease in severity. The optimal forms of the non-price terms used to respond to moral hazard are therefore influenced by shifts in bargaining power.⁵⁶

The indirect effect theory can be extended to equity and quasi-equity investing in the context of venture financings.⁵⁷ As is the case in the basic lending market example, venture investing is rife with asymmetric information. Venture investors are primarily investing in companies that are developing innovative technologies and business models. In many cases, the founders of these companies have never started a business before. For explanatory purposes, we can think of a simplified version of the venture investing landscape that contains two types of companies in which to invest: low-quality and high-quality. While entrepreneurs know their company type, venture investors can only imperfectly assess company type.⁵⁸ This is the venture capital version of the adverse selection problem. As bargaining power shifts between entrepreneurs and investors, the prices of venture financings increase or decrease, respectively. In a market with low prices, high-quality companies with sufficient funding will opt-out of the market, preferring to wait for prices to increase.⁵⁹ Low-quality companies, on the other hand, will be less

54. *Id.*

55. *Id.* at 55–56, 58, 68–70; see also Arnoud W. A. Boot et al., *Secured Lending and Default Risk: Equilibrium Analysis, Policy Implications and Empirical Results*, 101 *ECON. J.* 458, 465 (1991); Clifford W. Smith, Jr. & Jerold B. Warner, *On Financial Contracting: An Analysis of Bond Covenants*, 7 *J. FIN. ECON.* 117 (1979); see generally George G. Triantis, *A Free-Cash-Flow Theory of Secured Debt and Creditor Priorities*, 80 *V.A. L. REV.* 2155 (1994).

56. See Choi & Triantis, *Market Conditions*, *supra* note 7, at 70–71.

57. As discussed below, debt in the venture financing context is typically convertible to equity and therefore debt venture financings can be thought of as quasi-equity investing. See *infra* Section II.B.

58. In the real world, company quality is a spectrum and entrepreneurs do not know the quality of their companies with certainty. As in this theoretical simplification, however, entrepreneurs have better information regarding the quality of their companies than venture investors.

59. Some high-quality companies will still have to raise money in a low-price market because of capital needs.

likely to exit the market and will continue attempting to raise capital.⁶⁰ As a result, there will be a higher proportion of low-quality companies seeking capital in a low-price market relative to a high-price market. To screen between low and high-quality companies, investors can use non-price terms that take effect if a company does poorly such as a term that withholds future financing if the company fails to hit certain achievement milestones.⁶¹ These terms are costlier for low-quality companies and therefore allow high-quality companies to credibly signal their quality to investors.⁶² The lower the price, the more severe the adverse selection problem, which in turn necessitates more stringent, investor-favorable terms. Relative bargaining power between entrepreneurs and investors therefore alters the optimal forms of these non-price terms.

Moral hazard also comes into play in the venture financing context. Venture investors typically make equity investments via preferred stock and quasi-equity investments via convertible debt, both of which have the right to receive payment before the common stock held by entrepreneurs.⁶³ Increased bargaining power on the part of investors pushes prices down, which means investors receive a larger share of the company in exchange for a given amount of money.⁶⁴ Investor ownership in this context functions similarly to a debt overhang in the basic lending context, and therefore entrepreneurs are incented to take greater risks and/or squander company resources via misbehavior.⁶⁵ To respond to this post-investment moral hazard problem, investors can push for non-price terms that constrain the entrepreneur's behavior such as a term that requires investor approval for certain key actions.⁶⁶ The lower the price, the greater the moral hazard problem and therefore the greater the

60. Low-quality companies are less likely to have sufficient funds on hand to be able to wait for prices to increase. In addition, low-quality companies have to spend more time fundraising and meet with a greater number of investors to secure financing.

61. See *infra* Part II for a discussion of which terms can be used as screening mechanisms for adverse selection.

62. Agreeing to investor-favorable terms could also signal inexperience on the part of the entrepreneur and/or a need for capital on a short timeframe. As a result, these signals can be noisy.

63. See *infra* Part II.

64. See *infra* Section II.A.1.

65. See *supra* note 53 and accompanying text. This example functions similarly in the venture investing context because investors (both equity and debt) are entitled a certain payment before the entrepreneur receives anything.

66. See *infra* Part IV for a discussion of which terms can be used to respond to moral hazard.

importance of these restrictive terms. As in the case of adverse selection discussed above, bargaining power influences the value-maximizing design of venture financing contracts.

In the venture financing context, the indirect effect theory would be empirically supported by the following two findings. First, a finding that bargaining power is connected to efficiency-enhancing non-price terms that act as screening mechanisms in response to adverse selection and/or constrain the entrepreneur's behavior in response to moral hazard. Second, a finding that bargaining power is not connected to non-price terms that do not respond to adverse selection and/or moral hazard and are instead intended merely for value-extraction. Unlike the direct effect theory, the indirect effect theory contends that bargaining power does not have an effect on these value-extraction terms.

II. VENTURE FINANCING CONTRACT TERMS

This Part provides an overview of equity and debt venture financings and discusses the mechanics and implications of specific terms contained in the empirical sample. Subpart A covers equity financings and Subpart B covers debt financings.

A. EQUITY FINANCINGS

The classic form of venture financing in the U.S. is a preferred stock equity financing in which investors received shares of preferred stock in exchange for their capital.⁶⁷ Shares of preferred stock typically contain a broad set of additional rights and benefits that set these shares apart from the shares of common stock held by founders and employees.⁶⁸ In addition to the contractual rights granted by the preferred stock, equity investors will often receive representation on the company's board of directors.⁶⁹ If there are multiple investors, a member of the lead investor

67. Equity venture investments can take the form of common stock purchases as well. Common stock, however, is rarely sold to investors other than friends and family and very early angel investors. A company's first institutional equity investment is almost always via preferred stock.

68. See William W. Bratton, *Venture Capital on the Downside: Preferred Stock and Corporate Control*, 100 MICH. L. REV. 891 (2002). Many of these rights are discussed in the subparts below.

69. Board representation is often considered the most important non-price term. A seat on the board gives the investor a formal say in key decisions regarding the company's

(the investor putting in the largest amount of capital) will typically occupy the board seat.

Entrepreneurs, investors, and venture attorneys often characterize the terms in a venture financing as either “economics” or “control.”⁷⁰ Economic terms are generally seen as terms that determine how the value of the company is divided between the parties whereas control terms determine how decisions regarding the company are made and who has the power to make them.⁷¹ There is a common saying in Silicon Valley (often regarded as the heart of the venture world), “you can have economics or control, but not both.”⁷² First-time entrepreneurs are often believed to focus too heavily on economics whereas more experienced entrepreneurs understand the importance of control.⁷³ According to the irrelevance theory discussed in Part I.A, bargaining power should only affect distributional economic terms whereas control terms (along with the rest of the contract design terms) should take their most efficient forms regardless of bargaining power. The direct and indirect effect theories, on the other hand, contend that bargaining power affects control terms as well, though they disagree on the mechanism through which this connection occurs.

Venture financings (both equity and debt) also contain a long-term relationship aspect that differentiates them from many other contracting contexts. Practitioners frequently describe the venture investing relationship as a marriage between the entrepreneur and the investors.⁷⁴ The investors will be represented on the company’s board and will usually be the entrepreneur’s first stop when raising subsequent financing.⁷⁵ In addition, venture investors frequently act as counselors and advisors to

strategy and operations as well as the hiring of officers such as the CEO. In addition, the decision-making authority granted by a board seat fills in gaps left by the contractual rights specified in the financing contracts.

70. Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017).

71. Telephone Interview with Anonymous Source (Apr. 13, 2017). Some terms will have both economic and control implications. *See* sources cited *supra* note 2.

72. *Id.*

73. Interview with Anonymous Source, in Palo Alto, Cal. (Apr. 17, 2017).

74. With lawyers often serving as marriage counselors.

75. If current investors decide not to participate in subsequent financing rounds, this sends a bad signal to outside investors.

their portfolio companies even if they do not sit on the board.⁷⁶ Both sides know they will have to work with one another for many years for the company to be successful, and as a result they want their counterpart to be happy with the arrangement.⁷⁷ One experienced attorney distinguished this approach from the “scorched earth” strategy of an M&A deal in which the parties part ways at the conclusion of the transaction.⁷⁸ This relational aspect therefore affects the negotiation of venture financing contracts, especially in the early stages of a company’s life. In the words of a prominent Silicon Valley venture attorney, “You’re picking a partner. It’s not zero sum.”⁷⁹

The remainder of this Part discusses the equity financing terms that the Article empirically analyzes in Part IV.⁸⁰

1. Pre-Money Valuation

The pre-money valuation is the most important term in an equity venture financing because it functions as the price of the deal and, in conjunction with the amount raised, determines the percentage of the company that will be owned by the investors. The term gets its name because it refers to the value the parties assign to the company before the investors put in their money.⁸¹

76. Investors who can provide valuable advice and connections in addition to capital are often referred to as “smart money,” and have an advantage over investors who only provide capital.

77. Telephone Interview with Anonymous Source (April 13, 2017).

78. *Id.*

79. *Id.*

80. The most important non-price terms that are not analyzed in this Article (because they do not appear in the dataset) are board representation and protective provisions. The latter typically specify certain company actions for which the company must obtain approval from a specified percentage of investors in addition to the board of directors.

81. See *Model Legal Documents: Term Sheet*, NAT’L VENTURE CAP. ASS’N, <http://nvca.org/resources/model-legal-documents> [https://perma.cc/XK5D-FXYP] (follow “Term Sheet” hyperlink) (last visited Oct. 3, 2017) [hereinafter *NVCA Model Term Sheet*]. A simple example can be helpful to demonstrate how the pre-money valuation sets the price of the deal and its impact on ownership percentage. In this hypothetical, the company is seeking its first venture capital investment. There are ten million shares of common stock outstanding that have been issued to the founders and early employees. Early employees will often receive options instead of shares. For the purposes of calculating the pre-money valuation, options outstanding are treated the same as shares outstanding. This includes options and shares that are subject to vesting. The company is looking to raise \$2 million to finance the development of its business. If the parties agree

In a typical venture financing, the lead investor discusses a general range of pre-money valuations with the entrepreneur before the investor presents the entrepreneur with a term sheet.⁸² This is known as “socializing” the deal. During this process, the investor and the entrepreneur also discuss other key terms such as board seats.⁸³ The investor will not present the entrepreneur with a term sheet unless the investor is reasonably confident the entrepreneur will be happy with the pre-money valuation and key terms.⁸⁴ As one attorney put it, the investor will not “propose” unless they think the entrepreneur will “say yes.”⁸⁵ After the investor puts a term sheet on the table, the parties negotiate the pre-money valuation and key terms. According to experienced venture attorneys, these key terms are the terms most likely to be affected by bargaining power because they are fundamental to the deal.⁸⁶ In many

on a pre-money valuation of \$6 million, the post-money valuation will be \$8 million, the price per share of the preferred stock will be \$0.60, the investors will receive 3,333,333 shares and they will own 25% of the company following the investment (price per share = \$6 million pre-money / 10 million shares outstanding = \$0.60; investor shares = \$2 million investment / \$0.60 price per share = 3,333,333 shares; investor ownership percentage = 3,333,333 investor shares / 13,333,333 total shares = 25%). If instead the parties agree on a pre-money valuation of \$8 million, the post-money valuation \$10 million, the price per share of the preferred stock will be \$0.80, the investors will receive 2,500,000 shares and they will own 20% of the company following the investment (price per share = \$8 million pre-money / 10 million shares outstanding = \$0.80; investor shares = \$2 million investment / \$0.80 price per share = 2,500,000 shares; investor ownership percentage = 2,500,000 investor shares / 12,500,000 total shares = 20%). As can be seen from this example, a higher pre-money valuation leads to a higher price per share for the preferred stock and a lower ownership percentage for the investors. Entrepreneurs therefore prefer a higher pre-money valuation whereas investors prefer a lower pre-money valuation.

82. Interview with Anonymous Source, in Palo Alto, Cal. (Apr. 17, 2017). A term sheet is a preliminary agreement that describes a number of key terms, including the price of the deal. For an example of a term sheet, see *NVCA Model Term Sheet*, *supra* note 81. Venture financings will often involve multiple venture investors. This is commonly referred to as a “syndicated” deal, with the group of investors being the “syndicate.” The lead investor is typically the investor putting in the largest amount of capital.

83. Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017); Interview with Anonymous Source, in Palo Alto, Cal. (Apr. 17, 2017).

84. Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017).

85. *Id.*

86. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Palo Alto, Cal. (Apr. 17, 2017).

cases, the parties will negotiate these terms without their lawyers.⁸⁷ If the parties trade changes in price for changes in key terms, they will almost always do so during the socialization period and/or the negotiation of the term sheet.⁸⁸ Once the parties agree on the term sheet, they will rarely change the price or other terms listed in the term sheet.⁸⁹ Terms not included in the term sheet are then negotiated by the parties' lawyers who are tasked with preparing the official financing documents. This staged negotiation process is a potential reason why the final design of the contract may deviate from the value-maximizing form predicted by the irrelevance theory.⁹⁰

All three bargaining power theories predict greater bargaining power on the part of entrepreneurs leads to higher pre-money valuations.

2. Amount Raised

The amount raised is generally the simplest term in a venture financing contract. It is the total amount of capital the investors put into the company in the financing. Like the pre-money valuation, the amount raised is often set in the term sheet at the beginning of the negotiation.⁹¹ For a given pre-money valuation, the greater the amount raised, the greater the investor's post-financing ownership percentage.

While at first glance it might seem that entrepreneurs with greater bargaining power will raise more money, this is not necessarily the case. A startup company usually raises money under the assumption its value will increase over time. As the company's valuation increases, the entrepreneur has to give up less ownership to raise a given amount of money.⁹² If an entrepreneur has the option to raise up to \$5 million at a \$15 million valuation, but predicts the company only needs to raise \$2 million to get to a point where it can raise money again at a \$30 million valuation, the entrepreneur is unlikely to raise the entire \$5 million amount. That being said, entrepreneurs will often raise more capital than

87. Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017).

88. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017).

89. See Choi & Triantis, Staged Contracting, *supra* note 32, at 8–9; Hwang, *supra* note 32 (manuscript at 10).

90. See generally Choi & Triantis, Staged Contracting, *supra* note 32 and accompanying text.

91. See NVCA Model Term Sheet, *supra* note 81, at 1.

92. See NVCA Model Term Sheet, *supra* note 81 and accompanying text.

the bare minimum to provide a “buffer,” especially if they expect the supply of capital to decrease in the future.⁹³ As a result, the amount of money raised is likely to be determined less by the relative bargaining power of the parties and more by the company’s funding needs and the entrepreneur’s expectations of valuation growth and availability of future capital.

3. Liquidation Preference

In the event of a liquidation of the company (by dissolution, sale, merger, etc.), shares of preferred stock typically carry the right to receive a fixed payment before any payment is made to holders of common stock such as entrepreneurs and early employees.⁹⁴ This right to receive payment before the common stockholders is known as the liquidation preference.⁹⁵ The amount of the liquidation preference is usually a multiple (often 1X) of the original price per share of the preferred stock.⁹⁶ The liquidation preference is the feature of preferred stock that creates an effect similar to a debt overhang.⁹⁷

If a company has multiple series of preferred stock (such as Series A, B, etc.), the financing documents will specify the order of the various liquidation preferences.⁹⁸ The most common ordering mechanism is known as “*pari passu*” which means the different series of preferred stock will receive payment at the same time on a pro rata basis.⁹⁹ Occasionally,

93. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017).

94. See *NVCA Model Term Sheet*, *supra* note 81, at 2–3. Early employees will often hold stock options that convert into shares of common stock.

95. *Id.*

96. See *id.* For example, if there are two million shares of preferred stock outstanding with a price per share of \$0.50 and a liquidation preference multiple of one, then the preferred stockholders collectively have a right to receive the first \$1 million in the event of a liquidation (liquidation preference = 2 million preferred shares * \$0.50 price per share * 1X multiple = \$1,000,000).

97. See *supra* Part I.C.

98. See *Model Legal Documents: Certificate of Incorporation*, NAT’L VENTURE CAP. ASS’N, 6–7 n.14, <http://nvca.org/resources/model-legal-documents> [<https://perma.cc/XK5D-FXYP>] (follow “Certificate of Incorporation” hyperlink) (last visited Oct. 3, 2017) and accompanying text.

99. See *id.*

however, a series of preferred stock will be specified as junior or senior to other series in the distribution ordering.¹⁰⁰

In a typical equity financing, preferred stockholders have the option to convert their shares to common stock in the event of a liquidation.¹⁰¹ The conversion price is typically set equal to the original purchase price of the preferred shares so the shares convert on a one-to-one basis.¹⁰² If preferred stockholders convert to common, they forfeit their liquidation preference. They will therefore only convert if doing so will give them a payout greater than their liquidation preference.¹⁰³ The liquidation preference functions as downside protection for preferred stockholders while still providing them with the option of unbounded upside.¹⁰⁴

Liquidation preferences, particularly preferences with a multiple greater than one, can act as a screening mechanism to help investors identify a company's quality in response to adverse selection. Because preferred stockholders are likely to convert to common (and therefore lose their liquidation preference) in the event of a lucrative liquidation event, liquidation preferences are more likely to take effect for low-quality companies. High liquidation preferences are costlier for low-quality companies and therefore allow high-quality companies to signal their quality to investors. While high liquidation preferences can help respond

100. See *id.* For example, consider a hypothetical company with three series of preferred stock: A, B, and C. Series A and B are *pari passu* with each other, but Series C is senior to both A and B. There are one million shares of each series. Series A, B, and C have liquidation preferences of \$0.50, \$1.00, and \$2.00, respectively, for a total liquidation preference of \$3.5 million. The company then receives an acquisition offer of \$5 million. Series C would be entitled to the first \$2 million, Series A and B would jointly be entitled to the next \$1.5 million, and the common stockholders would receive the final \$1.5 million. If, however, the offer was only for \$3 million, Series C would still receive the first \$2 million, but now Series A and B would have to split the remaining \$1 million on a *pro rata* basis. The common stockholders would receive nothing.

101. See *NVCA Model Term Sheet*, *supra* note 81, at 4.

102. *Id.*

103. For example, assume a company has one million shares of preferred stock with a liquidation preference of \$1.00 per share and nine million shares of common stock. If the preferred stockholders convert to common, they will receive 10% of the total liquidation amount (investor ownership percentage = 1 million investor shares / 10 million total shares = 10%). As a result, they will only convert to common for a liquidation amount greater than \$10 million (break-even valuation = \$1 million liquidation preference / 10% ownership = \$10 million).

104. If the liquidation preference multiple is greater than 1, the liquidation preference provides the investor with a guaranteed minimum return assuming there is sufficient value at the point of liquidation to cover the preference.

to adverse selection, they also create a debt overhang effect that increases the severity of moral hazard.

4. Participation

While preferred stockholders generally must give up their liquidation preference to share in the upside of the deal by converting to common, this is not the case if the preferred stock contains a participation right.¹⁰⁵ Participation allows the preferred stockholders to share the liquidation proceeds pro rata with the common stockholders in addition to receiving their liquidation preference.¹⁰⁶ Equity venture financings with participation will sometimes contain a term referred to as a “participation cap.”¹⁰⁷ Under a participation cap, preferred stockholders have the option to (1) receive their liquidation preference and participate with the common stockholders up to a limit (usually a multiple of the original purchase price of the stock) or (2) convert to common.¹⁰⁸

Capped participation is effectively a more extreme version of a liquidation preference. The higher the cap, the costlier the term is for low-quality companies. High-quality companies are more likely to achieve total liquidation amounts that will render a cap irrelevant, so capped participation can function as a signaling mechanism to respond to adverse selection. Uncapped (or “full”) participation, on the other hand, is very costly for both high and low-quality companies and therefore has little

105. See *NVCA Model Term Sheet*, *supra* note 81, at 2–3.

106. *Id.* In the example from *supra* note 103, assume the preferred shares have a participation right. If the company receives an acquisition offer of \$11 million, the preferred stock would receive \$1 million for its liquidation preference and an additional \$1 million via participation for a total of \$2 million (liquidation preference = \$1.00 per share * 1 million investor shares = \$1 million; participation = 10% ownership * (\$11 million - \$1 million) = \$1 million, for a total of \$2 million). Without participation, the investors would convert to common and receive 10% ownership * \$11 million = \$1.1 million.

107. See *NVCA Model Term Sheet*, *supra* note 81, at 3.

108. See *id.* In the example from *supra* note 106, assume there is a participation cap of two times the original purchase price, for a total of \$2 million. In this case, the preferred stockholders will only convert to common when doing so provides them with a payout of greater than \$2 million, which will only occur for total liquidation amounts of more than \$20 million (break-even valuation = \$2 million participation cap / 10% ownership = \$20 million). The break-even valuation without participation was \$10 million. See *supra* note 103.

efficiency implications. As a result, uncapped participation is a value-extraction term rather than an efficiency term. Both capped and uncapped participation exacerbate the moral hazard problem.

5. *Anti-Dilution*

Most equity venture financings contain a provision known as “anti-dilution protection” that protects preferred stockholders in the event the company raises capital at a later date at a price per share less than the price the preferred stockholders paid.¹⁰⁹ Raising capital at a valuation less than the valuation of a previous round is known as a “down round” and typically signals the company is not performing well. “Anti-dilution protection” functions by reducing the price at which the preferred stock converts into common stock.¹¹⁰ As discussed in Part II.A.3, the initial conversion price is usually set equal to the original purchase price of the preferred stock. Each share of preferred stock converts into a number of shares of common stock equal to the quotient of dividing the original purchase price by the conversion price.¹¹¹ The preferred stock therefore initially converts into common stock at a one-to-one ratio, but will convert into a greater number of shares of common stock if the conversion price is reduced via anti-dilution protection.

The most severe (and investor favorable) form of anti-dilution protection is known as “full ratchet” protection. Under full ratchet protection, in the event of a down round, the conversion price of the preferred stock is set equal to the purchase price of the new shares.¹¹² Full ratchet protection functions the same regardless of how much money is raised in the down round.¹¹³

109. See *NVCA Model Term Sheet*, *supra* note 81, at 4–5. This type of anti-dilution protection is generally referred to as “price-based” protection. This is distinct from anti-dilution protection for non-economic stock modifications such as stock splits, which all venture financings contain.

110. *Id.*

111. *Id.* at 1–2, 4–5.

112. *Id.* at 5. For example, if a company with Series A preferred shares with a conversion price of \$1.00 per share and full ratchet protection raises a Series B round at \$0.80 per share, the conversion price of the Series A shares becomes \$0.80. The Series A shares go from converting into one share of common each to 1.25 shares of common each (number of shares of common per share of preferred = \$1.00 original purchase price / \$0.80 conversion price = 1.25 shares).

113. *Id.*

A less severe (and more common) form of anti-dilution protection is known as “weighted average” protection. As the name suggests, weighted average protection modifies the change in the conversion price based on the size of the down round relative to the total capitalization of the company.¹¹⁴ The larger the amount of money raised in the down round, the larger the drop in the conversion price.¹¹⁵ Weighted average protection helps protect investors against down round dilution but does not penalize the company as severely as full ratchet protection. When determining the effect of weighted average protection, there are two general ways to calculate the total capitalization of the company: “broad based” weighted average protection and “narrow based” weighted average protection. Broad based protection includes options and other similar securities whereas narrow based protection only includes shares of stock outstanding.¹¹⁶ Broad based protection results in a smaller reduction in the conversion price and therefore is more favorable for the company.¹¹⁷

Anti-dilution protection only takes effect in the event of a down round and is therefore costlier for low-quality companies, with full ratchet being costlier than weighted average and broad based being costlier than narrow based. Investors can use the different forms of anti-dilution protection as a screening mechanism to respond to adverse selection.

6. Redemption

A right of redemption allows the preferred stockholders to force the company to repurchase their preferred shares at a price equal to the original purchase price of the shares.¹¹⁸ Redemption rights often require a vote of a certain percentage of the preferred stockholders to prevent one-off redemptions.¹¹⁹ Some redemption rights are only exercisable after a certain amount of time, such as one year. Most startups do not operate with sufficient cash on hand to redeem their outstanding preferred shares, so in many cases the exercise of a redemption right will effectively force a dissolution of the company.

114. *Id.* at 4–5.

115. *Id.*

116. *Id.*

117. *Id.*

118. *Id.* at 6.

119. *Id.*

Investors are unlikely to exercise a redemption right unless the company is performing poorly.¹²⁰ As a result, redemption rights are costlier for low-quality companies that are more likely to be in a position in which investors want to exercise. Investors can use redemption rights as a screening mechanism to respond to adverse selection. Once the investment has been made, investors can also use the threat of exercise to deter excessive risk-taking and misbehavior by the entrepreneur, thereby mitigating the moral hazard problem.

7. Dividends

In the context of a large public company, dividends are typically used as a method to distribute cash to the company's stockholders. This is not the case for dividends in the context of a preferred stock venture financing. Preferred stock dividends are usually only payable in the event of a liquidation.¹²¹ These dividends generally come in two forms: cumulative and non-cumulative.¹²² Cumulative dividends automatically accrue every year.¹²³ Non-cumulative dividends only accrue "when and if" declared by the company's board of directors, which rarely occurs.¹²⁴ In both cases, the size of the dividend per share is equal to a percentage of the original purchase price of the preferred stock.¹²⁵

In practice, dividends are typically regarded as far less important than other terms in an equity financing and serve little to no efficiency

120. There are situations in which an investor will need to cash out of the company even if the company is performing well. For example, if the investor's limited partners are demanding liquidity. The voting threshold requirement prevents investors from using the redemption right in this type of situation. In this situation, another investor will typically purchase the shares of the investor who wants to liquidate.

121. See *NVCA Model Term Sheet*, *supra* note 81, at 2 n.4. Dividends are occasionally payable upon redemption and/or conversion to common stock. *Id.*

122. *Id.* at 2.

123. *Id.*

124. *Id.*

125. *Id.* For example, assume a company raises a Series A with a liquidation preference of \$1.00 per share and cumulative dividends of 10%. If the company has a liquidation event three years later, the liquidation preference on the Series A shares will be \$1.30 (liquidation preference = \$1.00 initial liquidation preference + 3 years * \$1.00 original purchase price * 10% dividend = \$1.30). Dividends typically do not compound.

purpose.¹²⁶ As a result, dividends are best characterized as a method of value extraction.

8. *Pay-to-Play*

A pay-to-play provision requires preferred stockholders to participate pro rata in all future equity financing rounds or suffer a variety of consequences.¹²⁷ The most severe form of punishment is converting the investor's shares of preferred stock to shares of common stock, thereby stripping the investor of all the additional rights and benefits of the preferred.¹²⁸ A less severe (but still considerable) consequence is allowing the investor to keep its preferred shares, but taking away the liquidation preference and/or anti-dilution protection of those shares.¹²⁹ The least serious punishments are to demote the investor's preferred shares to be junior with respect to all other preferred shares and/or take away the right to participate in future rounds.¹³⁰

While investors may not want to invest in a subsequent financing round for a variety of reasons,¹³¹ investors are less likely to want to invest additional money in a low-quality company. Because pay-to-play provisions incent investors to invest in subsequent rounds, these provisions are more valuable for low-quality companies. Pay-to-play provisions (or the lack thereof) can be used as a signaling mechanism to respond to adverse selection. These terms also have an effect on moral hazard because they restrict the ability of investors to withhold additional capital from an entrepreneur who is engaging in excessive risk-taking or misbehavior.

126. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017).

127. See *NVCA Model Term Sheet*, *supra* note 81, at 5–6.

128. *Id.* at 6.

129. *Id.*

130. *Id.*

131. Alternative reasons include a poor economy, a venture fund reaching the end of its investing life and an investor shifting its focus on a different industry or stage (i.e. early versus late).

9. Drag-Along

A drag-along provision allows the preferred stockholders the right to force the entrepreneur and other major holders of common stock to vote in favor of a liquidation event that has been approved by a threshold level of the preferred stockholders.¹³² A drag-along right effectively enables the preferred stockholders to decide when to liquidate the company.

Preferred stockholders are unlikely to push for a liquidation that the entrepreneur disagrees with unless the company is performing poorly. As a result, a drag-along provision is costlier for a low-quality company and therefore can be used as a signaling mechanism to respond to adverse selection. Investors can also use the threat of a forced liquidation to deter excessive risk-taking and/or misbehavior by the entrepreneur, thereby mitigating moral hazard.

10. Staged Financing

A staged financing (also known as a “tranche” or “milestone” financing), is one in which the investors contribute capital over multiple stages.¹³³ The different stages can be separated by time (with investors having the option to invest more at each stage) or can be tied to the achievement of specific technological or business milestones.¹³⁴ The use of a staged financing increases the expected return on investment due to the time value of money and reduces the risk associated with the investment if the company must achieve certain performance goals before the investors are required to commit additional capital.¹³⁵

Staged financings are costlier for low-quality companies because they are less likely to perform well during the waiting period and achieve performance milestones. Investors can therefore use staged financings to

132. See *NVCA Model Term Sheet*, *supra* note 81, at 11–12. Drag-along provisions usually apply to holders of greater than 1% of the common stock. *Id.*

133. *Id.* at 1 n.2. A staged financing is distinct from separate funding rounds such as Series A, B, etc. because the price and terms of the deal are the same across the stages.

134. *Id.* Examples of performance milestones include reaching a certain number of daily/monthly active users, hitting a revenue target or getting government approval for a product (such as FDA approval for a medical device).

135. Consider two investments, one in which an investor commits \$2 million of capital to a company on January 1, 2018, and one in which the investor commits \$1 million on January 1, 2018, and \$1 million on July 1, 2018. Assuming all else is equal, the second investment will give the investor a higher return because the investor is able to earn a market rate of return on \$1 million between January 1 and July 1.

respond to adverse selection. Staged financings also respond to moral hazard because entrepreneurs are less likely to misbehave and/or take excessive risks if they still need to secure future stages of financing.

B. DEBT FINANCINGS

Debt financings, while less studied than equity financings, play an important role in the venture financing landscape.¹³⁶ Debt financings are often used before a company raises its first equity round and in between subsequent equity rounds. As will be discussed below, the debt issued in these financings usually converts into preferred stock during the next equity round.¹³⁷ These investments can therefore be viewed as quasi-equity investments.¹³⁸ Unlike most equity financings, however, investors in a debt financing rarely receive representation on the company's board of directors. There are two primary benefits to using a debt financing relative to an equity financing: (1) a debt financing does not require the parties to determine a valuation for the company and (2) a debt financing is generally faster and much less expensive than an equity financing.¹³⁹ Debt financings allow early stage companies to postpone raising capital via an equity financing until they are more developed and can therefore secure a higher pre-money valuation.¹⁴⁰

136. The convertible debt discussed in this subpart is distinct from "venture debt" which typically describes traditional loans targeted at early-stage companies. See Darian M. Ibrahim, *Debt as Venture Capital*, 2010 U. ILL. L. REV. 1169, 1171–74 (2010).

137. See *WSGR Note Term Sheet Generator (Convertible Notes)*, WILSON SONSINI GOODRICH & ROSATI P.C., <https://www.wsgr.com/WSGR/Display.aspx?SectionName=practice/termsheet-convertible.htm> [<https://perma.cc/B5ES-XBSV>] (last visited Oct. 3, 2017) [hereinafter *WSGR Convertible Note Term Sheet Generator*]; *id.* (follow "Launch" hyperlink; then follow "About Convertible Note Financings" in the drop-down box); see also John F. Coyle & Joseph M. Green, *Contractual Innovation in Venture Capital*, 66 HASTINGS L.J. 133 (2014).

138. Another form of quasi-equity investing gaining traction in recent years is the Simple Agreement for Future Equity (SAFE). Made popular by Y Combinator (a prestigious startup accelerator), a SAFE is similar to a convertible note, but contains far less terms and is not considered a debt instrument. See *Startup Documents*, Y COMBINATOR (Feb. 2016), <https://www.ycombinator.com/documents> [<https://perma.cc/RNG7-CTZX>].

139. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017).

140. See *supra* Part II.A.1. for the benefits of a higher pre-money valuation

The remainder of this Part discusses the debt financing terms that the Article empirically analyzes in Part IV.

1. Interest Rate

The interest rate in a debt venture financing functions similarly to the interest rate in a basic loan. Interest accrues periodically on the principal of the loan as well as any accrued but unpaid interest. The main difference is interest in the venture context is generally not payable until maturity or conversion.¹⁴¹ As is the case in the basic lending context, the interest rate for a debt financing functions as the price of the deal.¹⁴² The irrelevance, direct effect, and indirect effect theories predict greater bargaining power on the part of investors should lead to higher interest rates. All three bargaining power theories predict greater bargaining power on the part of entrepreneurs leads to lower interest rates.

2. Amount Raised

The amount raised in a debt financing can be analyzed in much the same way as the amount raised in an equity financing, which is discussed in Part II.A.2. As is the case with equity financings, entrepreneurs are unlikely to raise larger amounts of capital in debt financings simply because they have greater bargaining power. As discussed in Section II.B.4, debt in the venture context typically converts into equity based on the valuation set in the next equity round. Because an entrepreneur generally expects the value of their company to increase round by round, they would not want to raise substantially more convertible debt than they predict they will need. As result, the amount raised in a debt financing is unlikely to be influenced by bargaining power.

3. Maturity

The maturity of a debt venture financing is the length of time after which the principal of the loan and any accrued interest is payable unless

141. See *WSGR Convertible Note Term Sheet Generator*, *supra* note 137 (follow “Launch” hyperlink; then follow “Notes – Interest Payments” in the drop-down box).

142. The conversion terms of the convertible debt also function as price terms in conjunction with the interest rate. See *infra* Part II.B.4.

the debt has already converted to equity.¹⁴³ If the debt has yet to convert by the maturity date, investors can either require the principal and interest be repaid or negotiate an extension of the loan.¹⁴⁴ Startups tend to spend the money they raise on expenses such as rent, salaries, and assets that cannot be easily liquidated, while at the same time generating little if any revenue. As a result, most companies will not be able to repay the principal and interest on a debt financing if they hit the maturity date before the debt converts to equity.¹⁴⁵

Over a given period of time, a low-quality company is less likely to secure a subsequent equity financing that causes their convertible debt to convert into equity. Shorter maturities are costlier for low-quality companies because they are at greater risk of hitting the maturity date before a conversion event. Investors can therefore use the length of the maturity as a screening mechanism to respond to adverse selection. Maturity length can also be used to respond to moral hazard. A company with a shorter maturity date is more likely to be in a scenario in which it has to renegotiate the loan terms with its investors, who can use the threat of requiring repayment to curb excessive risk and/or misbehavior taking by the entrepreneur.

4. Conversion

The terms that govern the conversion of debt into equity are the most important provisions in a convertible debt financing. The set of investors making convertible debt investments is mostly the same set of investors making equity investments.¹⁴⁶ These investors are looking for high risk, high return investments and therefore generally make convertible debt investments with the expectation the debt will convert into equity.¹⁴⁷ As mentioned above, convertible debt converts into equity during the next equity financing round based on the valuation set in that round.¹⁴⁸ This

143. See *WSGR Convertible Note Term Sheet Generator*, *supra* note 137 (follow “Launch” hyperlink; then follow “Notes – Term” in the drop-down box).

144. *Id.*

145. *Id.*

146. Debt investments tend to skew towards angel investors and venture capital funds focused on early stage investments.

147. These investors are not simply looking for a 5–10% debt return.

148. See *WSGR Convertible Note Term Sheet Generator*, *supra* note 137 (follow “Launch” hyperlink; then follow “Notes – Conversion” in the drop-down box).

allows convertible debt financings to largely ignore the complicated, time consuming, and contentious issue of valuation.

To compensate convertible debt investors for putting their money in earlier than equity investors, debt financings often contain a conversion discount term.¹⁴⁹ This discount reduces the effective price per share convertible debt investors end up paying upon conversion.¹⁵⁰ The conversion rate will occasionally increase with time.¹⁵¹ While less common than a conversion discount, another price reduction mechanism used in convertible debt financings is a term known as a “conversion cap.” A conversion cap places a ceiling on the valuation at which the debt will convert into equity.¹⁵² If the company receives a valuation in the next equity round above the conversion cap, the debt will convert based on the cap value.¹⁵³ Debt financings will sometimes contain both a conversion discount and a conversion cap. If this is the case, the debt will typically

149. *Id.* (follow “Launch” hyperlink; then follow “Notes – Automatic Conversion – Conversion Price” in the drop-down box).

150. For example, assume a company raises \$500,000 in convertible debt with a 10% interest rate and a 20% discount rate. One year later, the company raises its first equity financing round in which it sells shares of preferred stock at \$1.00 per share. The convertible debt would convert into preferred stock at a price of \$0.80 per share for a total of 687,500 shares (convertible debt price per share = \$1.00 equity price per share * (100% - 20% discount rate) = \$0.80 per share; number of preferred shares = \$500,000 * (1 + 10% interest) ^ 1 year / \$0.80 price per share = 687,500 shares).

151. See *WSGR Convertible Note Term Sheet Generator*, *supra* note 137, (follow “Launch” hyperlink; then follow “Notes – Automatic Conversion – Increasing Discount Tab” in the drop-down box; select “Increasing discount to price paid in qualified financing”; then follow “Next”). For example, the conversion rate might start at 20% and increase by 5% every year.

152. *Id.* (follow “Launch” hyperlink; then follow “Notes – Automatic Conversion – Valuation Cap”).

153. *Id.* In the example from *supra* note 150, instead of a 20% discount, assume the convertible debt has a \$5 million conversion cap. One year later, the company raises its first equity financing round at a \$10 million valuation with a price per share of \$1.00. In this case, the conversion cap would take effect and the debt would convert at a price per share of \$0.50 for a total of 1,100,000 shares (convertible debt price per share = \$1.00 equity price per share * \$5 million conversion cap / \$10 million valuation = \$0.50 per share; number of preferred shares = \$500,000 * (1 + 10% interest) ^ 1 year / \$0.50 price per share = 1,100,000 shares).

convert at the lower of the two prices determined by the discount and the cap.¹⁵⁴

In conjunction with the interest rate, the conversion terms function as the price of a debt financing deal. Convertible debt investors intend to become equity investors and the conversion terms determine the price at which the debt converts to equity. In addition to their price effects, the conversion terms have implications for adverse selection and moral hazard. Relative to a discount rate, a conversion cap is costlier for a high-quality company because a high-quality company is more likely to achieve a valuation that exceeds the cap. The choice between a discount and a cap can be used as a screening mechanism to respond to adverse selection. A discount that increases with time can be used as a screening mechanism as well because an increasing discount is costlier for low-quality companies that take longer to convert their debt into equity. An increasing discount can also mitigate moral hazard because an entrepreneur is less likely to engage in wasteful post-investment misbehavior if the price of the investment continues to rise over time.

5. Warrants

A warrant gives an investor the right to purchase extra shares of the company at a specified price.¹⁵⁵ In this sense, a warrant functions like a standard call option.¹⁵⁶ Warrants are generally exercisable for preferred stock sold in the next equity financing round, but are sometimes exercisable for common stock.¹⁵⁷ The number of shares available for purchase is typically a percentage of the principal amount of the loan and any accrued interest.¹⁵⁸ The exercise price can range from the price set in

154. In the example from *supra* note 150, if the debt has both a 20% discount and a \$5 million cap, the discount price would be \$0.80 per share whereas the cap price would be \$0.50 per share. The debt would therefore convert at \$0.50 per share.

155. See *WSGR Convertible Note Term Sheet Generator*, *supra* note 137 (follow “Launch” hyperlink; then follow “Warrants” in the drop-down box).

156. A call option is a standard security that gives the holder a right to purchase another security (usually a share of stock) at a specified price (known as the strike price) for a specified amount of time.

157. See *WSGR Convertible Note Term Sheet Generator*, *supra* note 137 (follow “Launch” hyperlink; then follow “Warrants – Shares” in the drop-down box).

158. *Id.* (follow “Launch” hyperlink; then follow “Warrants – Share Amount” in the drop-down box). For example, a loan of \$500,000 with 10% interest and 10% warrant coverage would enable the investor to purchase up to \$55,000 of stock after one year

the next equity round to a *de minimis* price such as \$0.01.¹⁵⁹ Warrants are primarily used to increase an investor's potential equity stake in the company (sometimes at a very low price) and therefore are primarily a method of value extraction.

6. Collateral

Collateral in the venture financing context functions similarly to collateral in the basic lending context. Debt secured by collateral is placed ahead of general creditors with respect to recovery from the collateral.¹⁶⁰ Because startups lack common forms of collateral such as physical assets and accounts receivable, convertible debt is often secured by the company's intellectual property. In some rare cases, investors will require an entrepreneur to secure a loan with a portion of their personal assets. Securing convertible debt is costlier for low-quality companies because they are more likely to default on their obligations and have their collateral seized. Investors can use collateral requirements as a screening mechanism to respond to adverse selection. Collateral can also respond to moral hazard because an entrepreneur is less likely to take excessive risk and engage in wasteful post-investment misbehavior if important assets are pledged as collateral, especially if those assets belong to the entrepreneur personally.

7. Subordination

A company's existing creditors may require convertible debt in a venture financing be subordinated to their interests.¹⁶¹ Alternatively, future creditors may require subordination of existing convertible debt as a requirement to lend.¹⁶² Subordination is primarily determined by the relative positions and interests of a company's multiple creditors and

(warrant coverage = \$500,000 loan * (1 + 10% interest) ^ 1 year * 10% warrant coverage = \$55,000).

159. *Id.* (follow "Launch" hyperlink; then follow "Warrants – Exercise Price" in the drop-down box).

160. *Id.* (follow "Launch" hyperlink; then follow "Security Interest" in the drop-down box).

161. *Id.* (follow "Launch" hyperlink; then follow "Subordination" in the drop-down box).

162. *Id.*

therefore is unlikely to be affected by the bargaining power relationship between the company and the investors.

8. Repayment Multiple

A repayment multiple requires a company to pay investors a multiple of the loan amount in addition to accrued interest in the event the loan is repaid instead of converting to equity.¹⁶³ Repayment multiples increase the cost of repayment relative to conversion. A low-quality company is less likely to achieve a subsequent equity financing that results in conversion, and therefore a repayment multiple carries a heavier cost. Investors can use repayment multiples to screen for company quality in the presence of adverse selection.

9. Staged Financing

Staged debt financings function the same way as staged equity financings discussed in Part II.A.10 and have the same implications for adverse selection and moral hazard.

III. METHODOLOGY AND DATA

To resolve the disagreement between the three theories of bargaining power discussed in Part I, this Article empirically examines the connection between terms in venture financing contracts and a measure of the relative bargaining power between entrepreneurs and investors. This Part discusses the Article's empirical methodology and describes the empirical data. Subpart A discusses the independent variable of interest used to represent bargaining power, Subpart B discusses the dependent variables used to represent contract design, and Subpart C describes the venturing financing data.

163. *Id.* (follow "Launch" hyperlink; then follow "Notes – Repayment Premium on Change of Control or IPO" in the drop-down box). For example, a loan of \$1 million with a 1.2X multiple would require repayment of \$1.2 million, plus interest.

A. INDEPENDENT VARIABLE: SUPPLY OF VENTURE CAPITAL

To empirically test the connection between bargaining power and contract design, the Article needs a measure of the relative bargaining power between entrepreneurs and investors. While there is some disagreement in the negotiation and contract literature over how to define and measure bargaining power,¹⁶⁴ it is commonly characterized as the negotiating force between the parties and is intrinsically tied to each party's best alternative to the negotiated agreement (BATNA).¹⁶⁵ The better a party's BATNA, the stronger their bargaining power. Depending on the contracting context, there will be different sources of bargaining power that contribute to the overall relative bargaining power between the parties.¹⁶⁶

In the venture financing context, numerous sources determine the relative bargaining power between the entrepreneur and investors. Some sources only affect the specific entrepreneur and investors at hand (such as the quality and popularity of the entrepreneur's product), whereas other sources affect all entrepreneurs and investors (such as the overall strength of the economy). In interviews with experienced venture attorneys, they described a wide range of sources that affect bargaining power in venture financings, including: the market opportunity for the company's product, the development level of the product, the entrepreneur's level of experience, the lead investor's level of experience, the quality of the engineering team, the stage of the investment, whether the company went through an accelerator program such as Y Combinator, the supply of available venture capital, the exit environment, the strength and number of the company's competitors, the number of investors interested in the

164. See LAX & SEBENIUS, *supra* note 22, at 249; RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 101–04 (3d ed. 1986); Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1674; Duncan Kennedy, *Distributive and Paternalist Motives in Contract and Tort Law, with Special References to Compulsory Terms and Unequal Bargaining Power*, 41 MD. L. REV. 563, 623 (1982).

165. FISHER ET AL., *supra* note 22, at 97–105; Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1675.

166. Some scholars have attempted to classify the sources of bargaining power. For example, Choi & Triantis break the sources of bargaining power into five categories: “(1) demand and supply conditions, (2) market concentration, (3) private information, (4) patience and risk aversion, and (5) negotiating skills and strategy.” See Choi & Triantis, *Bargaining Power*, *supra* note 1, at 1675–76.

company, the trendiness of the company's industry, the regulatory environment, and the relative experience of the attorneys on both sides.¹⁶⁷

This Article uses the total supply of venture capital as a measure of the relative bargaining power between entrepreneurs and investors. The greater the total supply of venture capital, the greater the entrepreneur's bargaining power. When there is more available venture capital, bargaining power shifts towards the entrepreneur because there are more investors and more capital competing to invest in startup companies, thereby improving the entrepreneur's BATNA. While demand for venture capital (i.e. the number of startups seeking financing and the amount of financing they are seeking) can increase in response to the increase in supply, demand changes more slowly than supply because entrepreneurs first have to start and grow companies.¹⁶⁸ There are a number of advantages to using venture supply to represent bargaining power. First, the supply of venture capital will affect the relative bargaining power in all financings. Other, more idiosyncratic sources may only affect bargaining power in a subset of financings. Second, venture financing supply is quantifiable and therefore lends itself well to empirical analysis. Third, venture financing supply affects bargaining power in both equity and debt financings.¹⁶⁹ Fourth, the use of venture financing supply to represent bargaining power is consistent with prior empirical research in the venture financing context.¹⁷⁰

Venture financing supply is measured by the total one-year lagged limited partner inflows to U.S. venture capital firms.¹⁷¹ The Article uses inflows to U.S. venture capital firms because almost all of the companies in the sample are located in the U.S.¹⁷² One-year lagging is necessary to

167. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017); Interview with Anonymous Source, in Palo Alto, Cal. (Apr. 17, 2017).

168. See Gompers & Lerner, *supra* note 26, at 282–84.

169. The same set of investors is generally making both equity and debt venture investments and these investors received their capital from the same broad set of sources.

170. See Gompers & Lerner, *supra* note 26, at 282–83; Raghavan, *supra* note 26, at 50–51.

171. Adjusting all dollar values to 2015 dollars accounts for inflation.

172. U.S. companies represent over 95% of the equity financings and over 97% of the debt financings. See *infra* Appendix.

account for the seasonality of limited partner contributions.¹⁷³ For the empirical analyses, the Article uses the log of the lagged inflows as the independent variable.¹⁷⁴ This measure of venture supply is consistent with prior empirical research.¹⁷⁵

The data on venture financing inflows were obtained from Thomson ONE, a financial information database maintained by Thomson Reuters.¹⁷⁶ Thomson ONE collects information on limited partner contributions to U.S. venture capital firms and reports the aggregate amount.

Chart 1 shows the one-year lagged inflows by quarter from 2004 to 2015 in billions of 2015 U.S. dollars.¹⁷⁷

173. A disproportionate percentage of limited partner contributions to venture capital firms take place in the fourth quarter of the year. *See* Gompers & Lerner, *supra* note 26, at 294; Raghavan, *supra* note 26, at 13.

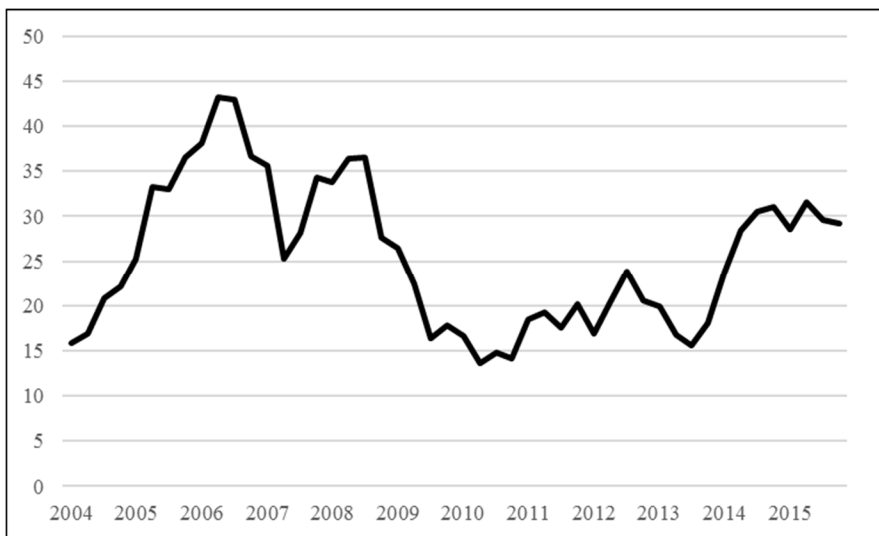
174. Using a log transformation helps to account for the positive skew of the inflow data by bringing the distribution closer to a normal distribution. A log transformation also helps with interpretation of regression results by enabling analysis of percentile changes in the transformed variable. *See generally* *How Can I Interpret Log Transformed Variables in Terms of Percent Change in Linear Regression?* | *SAS FAQ*, UCLA INST. FOR DIGITAL RES., <https://stats.idre.ucla.edu/sas/faq/how-can-i-interpret-log-transformed-variables-in-terms-of-percent-change-in-linear-regression> [<https://perma.cc/RNU3-7HMX>] (last visited Oct. 4, 2017).

175. *See* Gompers & Lerner, *supra* note 26, at 294; Raghavan, *supra* note 26, at 13.

176. *See* Thomson ONE, THOMSON REUTERS, <https://www.thomsonone.com> [<https://perma.cc/4QNQ-VGMZ>] (last visited Oct. 4, 2017).

177. Inflow data is presented quarterly because the financing dates in the empirical sample are given by quarter.

Chart 1: Lagged Venture Financing Inflows 2004–2015 (\$B2015)



B. DEPENDENT VARIABLES: VENTURE FINANCING CONTRACT TERMS

This Article uses multiple terms from venture financing contracts as dependent variables to test how contract design responds to changes in bargaining power. Tables 1 and 2 describe the dependent variables for equity and debt financings, respectively. The tables list the primary functions of the variables in venture financings: price, efficiency (a response to moral hazard and/or adverse selection) or value extraction.

Table 1: Equity Financing Dependent Variables

Dependent Variable	Type	Description	Function
Log Pre-Money Valuation	Continuous	Log of the pre-money valuation in \$M2015	Price
Log Amount Raised	Continuous	Log of the amount raised in \$M2015	N/A
Liquidation Preference	Ordered Categorical ¹⁷⁸	Whether the liquidation	Value Extraction

178. The coding values for the ordered categorical variables are contained in the Appendix.

		preference is senior, pari-passu, or junior	
Preference Multiple	Bounded	The size of the liquidation preference multiple	Efficiency
Participation	Binary	Whether the preferred stock participates	Value Extraction
Participation Cap	Binary	Whether there is a cap on participation	Efficiency
Participation Cap Size	Bounded	The size of the participation cap	Efficiency
Anti-Dilution	Ordered Categorical	Whether the anti-dilution protection is full ratchet, narrow based weighted average, broad based weighted average, or none	Efficiency
Redemption	Binary	Whether there is a redemption provision	Efficiency
Dividends	Ordered Categorical	Whether the dividends are cumulative, non-cumulative, or none	Value Extraction
Dividend Rate	Bounded	The dividend percentage rate	Value Extraction
Pay-to-Play	Binary	Whether there is a pay-to-play provision	Efficiency
Pay-to-Play Punishment	Ordered Categorical	Whether the pay-to-play punishment is conversion to junior preferred, loss of liquidation preference, or conversion to common stock	Efficiency

Drag-Along	Binary	Whether there is a drag-along provision	Efficiency
Staged Financing	Binary	Whether the financing is staged	Efficiency

Table 2: Debt Financing Dependent Variables

Dependent Variable	Type	Description	Function
Interest Rate	Bounded	The interest percentage rate	Price
Log Amount Raised	Continuous	Log of the amount raised in \$M2015	N/A
Maturity ¹⁷⁹	Ordered Categorical	Whether the maturity is less than six months, between six months and one year, one year, or greater than one year	Efficiency
Conversion	Binary	Whether the debt is convertible into equity	Efficiency
Conversion Discount	Binary	Whether the debt converts at a discount	Price/ Efficiency
Discount Rate	Bounded	The size of the conversion discount rate	Price
Increasing Discount	Binary	Whether the conversion discount rate increases with time	Efficiency
Conversion Cap	Binary	Whether there is a conversion cap	Price/ Efficiency

179. This is an ordered categorical variable instead of a bounded or continuous variable because maturities are coded categorically in the empirical sample.

Warrants	Binary	Whether warrants were issued	Value Extraction
Collateral	Binary	Whether the debt is collateralized	Efficiency
Subordination	Binary	Whether the debt is subordinated	N/A
Repayment Multiple	Binary	Whether there is a repayment multiple	Efficiency
Repayment Multiple Size	Bounded	The size of the repayment multiple	Efficiency
Staged Financing	Binary	Whether the financing is staged	Efficiency

C. VENTURING FINANCING DATA

This Article uses an original empirical sample of 5,564 venture financings (4,075 equity financings and 1,489 debt financings) ranging from 2004 to 2015.¹⁸⁰ The data for these financings were collected by an international law firm.¹⁸¹ For each financing, the firm represented the entrepreneur. At the completion of each financing, the entrepreneur's attorney would record a broad set of contractual and descriptive data for the deal, including the data used for the dependent and control variables described in Subparts B and C. Data for every variable is not available for every financing, so most of the regressions are based on subsets of financings.¹⁸²

Using data collected by a single law firm or a small set of firms is common in the empirical literature on contractual provisions.¹⁸³ That being said, there are advantages and disadvantages to using a dataset

180. This dataset is substantially larger than previous studies of venture financing contracts. See Raghavan, *supra* note 26, at 49–50 n.12 and accompanying text.

181. In the interest of the firm's privacy and the privacy of its clients, the Article omits the firm's name. The firm anonymized the data before providing the dataset to the author. Companies and investors in the dataset are identified using alphanumeric strings, and as a result their real identities are protected.

182. Raghavan, *supra* note 26, at 49–50. This is consistent with prior empirical research on venture financing contract terms. *Id.*

183. See, e.g., Kaplan & Stromberg, *Characteristics, Contracts, and Actions*, *supra* note 12; Kaplan & Stromberg, *Financial Contracting Theory Meets the Real World*, *supra* note 12.

compiled by one law firm. The primary disadvantage is the possibility that the sample is not representative of venture financings that do not involve the particular firm. If this is the case, the results drawn from this sample may not translate to venture financings more broadly. This concern, however, is mitigated in the following ways. First, entrepreneurs in the U.S. are typically represented by a law firm by the time they raise venture capital, especially institutional capital.¹⁸⁴ As a result, most venture financings will involve a law firm negotiating contract provisions on behalf of the entrepreneur. Second, in the context of venture financings, most established law firms approach the representation of entrepreneurs in a similar manner. While negotiating strategies and contractual preferences will differ from firm to firm and lawyer to lawyer, these differences are likely small compared to the high degree of similarity in representation.¹⁸⁵ Third, while the choice of law firm may have some effect on contract design, it is unlikely to change the fundamental relationship between bargaining power and contract design that is the focus of this Article. Fourth, this sample is very broad. It contains thousands of financings from 2004–2015 involving thousands of different companies. These companies come from dozens of states and operate in numerous industries. The financings range from small seed stage investments at the beginning of a company's life to massive late stage investments before a company goes public. The breadth of the sample increases the likelihood it is representative of venturing financings as a whole.

There are two primary advantages to using financing data collected by a law firm. First, the data on contract provisions in this sample are far more granular than contract data from alternative sources such as online venture databases. This sample contains substantial data on non-price terms, which are relatively rare and difficult to obtain. Second, the data in this sample have a high degree of reliability. The data for each financing were recorded by an attorney familiar with the financing at the time of the financing's conclusion. This method of data collection is likely to result in data that is more reliable than data from alternative sources.¹⁸⁶

184. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017).

185. *Id.*

186. See Raghavan, *supra* note 26, at 50, 50 n.11 (citing Steven N. Kaplan et al., How Well Do Venture Capital Databases Reflect Actual Investments? (Sept. 2002) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=939073 [<https://perma.cc/4WRV-P67N>]).

Summary statistics for the empirical sample are contained in the Appendix.

IV. RESULTS AND DISCUSSION

This Part presents the empirical results and discusses them in the context of the three bargaining power theories from Part I.

Table 3 presents the results of each dependent variable in the equity financing sample being regressed on the log of venture financing inflows using an ordinary least squares (OLS) regression that controls for the company's industry¹⁸⁷, the location of the company's headquarters¹⁸⁸, the type of lead investor¹⁸⁹ (venture capital firm, angel investor, or strategic investor¹⁹⁰), and the round of financing (e.g. Series A, B, etc.).¹⁹¹ The

187. The company's industry is included as a control variable because standard contract terms can differ by industry. In addition, the trendiness of the company's industry can have a substantial effect on bargaining power. For example, most venture investors are currently much more interested in investing in artificial intelligence software startups than physical consumer product startups. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017); Interview with Anonymous Source, in Palo Alto, Cal. (Apr. 17, 2017).

188. The location of the company's headquarters is included as a control variable because there is a strong preference among investors for companies located in technology hubs such as Silicon Valley, Seattle, or New York. In addition, there are regional preferences for certain contract terms. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017).

189. The lead investor's type is included as a control variable because different types of investors prefer to invest in different types of companies and have different preferences with respect to contract terms. For example, angel investors typically care far less about control terms and tend to invest in earlier stage companies. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017). The Article focuses on the lead investor because this investor typically manages the contract negotiation process. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); *see also* Raghavan, *supra* note 26, at 12 (citing Rajarishi Nahata, *Venture Capital Reputation and Investment Performance*, 90 J. FIN. ECON. 127, 131 (2008)).

190. "Strategic investor" is a term used to describe in-house venture investment teams at companies such as Google.

191. Round of financing is included as a control variable because standard contract terms differ by round. In addition, entrepreneurs tend to have more bargaining power in later rounds because by that point the company has shown some level of success.

regressions use standard errors clustered at the company level. Some companies appear multiple times in the sample for different rounds of financing. Venture financing terms (like many terms in repeat contracts) are often “sticky,” and as a result a term is more likely to appear in a subsequent financing if it appeared in a prior financing.¹⁹² Clustering standard errors at the company level helps mitigate this issue.¹⁹³

Table 3: OLS Regression Results for Equity Financings

Dependent Variable	Log Inflows	Observations	R-Squared
Log Pre-Money Valuation	0.1355** (0.0629)	3,501	0.43
Log Amount Raised	0.0774 (0.0543)	4,063	0.39
Liquidation Preference	-0.0367 (0.0339)	2,484	0.06
Preference Multiple	0.0222 (0.0222)	3,527	0.03
Participation	0.0149 (0.0254)	3,853	0.08
Participation Cap	0.0066 (0.0380)	1,627	0.05
Participation Cap Size	-0.0684 (0.0822)	684	0.08
Anti-Dilution	-0.0228	3,835	0.05

Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Telephone Interview with Anonymous Source (Apr. 13, 2017). The empirical sample also contained data on the stage of the company’s financing (*e.g.* early, middle, late, etc.) and stage of development (*e.g.* startup, product development, selling product etc.). Categories within these variables, however, were not consistently applied and therefore the data were not reliable enough to use in the regression analyses.

192. Telephone Interview with Anonymous Source (Apr. 13, 2017).

193. See A. Colin Cameron & Douglas L. Miller, A Practitioner’s Guide to Cluster-Robust Inference 2–3 (2015) (unpublished manuscript), http://cameron.econ.ucdavis.edu/research/Cameron_Miller_JHR_2015_February.pdf [<https://perma.cc/6NY3-GQ3A>]. Clustered standard errors help account for the fact that the terms across multiple deals for the same company are more likely to be similar by “clustering” these deals together for purpose of the regression analysis.

	(0.0264)		
Redemption	0.0131 (0.0210)	3,939	0.10
Dividends	-0.0480** (0.0222)	3,916	0.09
Dividend Rate	-0.0066 (0.0706)	3,226	0.02
Pay-to-Play	-0.0157 (0.0156)	3,907	0.06
Pay-to-Play Punishment	-0.0250 (0.0430)	261	0.08
Drag-Along	-0.1008*** (0.0302)	2,863	0.08
Staged Financing	-0.0009 (0.0134)	4,075	0.04

Statistical Significance Levels: * = 10%, ** = 5%, *** = 1%

As can be seen in Table 3, the log of venture financing inflows has a statistically significant relationship with the following dependent variables in the equity financing sample: log of pre-money valuation, dividends, and drag-along.

Table 4 presents the results of each dependent variable in the debt financing sample being regressed on the log of venture financing inflows using an OLS regression that controls for the company's industry, the company's location, the type of lead investor, the prior round of financing,¹⁹⁴ and the one-year treasury rate.¹⁹⁵ Like the equity regressions, the debt regressions use standard errors clustered at the company level.

Table 4: OLS Regression Results for Debt Financings

Dependent Variable	Log Inflows	Observations	R-Squared
Interest Rate	-1.2214*** (0.3479)	1,071	0.15

194. Prior round of financing is included as a control variable for the same reason round of financing is included in the equity regressions. Debt financings are not specified by round, however, so prior round is used instead.

195. The treasury rate is included as a control variable because it represents the risk-free borrowing rate and therefore is often used as a baseline for setting interest rates. The Article uses the one-year rate to match the standard length of a venture debt investment.

Log Amount Raised	0.1892 (0.1281)	1,488	0.29
Maturity	0.2681** (0.1069)	1,054	0.18
Conversion	-0.0738** (0.0297)	1,086	0.06
Conversion Discount	0.2347*** (0.0581)	988	0.17
Discount Rate	-8.0502*** (2.9570)	638	0.08
Increasing Discount	-0.0975* (0.0587)	585	0.08
Conversion Cap	0.0705 (0.0680)	849	0.33
Warrants	-0.1848*** (0.0464)	1,457	0.18
Collateral	-0.0691 (0.0436)	1,489	0.13
Subordination	-0.0480 (0.0567)	1,076	0.20
Repayment Multiple	-0.0730 (0.0455)	1,062	0.06
Repayment Multiple Size	1.5932 (1.4905)	177	0.22
Staged Financing	0.0151 (0.0251)	1,489	0.06

Statistical Significance Levels: * = 10%, ** = 5%, *** = 1%

As can be seen in Table 4, the log of venture financing inflows has a statistically significant relationship with the following dependent variables in the debt financing sample: interest rate, maturity, conversion, conversion discount, discount rate, increasing discount, and warrants.

For robustness, the bounded independent variables (both equity and debt) are also tested using tobit regressions, the binary variables using probit regressions, and the ordered categorical variables using ordered probit regressions. The results of these unreported regressions are consistent with the OLS results presented in Tables 3 and 4.

Price

Tables 3 and 4 show a statistically significant positive relationship between venture financing inflows and price. In both equity and debt financings, a greater supply of venture capital is associated with better prices for entrepreneurs—higher pre-money valuations in equity financings and lower interest rates and discount rates in debt financings. These results are consistent with findings from previous studies showing that there is a positive relationship between bargaining power and price.¹⁹⁶ All three theories of bargaining power discussed in Part I predict this relationship between inflows and price.

Irrelevance Theory

As discussed in Part I.A, the irrelevance theory contends that bargaining power has no effect on non-price terms. The irrelevance theory therefore predicts that venture financing inflows are not connected with non-price terms in venture financing contracts. The results presented in Tables 3 and 4, however, contradict this core assertion of the irrelevance theory. In both equity and debt financings, the supply of venture capital has a statistically significant relationship with non-price terms. These results are further evidence that the irrelevance theory is not an accurate description of how bargaining power affects contract design in the real world.

Direct Effect Theory

As discussed in Part I.B, the direct effect theory claims that parties use their bargaining power to directly advocate for more favorable non-price terms, including value-extraction terms that do not enhance the overall efficiency of the contract. The direct effect theory makes the following two empirical predictions:

- (1) Venture financing inflows are broadly connected with a variety of non-price terms in venture financing contracts.
- (2) Venture financing inflows are connected with non-price value-extraction terms that do not enhance contract efficiency.

196. See sources cited *supra* note 26; Marotta-Wurgler, *supra* note 25, at 447–51; Priest, *supra* note 2, at 1298, 1320–21.

The results do not support the direct effect theory's first prediction that venture financing inflows are broadly connected with non-price terms. This is especially true in the equity financing sample. Inflows appear to be related to specific non-price terms rather than non-price terms generally.

The results raise an interesting question as to why venture financing inflows are associated with certain non-price terms but not others. If parties use bargaining power to directly advocate for more favorable non-price terms, then why do many terms show no connection with venture financing inflows? The beginning of an answer to this question may be found in a point consistently raised by experienced venture practitioners: different sources of bargaining power affect different terms.¹⁹⁷ For example, one attorney noted that the quality and popularity of a company's product will have a large effect on pre-money valuation but will have relatively little effect on non-price terms related to control of the company.¹⁹⁸ On the other hand, the entrepreneur's level of experience is unlikely to affect price but will substantially impact negotiations regarding control.¹⁹⁹ Based on this reasoning, it is possible that venture financing inflows only affect a subset of contract terms and that the other terms are potentially influenced by other sources of bargaining power such as product quality and entrepreneur experience. Understanding the extent of these other relationships is beyond the scope of this Article. The conclusion below proposes additional research to explore this concept.

The results support the direct effect theory's second prediction that venture financing inflows are connected with non-price value-extraction terms that do not enhance efficiency. Table 3 shows inflows have a negative relationship with dividends in equity financings. A greater supply of venture capital is associated with dividend terms that are more favorable for entrepreneurs. Table 4 shows inflows have a negative relationship with the use of warrants in debt financings. A greater supply of venture capital is associated with less use of warrants. Both dividends and warrants are terms used for value extraction.

197. Interview with Anonymous Source, in Palo Alto, Cal. (Mar. 29, 2017); Interview with Anonymous Source, in Mountain View, Cal. (Apr. 13, 2017); Interview with Anonymous Source in Palo Alto, Cal. (Apr. 17, 2017).

198. Interview with Anonymous Source in Palo Alto, Cal. (Apr. 17, 2017).

199. *Id.*

Indirect Effect Theory

As discussed in Part I.C, the indirect effect theory claims that bargaining power has an indirect effect on contract design by affecting the price of the contract, which in turn alters the severity of adverse selection and moral hazard and, by extension, the terms that respond to these problems. The indirect effect theory makes the following two empirical predictions:

- (1) Venture financing inflows are connected with non-price terms that enhance contract efficiency by responding to adverse selection and/or moral hazard.
- (2) Venture financing inflows are not connected with non-price value-extraction terms that do not enhance contract efficiency. This prediction is in opposition with the second prediction of the direct effect theory.

The results provide some support for the indirect effect theory's first prediction that venture financing inflows are connected with non-price terms that respond to adverse selection and/or moral hazard. Table 3 shows a negative relationship between inflows and drag-along provisions in equity financings. A greater supply of venture capital is associated with less use of drag-along rights. Table 4 shows a positive relationship between inflows and maturity length in debt financings, as well as whether debt converts at a discount. Table 4 also shows a negative relationship between inflows and whether conversion discounts increase with time. A greater supply of venture capital is associated with longer maturities, more debt converting at a discount, and fewer conversion discounts increasing with time. All of these terms respond to adverse selection and/or moral hazard. Yet numerous terms that respond to adverse selection and/or moral hazard are not associated with inflows; most notably, participation and anti-dilution provisions in equity financings, the use of collateral in debt financings, and staged financings in both equity and debt financings.

The results do not support the indirect effect theory's second prediction that venture financing inflows are not connected with non-price value-extraction terms that do not enhance efficiency. As discussed above, venture financing inflows are connected with dividends in equity financings and warrants in debt financings, both of which are value-extraction terms that do not respond to adverse selection and/or moral hazard.

The results paint a picture that resembles a combination of the direct and indirect effect theories. The irrelevance theory, on the other hand, ultimately fails to describe real-world contracting because of the failure of its core assumption of perfect contracting conditions. Venture financings, like all real-world contracting contexts, contain numerous contracting imperfections such as imperfect information and transaction costs. In the presence of these imperfections, the irrelevance theory's namesake assertion that bargaining power is irrelevant to contract design does not hold true.

While it is possible that the connections between venture financing inflows and non-price terms observed in the results are driven entirely by the direct effect mechanism, the more likely explanation is that the mechanisms proposed by both the direct and indirect effect theories are at play in the venture financing context.²⁰⁰ Both the direct and indirect effect theories argue that bargaining power affects contract design because of the lack of perfect contracting conditions assumed by the irrelevance theory. Due to contracting imperfections such as imperfect information and transaction costs, the direct effect theory claims that parties will be unable to determine and/or achieve the value-maximizing contract design and as a result will use their bargaining power to extract value via advantageous terms. The indirect effect theory claims these contracting imperfections lead to moral hazard and adverse selection and that the parties adjust the non-price terms to respond to these problems. The results of this Article suggest that imperfect contracting conditions result in bargaining power having both direct and indirect effects on venture financing contract design.

CONCLUSION

This Article theoretically and empirically analyzed the connection between bargaining power and contract design using an original dataset of over 5,500 equity and debt venture financings from 2004–2015. The Article framed this analysis within the context of three competing theories regarding the connection between bargaining power and contract design: the irrelevance, direct effect, and indirect effect theories. Using the total

200. It is not possible that indirect effects are responsible for all of the connections seen in the results because the indirect effect theory does not contemplate a relationship between bargaining power and value-extraction terms that do not respond to adverse selection and/or moral hazard.

supply of venture capital in the U.S. as a measure of the relative bargaining power between entrepreneurs and investors, the Article finds that venture financing supply has a statistically significant relationship with price and non-price terms in both equity and debt financings. These results contradict the irrelevance theory, which contends that bargaining power only affects price, not non-price terms. The irrelevance theory fails to describe real-world contracting due to the failure of its core assumption of perfect contracting conditions. The results also provide support for the direct and indirect effect theories and suggest that bargaining power has both direct and indirect effects on contract design in the venture financing context.

The results of this study have significant implications for entrepreneurs, investors, and attorneys. The supply of venture capital is connected to the price of venture financings as well as certain non-price terms. The parties to a financing (and their lawyers) should be aware of these connections before they sit down at the negotiating table. In particular, entrepreneurs would be well served by understanding how market conditions affect financing terms when planning and negotiating their fundraisings. Looking more broadly, parties in any contracting context will be better equipped to reach value-maximizing agreements if they understand how different sources of bargaining power are related to contract terms.

Developing a better understanding of how different sources of bargaining power are related to contract terms requires additional research. First, research on negotiating strategies and norms is critical for understanding the mechanisms through which sources of bargaining power can influence contract design. For example, in the venture financing context, important questions include: (1) who negotiates which terms (clients vs. lawyers) and when are these terms negotiated, (2) how often and under what circumstances do parties trade changes in non-price terms for changes in price, and (3) how do entrepreneurs and investors interpret signals sent by each other during negotiations? Practitioner interviews and surveys will shed light on these and similar questions. Testing the connections between different sources of bargaining power and contract terms, on the other hand, will require additional empirical analyses similar to those conducted in this Article. In the venture financing context, protective provisions and board seats are critical non-price terms that deserve empirical investigation. With respect to sources of bargaining power, it would be interesting to examine less-studied qualitative sources such as product quality, entrepreneur experience, and industry trendiness.

APPENDIX

DEPENDENT VARIABLE CODING

This section contains the coding values for the ordered categorical dependent variables.

Liquidation Preference

Value	Category
1	Junior
2	Pari-Passu
3	Senior

Anti-Dilution

Value	Category
1	None
2	Weighted Average Broad Based
3	Weighted Average Narrow Based
4	Full Ratchet

Dividends

Value	Category
1	None
2	Non-Cumulative
3	Cumulative

Pay-to-Play Punishment

Value	Category
1	Convert to Common
2	Lose Liquidation Preference
3	Convert to Junior Preferred

Maturity

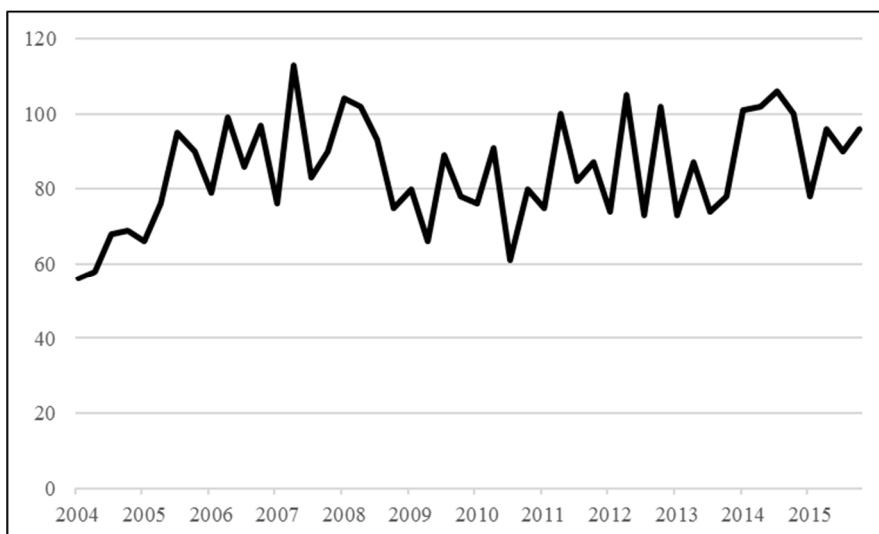
Value	Category
1	Less than six months

2	Between six months and one year
3	One year
4	Greater than one year

EQUITY FINANCING SUMMARY STATISTICS

This section provides summary statistics for the empirical sample of 4,075 equity financings ranging from 2004 to 2015.

Number of Closings Per Quarter (2004–2015)



Company Industry

Industry	Frequency	Percentage
Clean Technology and Renewable Energy	287	7.04
Communications and Networking	469	11.51
Electronics and Computer Hardware	221	5.42
Financial Institutions*	32	0.79
Life Sciences	875	21.47
Media and Information Services	397	9.74
Nanotechnology*	15	0.37
Retail and Non-Technology Products	213	5.23
Semiconductors	177	4.34

Services	307	7.53
Software	1,065	26.13
Other	17	0.42
Total	4,075	100

* For the regression analyses, these industries are included in the “Other” category because they represent less than 1% of the total sample.

Location of Company Headquarters

Location	Frequency	Percentage
AZ - Arizona	12	0.29
CA - California*	2,611	64.07
CO - Colorado	40	0.98
CT - Connecticut	5	0.12
DC - District of Columbia	9	0.22
FL - Florida	11	0.27
GA - Georgia	13	0.32
HI - Hawaii	3	0.07
IA - Iowa	4	0.1
ID - Idaho	1	0.02
IL - Illinois	11	0.27
IN - Indiana	12	0.29
KY - Kentucky	4	0.1
LA - Louisiana	1	0.02
MA - Massachusetts	23	0.56
MD - Maryland	23	0.56
ME - Maine	1	0.02
MI - Michigan	5	0.12
MN - Minnesota	6	0.15
MO - Missouri	4	0.1
MT - Montana	2	0.05
NC - North Carolina	16	0.39
NH - New Hampshire	2	0.05
NJ - New Jersey	12	0.29
NM - New Mexico	3	0.07
NV - Nevada	14	0.34

NY - New York*	166	4.07
OH - Ohio	6	0.15
OK - Oklahoma	6	0.15
OR - Oregon	20	0.49
PA - Pennsylvania	19	0.47
RI - Rhode Island	1	0.02
SC - South Carolina	2	0.05
SD - South Dakota	1	0.02
TN - Tennessee	3	0.07
TX - Texas*	352	8.64
UT - Utah*	57	1.4
VA - Virginia	25	0.61
VT - Vermont	2	0.05
WA - Washington*	383	9.4
WI - Wisconsin	4	0.1
WV - West Virginia	3	0.07
Foreign*	177	4.34
Total	4,075	100

* These locations are included in the regression analyses because they represent more than 1% of the total sample.

Lead Investor Type

Investor Type	Frequency	Percentage
Angel	595	14.6
Strategic/Corporate	469	11.51
Venture Capital	2,888	70.87
Unknown	123	3.02
Total	4,075	100

Round

Round	Frequency	Percentage
Seed	250	6.13
A	1,411	34.63
B	840	20.61
C	567	13.91

D	288	7.07
E	134	3.29
F or higher	99	2.43
Unknown	486	11.93
Total	4,075	100

Liquidation Preference

Liquidation Preference	Frequency	Percentage
Junior	11	0.44
Pari-Passu	1,274	51.29
Senior	1,199	48.27
Total	2,484	100

Participation

Participation	Frequency	Percentage
No	2,226	57.77
Yes	1,627	42.23
Total	3,853	100

Participation Cap

Participation Cap	Frequency	Percentage
No	861	52.92
Yes	766	47.08
Total	1,627	100

Anti-Dilution

Anti-Dilution	Frequency	Percentage
None	285	7.43
Weighted Average Broad Based	3,256	84.9
Weighted Average Narrow Based	179	4.67
Full Ratchet	115	3.00
Total	3,835	100

Redemption

Redemption	Frequency	Percentage
No	3,060	77.68
Yes	879	22.32
Total	3,939	100

Dividends

Dividends	Frequency	Percentage
None	470	12.00
Non-Cumulative	3,110	79.42
Cumulative	336	8.58
Total	3,916	100

Pay-to-Play

Pay-to-Play	Frequency	Percentage
No	3,563	91.20
Yes	344	8.80
Total	3,907	100

Pay-to-Play Punishment

Pay-to-Play Punishment	Frequency	Percentage
Convert to Common	243	93.1
Lose Liquidation Preference	15	5.75
Convert to Junior Preferred	3	1.15
Total	261	100

Drag-Along

Drag-Along	Frequency	Percentage
No	1,201	41.95
Yes	1,662	58.05
Total	2,863	100

Staged Financing

Staged Financing	Frequency	Percentage
No	3,763	92.34
Yes	312	7.66
Total	4,075	100

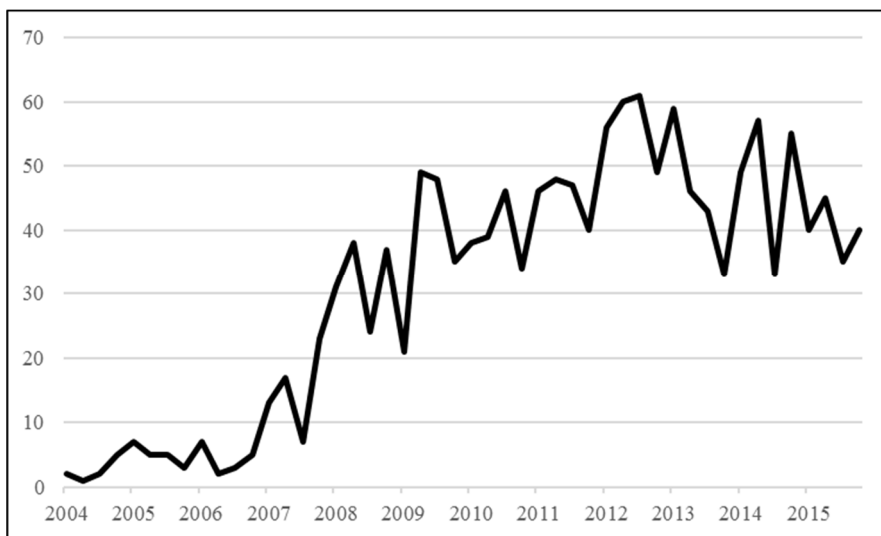
Numerical Variables

Variable	Observations	Mean	Standard Deviation	Min.	Max.
Pre-Money Valuation (\$M2015)	3,501	59.20	230.49	0.01	8,860.85
Amount Raised (\$M2015)	4,063	11.80	28.99	0.01	998.26
Preference Multiple	3,527	1.11	0.41	1	5
Participation Cap Size	684	2.51	0.71	1	4
Dividend Rate (%)	3,226	7.70	1.37	0.02	52

DEBT FINANCING SUMMARY STATISTICS

This section provides summary statistics for the empirical sample of 1,489 debt financings ranging from 2004 to 2015.

Number of Closings Per Quarter (2004–2015)



Company Industry

Industry	Frequency	Percentage
Clean Technology and Renewable Energy	176	11.82
Communications and Networking	142	9.54
Electronics and Computer Hardware	71	4.77
Financial Institutions*	4	0.27
Life Sciences	333	22.36
Media and Information Services	159	10.68
Nanotechnology*	3	0.2
Retail and Non-Technology Products	83	5.57
Semiconductors	48	3.22
Services	98	6.58
Software	368	24.71

Other	4	0.27
Total	1,489	100

* For the regression analyses, these industries are included in the “Other” category because they represent less than 1% of the total sample.

Location of Company Headquarters

Location	Frequency	Percentage
AZ - Arizona	4	0.27
CA - California*	885	59.44
CO - Colorado*	16	1.07
CT - Connecticut	6	0.4
DC - District of Columbia	3	0.2
FL - Florida	6	0.4
GA - Georgia	6	0.4
HI - Hawaii	3	0.2
IA - Iowa	2	0.13
ID - Idaho	1	0.07
IL - Illinois	4	0.27
IN - Indiana	1	0.07
MA - Massachusetts	7	0.47
MD - Maryland	4	0.27
MI - Michigan	3	0.2
MN - Minnesota	4	0.27
MT - Montana	3	0.2
NC - North Carolina	9	0.6
NH - New Hampshire	8	0.54
NJ - New Jersey	4	0.27
NM - New Mexico	1	0.07
NV - Nevada	7	0.47
NY - New York*	80	5.37
OH - Ohio	6	0.4
OK - Oklahoma	1	0.07
OR - Oregon*	17	1.14
PA - Pennsylvania	6	0.4
SD - South Dakota	1	0.07

TX - Texas*	140	9.4
UT - Utah*	18	1.21
VA - Virginia	7	0.47
VT - Vermont	3	0.2
WA - Washington*	189	12.69
Foreign*	34	2.28
Total	1,489	100

* These locations are included in the regression analyses because they represent more than 1% of the total sample.

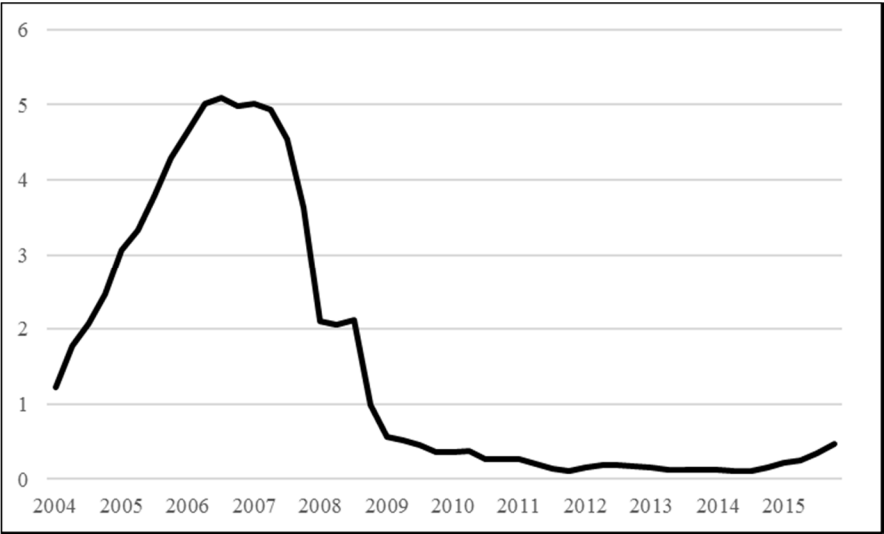
Lead Investor Type

Investor Type	Frequency	Percentage
Angel	483	32.44
Strategic/Corporate	132	8.87
Venture Capital	810	54.40
Unknown	64	4.30
Total	1,489	100

Prior Round

Prior Round	Frequency	Percentage
None/Common	425	28.54
Seed	17	1.14
A	182	12.22
B	129	8.66
C	84	5.64
D	43	2.89
E	18	1.21
F or higher	17	1.14
Unknown	574	38.55
Total	1,489	100

Average One-Year Treasury Rate (%)



Maturity

Maturity	Frequency	Percentage
Less than six months	59	5.60
Between six months and one year	170	16.13
One year	345	32.73
Greater than one year	480	45.54
Total	1,054	100

Conversion

Conversion	Frequency	Percentage
No	56	5.16
Yes	1,030	94.84
Total	1,086	100

Conversion Discount

Conversion Discount	Frequency	Percentage
No	330	33.40
Yes	658	66.60

Total	988	100
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Increasing Discount

Increasing Discount	Frequency	Percentage
No	520	88.89
Yes	65	11.11
Total	585	100

Conversion Cap

Conversion Cap	Frequency	Percentage
No	528	62.19
Yes	321	37.81
Total	849	100

Warrants

Warrants	Frequency	Percentage
No	973	66.78
Yes	484	33.22
Total	1,457	100

Collateral

Collateral	Frequency	Percentage
No	1,128	75.76
Yes	361	24.24
Total	1,489	100

Subordination

Subordination	Frequency	Percentage
No	703	65.33
Yes	373	34.67
Total	1,076	100

Repayment Multiple

Repayment Multiple	Frequency	Percentage
No	877	82.58
Yes	185	17.42
Total	1,062	100

Staged Financing

Staged Financing	Frequency	Percentage
No	1,408	94.56
Yes	81	5.44
Total	1,489	100

Numerical Variables

Variable	Observations	Mean	Standard Deviation	Min.	Max.
Interest Rate (%)	1,071	6.87	3.03	0.01	30
Amount Raised (\$M2015)	1,488	2.75	8.9	0.01	190.23
Discount Rate (%)	638	26.55	19.08	0.90	90
Repayment Multiple Size	177	2.43	2.59	0.50	25