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TWO ESSAYS ON NEGOTIATIONS BETWEEN ENTREPRENEURS AND ANGEL INVESTORS

By

Aydin Selim Oksoy
B.A. December 2002, Alfred University
M.B.A May 2005, Union College

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Approved by:
Anil Nair (Chair)
Andrew Bennett (Member)
David Selover (Member
Ryan Klinger (Member)

ABSTRACT

TWO ESSAYS ON NEGOTIATIONS BETWEEN ENTREPRENEURS AND ANGEL INVESTORS

Aydin Selim Oksoy
Old Dominion University, 2020
Director: Dr. Anil Nair

This dissertation has two essays examining negotiations between entrepreneurs and angel investors. In Essay 1, I study the dual roles of equity from the angel investor's perspective, where the equity position sought in an embryonic firm creates two concerns. The first concern relates to the risks involved in generating returns from the initial capital investment. The second is a governance concern due to the challenges involved in managing future interactions between the firm and its environment. Because the angel investor is beholden to the entrepreneur for the proper execution of the embryonic firm's strategy, this governance concern involves incentivizing the entrepreneur using equity. These simultaneous concerns represent the two sides of a coin that Commons (1934) refers to as a strategic transaction that is completed when the parties reach a negotiated agreement. I extend the governance literature to include the embryonic firm, and contribute by highlighting how the firm-environment exchange influences firm complexity, which in turn impacts the angel investor's final equity position. I also contribute to the entrepreneurship literature, by applying theories of risk and governance to the embryonic firm context to explain the outcomes of angel and entrepreneur negotiations.

In Essay 2, I study how anchoring effects influence negotiations between entrepreneurs and angel investors. I argue that in negotiations involving new ventures there exists two tensions: *uncertainty* and *power differentials*. Entrepreneurial opportunities are inherently uncertain and the unfolding negotiation occurs along two interdependent dimensions of value (capital and equity) where each dimension adds a degree of uncertainty. Moreover, power differentials create an additional layer of tension. I explore how such tensions impact anchoring effects by studying negotiations on the TV show *Shark Tank*. I contribute to the anchoring literature by studying a context where true value is unknowable, and to the negotiation and power literatures by studying

the direct impact of power in a natural negotiation setting. In terms of anchoring effects, I observe an effect with the capital dimension but not with the equity dimension. For this capital dimension, I raise the possibility that the observed effect is a function of the negotiation task and not necessarily due to cognitive bias. For the equity dimension, it appears angels may be immune to the cognitive effects of anchoring. I also find that shifting power dynamics benefit the entrepreneur with a larger final capital position and a lower final equity position, suggesting that the effects of power and cognition may be confounded during an actual negotiation.

Essay 1 Keywords: Governance, Risk, Embryonic Firm, Equity, Organizational Complexity, Transaction Cost Economics, Agency Theory, Managerial Risk-taking

Essay 2 Keywords: Angel Investors, Entrepreneurs, Negotiation, Cognitive Bias, Anchoring Effect, Power Dynamics, Power Tactics

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DEDICATIONS

This dissertation is dedicated to my mother and father. It is through their unwavering support that I have persevered, and it is to them that I owe my character and constitution. They have taught me that failure is merely the beginning of success.

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To Dr. Anil Nair, my academic father, I am grateful for his patience and unwavering support; I have learned the immense satisfaction that one achieves after wading through endless theories to finally land on logic and reason. I will be forever thankful for his willingness to support me as we boldly waded into the uncertainty of novel academic terrain. To the dissertation committee I am grateful for their support and acceptance of ideas that go against the grain of convention; their hours of patient attention will be forever appreciated.

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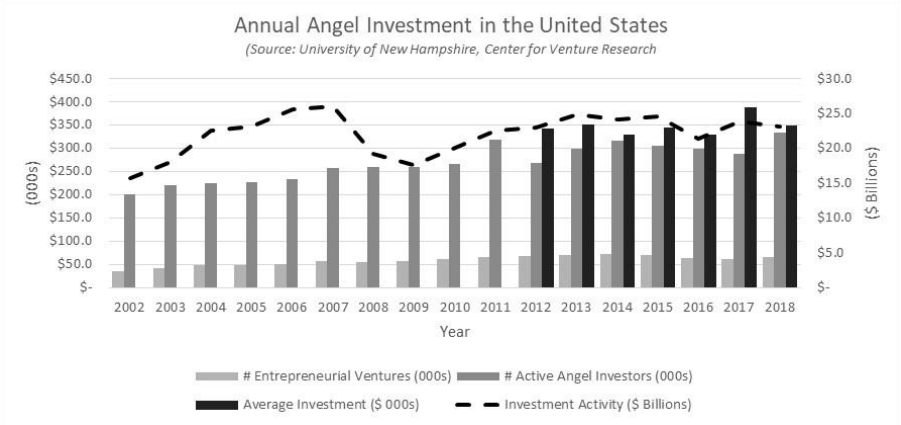
INTRODUCTION

In this dissertation, I study the negotiation between angel investors and entrepreneurs. The object of their focus is an embryonic firm, and the negotiation task involves an exchange of a capital investment for equity ownership in that embryonic firm. A negotiated agreement is reached when the angel investor's capital ($) offer and equity (%) request mirrors the entrepreneur's capital ($) request and equity (%) offer. From an economics perspective, a negotiated agreement implies an alignment of strategic interests, and completes the basic unit of activity within an economy – a transaction (Commons, 1934). In relation to the overall domain of economic activity, this particular transaction contributes to the informal risk capital markets, characterized as highly inefficient, hindering efforts by the relevant economic actor to enter into such exchanges (Wetzel, 1987; Wiltbank, Read, Dew & Sarasvathy, 2009).

This negotiation is particularly messy, evident by the dismal success rate of an entrepreneur to secure an angel investment at 3% in a US sample and 5% in a Canadian sample (Riding, Duxbury & Haines, 1997; Maxwell, Jeffrey & Levesque, 2011). And yet, even in the face of such inefficiencies, the University of New Hampshire's Center for Venture Research reports that average annual angel investments in the U.S. between 2002 and 2018 is approximately $22.06 billion. This implies that the *total volume* of angel investment requests ranges from $441.20 billion (22.06 / 5%) to $735.33 billion (22.06 / 3%). Figure 1.1 presents the magnitude of activity between 2002 and 2018. To put the volume of activity into perspective, I highlight the #number of entrepreneurial ventures that have received an angel investment (in thousands), the #number of active angel investors (in thousands), the average angel investment into an embryonic firm (in thousands, and the total annual angel investment (in billions):

Figure 1.1: Annual Angel Investment in the United States



The inefficiency is a function of the severe lack of information (Knight, 1921; Arrow, 1974); neither is the firm's future viability knowable, nor is the entrepreneur's ability to coordinate the effort knowable, nor is the angel investor's non-monetary contributions to create value knowable (Hsu, 2004). Driven by such unknowns, I employ Raffia's (1982) 'asymmetric approach' to negotiations. Raffia (1982) points out that it is entirely too ambitious to expect the behavior of both negotiators to follow the rational prescriptions found throughout the vast bodies of literature spanning game theoretical models to social psychological experiments. That is, even if one actor behaves in an entirely rational manner, the outcome must account for the potential irrationality of the counterparty; humans are, after all, boundedly rational creatures (Barnard, 1938; Simon, 1947). Raffia (1982) therefore focuses on the behavior of one side of the negotiation, while remaining cognizant that the other out-of-focus side of the negotiation is an inherent component that must be accounted for. In this dissertation, I focus on the angel investor's behavior while the entrepreneur's behavior remains out-of-focus; the following passages from Raffia's (1982) insightful book specify the asymmetric approach:

> "My main preoccupation was with real people in real situations: How could analysis be used to help one party in a competitive conflict situation without assuming excessive rationality on the part of the "others"?" (Prologue: pg. 2-3)

> "I could try to be systematic, thoughtful, and analytic, but the "others" I negotiated with always seemed to have intricate, hidden agendas." (Prologue: pg. 3-4)

> "The researcher in this area is concerned with studying and understanding the behavior of real people in real conflict situations, so that he can better advise one party about how it should behave in order to achieve its best expected outcome. This type of analysis is prescriptive from the vantage point of one party and descriptive from the point of view of the competing parties." (pg. 21)

A better understanding of the investor's behavior should help improve the dismal success rate and lead to stronger entrepreneurial ideas. It is however, difficult to research negotiations between these economic actors because of the private nature of the interactions. Offers are typically closely-guarded secrets. To gain insights into this niche world, I study the ABC TV show Shark Tank, which may raise some eyebrows as to the generalizability of the data to the "real people in real conflict situations" that Raffia (1982: 21) sought to study. I present four (4) reasons

that justify the use of the Shark Tank. First and according to UNH-CVR, the average size of an angel investment between 2002 and 2018 was $347,884; in contrast, the average investment within my dataset is $260,037. This indicates that I am at least within the same ballpark in terms of invested dollars. Further, the profile of the angel investors on the TV show can be seen as the crème-de-la-crème of angel investors based on the sheer volume of their investment activity and the war chest that they have to continue investing. Because the angel investors on the Shark Tank invest their own money with full discretion (Benjamin, Margulis, Margulis, 2000) and are expert entrepreneurs (Wiltbank, Dew, Read & Sarasvathy, 2009), there is a direct parallel to reality. My second argument closely follows the first; there are many products found on the Shark Tank that we can purchase in real life. 'Hamboards' is one example that will allow you to surf like a Californian no matter where you find yourself; another is the $14.5 million purchase of Groovebook by Shutterfly; and yet another is Three Jerks Jerky which services the high-end beef jerky market using fillet mignon cuts.

Third, and perhaps most important, is the nature of the transaction occurring in both the real world and on the TV show that further lends support to the generalizability of the sampled dataset. In general, the contract that follows an angel investment is considered to be unsophisticated in contrast to the traditional venture capitalists that incorporate contingencies into the contract based on the historical operating performance of the firm (Ibrahim, 2008). The lack of sophistication is driven by the use of common stock (i.e.: equity) to partition rights over the future earnings of the firm; common stock (equity) provides the lowest form of protect against investment expropriation and evaporation (Prowse, 1998). An extensive literature explores how contracts are inherently incomplete because the actors signing the contract are themselves boundedly rational and unable to document all contingencies within a contract. For the angel investors operating under extreme uncertainty, it seems the unknown is embraced and the contract is the unsophisticated exchange of capital for partial equity ownership in the embryonic firm. It is this basic structure that allows for the generalizability of this study to non-televised interactions between angel investors and entrepreneurs, allowing for the TV show to represent a loose proxy for the actual occurrences unfolding via private conversations.

Fourth, by further constraining my focus to only those cases where an offer has been made by the angel investor (for Essay 1) or when a negotiated agreement has been reached (Essay 2), I am able to improve the generalizability of the study. Essay 2 has the added robustness of

constraining exchanges to only negotiated outcomes. In this dissertation, I only study those cases where an angel investor decided to engage; the reason why they chose to engage as opposed to not engaging is outside the scope of my research effort. When the negotiation begins, the angel investor is not obligated to present an offer, and the lack of any offer results in an impasse. While an impasse may also occur after any offer is communicated by the angel investor, the act of communicating any offer is itself more important than the acceptance of the offer. Further, one must anticipate acceptance when communicating an offer and must stand behind that offer if accepted, else the entire exercise becomes a disingenuous exercise. By communicating an offer, the angel investor is sending an explicit and quantifiable signal; a signal that encompasses the totality of their concerns and expectations for the future, which is unknowable in this instance (Knight, 1921). In addition, a communicated offer on the TV show represents only an intention-to-fund (Smith & Viceisza, 2018) and the actual capital investment typically depends on the subsequent due diligence effort (Forrester, 2014). I argue that the explicitly communicated offers as captured in this dissertation represent the angel investor's most idealistic expectations of the future because they are as of yet unaware of any skeletons within the closet found during due diligence. Faced with such difficulties in both reality (the unknowns) and research (the lack of access to negotiations because of their private nature), focusing on the angel investor while keeping the entrepreneur out-of-focus, allows me to gleam insights as to how the source of funds behave that will then begin the entrepreneurial process.

The Two Essays

This dissertation is split into two essays. Essay 1 is at the firm-level of analysis and falls within the framework of transaction cost economics. Coase (1937) provided a conceptual delineation between the firm and the market, asking the question of why one firm cannot account for all activities within an economy. Coase's (1937) conclusion is that of transaction costs, which Williamson (1985) will later refer to as the economic equivalent of friction in physics. I build directly upon Williamson's discriminating alignment hypothesis that states the characteristics of the transaction will determine governance-related decisions (see Williamson's 1998 article explaining how TCE work; section 3.3, pages 37-39). Per Williamson (1975, 1985), the specificity of the asset determines how the decision-maker discriminates across transactions.

When applied to the angel investment context however, asset specificity allows for little (if any) discrimination because each embryonic firm is unique to its own trajectory – a kitten will become a cat, whereas a baby elephant will become an adult elephant. While clearly the initially intended strategy will evolve in emergent directions (Mintzberg, 1978), at the time an offer is communicated the expectation is for the current embryonic firm to reach economies of scale; the notion of 'futurity' per Commons (1934). My argument is, that which allows angel investors to discriminate among embryonic firms is the complexity associated with the respective firm-environment exchanges (Simon, 1962, Thompson, 1962). This is what I call organizational complexity. It is this exchange that will generate sales and ultimately generate a return for the angel investor, and each firm will vary in how it interacts with its environment. Therefore, it is the organizational complexity and not asset specificity that allows investors to discriminate in this context of angel investing.

Further, it appears that transaction cost economics has primarily only considered one transaction. That is, all transactions are lumped together. However, a closer review of the literature indicates that the Williamsonian discussion really pertains to the notion of vertical integration (Tadelis, 2002). In vertical integration decisions (the make-or-buy decision), the marginal activity to be internalized is comparted to the existing set of activities that the firm has already internalized. However, this is not the type of transaction that the angel investor is focused on. Rather, angel investors are trying to decide if the initial set of internalized activities have the potential to generate a return on investment; vertical integration is a distant concern; their immediate choice is to either invest, or not do anything at all (keep their money). I therefore grapple with a fundamentally different problem during my investigation of angel investors.

Williamson's (1973: 316) specific focus is clearly stated in the first sentence of the first paragraph: "The principal purposes of this paper are to examine the factors that induce a shift of transactions from market to internal organization and, within internal organization, to explain the types of hierarchical relationships that predictably emerge." Williamson (1979) will later highlight: "The efficient organization of economic activity entails matching governance structures with these transactional attributes in a discriminating way" (pg. 261). Further, "The criterion for organizing commercial transactions is assumed to be the strictly instrumental one of cost economizing…[and]…Economizing on transaction costs essentially reduces to economizing on

bounded rationality while simultaneously safeguarding the transactions in question against the hazards of opportunism" (pg. 245-246).

A review of the origins of transaction cost economics has uncovered the work of Commons (1932, 1934, 1936), who per Perrow (1986) and Van de Ven (1993) can be credited with laying the foundations of the theory. Per Commons (1934), a transaction is the basic unit of analysis in an economy, and he highlights that there are rather two types of transactions. The first is a routine transaction as pertaining to the firm-environment exchange that Williamson (1975, 1985) seems to have concerned himself with, while the second is a strategic transaction that establishes the customs, conflicts of interest and working rules between two willing negotiating parties. While both sets of transaction have the same three components of conflict, mutuality and order, the strategic transaction is the angel investor's domain of activity.

Naturally, this strategic transaction is a function of the anticipated routine transactions of the embryonic firm. Therefore, the two are interrelated, and it is this interrelationship that creates dual concerns for an angel investor driven by the fact that the entrepreneur must act as their vessel to generate a return on investment. The angel investor is trying to resolve the dual tensions of *incentivizing* the entrepreneur adequately while also *internalizing* enough of the firm to generate a healthy return on their invested capital. Incentivize the entrepreneur too little and their limited effort will negatively impact the angel investor's returns; incentivize the entrepreneur too much and it will again negatively impact the generated returns. These dual concerns are resolved through the use of equity, which plays a dual role in this unsophisticated contract.

Essay 2 is at the individual level, which introduces the potential impact of not only cognitive biases but also shifting power dynamics as the negotiation unfolds in real-time. In the TV show, entrepreneur enters the room, introduces him/herself, and presents their request for capital and their offer of equity. The entrepreneur's explicitly communicated opening negotiation position is prior to their presentation of the opportunity and from a cognitive bias perspective, potentially creates an anchoring effect on both dimensions of capital and equity (Brown, 1953, Tversky & Kahneman, 1971; Tversky & Kahneman, 1974; Turner & Schley, 2016). Per Brown (1953: 199), the anchoring effect is such that a stimulus (the opening offer) "acts as a standard referent for the stimuli [the subsequent offers] under consideration".

A fundamental premise of cognitive biases (in general), and the anchoring effect (in particular), is that uncertainty strengthens the effect (Kahneman & Tversky, 1982). In this context,

the embryonic firm has an unknowable value (Knight, 1921) and so there is a limited and bounded reality to act as a barometer to which the opening position can be compared; this scenario is in contrast to Northcraft and Neale's (1987) study using tangible real estate assets as the barometer. As such, the anchoring effect should be highly impactful in this context and this is important to investigate because annual angel investment has averaged ~$22.0 billion between 2002 and 2018 (UNH-CVR).

Power dynamics enter the picture because of the structure of the negotiation, where a panel of five angel investors are negotiating with an entrepreneur. The entrepreneur initially faces a power disadvantage due to their dependency on capital (required for firm survival); capital, which the angel investor has the discretion to provide. This power imbalance is directly based on Emerson's (1962) power-dependency theory, where power is the inverse of dependence. However, the initial imbalance can shift in the entrepreneur's favor as they receive additional unique offers or as multiple angel investors show an interest in the opportunity to thereby increase the legitimacy of the entrepreneur (either as unique offers or by forming coalitions). I study the impact of these dual tensions of cognition and power on the negotiation outcomes.

ESSAY 1: THE ROLE OF EQUITY IN AN EMBRYONIC FIRM: GOVERNANCE VERSUS RISK

Aydin S. Oksoy
Old Dominion University

ABSTRACT

In this essay, I study the dual roles of equity from the angel investor's perspective, where the equity request sought in an embryonic firm creates two concerns. The first concern relates to the risks involved in generating returns from the initial capital investment. The second is a governance concern due to the challenges involved in managing future interactions between the firm and its environment. Because the angel investor is beholden to the entrepreneur for the proper execution of the embryonic firm's strategy, this governance concern involves incentivizing the entrepreneur using equity. These simultaneous concerns represent the two sides of a coin that Commons (1934) refers to as a strategic transaction that is completed when the parties reach a negotiated agreement. I extend the governance literature to include the embryonic firm, and contribute by highlighting how the firm-environment exchange influences firm complexity, which in turn impacts the angel investor's final equity request. I also contribute to the entrepreneurship literature, by applying theories of risk and governance to the embryonic firm context to explain the outcomes of angel and entrepreneur negotiations.

Keywords: Keywords: Governance, Risk, Embryonic Firm, Equity, Organizational Complexity, Transaction Cost Economics, Agency, Managerial Risk-taking

INTRODUCTION

The initial exchange of capital for partial equity ownership in a firm creates the first exogenous fracture between ownership and control, creating an embryonic version of the modern corporation (Berle & Means, 1932). Two simultaneous concerns emerge from this fracture. An investment not only creates a risk concern due to the outlay of capital (March & Shapira, 1987), but also creates a governance concern due to this fracturing (i.e.: agency costs) (Jensen & Meckling, 1976). I study these dual concerns via the angel investor's negotiation positions on equity, which I argue can be utilized to resolve the tension.

To the best of my knowledge, research has not investigated how angel investors resolve the above tension. To gain insight, I study the negotiation that precedes each angel investment (Commons, 1934) and ask: *does the angel investor focus more on the risk concern or more on the governance concern*? Williamson's (1985) discriminating alignment hypothesis states that the characteristics of the underlying asset will lead to an economizing decision to ranging from internalizing the asset to purchasing it across the spot market. Applying the same logic of the discriminating alignment hypothesis to the angel investment context, I ask another question that is closely related: *what impact does the characteristics of the transaction have on the negotiation positions communicated by the angel investor as they resolve the tension between a risk and a governance concern?*[1].

This initial exogenously-driven fracturing occurs predominantly in the informal risk capital markets where information is allocated asymmetrically across market actors (Wetzel, 1983/1987). The predominant investor occupying this domain is the angel investor, also referred to as a business angel (Harrison, Mason & Smith, 2015; Maxwell, Jeffrey & Levesque, 2011), and is more generally considered as an early-stage investor. Annual angel investment activity for the US

[1] What may concern the reader is the use of firm-level research findings to study the individual-level decisions of the angel investor. There are two ways to look at this: One way is to consider the angel investor as a firm itself, and one that operates with full discretion and autonomy as an informal venture capitalist that does not have to report to limited partners (Wiltbank, Read, Dew & Sarasvathy, 2009). If more formal venture capital firms such as private equity companies can be considered a firm that deals with limited partners to finance their investment efforts (Wiltbank et al., 2009), then this same logic should extend to the *informal* venture capitalists who do not have to rely on limited partners but invest personal wealth (Wetzel, 1987; Wiltbank et al., 2009). Further, angel investors can also be seen as portfolio holding company or as a syndicates of angel investors operating in unison (Gregson, Mann & Harrison, 2013; Reuer, Matusik & Jones, 2019). From an economic lens, both are pursuing the same objective of a return on investment. The other way is to highlight the firm as an entity that is afforded equal space within the economic system for return generating, taxation, and succession planning purposes (Lan & Heracleous, 2010).

market since 2006 has exceeded $20.0 billion (UNH-CVR), yet research is limited due to the idiosyncratic and private nature of the conversations between an investor and entrepreneur. There is very little information available on the negotiations that precede each transaction, where each transaction represents the unit of measure in this informal economy (Commons, 1934; Wetzel, 1983).

The overarching theoretical perspective I utilize is transaction cost economics (TCE), and I take the perspective of the angel investor for one simple reason: a better understanding of the behavior of actors that supply capital to the entrepreneurial process will allow for the development of better entrepreneurs and better opportunities. From this investor perspective, a unique problem emerges that has not been directly addressed by the TCE framework. The choice is not the famous make-or-buy decision (Williamson, 1985), or its expanded make-buy-ally version (Geyskens, Steenkamp & Kumar, 2006). Rather, the choice is to internalize or not do anything at all.

I find that the roots of TCE hold neglected concepts that can address this unexplored dilemma (via TCE) faced by angel investors. Per Van de Ven (1993: 150-151): "Commons must be credited with anticipating the work on transactions by Ronald Coase…and many of subsequent developments in transaction cost theory led by Williamson" Perhaps the most important aspect of Commons' contribution that I utilize is his dichotomy of transactions as either strategic or routine. Perrow (1986) also extended credit to Commons as contributing to the foundations of TCE. In review of Commons' (1934) book "*The Economics of Collective Action*", Van de Ven (1993: 146) illuminates this nuance between transactions:

> "Commons emphasized **strategic transactions**, for they are the generative mechanisms for establishing customs, resolving conflicts of interests, and establishing working rules. The **strategic transaction** represents the dynamic element, the transaction that alters the set of incentives or constraints that affect **routine transactions**…Commons brings these concepts of scarcity, futurity, and limiting factors together when he uses reasonable behavior as the criterion for evaluating transactions. As has been reviewed previously, scarcity and a resulting conflict of interest are Commons' basic premises. Scarcity finds its expression in property title, and conflict between individuals and groups takes the form of negotiations over the terms on which title will be transferred" [bold added]

This dichotomy is useful for the angel investor's dual concerns. The routine transactions can be viewed in terms of Thompson's (1962) boundary-spanning transactions that pertains to the

firm-environment exchange and is the source of sales generated by the firm from which free cash flows will be earned. As such, routine transactions can be conceptualized as return-generating transactions, generating sales and profit (Richard, Devinney, Yip & Johnson, 2009). TCE has historically focused on these routine transactions, adopting Williamson's (1985) conceptualization that the specificity of the underlying asset plays an instrumental role in the governance structure that oversees those routine transactions generated from that asset. Angel investors however, are only indirectly concerned with these routine transactions, and they must assume that such routine transactions exist (either currently or in the near future), else there would be no reason to invest. Their direct focus is rather on the strategic transaction and the preceding negotiation with the entrepreneur for partial firm ownership. In terms of Commons' (1934) categorization, the strategic transaction "alters the set of incentives or constraints that affect routine transactions" (Van de Ven, 1993: 146). The angel investment that creates the first exogenous fracturing between ownership and control (Berle & Means, 1932) reflects an ideal representation of such strategic transactions and the arising dual concerns of risk and governance[2].

Said in another way, while a strategic transaction may be embedded directly into a routine transaction (undertaken by the Williamsonian business executive), there is also a stand-alone strategic transaction that has routine transactions embedded into it (as undertaken by the angel investor). The governance choices on routine transactions can remain unaltered before and after an angel investment, but once an angel investment is made, we must recognize the added two concerns of risk and governance enter above and beyond the baseline firm-level risk and governance concerns[3]. I present these different governance choices as layers and I investigate the investor-layer by using the theoretical discussion that has thus far investigated the firm-layer.

[2] An example may clarify the difference in the two transactions. In a traditional business setting reflective of a going concern, there is an exchange between a firm and its environment in terms of absorbing inputs and discharging outputs. Based on the characteristics of the exchange between the firm (applicable to both ends: where the firm acquires inputs and where it discharges outputs), the firm may wish to internalize a particular exchange point; Apple's internalizing retail sales of their products to customers, or a coffee shop deciding to grow its own coffee beans are two examples. The firm may also wish to not internalize, relying on the spot markets to facilitate the exchange. These two potential wishes reflect the make (internalize) or buy (spot markets) decision (Williamson, 1985), and represent the problem of vertical integration (Tadelis, 2002). While each routine transaction does have an accompanying negotiation to determine how that routine transaction will be governed (Common, 1934; Williamson, 1973; 1985), this is an entirely different concern that what I focus on in this paper.

[3] This implies that within the Williamsonian version of TCE (I say with all due respect), the strategic and routine transactions fold into a common set of governance issues. In contrast, we can highlight the clear additional layer of concerns as injected by the investor upon their participation, which allows for investor-centric nuances to creep into the firm's future decision-making focused on governing its routine transactions.

Naturally, the two transactions are intertwined and both impact each of the risk and governance concerns; representing different sides of the same coin. Keeping embeddedness in mind, one may cautiously consider that the risk concern as *more closely* aligned to the routine transactions occurring between the firm and its environment because the risked capital can only be recouped by the firm's ability (expected to actual) to generate profits. The angel investor is however, beholden to the entrepreneur in generating these routine transactions and thus governance is of no less concern, aligned *more closely* to the strategic transaction due to it establishing the incentive structure. Ultimately, both concerns pertain to the firm's ability to coordinate its interaction with the environment (Coase, 1937) and to generate the cash flows and a return on investment for shareholders[4] (Richard, Devinney, Yip & Johnson, 2009: 733).

This mechanistic view of the firm as a coordination mechanism (Coase, 1937; Alchian & Demsetz, 1972) invites a question of how the complexity of the firm-environment exchange will impact these dual concerns. Per Child (1973: 169), "Complexity is frequently regarded as a major defining characteristic of modern organizations" and "is likely to generate administrative problems of coordination and control." The intuitive expectation is, the greater the complexity of coordinating the routine transactions, the more difficult it should be to generate free cash flows.

Complexity "depends critically upon the way in which we describe it", but roughly pertains to "a large number of parts that interact in a non-simple way" (Simon, 1962: 481). Thompson (1962: 309) makes a more directly useful point: "Complex purposeful organizations receive inputs from, and discharge outputs to, environments." I use these conceptual building blocks to focus on the complexity of the firm-environment exchange as a key characteristic of routine transactions. My conceptualization builds upon early research on organizational complexity highlighting that the definition of complexity is not necessarily dependent upon the firm's size (Woodward, 1965; Thompson, 1967; Hall, Johnson & Haas, 1967; Scott, 1975). I advance that the complexity of the firm-environment exchange as reflective of the nature of routine transactions is the characteristic that will impact angel investor behavior as they resolve the dual concerns of risk and governance; resolved in a discriminating manner (Williamson, 1985).

I present Thorelli's (1967) framework to delineate the space between a firm and its environment, to therefore identify the points of exchange between the firm and environment.

[4] I make the assumption that the economic actors under investigation pursue a return on investment as opposed to more philanthropic objectives (I thank Mr. Michael Lynch for highlighting this necessary nuance).

Originally used as a framework to describe a network of firms, the framework is just as applicable to highlight the domain of a single node within the network, where the domain represents the nature of the firm-environment exchange. This single node in the network is an embryonic firm set within a market of firms. I adapt Thorelli's original framework to the modern economy where domains can take on a purely intangible form (e.g.: an internet firm selling satisfaction – Candy Crush); therefore, we are not limited to firms operating in only a physical dimension. This conceptualization places complexity within the entrepreneur's control; that is, complexity is a function of the intended strategic direction to be pursued by the firm that drives the nature of the firm-environment exchange (Mintzberg & Waters, 1985). If the entrepreneur choice a different strategy, the firm-environment exchange may differ significantly. Arguably at the embryonic stage, this conceptualized complexity is in its most pliable state because the firm is young enough to shift strategies with limited negative consequences.

This study provides five main contributions. March and Shapira (1987) discuss a managerial view of risk that is content dependent, where risk is viewed ex ante in terms of the actual capital outlay (Larcker, 1983; MacCrimmon & Wehrung, 1984; Sanders & Hambrick, 2007). I contribute to this literature on managerial risk taking by investigating angel investor behavior once they've decided to commit to the risk in the form of an offer. I find that angel investors, on average, exhibit a conservative stance to their risk-taking behavior and that the relationship between capital and equity is a strong positive, though that positive relationship is curvilinear.

Second, I add to nascent literature on the relationship between equity and capital in a negotiation context (Oksoy, Bennett, Nair & Klinger, 2019; Boulton, Shohfi & Zhu, 2019). This specific negotiation highlights a novel situation where both components of valuation (capital and equity) are allowed to fluctuate independently though are interrelated. This independence is a function of the entrepreneur's need for capital and the angel investor's ability to not only provide that capital but to do so entirely at their discretion. The angel investor's offer can therefore include any value for equity (ranging from 0% to 100%) in exchange for their investment. This independence between capital and equity allows for equity to play a dual role: (1) establishes an incentive structure related to the subsequent governance concern, and (2) establishes a return structure related to the immediate risk concern.

Third, complexity is an important organizational characteristic (Child, 1973) though we have "only begun to explore the variety and complexity of organizational forms" (Geyskens, Steenkamp & Kumar, 2006: 534). I find that organizational complexity indeed plays a significant role. The direct effect of organizational complexity is negatively related to angel equity positions, while the interaction effect of complexity and capital strengthens the positive relationship between capital and equity. In this manner, I extend Williamson's (1985) discriminating alignment hypothesis by considering the complexity of a firm-environment exchange as a contributing factor, as opposed to the specificity of an asset[5].

Fourth, I address the conflicting guidance pertaining to the governance concern provided by the two theoretical logics of agency and TCE (Oviatt, 1988; Madhok 1996; Williamson, 1998); I investigate which logic prevails in the context of an embryonic firm. Because I am dealing with matters of degree, I apply Demsetz and Lehn's (1985) notion of a tighter grip versus a looser grip in terms of ownership concentration to study this tension within the literature. I find that an agency logic prevails as organizational complexity increases, but that a transaction cost logic prevails once the risk concern is accounted for.

Fifth, I extend transaction cost economics into the domain of investments as representing a strategic transaction with embedded routine transactions (which themselves have an embedded strategic transaction that folds into a make-or-buy decision). I highlight that the angel investor grapples with an additional layer of concerns: one pertaining to the capital put-at-risk and the other pertaining to the governance of the agent who will oversee the coordination efforts direct at the routine transactions. As such I highlight a set of governance concerns that have been left unaddressed by the extant TCE framework.

The remainder of the paper will first establish the theoretical domain of transaction cost economics as the overarching framework. Next, I present the firm's conceptual domain in terms of its organizational complexity. I then further bound the discussion by highlighting that for the governance concern, incentivization holds primacy over that of monitoring because of the difficulties associated with the latter. After presenting an overview of the managerial risk-taking literature, I present hypotheses for both the risk and governance concerns. In the methods section

[5] Driven by the unique problem of a make-only decision that angel investors face, each opportunity is specific to its own intended strategy trajectory (Mintzberg & Waters, 1985). Therefore, all opportunities are equally specific, reducing the applicability of asset specificity to discriminate among opportunities.

I discuss both the application of Thorelli's (1967) framework to derive the domain of the coordination mechanism (Coase, 1937) and the data collection process to capture the negotiation. After a review of the findings, I conclude by presenting new questions derived from this study to foster future research.

LITERATURE REVIEW

The Framework: Transaction Cost Economics

Commons (1932, 1934) laid the foundation for transaction cost economics (Perrow, 1986; Van de Ven, 1993). It was Commons' (1934) view that the source of institutional change was a function of human will. "To Commons, the institutions existing at a specific time represent nothing more than imperfect and pragmatic solutions to reconcile past conflicts…thus, out of the great seamless web of activities and social relationships among persons in society, Commons has fixed upon the transaction as the elemental unit of analysis…and took a process view of transactions by examining the actions of parties as they negotiated, made commitments to, and administered their "deals"." (Van de Ven, 1993: 142-143). This complex web of social interaction also naturally led to "some solutions [that] produce outcomes that are unintended, accidental, or may appear random" (pg. 150). The unexpected impact that some institutions of social interaction (i.e.: the firm) may have on the larger institution of an economy from which they arise invites a Schumpeter (1942) view of creative destruction that occurs over time as social interactions adjust to the times. As such, Commons "was recognized as a founder of both institutional economics…and industrial relations" (Van de Ven, 1993: 139).

As the economic unit of analysis, a transaction is comprised of three parts that converge if a negotiated agreement is reached: conflict, mutuality, and order (Commons, 1934). However, Commons (1934) highlights that there are two separate transactions (a routine transaction and a strategic transaction), which may confound matters if both transactions include all three parts. I highlight that each transaction has its own set of concerns. The routine transaction is concerned with governing the firm's relationship with its environment, while the strategic transaction is concerned with governing the investor's relationship with the entrepreneur who is charged with the firm's oversight – an oversight that extends to the governance of all routine transactions. Another key difference in transactions is that the strategic transaction will explicitly determine the value of the firm while not directly contributing to the firm's ability to create value, while the routine transactions will directly create value but will only indirectly determine the value of the

firm. An angel investment completes a strategic transaction and pertains to a firm that may not have even completed its first routine transaction, but *expects* to after an angel investment (i.e.: a conceptual business model).

I do not want to over-emphasize the individual impact of any of the above three components of a transaction as presented by Commons. For example, the degree of conflict may not exist between the angel investor and entrepreneur, if they are "willing" actors as stated by Commons (1932); but rather the conflict could be between each negotiator and their respective environments. It is through a negotiated agreement that the two willing negotiators' respective environmental conflicts will partially overlap, and the negotiation can be viewed as a means of resolving the individual-environment conflicts. Likewise, the deal may not be viewed as equally beneficial (mutuality), leading to moral hazard or adverse selection concerns that then destabilize order. The nuances of how these three components interact within the two transactions is an interesting area for future research; questions such as: does high conflict for the strategic transaction benefit or hinder the future order between the parties, or does high conflict influence the nature of future routine transactions in either their generation or governance. These questions remain unexplored.

Coase (1937) picks up the discussion from a cost perspective. For Coase, a firm is an aggregation of activities internalized into that firm. The choice to internalize an activity is dependent upon its related transaction costs. From a cost perspective, integrating these activities is presumably done because there are efficiencies gained by doing so; efficiencies in the form of lower firm-wide transaction costs. If the total cost of these activities occurring within a firm is lower than the aggregated cost of each individual activity operating on its own in the environment, the firm is able to generate positive free cash flows and justify its existence[6]. Thompson (1962: 309) would refer to these marginal activities as "boundary spanning roles linking organization and environment through interaction between member and non-member", thereby creating "a transaction structure." Combining the above, a firm can therefore be conceptualized as a set of routine transactions, pertaining to the set of internalized activities.

Dahlman (1979) would later 'crystalize' the term transaction costs (as stated by Coase himself in 1988) by discussing the externalities that develop from a zero transaction cost theoretical environment where case law doesn't matter and where market focuses determine

[6] In our modern world of unicorns, UBER threatens this basic logic.

everything (Coase, 1960). Per Dahlman, (1979), transaction costs were comprised of three components: (1) search and information costs, (2) bargaining costs, and (3) policing and enforcement costs. These three components are stated to reduce to a single factor: *resource losses* due to lack of information as driven by uncertainty.

Since these early studies by both Commons and Coase, the TCE literature has focused primarily on the organization's decision to internalize the marginal activity related to an existing firm's strategic trajectory – the question of vertical integration (Williamson, 1973; Tadelis, 2002). For each of these marginal activities to be internalized, Williamson (1981: 550) was concerned with the "governance structures with which to mediate the exchange of goods and services between technologically separable entities." Williamson's (1985) discriminating alignment hypothesis is concerned with selecting the appropriate governance structure given the characteristics of that marginal activity. As such, the focus of Williamson's work is primarily on the question of vertical integration of routine transactions (Commons, 1934; Ghosal & Moran, 1996, Tadelis, 2002; Williamson, 2010). Like Dahlman (1979), Williamson (1985, 1998) considers transaction costs as the economical equivalent of friction in physics; friction that is reflected in a transaction's characteristics. The *specificity* of the asset is considered to be the most important characteristic that leads to greater friction and internalization decisions, followed by the *frequency* with which the asset will be used in the future and the *uncertainty* associated with that future (Perrow, 1986). Governance options range from a pure market-based approach to a pure hierarchical-based approach; Hennart (1993) will later highlight that the majority of governance decisions lay in between these two extremes – referred to as the 'swollen middle'.

There are many dichotomies and frameworks that have thus far been discussed and I would like to take stock. Commons (1934) presented a dichotomy on the transactions as either *routine* or *strategic*. Dahlman (1979) identified the three components associated with resource losses as *search & information costs*, *bargaining costs*, and *policing & enforcement costs*. Williamson (1985) grouped transaction costs into *ex-ante* costs and *ex post* costs, with the majority of transactions drifting out of alignment as a sign of ex post costs. Dyer (1997) will later present his framework where a transaction includes four parts: *search, contracting, monitoring, and enforcement*; the first two (search and contracting) correlate to Williamson's ex ante costs, while the latter two (monitoring and enforcement) correlate to ex post costs. The above taxonomies are not to be confused with the two concerns (of *risk* and *governance*) that I've highlighted. These two

concerns can be seen as the two sides of a strategic transaction coin. However, this coin must inherently account for the routine transaction as representing the ultimate focus of the negotiation, as representing the underlying asset. As such, these respective frameworks do not overlap neatly. I present Figure 2.1 below as a visual guide:

[INSERT FIGURE 2.1 ABOUT HERE]

There is seemingly a consensus in the criticism of TCE (Perrow, 1986; Demsetz, 1988; Hennart, 1993; Madhok, 1996). Perrow (1986: 19) states that "perhaps most importantly, Williamson does not ask simply why there are so many big firms, but asks where will big firms fail to appear". Hierarchies are considered to replace markets when transactions go beyond the spot markets, with efficiency as the main focus of the firm. While Perrow (1986) praises Williamson's efforts to address why markets persist, or said another way, why big firms fail to appear in certain portions of the market, Perrow's (1986) main critique is that in the event of vertical integration, "the sum total of transaction costs remains; their local is different" (pg. 25). Per Perrow, justifying a vertical integration decision by explicit transaction costs doesn't account for the reduction in the firm's "flexibility in response to changes…" (pg. 28). The overall point is that TCE does not properly identify and account for the different transaction costs that arise, and does not delineate between costs that arise from market interactions and those that arise from within the firm itself.

Demsetz (1988) highlights that it is difficult to disentangle management costs from transaction costs, stating: "This makes it difficult to use the magnitude of transaction costs relative to management cost to predict how changed circumstances affect economic organization. The inherent difficulty is that the same organizing activities often characterize exchange and management" (pg. 149). He goes on to state, "This comparison of transaction and management costs has become the focusing conceptualization of the transaction cost theory in all applications to the theory of the firm of which I am aware" (pg. 145). Demsetz's perspective can perhaps be more clearly summarized as follows: "If transaction cost is zero, yet management cost is positive, the transaction cost theory predicts the demise of the firm" (pg. 145).

Hennart (1993: 530) proclaims that "a complete theory of economic institutions should therefore consider simultaneously the costs of organizing transactions in markets (transaction

costs) and those of effective exchange within the firm (management costs)". Per the author, the extant transaction costs economics framework is found unable to accommodate for this need. Madhok (1996) concludes "that, with its purely incentive-based logic governed by assumptions of opportunism, TC economics is fundamentally incapable to being a complete theory of the firm and of economic organization in general." (pg. 588). And in a similar vein, He and Wang (2009) express the need to consider organizational capabilities in order to address the limitations of TCE.

In this study, I take the perspective of the angel investor as the focal economic actor. From this perspective, there is limited need to delineate between the costs associated with transactions between the firm-environment exchange and the costs associated with the management of the firm's internal operations. For the angel investor, these are all one and the same – costs that fall under a risk or governance concern.

I agree with Demsetz (1988) that transaction costs occur across markets while management costs occur within the firm. However, considering the simple case of a single-member firm, I conceive of a world where transaction costs can never be zero (outside of its theoretical applications) while management costs can indeed be zero (e.g.: a firm with only one person – the owner). Considering a single-member firm where the individual is performing consulting services – there are clearly transaction costs pertaining to time and effort but there are no agency costs. Agency costs are created by the angel investment that creates the initial fracture of ownership and control (Berle & Means, 1932; Jensen & Meckling, 1976); these I equate to management costs. To be more specific, I consider routine transaction costs to pertain to everything within the sphere of a firm's domain as it interacts with the environment to generate sales and profit; if the owner has employees, then inner-firm management costs certainly arise and are a component of these routine transaction costs[7]. In contrast, strategic transaction costs pertain to the external governance of that system and *the investment made in order to obtain the mandate to govern*. While Demsetz (1988: 156) briefly touches upon the concept of self-management and states "the agency problem resides within each of us as well as interactions between us", I limit the use of agency to the angel-entrepreneur relationship as driven by my focus on the angel investor.

[7] I can highlight this by asking the following question: What value does a business idea have that could create millions in profit if only one didn't have to worry about the costs of management? That is, the business isn't viable if management costs are accounted for, but can make millions if that 'problem' is solved. The answer is clearly that the business idea has no value or merit; it is not feasible.

Therefore, while a strategic transaction, as represented by an angel investment, has both the costs associated with the capital put-at-risk and the costs of governing the investor-entrepreneur relationship (i.e.: management), these dual concerns are in addition to the existing governance concerns of the firm-environment relationship via routine transactions. Some transaction costs are shared between angel investor and entrepreneur, while others only burden the investor. If the firm is comprised of only the owner, that owner is only concerned with transaction costs and is unburdened by management costs. Therefore, in agreement with the criticism of past researchers, transaction cost economics as currently and traditionally viewed has only considered issues associated with the routine transaction costs and has not incorporated the distinct nature of the strategic transaction costs[8].

Organizational Complexity

Pertaining to these shared transaction costs, the objective for both the angel investor and the entrepreneur is to generate sales as the firm interacts with its environment. Complicating that effort is the degree of friction arising from that interaction (Williamson, 1985). The current TCE framework associates the specificity of the asset with friction directly, stating that specificity "is both the most important dimension for describing transactions and the most neglected attribute in prior studies of organization" (Williamson, 1981; 555). In the event a specific asset becomes of vital importance for the firm and where there is limited supply (e.g.: a quarry for an aggregates firm that makes little rocks from big rocks), not controlling or owning that asset puts the firm at a strategic risk due to the potential to be 'held-up' in the spot markets that are subject to fluctuations in price. Internalizing is suggested for such circumstances – governance by hierarchy.

However, in a recent meta-analysis of 200 studies on the make-buy-ally decision, Geyskens, Steenkamp and Kumar (2006) "found no evidence supporting the superior predictive power of asset specificity over uncertainty, in contrast to previous reviews that have supported Williamson's contention that asset specificity is the critical driver of governance choice" (pg. 531). Though asset specificity didn't play the central role as expected, the authors who conducted "the largest quantitative review of transaction cost theory as it applies to inter-organizational

[8] It is also worth mentioning that within routine transactions, we remain unable to delineate between the costs of management and the costs of the firm-environment exchange as highlighted by Demsetz's (1988) criticism. However, the focus of attention on the angel investor allows me to side-step this open issue because for the angel investor, these are just costs to be incurred and that reduce the return on one's investment.

relationships in order to take stock of what is known" (pg. 532), did find overall "strong support for the normative implications of transaction cost theory" (pg. 532). In general, they "found that asset specificity, volume uncertainty, and behavioral uncertainty promote a choice of hierarchical governance over market governance" (pg. 532). Therefore, the use of TCE as a framework to study these matters is appropriate, even though asset specificity may not be the most useful business characteristic to focus upon.

The limited influence of asset specificity has important implications for the present context. The angel investor is perpetually engaging in a series of *make decisions*[9], where each make decision results in an entirely unique firm that has an entirely unique trajectory. In a loose analogy, a kitten will grow into a cat while a baby elephant will grow to become an adult elephant. Removing the deterministic nature of the analogy, the point is that at time zero (0) when the strategy is developed, each opportunity can only be compared to the potential future state of that opportunity which represents a larger version of its current scale. That is, each firm is specific to its own strategic objectives and in such a decision context, the specificity of the asset under question provides limited understanding of an angel investor's behavior.

The economic actor of the angel investor is preoccupied with a fundamentally different question from that of the Williamsonian business executive. There will presumably come a time in the future where vertical integration questions will arise. At that point, the make-buy-ally decision will arise. However, at the present time the angel investor doesn't even know if a demand function exists for the firm, to then be able to project economies of scale. For the angel investor, the decision at the moment is whether to make (invest) or *not* do anything at all – that is the question. The specificity of the asset does little to help the angel investor discriminate across a wide range of highly specific assets because each firm is pursuing its own strategic trajectory; hence, I focus on the organizational complexity as the characteristic allowing for such discrimination.

In this dissertation, I add to a small set of studies within the transaction cost economics framework addressing the importance of an organization's complexity as impacting governance structures (Demsetz & Lehn, 1985; Tadelis, 2002). Demsetz and Lehn (1985) discuss the

[9] This is contrasted to the now famous make-or-buy decision (and the updated make-buy-or-ally decision) that decides to either internalize the activity (make) or transact away the need on the spot markets (buy) (Williamson, 1985).

importance of increased ownership concentration when the firm has greater complexity. The authors define complexity in terms of the output for the firm. A sports team and an advertising agency constantly adapt the organization's output to the novelties as presented by the environment, and this need to adjust to the environment increases the complexity of the firm. The authors suggest that greater concentration of ownership will serve as a more economizing governance structure. Likewise, Tadelis (2002) considers the narrow focus of procurement decisions within the make-or-buy decision, highlighting: "More complex products are more likely to be procured internally (make) and have the upstream unit face low incentives, while more simple products are more likely to be procured through the market (buy) and have the upstream supplier face high incentives" (pg. 435).

Nearly five decades ago, Child (1973: 169) stated that complexity "is frequently regarded as a major defining characteristic of modern organizations and also an important determinant of other structural features". And yet, Geyskens, et al., (2006: 534) recently lament that we have "only begun to explore the variety and complexity of organizational forms." I advance that the complexity associated with the firm's interaction with the environment (actual or intended) is of primary relevance for a strategic transaction This focus on complexity accounts for Williamson's (1985) discriminating alignment hypothesis nearly unaltered, aligned more closely to his notion of economic friction. Here, friction is caused by the moving parts associated with the coordination mechanism (Coase, 1937; Simon, 1962). If the completion of each routine transaction (Commons, 1934) requires the coordination of many moving parts, I consider this system as a more complex effort than if there were fewer or even just one moving part (Simon, 1962). Further, this complexity should be reflected in the nature of the firm-environment exchange; after all, this is where the rubber meets the road for a business – the need to generate sales.

The embryonic state reflects the basic nature of the firm's intended interaction with the environment, and it is reasonable to expect continuity in how a firm interacts with its environment while the scale at which that happens is allowed to vary. As such, focusing on the firm-environment exchange allows freedom from the hindrance of size in the use of complexity, while also capturing Common's (1934) notion of futurity[10] (Thompson, 1962; Woodward, 1965). As such, the

[10] The literature in the 1960'2 and the 1970's highlights that while size most certainly contributes to complexity, complexity is independent of size (see: Anderson & Warkov, 1961; Hall, Johnson & Haas, 1967; Scott, 1975)

complexity is important factor that should influence how the investor resolves the dual concerns of risk and governance via their positions on equity in relation to a capital investment.

Incentivizing over Monitoring

There is another nuance to the circumstances of an angel investor as opposed to the Williamsonian business executive. Traditionally, governance choices fall within two ends: hierarchal versus market governance, behavioral versus output controls, or monitoring versus incentivization mechanisms (Eisenhardt, 1989; Ouchi, 1980; Williamson, 1985). Most governance choices fall in-between, referred to as the 'swollen middle' of the economy (Hennart, 1993). However, the angel investor doesn't have the benefit of all of the above governance options. Internalizing the entirety of the embryonic firm (i.e.: 100% equity) does not typically occur and eliminates an entire tier of governance concerns though it retains the risk concern. Therefore, the options of full hierarchy, behavioral controls, or monitoring approaches are not available as they are to traditional business executives.

Though angel investors are considered to be hands on (Van Osnabrugge, 2000; Mason & Stark, 2004), expert entrepreneurs (Wiltbank, Read, Dew & Sarasvathy, 2009), they are inherently removed from the day-to-day execution of tasks. Literature has found that 65% of angel investors are non-one-time investors (Van Osnabrugge, 1998), where the typical angel investor has roughly one deal every 18-to-24 months, and where 25% to 40% of angel investors are engaged either full-time or part-time in their ventures (Morrissette, 2007). The point is, even actively involved angel investors can only provide a fraction of their full attention to the focal venture which presents difficulties in terms of monitoring entrepreneurial behavior within each venture.

An incentive-centric approach is supported by Makadok and Coff (2009), who state "firms increasingly use hybrid governance forms that fuse elements of market transactions into hierarchies or integrate elements of hierarchies into market transactions" (pg. 297). The authors build upon Holmstrom and Milgrom (1994), stating that markets are distinguished from firms by three dimensions of authority ("giving principal authority over what can and cannot be done demotivates the agent"), ownership ("allowing agent asset ownership motivates agent to maintain or improve"), and incentives ("for output completed motivates agents to increase production"). In the present context, an increased equity position for the angel investor increases their authority over the future relationship, decreases the agent's ownership of the asset, and decreases the agent's

incentives to work harder. Makadok and Coff (2009) continue, stating that a 'true hybrid' is where some dimensions are simultaneously market-like while others are hierarchy-like. The authors present six types of hybrid arrangements and suggest that the *autonomous profit center* arrangement, which is equated to *corporate venture capital investments*, will be most effectively governed with a mixture of hierarchy with strong incentives and autonomy.

The modern economy alleviates monitoring concerns by providing new ventures with significant technological capabilities in the form of accounting software; companies like Square offers a mobile accounting and point-of-sale system that can easily track the fundamentals of business activity important for the investor – income statement items of sales, expenses and profits. Bushman, Chen, Engel and Smith (2004) define corporate transparency as "the clarity of the activities and performance of the firm to outsiders" (pg. 168). Two factors are stated to hinder this transparency, (1) the relatively uninformative financial accounting systems where the firm's GAAP earnings are unable to explain changes to shareholders, and (2) the firm's complexity due to either geographic or business diversification. These modern software platforms help overcome transparency issues due to the ease of their use and how well they can integrate with the other a-la-carte systems. In the context of a new venture where resources are limited, the potential set of actions available for an entrepreneur is likewise limited. Assuming that the entrepreneur honestly accounts for each firm-level action, the accounting system should capture a significant portion of the entrepreneurial effort. Modern accounting systems thus provide a powerful baseline that the behavior of the entrepreneur must adhere to and should be expected as fundamental behavior by angel investors or any professional investor.

At the core of the transaction lies the basic premise from the private property rights literature that the firm is a legal entity onto itself, independent from the owners as its own taxable entity (Lan & Heracleous, 2010). During an angel investment, the invested capital is injected directly into the firm as opposed to given directly to the entrepreneur, and though the angel investor will become a partial owner of that firm and therefore of the investment, the entrepreneur will ultimately control the expenditure of that investment. Lan and Heracleous (2010) remind us that the firm "acquires a separate and distinct legal personality" (pg. 295), and "once shareholders subscribe to shares in the corporation, payment made in consideration for shares is considered property of the corporation" (pg. 301). To partially overcome this issue, I observe that angel investors require that the entrepreneur stipulate how the funds will be deployed. In support of this

general concept, Holmstrom and Milgrom (1991) "begin with the assumption that it is easier for an employer to exclude an activity entirely than to monitor it and limit its extent" (pg. 38). While the angel investor is not explicitly excluding any activity, I consider their stipulation of where to invest the funds as generating the same result. Because the specific use of funds is to pursue a strategic trajectory, the expenditure of those funds will reduce the firm's ability to take additional strategic actions. In other words, capital budgeting and documentation creates such an exclusion effect[11]. Under conditions of shared asset ownership, Holmstrom and Milgrom (1991) argue directly for an incentive-based contract, stating: "when the agent owns the asset returns, the optimal incentive contract will provide more intensive incentives to engage in production" (pg. 26). This behavior is also in-line with what Makadok and Coff (2009) highlight as 'indirect-inducement'. This is where a focal activity is selected for motivation knowing that such a focus will motivate adjacent tasks that can't be directly induced. The specification of how the funds will be utilized establishes an alignment of strategic intentions for how the firm will interact with its environment, and constrains the range of entrepreneurial behaviors around this strategic focus.

A third mechanism is the more visible act of requesting an equity stake in the embryonic firm. Prowse (1998) highlights how the shared ownership of common stock aligns interests, and often times, an angel investment contract is only held together by common stock allocation; highlighting the simplicity of the contract (Ibrahim, 2008). The earlier discussed tension for the governance concern pertains to this mechanism because equity is finite, ranging from 0% to 100%; additional ownership for one party must come at the other party's expense.

Incorporating the complexity of the organization further tilts the discussion towards an incentive-centric focus. Addressing this point directly, Jones and Butler (1992) state "In the entrepreneurial context, monitoring entrepreneurial behavior and the outcomes of that behavior to align interests is very expensive, only possible over the long-term, and an inefficient solution to making agents act like principals" (pg. 745). "Thus, behavior-based contracts are seldom sufficient. An outcome-based contract is the appropriate contract to promote the bearing of uncertainty and reduction of opportunism" (pg. 745). The authors state that the size, age, and complexity of a firm influence this decision. Jones and Butler (1992) define complexity in terms

[11] Naturally, the exclusion effect diminishes if the firm is able to generate its own capital from the environment, and while that does increase the risk of strategic misalignment, I would consider that as a good problem indicating that the firm has started to generate a return on investment

of both vertical and horizontal differentiation, also characteristic of many hierarchical levels and semi-autonomous operating subunits. While this conceptualization of complexity is clearly different from my focus on the firm-environment exchange, their point is well-taken that a single individual's ability to monitor all organizational behavior is quite difficult as complexity increases.

Hennart (1993) builds upon Perrow's (1986) criticism that TCE has neglected the complexity of actual institutions by only focusing on the two extreme cases of either a firm or hierarchical governance structure to address such agency concerns. Hennart's (1993) discussion of the differences between shirking and cheating presents the following position: "One implication of the model is that firms introduce price incentives to reduce the high cost of constraining employee behavior. The higher the cost, the more likely that firms will rely on these incentives. However, using price incentives is not a panacea, for it reintroduces cheating costs" (pg. 541). He concludes by stating that firms "will use price incentives for those activities about which they have limited knowledge and/or those which are costly to supervise" (pg. 541). Again, we are left with the guidance of incentivization.

Madhok (1996) summarizes the issue nicely: "In brief, bounded rationality manifests itself in two ways: (a) inability to monitor and control behavior effectively given the tendency of actors towards opportunism, and (b) constraints on firm capabilities because they do not possess the necessary behavior" (pg. 580). He continues that at both ends of the market-hierarchy governance continuum, it becomes proportionately difficult to monitor and reduce either cheating or shirking. He and Wang (2009) add further nuance to this point by studying the novelty, tacit-ness, and specificity of resource characteristics, stating: "A key insight of this study is that the roles of the two broad categories of corporate governance, monitoring and incentives, are asymmetric in relation to deploying innovative knowledge assets…In a highly innovative firm, incentive-based interests alignment is more appropriate for motivating managers; monitoring will normally be less effective" (pg. 933). While the embryonic stage of the firm places an extreme lower limit to Madhok's (1996) discussion on organizational capabilities, He and Wang's (2009) position is quite appropriate given that at the embryonic stage, there is little beyond knowledge assets; arguably also at an extreme limit.

The Risk Concern (Managerial Risk-Taking)

The managerial risk-taking literature considers the capital investment as a proxy for one's risk (Larcker, 1983; MacCrimmon & Wehrung, 1984; March & Shapira, 1987; March, 1988; Sanders & Hambrick, 2007). From a managerial perspective, any investment towards a new initiative has an unknowable future (Knight, 1921) and therefore the cost of initiating the process of generating a return on investment is the initial investment representing one's risk exposure. In terms of the dichotomy as presented by Commons (1934), this means that each strategic transaction has a magnitude in terms of the cost to complete it, and the managerial risk-taking literature would equate the cost of this strategic transaction to that of risk.

This notion of risk naturally applies to both the routine and the strategic transaction: a manager about to take a vertical integration decision may expect profits based on modeled projections, but these are unknowable ex ante. This is a separate concern from that of the angel investor's strategic transaction where the risk involves ownership of the actual firm itself. The difference is the exchange between an investor and the firm versus a firm and its environment. In a manner of speaking, one can say the angel investor gets two uses from the same dollar investment: (1) acquires a portion of the firm for return and continuity purposes, and (2) implements a firm-level strategy that will ultimately generate the return on that investment.

To the best of my knowledge, the literature has thus far only studied the decision to take a risk or not to take a risk in terms of frequency or propensity. In this study, I directly assess the degree of an angel investor's risk taking once they have decided to engage an opportunity in the form of an explicitly communicated negotiation position. That is, I am not concerned with *why* an action was taken in relation to the question of *why it was not* taken; this pertains to a question of frequency. Rather, I ask to what degree of risk was taken once the decision to do so has been made.

Larcker (1983) is credited with anticipating the managerial risk taking literature that was later formalized by March and Shapira (1987). In a study of performance plans, Larcker (1983) finds that managers significantly increase their capital investment activity two years after the implementation of these performance plans. Performance plans were relatively new with few existing prior to 1972. Their implementation was intended to influence managers to take additional risk from their assumed baseline steady-state of risk-aversion. In terms of the research on risk, which was traditionally viewed as variance in returns (an ex poste measure that is retrospective).

Larcker's (1983) study created a subtle shift to begin viewing risk from an ex ante perspective – as the actual capital outlay that beings such risk events.

In another foundational study, MacCrimmon and Wehrung (1984) interviewed 400 executives, presenting each with four risky situations. Higher level executives scored higher on risk-taking than lower executives, though the executives in general had a strong tendency to be risk-seeking and commonly sought to modify risky situations in various ways. Risk modification techniques were to (1) delegate, (2) delay, or (3) collect more information. Risk-seeking was observed to be more common for losses while risk aversion was observed to be more common for gains (falling in-line with prospect theory). Ultimately, the authors suggested the need to expand theories of risk beyond that of just a choice because *modification* implies continued action and involvement after a choice. The angel investor certainly fits the economic actor that these authors had in mind. Howell's (1971) discussion of uncertainty while playing games of skill certainly also applies; subjects were more risk-seeking when they have the ability to control the outcome even if the control is an illusion that doesn't change the odds.

In an unpublished manuscript, Shapira (1986) uses the interviews from the MacCrimmon and Wehrung (1984) study to explicitly make the argument that invested capital is equal to risk. Shapira (1986) highlights that 80% of executives said that they consider the negative outcomes only, and that "Seventy-five percent of the Shapira respondents saw risk as controllable" (March and Shapira, 1987: pg. 1410). Risk is not viewed as a probability but rather as an amount to lose. The seminal article on the topic is provided by March and Shapira (1987: 1407) who highlight two quotes from executives of particular applicability to angel investors because of the similarity in job functions; a vice president of a VC fund stated: "I don't look at the probability of success or failure but at the volume of risk" (pg. 1407); a different vice president stated: "everything should be expressed in terms of the profit (or loss) at the end of the project, shouldn't it?" (pg. 1408). March and Shapira (1987) formalize their view of *content-dependent risk-taking* by separating the act of taking a risk from that of risk aversion (Kahneman & Tversky, 1979) and framing (Tversky & Kahneman, 1981), to position risk as an action-oriented behavior with a magnitude.

Sanders and Hambrick (2007: pg. 1057) will later orient the managerial risk taking literature in-line with Knight (1921), Von Neumann and Morgenstern (1947) and Arrow (1965). The authors state that a big stride was taken "when they [March and Shapira] proposed that the "likelihood of outcomes and their values enter into calculations of risk independently, rather than

as their product" (March & Shapira, 1987: 1405) and when they observed that managers hold a special concern for "the worst outcomes" in weighing choice alternatives". Sanders and Hambrick (2007: pg. 1057) define risk as: "the degree to which potential outcomes associated with a decision are consequential, vary widely, and include the possibility of extreme loss", and decompose it into its three elements of (1) the size of the outlay, (2) the variance of probabilistic outcomes, and (3) the likelihood of losing most or all of the investment. They continue: "ceteris paribus, the bigger the investment (for a given firm), the bigger the exposure and hence the bigger the risk" (pg. 1058).

This discussion does present another difference between the economic actors of the angel investor and the Williamsonian business executive. The business executive operating within a firm must justify their actions to a set of owners in relation to the firm's past performance, while the angel investor is free to engage in any decision even if seemingly random (Wiltbank et al., 2009). In general, this justification is performed by connecting the investment (risk) to the expected returns. It is important to note that investment risk doesn't necessarily exist unless there is an associated return to be earned. The economics and finance literature views this relationship from an ex poste perspective, equating risk with the variance in returns generated over time (determined retrospectively). In contrast, the managerial risk-taking literature views risk as the ex-ante investment made by the manager. While the traditional business executive invests risk capital based on projections of historical activity, the angel investor is exchanging risk capital for an equity percentage in a firm that has little to no historical activity. The angel investor is therefore unable to calculate the investment risk in relation to return expectations in the formal sense as can traditional business executives. Rather, the angel investor is relating the risk capital directly to an equity percentage in the firm; equity that will directly impact the risk-return relationship.

As such, I associate the angel investor's request for more equity with a more *conservative approach* to their risk-taking behavior[12]. Risk as defined by the managerial literature remains the

[12] This notion of risk-taking avoids the complications associated with assigning the terms *risk-seeking* or *risk-aversion* to the present discussion because I am currently unsure as to how prospect theory (Kahneman & Tversky, 1979) integrates to the angel investment context. We do not know if decisions are viewed from the reference point of a gain (in relation to their personal funds) or a loss (in relation to the opportunity, where they begin with a return of -100%). It is important to also note that managerial risk taking is a different concept from individual risk-taking such as with prospect theory, where a designed experiment identified patterns in behavior when subjects were presented with a choice between a known outcome and a less known outcome of similar expected value (Kahneman & Tversky, 1979). The angel investor is faced with a different choice: to invest in Firm A with an unknown future, or to invest in Firm B with an unknown future, or to simply not invest anything at all. In this sense, there is similarity to the earlier question because not doing anything at all is a known outcome in terms of retaining one's capital. Yet, the choice remains fundamentally different.

same – the initial capital outlay. I apply the adjective of *conservativism* to the associated position on equity that accompanies all angel investment negotiation positions. As mentioned throughout the paper however, there is a clear tension between these closely-coupled negotiation positions. While greater equity internalized by the angel investor will contribute to a greater return on investment, more equity doesn't automatically translate to a faster recuperation of one's initial capital investment because asking for more equity could have the unintended consequence of not adequately incentivizing the entrepreneur who will oversee operations. Therein lies the tension that we investigate below.

HYPOTHESIS DEVELOPMENT

The Risk Concern

Investing into an embryonic firm falls directly in-line with the managerial risk-taking literature, referred to as "context-dependent risk taking" (March & Shapira, 1987: 1406). The managerial-risk taking literature however presents conflicting guidance when applying that guidance to the context of an angel investor. This may be driven by the literature's focus on assessing if individuals are more likely or less likely to take a risk (in terms of the frequency of the propensity to do so). The question from this study's perspective however, is not if they will take the risk, but rather to what degree they will take a risk once that they've decided to commit via an explicitly communicated offer[13]. As such, I effectively assume that the prior literature's findings of greater risk-taking in terms of frequency or the likelihood of taking that action, will translate to a less conservative approach and a lower equity request; likewise, vice versa.

The literature has found that on the one hand, managers exhibit more risk-taking behavior once their firm moves away from bankruptcy concerns (March & Shapira, 1987), driving partially by managerial optimism (Cooper, Woo & Dunkelberg, 1988; Palich & Bagby, 1995), the house money effect (Thaler & Johnson, 1990), prior successes (MacCrimmon & Wehrung, 1990), and increased organizational slack (Miller & Leiblein, 1996). These findings can all be related to angel investors, who have the funds and the discretion to invest, and who are away from bankruptcy concerns. Angel investors are clearly driven by economic optimism for the particular opportunity, else they presumably wouldn't investment funds into an unknowable future without that

[13] The reason why the angel investor decided to communicate an offer lies outside the scope of this study.

expectation of a return. Because equity is exchanged for the capital put-at-risk, greater risk-taking behavior should translate to a less conservative position on equity. That is, a lower equity request.

On the other hand, this literature has also found that managers exhibit less risk-taking behavior when the size of the prize increases (Kachelmeier & Shehata, 1992), as firms are younger and as the investment at the time of entry increases in size (March, 1988), and with prior successes (Dickson & Giglierano, 1986; Das & Teng, 1997; Busenitz, 1999; Miller & Chen, 2004). These findings can all be related to the embryonic firm context that is the specific focus of the angel investor's attention. As such, the above implies that the angel investor's context-dependent risk-taking (March & Shapira, 1987) would tend to take a more conservative stance in relation to equity. That is, a higher equity request.

Carpenter, Pollack & Leary (2003) find that the managerial behavior of VC-backed IPO firms exhibited less risk-taking behavior based on their decision to not expand internationally. I find this study to be particularly interesting because it implies a manager (entrepreneur) working for a venture capitalist (an angel investor is an informal VC – Wetzel, 1987; Wiltbank, et al., 2009) would exhibit less risk-taking behavior; implying that risk-aversion is embedded within the relationship. The question that arises from this study is if the angel investor's risk-taking behavior during the negotiation with the entrepreneur will influence the future risk-taking behavior of the entrepreneur with respect to the future firm-level decisions that the entrepreneur will oversee. That is, does the angel investor's request for more equity as representing a conservative stance, exasperate the underlying risk-aversion found in the relationship. Further, can the effects of framing during the negotiation be used to overcome the negative implications of if more risk-taking behavior is preferred; or likewise, if framing matters such that less risk-taking behavior is preferred. Naturally, the angel investor – entrepreneur relationship is also different than the VC-manager relationship due to the seeming greater independence that the entrepreneur enjoys due to equity ownership. These questions I leave for future research.

Overall, the above findings present a seeming conflict in guidance: when viewing the economic actor of an angel investor, the above implies greater risk-taking behavior; when viewing the embryonic firm context that is the focus of the angel investor's behavior, the above suggests less risk-taking behavior. Rather than viewing these as opposing perspectives, the two can be layered on top of one another. Angel investors are previously successful expert entrepreneurs who have the discretion to spend their own money as they please (Benjamin, Margulis & Margulis,

2000; Morrissette, 2007; Wiltbank, Read, Dew & Sarasvathy, 2009). While it seems that prior successes generate both optimism and a sobering effect, the baseline conditions across all negotiations is the angel investor's status of a well-funded and liquid investor. I therefore focus primarily on the context of the angel investment – the embryonic firm. From this perspective, as the size of the prize increases (Kachelmeier & Shehata, 1992), and based on the age of the firm and the high capitalization at the time of entry (March, 1988), angel investors should exhibit less risk-taking behavior. This translates into a more conservative stance via a greater equity request.

H1a: Angel Investor's capital offer will be positively related to the angel investor's equity request.

The lack of clarity in the findings (with respect to the question of degrees of risk-taking behavior) may suggest that the expected positive relationship isn't linear. I point to evidence from the enterprise risk management literature where McShane, Nair and Rustambekov (2011) find that as insurance firms implement additional risk management practices, the marginal benefit to firm value diminishes. In their study, the risk management domain is split into five incremental components, with the first three representing total risk management practices while the last two enter into the domain of enterprise risk management practices. The authors show that as the firm implements the first three levels, there is a significant positive benefit in firm value that then tapers off to plateau into *in*significance when the last two levels are incorporated into the risk management practices of the firm. That is, there is a diminishing effect of additional risk-management practices.

In the present context, this diminishing effect could be observed due to the specific circumstances of the negotiation. Value is typically either created in a market setting that allows for multiple transactions as per the grocery analogy used by Alchian and Demsetz (1972), or via financial analysis tools that allow for projections of historical operating performance into the future (Graham & Harvey, 2001). The value of the embryonic firm is unknowable because there is little (if any) information connecting past samples of operating history with future samples of expectations of an unknowable future demand function (Knight, 1921; Davidson, 1996). The parties are therefore negotiating without a good barometer as to what value should be and neither of these mechanisms are available to the angel investor. Rather, angel investors must rely on their subjective expectations of the future that must have some degree of overlap with the entrepreneur's

world view; an overlap of expectations is reflected in the convergence of the negotiation positions on capital and equity. That is, the negotiated agreement for angel investors is structured around a comparatively weaker foundation to facilitate a shared understanding of value.

The capital portion of the offer will not only be invested directly into the firm, but also will be invested to meet a specific need that the firm has in order to pursue the agreed upon strategic direction. Makadok and Coff (2009) highlight the term 'indirect inducement' that I associate with the angel investor's behavior – they are indirectly inducing the entrepreneur's focus of attention by specifying the purpose of the capital investment, which effectively constrains the entrepreneur's ability to diverge from that strategic direction and indirectly induces the entrepreneur to focus on the additional tasks surrounding that strategic direction. These are the additional tasks that the angel investor may be unable to directly induce, and because the capital will presumably be expensed and depleted, this limits the entrepreneur's strategic focus to the tasks at hand. In this manner, capital can effectively be seen as the 'ante' in poker, required to being the game of generating a return on investment[14].

The equity position provides the angel investor with added discretion. The combination of the entrepreneur's need to inject the firm with capital and the angel investor's ability to supply that capital entirely at their discretion, allows the angel investor to request any equity percentage for any given level of capital; as long as the entrepreneur accepts, a deal is reached. That is, the two components of capital and equity are untethered to each other though are clearly interrelated, representing the two components of value (where capital divided by equity equals value).

We can view this problem in two ways. First, we have to remember that the entire reason for taking a risk is to generate a return. That is, there is no risk if there is no return expectation and we cannot separate these two concepts from one another from an economic perspective. I also remind the reader that I am only focused on degrees of risk taking behavior once the decision has been made to invest. Therefore, I consider the capital investment as fixed and shift focus to the equity position. We know from basic math that more equity will generate a greater return, though we also know this relationship is complicated by the need to incentivize the entrepreneur. If the general trend of a positive relationship between equity and return is maintained even after this

[14] As mentioned earlier, the firm may generate its own capital which will allow for greater entrepreneurial discretion, but at the present point in time, this is a distant concern that can also be considered as a good problem to have.

complication, the expected greater return generated from internalizing more equity should compensate for the greater capital investment risked by the angel investor – this follow hypothesis H1a. However, the complication associated with the governance concern should have a diminishing effect on generating returns driven by the fact that equity is finite ranging from 0% to 100% and that the entrepreneur is in charge of generating that return.

The second way of looking at this problem is similar to other risk mitigation efforts such as those taken in the insurance industry. Assuming that the decision to engage in risk has been already made (a decision to issue an insurance policy or to engage in angel investing), the question is how that risk can be mitigated. While risk is clearly defined as the capital investment per the managerial risk-taking literature (March & Shapira, 1987), we can also define risk as the inability to generate a return[15]. This view allows me to conceptualize risk along a range from a total loss (-100% return) to an infinitely positive return (∞); following Knight (1921) risk is measurable, uncertainty is not. Internalizing greater equity by the angel investor will alter the returns and can be seen in the same light as the risk mitigation practices of the insurance industry. These practices are found to have a diminishing effect on firm value (McShane et al., 2011), effectively diminishing the positive impact on returns generated from the capital outlay:

> **H1b:** The relationship between the Angel Investor's Capital Offer and the Angel Investor's Equity Request, is positive with a diminishing effect, such that the initial positive relationship plateaus as capital increases.

The Governance Concern

The governance concern pertains to the agency problem (Jensen & Meckling, 1976; Eisenhardt, 1989; Lan & Heracleous, 2010), and in the present study I effectively conduct a direct test of Williamson's (1985) discriminating alignment hypothesis that states business characteristics impact the choice between implementing a hierarchical-based and a market-based governance structure. The agency problem arises when "the interests of the principal and agent diverge and the principal has imperfect information about the agent's contribution" (Bosse & Phillips, 2016: 276). In this study, the characteristic that allows for discrimination is the organizational complexity in terms of future firm-environment exchanges. As a reminder, I study

[15] This is slightly different from identifying risk ex poste from a pattern of returns; but does maintain the intrinsic connection between risk and return.

the degrees of discriminating behavior given that equity is utilized as the mechanism (Prowse, 1998; Ibrahim, 2008).

Two influential logics have been applied to governance decisions: transaction cost economics that is primarily focused on the firm, and the literature pertaining to the agency problem (Perrow, 1986; Oviatt, 1988; Madhok, 1996; Williamson, 1998)[16]. While both logics are built upon the behavioral assumption of bounded rationality (Simon, 1947), they present conflicting guidance when applied to the angel investment context. Further, TCE logic appears to be internally consistent while agency logic appears to be internally inconsistent. Because I am concerned with matters of degree, I use notion of a tighter versus a looser grip driven by ownership concentration (Demsetz & Lehn, 1985). A greater ownership by the angel investor translates into a tighter grip on the organization; likewise, vice versa. Below, I present the contrasting hypothesis 2a and 2b as driven by the conflicting guidance of each logic.

Governance: A TCE Logic

In short, TCE suggests greater internalization of the firm that translates to a greater equity request by the angel investor; a tighter grip per Demsetz and Lehn (1985). In a more direct application of TCE, Williamson (1985) states that the specificity of the asset is the most important characteristic, and greater asset specificity should be paired with a hierarchical governance structure. "As asset specificity becomes great, however, the preemptive claims of the bondholders against the investment afford limited protection – because the assets in question have limited redeployability" (Williamson, 1988: pg. 589). This clearly represents the current situation because the invested capital by an angel investor will be applied to a specific application, hindering the capital's redeployability. In other words, all angel investments pertain to highly specific assets and per Williamson's position, all angel investors should seek to internalize as much of the firm as possible.

[16] I use the term logic to disentangle the current study from the various lenses that investigate the agency problem. That is, I stay agnostic to any particular theoretical camp that studies the agency problem, such as agency theory (Eisenhardt, 1989), property rights and team production theory (Alchian & Demsetz, 1972; Lan & Heracleous, 2010), or control systems theory (Ouchi & Maguire, 1975; Ouchi, 1980). Each of these theories (and others) grapple with the underlying same issue – that of the agency problem. However, if forced to choose a camp, I align myself more so with the property rights and team production theories as they relate to ownership of the corporate mechanism (Berle & Means, 1932; Alchian & Demsetz, 1972; Holmstrom & Milgrom, 1991; Lan & Heracleous, 2010).

Demsetz and Lehn (1985) highlight that more complex organizations have a higher concentration of ownership by presenting two examples: an advertising agency and a sports team. In both instances, the firms exhibit high complexity because the nature of their output must continuously be tailored to the circumstances of the situation at hand. Greater efficiency is achieved as a tighter grip is maintained over the firm. As an extension of the focus on complexity, Tadelis (2002) finds that as product complexity increases, firms are more likely to internally procure the item, while more simple products are more likely to be purchased across the spot market. Thus far, we are left with consistent logic to from within TCE.

Hennart (1988) applies the principals of TCE to the specific context of an equity joint venture, defined to "arise whenever two or more sponsors bring given assets to an independent legal entity and are paid for some or all of their contribution from the profits earned by the entity, or when a firm acquires partial ownership of another firm" (pg. 362-363). This is certainly the circumstance of the present investment context if relaxing the notion of the '3rd' independent legal entity and allowing one sponsor to provide contributions to another entity (e.g.: an angel investment into an entrepreneurial firm). Hennart (1988) states that "all JVs can be explained as a device to bypass inefficient markets for intermediate inputs. The presence of inefficiencies in intermediate markets is thus a necessary condition for JVs to emerge" (pg. 364). Further, the presence of high transaction costs "can also, in specific circumstances…lead to internalization between parents and JVs" (Hennart, 1988: 364). The author highlights that equity control "reduces the problem of opportunism because it aligns the incentives of buyers and seller" and "attenuates incentives of bargaining and opportunism" (pg. 365). Because monitoring from the outside is more difficult, Hennart (1988) states that hierarchical control "is a much more efficient method to reduce risk, because a boss is entitled to much more information from his subordinates, and has the power to intervene much earlier than a banker could" (pg. 369). Here again we see a strong endorsement of greater internalization of new ventures.

Balakrishnan and Fox (1993) focus on the redeployability of the asset, building upon Williamson (1988). The authors highlight that "a firm's capital structure may have more to do with strategic and control factors than with purely financial factors" (pg. 3). Debt is viewed as a market-based governance structure while equity is viewed similar to that of hierarchical control. The authors present a series of propositions that are directly applicable to the present context. As the redeployability of the asset is reduced (proposition 1), or as the intangibility of the asset is

increased (proposition 2), there should be a negative relationship with a debt structure (proposition 3); in their study, debt and equity are viewed inversely. The angel investor is clearly exchanging highly redeployable assets (capital) with a specific strategic purpose in order to pursue an opportunity that has an unknowable value (Knight, 1921). Here again we see a strong endorsement of internalization given the positive expected relationship with equity.

Taken together, a transaction cost economics logic implies that with greater complexity, the angel investor will request a greater equity share of ownership. That is, the angel investor will pursue a tighter grip (Demsetz & Lehn, 1985) on the firm and thereby incentivize the entrepreneur to a lesser degree:

> **H2a:** Organizational complexity is positively related to the Angel Investors' final equity request.

Governance: An Agency Logic

The exchange of capital for partial equity ownership naturally gives rise to agency costs (Jensen & Meckling, 1976) that are a function of information asymmetries (Eisenhardt, 1989). Rooted in bounded rationality (Simon, 1947), the agency problem states that a principal doesn't have all of the information that an agent has, and this information asymmetry causes a governance concern. Agency costs thus arise as actors engage in the activity of risk sharing (Eisenhardt, 1989).

These concerns are especially heightened in an embryonic firm context. Overall, when applied to this context, agency logic suggests a looser grip on the firm where the angel investor seeks less equity and thereby incentivizes the entrepreneur to a greater degree. However, the literature on agency is not as clear cut as per the guidance of TCE; there is internal inconsistencies in research on the agency problem. Incidentally, there has been recent calls to "critically reexamine agency theory" due to "the failure of empirical research to support agency theory tenants" where "a large and growing body of empirical research on the means proposed to mitigate the agency problem has failed to support their efficacy" (Lan & Heracleous, 2010: 294).

Alchian and Demsetz (1972) address the difficulties of measuring individual effort within a firm, referred to as a 'metering problem'. Faced with such measurement issues, the authors conclude that absentee owners would prefer more control over the firm that should translate to a greater request for equity ownership. The angel investment context presents a less complicated version of this problem because of the fairly clean separation between the strategic and execution

roles; that is, a metering problem doesn't necessarily exist because the firm will either make money or not and execution of day-to-day tasks rests with the entrepreneur[17]. Further, angel investors are hands-on investors and afforded a less of an absentee status, suggesting greater incentives for the entrepreneur.

Holmstrom and Milgrom (1991) will later highlight that as the metering problem (Alchian & Demsetz, 1972) becomes more difficult, there will be a push towards greater exclusivity over the relationship. However as established, there is no metering problem in the present context because the firm's profit is clearly measurable and the execution of day-to-day tasks clearly belongs to the entrepreneur. Combined with what we know of angel investors as hands on investors (Van Osnabrugge 2000; Mason & Stark, 2004), this should translate to a looser grip on the firm because angel investors are not absentee owners.

Ouchi and Maguire (1975) state paradoxically, that output measures are used when least appropriate. They state that the firm is better-served using behavioral measures under conditions of high complexity, interdependence, or a lack of experience. However, this position is made alongside the point that output measures serve the control needs of the organization as a whole whereas behavioral measures better serve the control needs of a subunit. On one hand, the entrepreneur is presumably the subject matter expert in the specific venture at hand while on the other hand the angel is presumably also an expert entrepreneur (Wiltbank, Read, Dew & Sarasvathy, 2009). This would imply more use of output measures. On the other hand, even though the authors advise that behavioral measures should be used as complexity increases, they note that practitioners are observed to utilize output measures (improperly).

Overall, Ouchi and Maguire (1975) highlight how output and behavioral measures can act as complements as opposed to only operating as substitutes, and the application to the angel investment context presents lukewarm guidance that output measures will be observed in angel investment behavior (even though behavioral measures and thus greater hierarchy is advised). In the present context, while the firm may be in an embryonic stage, the whole of the organization

[17] In terms of why there is not a metering problem, it is important to note that I do not assume the entrepreneur is the sole owner of the firm. From the perspective of the angel investor, the entrepreneur is responsible to generate the profit and the loss associated with firm activity. The management of employees and the execution of daily tasks therefore rests with the entrepreneur; that is, the responsibility of those tasks. The entrepreneur is most certainly going to delegate a portion of those tasks and that is simply part of the job. The metering problem therefore does exist within the firm, but does not when considering the space between an angel investor and the entrepreneur.

must be served implying that output measures are more appropriate. There is therefore an inconsistency in this guidance for the embryonic firm.

Eisenhardt (1989) presents a series of propositions pertaining to circumstances when a behavioral-based measure versus an output-based measure should be used. When applied to the present context, there is inconsistent guidance on the use of output-based measures. While proposition #3 states information systems are negatively related to output measures, this can be interpreted differently because an embryonic firm typically only has an accounting information system that is primarily focused on measuring outputs – a profit or a loss. Proposition #4 states that outcome uncertainly is negatively related to output controls while proposition #8 states that lower task programmability is positively related to output controls. In considering the complexity of the organization, these propositions (#4 & #8) provide limited clarity because greater complexity reduces task programmability while increasing outcome uncertainty. Likewise, proposition #9 states outcome measurability is positively related to outcome-based contracts while propositions #10 states the length of the agency relationship is negatively related to output-based controls. For the embryonic firm, not only is the investment associated with the intention of a long-term relationship but so too is the outcome highly measurable. The one benefit of accounting systems is the ability to clearly identify if one is making or losing money, and again, there is limited clarity provided by these propositions (#9 & #10). Viewed from this angel, Eisenhardt's (1989) propositions provide neutral guidance.

Jones and Butler (1992) provide a direct endorsement of a looser grip, stating that output-based contracts are more appropriate to not only allow the other party to share in the uncertainty, but to also reduce their opportunistic behavior. The authors highlight how output-based measures help align the interests of the principal and the agent by having the agent (entrepreneur in this case) act as the principal (the angel investor). Co-ownership of the embryonic firm is in terms of common stock (Ibrahim, 2008; Prowse, 1998), and the angel investor is beholden to the entrepreneur's ability to execute the strategic objectives. This implies that a looser grip will better serve the firm's interests.

Hennart (1993) likewise presents conflicting guidance when interpreting his findings to the angel investment context, through his findings do pertain directly to the larger domain of angel investments because of his focus on hybrid arrangements that utilize both a market and hierarchical structure (referred to as the 'swollen middle' of institutional arrangements). Price incentives are

more frequently utilized if the employer has limited knowledge of the day-to-day activities, and should be greater as managerial expertise is lower and smaller as firms are smaller. Clearly, even though angel investors are more hands on (Van Osnabrugge 2000; Mason & Stark, 2004) there is an inherent information asymmetry (Eisenhardt, 1989) with the entrepreneur, which should imply that price incentives should be used to some degree. However, the small size of the firm and the entrepreneur's own expertise in their business suggests less price incentives[18]. We are left with neutral guidance.

Child and Rodrigues (2003) directly study equity-based joint ventures and define them as firms that have formed a "strategic alliance in which there is a pooling of ownership assets and usually a degree of joint management between two or more partner firms…they are in effect hybrid organizations" (pg. 342). The authors utilize the term 'hybrid organization', which provides a workable definition of the hybrid arrangements in this study because there isn't necessarily a new entity that is being created. Rather, one independent entity is infusing resources into another firm that is subsequently jointly owned. Child and Rodrigues (2003) highlight that these *"new organizational forms"* are being adopted with more frequency across a wide range of sectors. Interestingly, they conclude as uncertainty increases, and when high innovation rates lead to new strategic directions and new objectives, output control is likely to become problematic. Here, we have guidance that endorses a tighter grip.

As a brief aside, this view on hybrid organizations has a nuanced difference from that of Borys and Jemison's (1989: 235) conceptualization, who state that hybrids are "organizational arrangements that use resources and/or governance structures from more than one existing organization." This definition certainly does encompass "a broad range of organizational combinations of various sizes, shapes, and purposes, some of which are formal organizations (e.g., mergers), whereas others are formalized relationships that are not properly organizations (e.g., license agreements)". Among five different forms of organizational arrangements presented by Borys and Jemison (1989), the joint venture is defined as a "the creation of a new organization that is formally independent of the parents; control over and responsibility for the venture vary greatly among specific cases" (pg. 235).

[18] I assume that an angel investment conveys their comfort level with the business, leading to value creation; that is, angel investors would most likely not invest if they have no idea about the business.

When taking all of the studies as a whole, and when combined with Makadok and Coff's (2009) overall advice on greater incentivization and autonomy for venture capital firms, agency logic appears to be leaning slightly more towards the greater use of output controls as the complexity of the organization increases. That is, the angel investor will pursue a looser grip (Demsetz & Lehn, 1985). Within the studies discussed above, I base this slight lean towards incentivization on the property rights[19] and team production literature (Alchian & Demsetz, 1972; Holmstrom & Milgrom, 1991; Lan & Heracleous, 2010), and on Jones and Butler's (1992) position. From these, I subtract the conflicting or neutral guidance provided by Eisenhardt (1989), Hennart (1993), and Child and Rodrigues (2003).

H2b: Organizational complexity is negatively related to the Angel Investors' final equity request.

Organizational Complexity's Interactive Effects

From the managerial risk-taking literature (March & Shapira, 1987), we know that context matters. The contextual factor that the angel investor is exposed to is the varying organizational complexity associated with each opportunity. The angel investor is perpetually engaging in a series of *make-decisions* to partially internalize the newly encountered venture that will generate routine transactions (Commons, 1934). Further, each *make-decision* will take the angel investor along a unique trajectory. At this early stage of investment, beyond the subjective expectations of future success, the most easily observed objective differentiator of each new venture is the nature of the firm-environment exchange (Thompson, 1962) that characterize routine transactions (Commons, 1934). Even if the venture is at a conceptual stage, the notion of Common's (1934) 'futurity' can be used to fast forward to a period when the firm has attained economies of scale by adhering to its unique trajectory.

Intuitively, the greater complexity associated with the firm-environment exchange, the more difficult should be the firm's ability to generate free cash flows. This equates to greater difficulties in the coordination process (Coase, 1937), which Williamson (1981) considers as economic friction, and that Dahlman (1979) considers as resource losses due to the associated increase in uncertainty that accompanies complexity. The complexity associated with the

[19] Per Berle & Means (1932), I refer to the firm as a corporate mechanism that has its own rights within the economic system (Lan & Heracleous, 2010).

entrepreneurial effort can be viewed as the wallpaper of the negotiating room – it represents a characteristic of each case the angel investor encounters allowing the investors to structure their transactions in a discriminating manner (Williamson, 1985) – as presented in the conflicting hypothesis of 2a and 2b.

And yet, the embryonic stage of the firm represents its most pliable state, allowing for any potential course correction should the future turn out as unexpected. My point is that the firm-environment exchange is more a function of the investor's conceptualizations of a distant future than any specifics of the present circumstances; projections that anticipate economies of scale. The negotiated positions on capital and equity are thereby against this backdrop. From the prior three hypotheses I can therefore derive an expected relationship. In hypothesis 1, transaction cost economics presented a strong endorsement towards a tighter grip. Hypothesis 2 provided a lukewarm endorsement of a looser grip, whereas hypothesis 3 provided a lukewarm endorsement of a tighter grip. Therefore, based on the expected directionality of the concerns when taken individually, organizational complexity is expected to strengthen the positive relationship between capital and equity. That is:

> **H3a:** Organizational complexity will positively moderate the effect of capital on equity, such that greater organizational complexity will positively impact the relationship between capital and equity.

The final hypothesis builds upon the arguments developed in hypothesis 1b and hypothesis 3a. Per hypothesis 1b, the diminishing benefit of added risk mitigation practices found within the insurance industry (McShane et al., 2011) can be expected for the relationship between capital and equity; while greater equity does increase the angel investor's authority, it comes at the cost of diminishing the agent's ownership of the asset and reduces incentives (Makadok & Coff, 2009). This expected diminishing effect between capital and equity should be exasperated by the interactive effect of organizational complexity; if as per hypothesis 3a, the organizational complexity will positively moderate the relationship between capital and equity, then organizational complexity should reduce the diminishing effect of capital on equity by turning the relationship into a more linear one. I would further expect that the interactive effect of organizational complexity will lead to an initially steeper relationship between capital and equity at low levels of capital.

H3b: Organizational complexity will positively moderate the non-linear relationship (positive with diminishing effect) between the Angel Investor's Capital Offer and the Angel Investor's Equity Request, such that greater organizational complexity will result in a reduced diminishing effect.

METHODOLOGY

I study this phenomenon of a negotiation between an angel investor and entrepreneur in a natural setting (Jeffrey, Levesque & Maxwell, 2016). The natural setting is driven not only by the structure of the ABC TV show Shark Tank, but also in the negotiation itself. In a gentleman's game, a negotiation position advanced by an investor must anticipate acceptance, because in the event the position is accepted, not standing by one's offer is bad form. A communicated negotiation position is the explicit act by the investor that represents *'the event'* in this natural setting. This study aggregates a number of such events to identify patterns. In terms of Common's (1934) dichotomy, I study only a series of strategic transactions. In terms of Williamson's (1985) dichotomy of a *make-or-buy* decision, I study only a series of *make*-decisions.

In the show, a panel of five angel investors are exposed to a variety of business opportunities, each unique to its own strategic trajectory. Each angel has complete freedom of movement and can act independently, form a coalition, or choose not to participate. Each investor also has freedom of movement by requesting any equity percentage in relation to the offered capital investment. For this study, I treat the angel investor as one collective body and I take the final offer presented for each opportunity. The negotiation task is to secure cash flow rights associated with an opportunity that is obtained by secure equity ownership in the firm. A negotiated outcome, which requires the entrepreneur's acceptance of an angel investor's offer, is not consequential to this study. Rather, what is important is only that the investor has expressed interest and has done so explicitly in the form of an offer.

I truncate the study to focus on the angel investor's offer, stopping short of the entrepreneur's acceptance, because falling outside of these bounds invites a host of other factors that are not pertinent in this particular analysis. The dismal success rate of the entrepreneur's ability to secure an investment, ranging from 3% in Canada (Riding, Duxbury & Haines, 1997) to 5% in the US (Maxwell, Jeffrey & Levesque, 2011), highlights there is simply too much noise in trying to identify why angel investors make an offer or why entrepreneur's accept an offer. One

reasonable explanation could be the general poor quality in the supply of opportunities, which are unique and initially have a value that is purely subjective (initially held only by the entrepreneur). In the event of a negotiated agreement, value is derived from the overlapping subjective expectations of either negotiator. Further, each opportunity is measured in isolation with limited comparability among alternatives. In short, the selection process is highly subjective. Given these complications, I do not focus on the investor's selection process and defer to the growing body of literature addressing this question (e.g.: Feeney, Haines & Riding, 1999; Sudek, 2006; Maxwell, Jeffrey & Levesque, 2011; Carpentier & Suret, 2015; Harrison, Mason & Smith, 2015; Jeffrey, Levesque, Maxwell, 2016).

The pre-handshake (Freund, 1975) exchange of negotiation positions is typically subject to due diligence and is not a guarantee of investment; it is rather an "intention-to-fund" (Smith & Viceisza, 2017). It stands to reason that a post due diligence value will typically be lower in value than the initial handshake position. The assumption is that the additional information obtained by the buyer during due diligence would not increase the value unless the negotiation is structured to account for such changes. This is perhaps why more experienced angel investors are found to spend more time on due diligence (Forrester, 2014). Because the buyer is concerned with due diligence, information that reduces the initial value would be communicated to the seller, while information that increases the value would not be communicated.

Focusing only on investor positions allows a closer look at their idealistic expectations. At the time an offer is made, the angel investor is operating with a mental image that is seemingly as close to an ideal expectation as can be obtained. This is a reasonable presumption because if each angel investor seeks a 10x return on investment, then any communicated offer has this expectation, else I assume there would not be an offer.

Data & Sample

This study adds to a growing body of literature on the ABC TV show Shark Tank (Boulton, Shohfi & Zhu, 2019; Smith & Viceisza, 2017; Jeffrey, Levesque & Maxwell; 2016; Pollack, Rutherford, Nagy, 2012) and to studies on game shows in general (De Roos & Sarafidis, 2010; Post, Van Den Assem, Baltussen & Thaler, 2008; Metrick, 1995; Gertner, 1993). I utilized the edited version of the show made directly available for purchase on Amazon. The data set includes 90 episodes across four seasons, ranging seven years. I transcribed every other season

corresponding to the years 2009, 2011, 2013, and 2015. Each 45-minute episode took approximately 5 hours of raw transcription time and generated a total of 343 cases of a unique entrepreneurial opportunity (Shane & Venkataraman, 2000).

The negotiation context requires at least one explicitly communicated negotiation position by the angel investor, else there is no negotiation. Excluding those cases where no offer was advanced by angel investors (135 cases), reduced the data from 343 cases to 208. There are however multiple types of transactions occurring on the Shark Tank that clouds the focus of this study, which is primarily on the use of equity to resolve the dual tensions of governance and risk. The three main transactions are as follows: (1) a pure exchange of partial equity for capital, where equity is greater than 0% and less than 100%, (2) a venture debt structure that is effectively a loan to the entrepreneur with a token amount of equity (typically less than 5%), and (3) a full internalization by the angel investor where purchased equity is 100%. This study is focused on the first category, representing 176 cases and the 3rd category, representing 5 cases. The elimination of the venture debt structure (27 cases), reduces the final sample size to 181 cases.

It is important however, to point out that the 5 cases where the angel investor internalizes the full embryonic firm by acquiring 100% of the capital distorts the purpose of this study. The purchase of 100% equity is similar to an act of consumption and there is no governance-related tension to resolve through the use of equity to incentivize the entrepreneur. This distortion can be observed in the means and standard deviations in equity between the two samples. In the 181 case sample, equity has a mean of 33.2% and a standard deviation of 19.2%; in the 176 case sample, equity has a mean of 31.3% and a standard deviation of 15.7%. In the interest of being conservative, I report the results from the larger sample set of 181 cases. I then analyze the 181 cases following an accounting technique called analytical review (Stringer & Stewart, 1986), to derive patterns from the aggregated transaction from which inferences will be made to the individual transactions (Stringer & Stewart, 1986).

Measures

Dependent variable. The dependent variable is the *final equity request* as communicated by the angel investors who are viewed as one collective body. That is, each unique entrepreneurial presentation to the panel of angel investors receives one equity request from the angel investor

collective. The final equity position is an objective data point that is clearly identified in terms of a percentage (%).

Independent variable. The first independent variable is the angel investor's *final capital offer* (IV1). Within each explicitly communicated offer, each position on equity is paired with a position on capital. This capital offer establishes the magnitude of the risk concern per the managerial risk-taking literature (March & Shapira, 1987), and is likewise an objective data point that is clearly identified in terms of dollars ($). The final capital offer also provides an inherent control for the size of the entrepreneurial opportunity. To test the curvilinear relationship between capital and equity, the second variable is capital squared (IV2).

The third independent variable is *organizational complexity* (IV3). At this early embryonic stage of the firm, the primary concern is the firm's domain in terms of how it will interact with the environment (Thompson, 1962) to generate routine transactions (Commons, 1934). Complexity is a matter of perspective (Simon, 1962; Jensen, 1983; Kellert, 1993) and I focus on the complexity associated with the firm-environment exchange; these exchange points comprise the firm's domain. Thorelli's (1967) framework directly addresses this question of domain while adhering to Thompson's (1962) premise that boundary-spanning roles connect member with non-member.

Thorelli (1967) presented an operationalization for the domain of a single node within a network; I apply that logic to highlight the domain of a firm set within a market and adapt it to the modern internet-driven economy. I also add a sixth point to account for the stage of the embryonic firm; the coordination mechanism is either in need of completion, which represents a *build stage*, or has been completed and needs to be scaled, which represents a *grow stage* (a dichotomy presented by Erzurumlu, Joglekar, Levesque, & Tanrisever, 2019). I highlight this visually in Figure 2.2 below.

[INSERT FIGURE 2.2 ABOUT HERE]

The four indicators of *target market consumption* (intangible consumption, tangible consumptions, or both), *factor input variety* (one, limited, or many), *product variety* (one, limited, or many), and *business domain* (virtual domain, physical domain, or both) each pertain to the boundary spanning role connecting members with non-members (Thompson, 1962). The first indicator of target market consumption pertains to how the consumer will consume the firm's unit

of measure to generate the sale (i.e.: the routine transaction); this act of consumption can be physical such as food or clothing, virtual such as an internet application, or a combination of both. The next two indicators pertain to the variety of inputs and the variety of outputs to allow the firm to generate routine transactions (i.e.: sales and profit). To use the same example of an internet application, the input for the firm is programming time while the output is a single digital product. In contrast, the inputs for a clothing company are far greater as are the variety of products available for sale to the market. The business domain asks if the firm is entirely a virtual operation where there are less moving parts to coordinate as opposed to a firm operating in a physical domain which requires inventory and the physical movement of goods; naturally, some firms can be a hybrid, straddling both domains not in terms of having a website presence, but in terms of incorporating the virtual domain as a structural component of the firm that will ultimately ship a tangible product. I conceptualize this group of four indicators as Coase's (1937) coordination mechanism.

The remaining two indicators of *asset perishability* (durable or non-durable) and *difficulty* (build stage or growth stage) each introduce different aspects of Thorelli's fifth component – that of time. *Asset perishability* pertains to the underlying unit of activity that generates the routine transactions (Commons, 1934), while *difficulty* pertains to the stage of the opportunity in terms of how far along they are in their efforts to generate routine transactions (Commons, 1934). The final complexity score takes the median of these three indicators in order to avoid any issues from skewness[20].

The third independent variable is an *interaction of capital and organizational complexity* (IV3) to account for non-linearity. The remaining independent variables four through six pertain to the interactive effect that organizational complexity is expected to have with capital (IV4), the capital squared term (IV5), and the interaction of capital, capital squared and organizational complexity (IV6).

Control variables. For controls, I build upon the timely study by Boulton, Shohfi & Zhu (2019), who also studied the ABC TV show Shark Tank. The authors analyzed factors impacting the entrepreneur's valuation, the factors impacting if a venture receives an offer, and the factors impacting the entrepreneur's acceptance of the offer. I am only concerned with the receipt of an offer. The control variables used in this dissertation will differ slightly from those used by Boulton

[20] It is worth mentioning that the analyses highlight significance under both the single-factor and two-factor methods, which is encouraging.

et al. (2019) for a number of reasons. First, I only focus on one aspect of their study – factors impacting if a venture receives an offer. Further, my constrained focus reduces data availability and limits the number of control variables to be incorporated. As such, I use the Boulton et al. (2019) study as more of a guideline. In Table 2.1, I present the controls from their study alongside the list of controls that I've utilized. Some are taken as is, some are modified, and some new variables are added. These choices are based on what the angel investor objectively is able to observe (as independently observed by myself – the investigator) when investing into an opportunity.

I include if the opportunity has a *patent (Y/N) (C1)*, if the offer included a royalty (Y/N) (C2), and if the offer includes a *contingency (Y/N)* (C3). One point of departure from Boulton et al. (2019) is the lack of focus on the valuation of the firm. Therefore, I adapt their *sales to requested valuation* ratio to the ratio of *lifetime sales to offered capital* (C4). Along the same lines, I add the ratio of *offered capital to unit price* (C5) that provides a sense of how many units of activity it will take to generate the equivalent of the invested capital in terms of sales dollars. I likewise adapt the *gross margin* variable to the ratio of *offered capital to margin contribution* (C6), where the margin contribution is the difference between the unit sales price and the unit cost, providing another sense of how much unit activity is required to recoup the initial investment in terms of gross profit dollars.

I also add if the firm is a manufacturing operation with a clearly defined cost per unit of activity or if the opportunity is a service via the *Industry* indicator *(1=Manufacturing, 0=Service)* (C7). I identify a collective *race* (C8) variable for the entire entrepreneurial team, where an all-white-looking team is 100% and an all-non-white-looking team is 0%. I do the same for *gender* (C9), where an all-female team is 0% and an all-male team is 100%. I chose to exclude if a *venture had one member* or not (seemed less important), the *venture's age* (all of these firms are effectively in the embryonic stage), if the *average age of the entrepreneur was over 50* (difficult to objectively identify), and if there was *geographic proximity* between investor and entrepreneur (modern communications and travel make this a manageable situation).

Because I am concerned with the final offer of the entire angel investor group as if they are acting as one body, I wanted to partially control for intra-group dynamics and thus I add two variables: the *number of unique offers* (C10) that are made to an entrepreneur, and the *number of participating angel investors* (C11) that have expressed interest. Partially controlling for the intra-

group dynamics, I am effectively accounting for the shifting power dynamics associated with the entrepreneur's position between the time the entrepreneur walked into the Shark Tank and the time that they walk out. While I do not measure the temporal duration (because aired shows are edited to some degree), these variables were found by Oksoy et al (2019) to play a significant role from a cognitive perspective. The number of angels that have engaged by presenting an offer is an indication of the entrepreneur's legitimacy power (Oksoy, et al. 2019; French & Raven, 1959) because the greater the number of angels that participate results in a greater collective acceptance of the opportunity's potential merit. Likewise, the number of unique offers that each entrepreneur secures is an indication of their positional power (Oksoy, et al. 2019; Yukl & Falbe, 1991) and is a direct test of Emerson's (1962) power-dependence theory, where power and dependence have an inverse relationship. The more unique offers that an entrepreneur has, the less dependent they are on any single offer, thereby increasing their power position.

[INSERT TABLE 2.1 ABOUT HERE]

Statistical Techniques

I used a variety to statistical techniques. Though the data was compiled using qualitative collection methods, the data that was captured allowed for the use of regression analyses. As discussed, I first used Thorelli's (1967) framework to identify six (6) indicators representing the theoretical domain of organizational complexity (this effort was motivated by the surprising lack of any such measure in the literature). The four indicators that I have conceptualized as Coase's coordination mechanism are on a 3-nominal scale while the other two (2) indicators are on a 2-nominal scale. I therefore standardized all variables to a z-scale. I performed a factor analysis, and as conceptualized above, the four non-time-related indicators reduced to a single factor with an Eigenvalue of 1.731, accounting for 43.27% of the total variance. The two indicators that were not within this grouping pertain to the time component[21]. The resulting variable is a formative index

[21] I had initially performed a factor analysis with all 6 indicators. The results were not as clean as I had hoped but were still adequate for my purposes. In the visual provided by the factor analysis, 4 non-time indicators were grouped together at the 90°position, while the two time-related indicators were individually placed at the 0° position and 270° position, respectively. This factor analysis created 2 factors corresponding to the time / non-time split, with Eigenvalues of 1.844 and 1.029 (respectively), accounting for 31.74% and 17.15% of the variance (respectively) for a total coverage of 47.89%.

construction from the remaining three (3) variables, yielding a singular organizational complexity score for each embryonic firm.

The final coding was then independently validated by a 4th-year Ph.D. student in the Strategic Management program. Working independently after an initial discussion of the organization complexity construct, an initial comparison of coding yielded a 0.70 kappa coefficient. The student took an empty coding sheet and by watching the initial part of the entrepreneurial presentation to the angel investors, identified across all 181 cases each of the 6 indicators from which a formative index for the complexity score is determined. The majority of the discrepancy pertained to the difference between "limited" and "many" for both the *factor input variety* indicator and the *product variety* indicator. I decided to leave the original coding given that 0.70 is an acceptable convergence (Miles & Huberman, 1994). We are currently working on resolving the discrepancy in future research that fine tunes the organizational complexity construct.

In order to assess the relative strength of the organizational complexity score, I standardized all of the other non-dichotomous control variables (C4, C5, C6, C8, C9, C10, and C11). This is standard procedure when models include polynomials or interaction terms. Another reason to run a regression with standardized variables is when there are differences in the underlying units of measure for the variables hindering the comparability of the relative impact of each variable. The remaining variables are dichotomous (C1, C2, C3, and C7). I chose not to transform capital in order to retain its relevance to actual investment dollars. I then ran linear regression models to test each of hypotheses.

One criticism that may arise pertains to the simultaneity of capital and equity, as both are components of valuation and both are communicated simultaneously[22]; the criticism pertains to the issue of regressing quantity (the equity percentage) on price (the capital offer). The counter-argument is that the specific nature of this negotiation provides a conceptual safeguard. I argue that capital is effectively fixed and is determined by the specific need of the firm, which is the reason for this negotiation in the first place. The entrepreneur may misrepresent the need (unwittingly perhaps) but the angel investor doesn't have any incentive to provide more capital than is needed unless the investment is purely about the angel's ability to participate in the anticipated lucrative opportunity, which at this time is unknowable (Knight, 1921). Thus, while I am less concerned with the above potential criticism, it did highlight one limitation of this study –

[22] Grateful to a colleague Dr. Tom Schneider for this insight.

my inability to separate if the offered capital is purely for a specific need that the firm has, or if the capital is provided only to ensure the investor's participation regardless of the firm's need, or perhaps even a combination of both. This question I leave for future research.

RESULTS

I present the results of the unstandardized coefficients. Across Tables 2.3 and 2.4, the adjusted R-square ranges from 0.655 (model 1) to 0.731 (model 9). In addition, the variance inflation factors (VIFs) associated with the variables of interest do not exceed 3.0 in the baseline models 1 through 4 that test the linear relationships. Two variables (the *capital offer to unit price* ratio [C5] and the *capital offer to margin contribution* ratio [C6]) did present high multicollinearity with VIF values ranging from 185 to 225 across these first four models. The presence of these variables is intuitively appealing for the practical implications[23], yet both were insignificant at 0.100 p-values. While it may also make intuitive sense to exclude one of these variables that have a near perfect correlation with one another (0.99), the opposite impact that they exhort on equity as highlighted in Table 2.2 is surprising and has led me to retain both variables.

[INSERT TABLE 2.2 ABOUT HERE]

Ultimately, multicollinearity is a concern that increased noise will reduce the significance of the variables by inflating the standard errors of the variables under investigation. Regarding the notion of multicollinearity, O'brien (2007) highlights a useful quote from Belsley, Kuh and Welsch (1980: 116) that I find quite applicable to the circumstances: "These cases serve to exemplify the pleasantly pragmatic philosophy that collinearity does not hurt so long as it does not bite" (pg. 683). This suggests that we can live with a bit of multicollinearity. Table 2.2 presents the descriptive statistics and correlation matrix, which are also encouraging.

I present the results of the linear relationships (hypotheses 1a, 2a, 2b, and 3a) in Table 2.3 and the non-linear relationships (hypotheses 1b, and 3b) in Table 2.4. Per model 2, hypothesis 1a is SUPPORTED as indicated by the beta coefficient for the angel investor capital offer variable

[23] The point is briefly as follows: The angel investor's ability to generate a return is less a function of time than it is a function of the business activity. As such, these two variables help conceptualize the amount of activity required to generate a return on investment; if the unit price is high, then a return is generated by selling less units; if the margin contribution of each unit is high, likewise a return is generated by selling less units.

(1.32) per each $100,000; significant at ($p<0.05$). In relation to the angel investor's final equity request, there is a positive impact by the capital offer. That is, angel investors tend to take a more conservative approach when the capital investment increases, and this makes intuitive sense.

Per model 3, hypothesis 2b is SUPPORTED in that the final equity request is negatively associated with the organizational complexity of the embryonic firm, which suggests that an agency logic dominates. This is identified by the negative beta coefficient for the organizational complexity testing the direct effects of this variable on the requested equity (9.89 at $p<0.01$). That is, greater incentivization or a looser grip is suggested; hypothesis 2b is therefore NOT SUPPORTED.

Per model 4, hypothesis 3a is NOT SUPPORTED in that there is no moderating role of organizational complexity as pertaining to the relationship between capital and equity; the beta coefficient of -0.00000333 (-3.33 E-06) is not significant at $p<0.10$. It is interesting however that the strength of the direct effect that organizational complexity has on equity decreases in significance across each of these main variables of interest (model 4).

[INSERT TABLE 2.3 ABOUT HERE]

Across models 5 through 9, I highlight that there is a curvilinear relationship between capital and equity such that the relationship is initially positive, but has a diminishing effect as capital increases; this is indicated by the highly significant beta coefficients of the offered capital – ranging from 5.25 ($p>0.01$) in model 5 to 6.44 ($p<0.01$) in model 9) – with the highly significant beta coefficients for the square of the offered capital – ranging from -2.90 E-11 ($p<0.01$) in model 5 to -5.02 E-11 ($p<0.01$) in model 9. This finding makes intuitive sense given that equity is finite and the investor has to manage their risk-return concerns with the governance-related tension of using equity as an incentivization lever. As such, hypothesis 1b is SUPPORTED.

Finally, hypothesis 3b is PARTIALLY SUPPORTED in that organizational complexity has a clear interactive effect on the non-linear relationship between capital and equity, but only on the square of the offered capital as indicated by the beta coefficient 2.29 E-10 ($p<0.05$). That is, the observed diminishing effect between capital and equity becomes more linear as hypothesized. What is interesting is that the significance and directionality of organizational complexity dances around in models 6 through 9. When organizational complexity is interacted with the square of

offered capital in model 9, the beta coefficient is a positive 2.29 E-10 ($p<0.05$); as before organizational complexity does not moderate the relationship between capital and equity as indicated by the interaction of organizational complexity with the offered capital (the non-significant beta coefficient of -1.04 E-04).

[INSERT TABLE 2.4 ABOUT HERE]

DISCUSSION

I highlight the importance of an organization's complexity in determining governance structures (Demsetz & Lehn, 1985; Tadelis, 2002). However, I present a novel conceptualization of organizational complexity that focuses on the boundary-spanning exchanges that the firm has with its environment (Commons, 1934; Thompson, 1962; Thorelli, 1967); the firm-environment exchanges will produce what Commons (1934) refers to as routine transactions. The importance of this novel conceptualization of organizational complexity is that the embryonic stage of firm operations does not limit our ability to study organizational complexity. I advance that assuming the firm will remain on its intended strategic trajectory, the nature of the firm-environment exchange will remain fairly constant even though the scale of operations will presumably grow over time. This is the notion of futurity that Commons (1934) considers as a component of each transaction (see Van de Ven's 1993 review of Commons' 1934 book).

There are important implications of the presented conceptualization of organizational complexity for the entrepreneur. Coase (1937) presented the firm as a coordination mechanism. I advance that the coordination mechanism can be viewed in terms of the firm-environment exchange, which means that the complexity of these exchange points is within the entrepreneur's control. The entrepreneur's choices to engage in certain activities determines the nature of how the firm will interact with its environment. In other words, the nature of the exchange is a function of the firm's chosen activities, which are firmly within the control of the entrepreneur when he/she decides to pursue that strategic direction. The results support the above discussion. For example, the organizational complexity variable has a negative impact on the equity requested by the angel investor, which indicates that the angel investor prefers to incentivize the entrepreneur to a greater degree to compensate for the added complexity of the coordination effort. The high significance ($p<0.01$) and positive impact when the firm is a manufacturing operation confirms this result. In

the modern economy that has become increasingly global, manufacturing is a relatively simple component of the business model that can be readily outsourced to a number of outlets[24] – I am reminded of Thomas L Friedman's (2005) discussion on globalization 3.0: "The Peruvian dish maker recently discovered he could manufacture his Peruvian dish ware in China cheaper than in Peru. He now sells Peruvian dish ware on the internet, that is manufactured in China" (see http://jawspeak.com/2007/02/18/thoughts-from-thomas-friedmans-talk/).

I also make sound contributions to the transaction cost economics literature that serves as the overarching framework. Coase (1937) delineated the firm from the market and presented a conceptual domain of the firm that Alchian and Demsetz (1972) will later characterize as a surrogate for the market. In this dissertation, I present an operationalization of that domain by incorporating network theory as presented by Thorelli (1967; 1986). Thorelli highlights that a network is created when there is overlap in the domains of nodes within the network. This conceptualization of the market as a network follows modern supply chain research – rather than the chain as conceptualized by Porter (1985), there is instead a network of relationships (Harland, 1996); a network is created when the domains of firms connect in various manners (Thorelli, 1967, 1986). However, if we eliminate all but one of the nodes within a network, we are left with the domain of that singular node, which correlates directly with Coase's (1937) conceptual domain of the firm.

Another contribution to the transaction cost economics literature is in highlighting that the Williamsonian (1973, 1979; 1985) focus on asset specificity does not allow the investor to construct governance structures in a discriminating manner. For the angel investor, considering that each embryonic firm has an intended strategic trajectory, each embryonic firm is specific to its own end. It is important to note however that Williamson's (1985) discriminating alignment hypothesis still holds – the characteristics of the transaction does allow for discrimination among governance structures that economize transaction costs. I simply highlight that the organization's complexity in terms of the firm-environment exchange allows for this economizing effort as opposed to the specificity of the asset (where the firm is the asset). I am not alone here as Geyskens et al (2006) also found a limited impact of the asset specificity construct in the largest meta-analysis conducted on the subject.

[24] I am grateful to Chris Willis for this argument.

I present a final contribution to the transaction cost economics literature – there are two generic transactions as highlighted by Commons (1934), illuminated by Van de Ven (1993), and seemingly not yet incorporated into the vast body of literature: the routine transaction and the strategic transaction. The routine transaction can be viewed as the firm-environment exchange that will generate the sales and profit of the firm to which the organizational complexity construct applies. The strategic transaction establishes the customs, resolves the conflicts of interest, and establishes the working rules for the willing participants who have entered into a negotiation. Clearly, these transactions are interrelated and the strategic is initially a function of the routine, that will no doubt impact the future routine transactions; this post-investment impact is discussed by way of more or less incentives provided by the angel investor to the entrepreneur. The point that I raise is that transaction cost economics has not addressed all potential types of transactions – the decision to invest has been left out of the framework. To the best of my knowledge, this is the first study to do so.

The importance of these two transactions comes to play when addressing Demsetz's (1988) concern that TCE predicts the demise of the firm when transaction costs are zero while management costs are positive. Though unicorns such as Uber would indicate that firms can exist even under such mythical circumstances, I suggest a more practical resolution to his concern – that management costs can be zero while transaction costs cannot. I make this point by simplifying to a single-entity firm owned by the entrepreneur. In today's gig economy, consider a freelance web designer. This person is only managing themselves, though clearly it takes time for a quality website to be designed and maintained. Management costs enter into the picture when a second individual enters the firm as either an angel investor or employee. We can see that the angel investor not only has management costs, but also shares the burden of the transaction costs. On the other hand, if the entrepreneur was to higher an employee, then both management costs and transaction costs stay with the entrepreneur. This has important implications for the literature on agency and strengthens the applicability of the transaction cost economics framework.

I also contribute to the literatures on the agency problem (Alchian & Demsetz; 1972; Eisenhardt, 1989) and managerial risk taking (March & Shapira, 1987; Sanders & Hambrick, 2007). The seemingly inconsistent guidance presented by these two vast bodies of literature presents the implication that scholars have primarily focused on larger firms. I highlight the need

for scholars to focus on the embryonic stage of the firm and present frameworks and theories that address all types of economic institutions.

The major limitation of this study is the use of the TV show Shark Tank. While I reduce the issues arising from using edited made-for-TV episodes by considering only those instances when an angel investor has presented an offer, future research should incorporate traditional angel investors who operate silently throughout the informal risk capital markets (Wetzel, 1983; 1987). However, I am encouraged by our ability to purchase in real-life a number of products as presented on the TV show, suggesting that the TV show has an adequate degree of reality.

Another major limitation is that the study investigates the angel investor's intention-to-fund (Smith & Viceisza, 2018). I am therefore unable to make any connection to the actual performance after an investment has been made which prohibits my ability to identify if a chosen governance structure actually leads to an economizing outcome. That is, while increased organizational complexity has a negative impact on the angel investor's equity requests, is that a good thing or a bad thing? As of yet, we cannot determine this question. Having said that however, there is a degree of comfort to be had because the investigated body of angel investors represent the crème de la crème of angel investors based on their sheer investment activity and the size of their war chest. As such, this study gets to peek at their intentions-to-fund before they learn about all of the skeletons in the closet during subsequent due diligence efforts (Forrester, 2004). In other words, an argument can be made that the TV show captures the angel investor's most idealistic expectations of the future. Future research should identify just how divergent reality becomes from this ideal.

I address two additional minor limitations. First, questions of survivorship bias could be raised with respect to my selection of only those cases where an angel investor has made an offer. The narrow scope of the study however should alleviate such concerns because I am interested in examining angel investor negotiation behavior and their degrees of risk taking once the decision to invest has been made. While there are many reasons why an investor would decide to engage in a firm in the first place (e.g.: Chen, Yao & Kotha, 2009), I am not concerned with that part of the process. By constraining the study to the actual negotiation when an explicit offer has been made, the very act of presenting an offer inherently accounts for the multitude of reasons for engaging. Second, the shark tank does take a percentage of the future proceeds of the firm ranging from 2% to 5%. This also does not concern me because I am only focused on the angel investor's

behavior and that behavior pertains to the exchange of their personal capital for personal equity ownership. Any other side deals that occur and how the remainder of equity is divided across the entrepreneurial side is of less concern.

To answer the research question, I observe that the organizational complexity of the embryonic firm does capture a significant portion of the angel investor's attention, that leads the investor to utilize a governance lens that is incentive-centric following an agency logic. The relative strengths of the standardized coefficients and the directionality highlights this conclusion. However, when the capital investment is accounted for, both as a stand-alone effect and when considered in relation (as an interaction term) to the complexity of the organization, the angel investor is observed to focus more so on the risk concern, leading to a greater internalization of the embryonic firm by way of a transaction cost economics logic. I must acknowledge that the angel investor's conservative stance when it comes to the risk concern is closely associated with the transaction cost economics logic because of a tendency towards greater internalization of the firm. On the other hand, a less conservative stance from a risk perspective is closely associated with an agency logic because both indicate a looser grip on the firm.

To rephrase the original question, I asked if angel investors internalize the embryonic firm more or less when faced with these dual concerns of risk and governance in relation to organizational complexity. To this question I can definitely state that as the organizational complexity increases for lower levels of capital, internalization is less, while internalization is greater at higher levels of capital.

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TABLES AND FIGURES

Figure 2.1: The Framework (Transaction Cost Economics)

		Transaction Costs							
Commons (1932)	~	unit of economic analysis							
Commons (1934)	~	Strategic Transaction = f(x) = f(Routine Transaction)							
Dahlman (1979)	~	Search & Info Costs	+	Bargaining Costs	+	Policing & Enforcement Costs			
Dahlman (1979: 148)	~	"resource losses due to lack of information" (uncertainty)							
Williamson (1981)	~	economic counterpart of friction							
Williamson (1975 / 1985)	~	Ex Ante					Ex Post		
Dyer (1997)	~	Search	+	Contracting			+	Monitoring	+ Enforcing
Dual Concerns	~	A **Risk** Concern					A **Governance** Concern		

Figure 2.2: The Organizational Complexity Construct

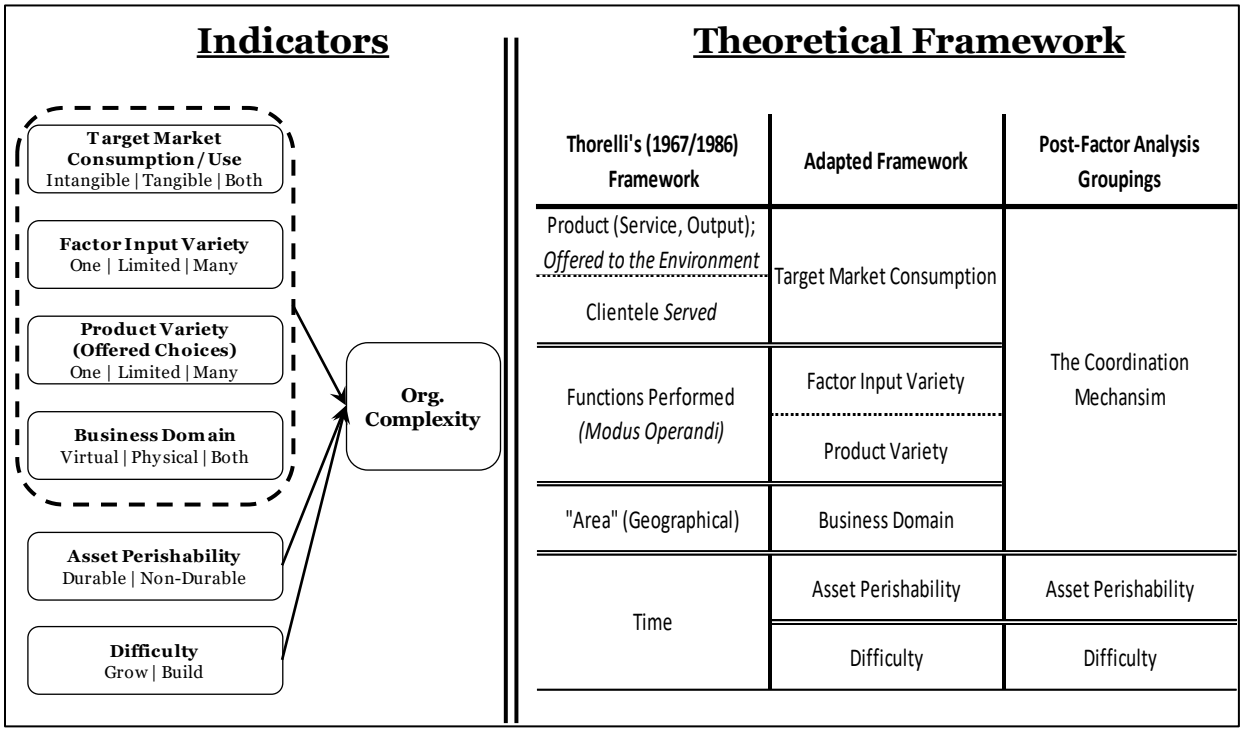

Table 2.1: Control Variables

Controls from Boulton et al (2019)	Utilized Controls		Dimension
Patent (Y=1, N=0)	Patent (Y=1, N=0)	(C1)	1 / 0
Royalty (Y=1, N=0)	Royalty (Y=1, N=0)	(C2)	1 / 0
Contingent Offer (Y=1, N=0)	Contingent Offer (Y=1, N=0)	(C3)	1 / 0
Sales / Requested Valuation	Sales (Lifetime) / Offered Capital	(C4)	%
- - - - - - -	Offered Capital / Unit Price	(C5)	$
Margin	Offered Capital / Margin Contribution	(C6)	$
Industry (2-digit SIC Code)	Industry (Manufacturing=1, Service=0)	(C7)	1 / 0
Race	Race of Team (W=100%, NW=0%)	(C8)	%
Gender	Gender of Team (M=100%, W=0%)	(C9)	%
- - - - - - -	Number of Unique Offers	(C10)	#
- - - - - - -	Number of Participating Investors	(C11)	#

Table 2.2: Descriptive Statistics and Correlation Matrix

	(C1)	(C2)	(C3)	(C4)	(C5)	(C6)	(C7)	(C8)	(C9)	(C10)	(C11)	(IV1)	(IV2)	(IV3)	(IV4)	(IV5)	(IV6)	(DV)
(C1) Patent (Y=1, N=0)	1																	
(C2) Royalty (Y=1, N=0)	0.12	1																
(C3) Contingent (Y=1, N=0)	0.09	0.10	1															
(C4) Z_SalesLifetime / Capital Offer	**-0.17 ****	-0.01	0.02	1														
(C5) Z_Capital Offer / Unit Price	0.12	-0.03	-0.02	-0.03	1													
(C6) Z_Capital Offer / Margin Contrib	0.11	-0.02	-0.02	-0.02	**1.00 *****	1												
(C7) Industry (Manu=1, Service=0)	**0.24 *****	0.01	0.08	**0.15 ****	0.05	0.05	1											
(C8) Z_Race (Team) (W=100%, NW=0)	0.05	0.08	-0.08	**0.12 ***	0.05	0.05	0.07	1										
(C9) Z_Sex (Team)(M=100%, F=0)	**0.18 ****	0.10	0.01	0.04	0.07	0.06	-0.09	**0.16 ****	1									
(C10) Z_Unique Offers	0.00	0.09	-0.06	**0.18 ****	-0.04	-0.05	0.09	-0.02	0.02	1								
(C11) Z_Unique Angel Participants	0.03	**0.17 ****	-0.05	**0.12 ***	-0.06	-0.06	0.11	0.00	-0.02	**0.84 *****	1							
(IV1) Angel Final Capital Position	0.10	0.09	0.02	0.05	0.01	0.01	-0.11	0.06	0.11	**0.20 *****	**0.22 *****	1						
(IV2) Angel Final Capital SQUARED	0.03	0.09	0.02	-0.02	-0.02	-0.02	**-0.14 ***	0.06	0.03	**0.15 ****	**0.18 ****	**0.92 *****	1					
(IV3) Organizational Complexity	-0.09	-0.02	0.13 *	-0.10	0.11	0.08	**0.13 ***	0.01	0.03	0.02	0.00	0.02	0.01	1				
(IV4) Org. Complexity * (IV1)	**-0.19 *****	0.11	0.12	-0.10	0.04	0.03	**0.17 ****	-0.09	-0.07	0.04	0.02	**-0.31 *****	**-0.32 *****	**0.69 *****	1			
(IV5) Org. Complexity * (IV2)	**-0.13 ***	**0.18 ****	0.10	-0.04	0.03	0.02	**0.18 ****	-0.10	-0.02	0.03	0.01	**-0.49 *****	**-0.59 *****	**0.29 *****	**0.83 *****	1		
(IV6) Org. Complexity * (IV1) * (IV2)	-0.06	**0.18 ****	0.10	-0.01	0.02	0.02	**0.18 ****	-0.08	0.02	0.01	-0.02	**-0.55 *****	**-0.69 *****	**0.15 ****	**0.66 *****	**0.95 *****	1	
(DV) Final Angel Equity	**0.13 ***	-0.03	-0.09	**-0.24 *****	-0.06	-0.05	0.03	-0.04	-0.08	**-0.19 ****	-0.04	**-0.13 ***	-0.11	-0.09	-0.08	-0.03	0.01	1
Mean	0.35	0.03	0.14	(0.00)	(0.00)	(0.00)	0.81	0.00	(0.00)	(0.00)	(0.00)	260,037	1.51E+11	(0.22)	(52,722)	-2.97E+10	-3.44E+16	0.33
Standard Deviation	0.48	0.18	0.35	1.00	1.00	1.00	0.39	1.00	1.00	1.00	1.00	289,063	4.55E+11	0.53	182,009	1.88E+11	2.88E+17	0.19
Min	0.00	0.00	0.00	(0.72)	(0.15)	(0.14)	0.00	(2.74)	(1.61)	(0.91)	(1.07)	25,000	6.25E+08	(1.43)	(735,000)	-1.29E+12	-2.25E+18	0.05
Max	1.00	1.00	1.00	5.01	12.87	13.09	1.00	0.41	0.74	4.04	2.55	2,000,000	4.00E+12	2.22	885,563	1.05E+12	1.46E+18	1.00
N	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181

Notes: Pearson correlations; bolded highlights significance, where *** is <0.01 (2-tailed), ** is <0.05 (2-tailed), and * is <0.10 (2-tailed)

Table 2.3: Models 1-4 (Linear Relationships)

	(DV) Angel Final Equity (%)							
	Model 1	**VIF**	**Model 2**	**VIF**	**Model 3**	**VIF**	**Model 4**	**VIF**
(C1) Patent (Y=1, N=0)	**6.32 *** (3.83)	1.9	5.07 (3.81)	1.9	2.60 (3.81)	2.0	2.43 (3.90)	2.1
(C2) Royalty (Y=1, N=0)	- 0.90 (9.70)	1.1	- 2.14 (9.57)	1.1	- 2.62 (9.36)	1.1	- 2.07 (9.69)	1.2
(C3) Contingent (Y=1, N=0)	- 2.63 (4.86)	1.2	- 3.48 (4.80)	1.2	- 1.77 (4.73)	1.2	- 1.72 (4.75)	1.2
(C4) Z_SalesLifetime / Capital Offer	**- 5.33 ***** (1.79)	1.1	**- 5.34 ***** (1.76)	1.1	**- 5.83 ***** (1.73)	1.1	**- 5.87 ***** (1.75)	1.2
(C5) Z_Capital Offer / Unit Price	- 25.82 (22.87)	186	- 24.77 (22.54)	186	4.38 (24.14)	223	3.81 (24.34)	225
(C6) Z_Capital Offer / Margin Contrib	23.71 (22.84)	185	22.73 (22.52)	185	- 5.77 (24.03)	221	- 5.20 (24.23)	223
(C7) Industry (Manu=1, Service=0)	**31.80 ***** (2.53)	1.9	**29.27 ***** (2.70)	2.2	**28.59 ***** (2.65)	2.2	**28.80 ***** (2.81)	2.5
(C8) Z_Race (Team) (W=100%, NW=0)	- 1.26 (1.73)	1.1	- 1.35 (1.71)	1.1	- 1.22 (1.67)	1.1	- 1.26 (1.69)	1.1
(C9) Z_Sex (Team)(M=100%, F=0)	0.12 (1.76)	1.1	- 0.26 (1.74)	1.1	- 0.03 (1.71)	1.1	- 0.05 (1.71)	1.1
(C10) Z_Unique Offers	**- 8.34 ***** (3.19)	3.6	**- 8.61 ***** (3.14)	3.6	**- 8.55 ***** (3.07)	3.6	**- 8.50 ***** (3.09)	3.6
(C11) Z_Unique Angel Participants	**5.45 *** (3.19)	3.6	4.97 (3.15)	3.6	**5.20 *** (3.08)	3.6	**5.19 *** (3.09)	3.6

	(DV) Angel Final Equity (%)							
	Model 1	**VIF**	**Model 2**	**VIF**	**Model 3**	**VIF**	**Model 4**	**VIF**
(IV1) Angel Final Capital Offer ($100K)			**1.32 **** (0.00) *[2.463]*	1.6	**1.19 **** (0.00) *[2.258]*	1.6	**1.13 *** (0.00) *[1.901]*	2.0
(IV2) Angel Final Capital SQUARED								
(IV3) Organizational Complexity					**- 9.89 ***** (3.34)	1.4	**- 9.12 *** (4.77)	2.9
(IV4) Org. Complexity * (IV1)							- 3.33 E-06 (0.00) *[- 0.226]*	3.0
(IV5) Org. Complexity * (IV2)								
IV6) Org. Complexity * (IV1) * (IV2)								
R^2	0.676		0.687		0.702		0.702	
Adjusted R^2	0.655		0.665		0.679		0.677	
F Statistic Change (p-value)	0.000		0.015		0.004		0.821	
Std. Error of the Estimate	22.51%		22.18%		21.69%		21.75%	
Degrees of Freedom	11		12		13		14	
Observations	181		181		181		181	

H1a

H2a & H2b

H3a

Note: All beta figures are standardized coefficients; standard errors in parentheses; t-values in [brackets]; significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.10$); intercept=0

Table 2.4: Models 5-9 (Control Variables)

	(DV) Angel Final Equity (%)									
	Model 5	**VIF**	**Model 6**	**VIF**	**Model 7**	**VIF**	**Model 8**	**VIF**	**Model 9**	**VIF**
(C1) Patent (Y=1, N=0)	3.37 (3.73)	1.9	1.27 (3.75)	2.0	0.49 (3.84)	2.1	0.30 (3.84)	2.1	0.99 (3.80)	2.2
(C2) Royalty (Y=1, N=0)	- 1.18 (9.31)	1.1	- 1.69 (9.14)	1.1	0.58 (9.47)	1.2	3.44 (9.76)	1.3	3.90 (9.63)	1.3
(C3) Contingent (Y=1, N=0)	- 3.64 (4.66)	1.2	- 2.08 (4.61)	1.2	- 1.91 (4.62)	1.2	- 1.36 (4.64)	1.3	- 0.73 (4.58)	1.3
(C4) Z_SalesLifetime / Capital Offer	**- 6.02 ***** (1.72)	1.2	**- 6.41 ***** (1.70)	1.2	**- 6.61 ***** (1.71)	1.2	**- 6.63 ***** (1.71)	1.2	**- 6.74 ***** (1.69)	1.2
(C5) Z_Capital Offer / Unit Price	- 27.20 (21.91)	186	- 0.74 (23.61)	224	- 3.39 (23.79)	227	0.49 (23.99)	232	- 16.74 (24.77)	254
(C6) Z_Capital Offer / Margin Contribution	25.07 (21.89)	186	- 0.79 (23.49)	222	1.83 (23.68)	225	- 1.89 (23.56)	229	14.78 (24.58)	250
(C7) Industry (Manu=1, Service=0)	**23.83 ***** (3.09)	3.0	**23.64 ***** (3.04)	3.0	**24.17 ***** (3.09)	3.1	**23.43 ***** (3.15)	3.3	**22.49 ***** (3.13)	3.3
(C8) Z_Race (Team) (W=100%, NW=0)	- 0.83 (1.67)	1.1	- 0.75 (1.64)	1.1	- 0.91 (1.65)	1.1	- 0.87 (1.64)	1.1	- 0.52 (1.63)	1.1
(C9) Z_Sex (Team)(M=100%, F=0)	- 1.24 (1.72)	1.1	- 0.96 (1.69)	1.1	- 1.07 (1.70)	1.2	- 0.88 (1.70)	1.7	- 1.09 (1.68)	1.2
(C10) Z_Unique Offers	**- 8.58 ***** (3.05)	3.6	**- 8.53 ***** (3.00)	3.6	**- 8.33 ***** (3.01)	3.6	**- 8.05 ***** (3.01)	3.7	**- 8.06 ***** (2.97)	3.7
(C11) Z_Unique Angel Participants	5.01 (3.06)	3.6	**5.21 *** (3.01)	3.6	**5.19 *** (3.01)	3.6	**5.03 *** (3.01)	3.6	**5.02 *** (2.97)	3.6

Note: All beta figures are standardized coefficients; standard errors in parentheses; t-values in [brackets]; significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.10$)

Table 2.4: Models 5-9 (Main Variables of Interest; Curvilinear Relationships)

	(DV) Angel Final Equity (%)									
	Model 5	**VIF**	**Model 6**	**VIF**	**Model 7**	**VIF**	**Model 8**	**VIF**	**Model 9**	**VIF**
(IV1) Angel Final Capital Offer ($100K)	**5.25 ***** (0.00) *[4.056]*	9.8	**4.83 ***** (0.00) *[3.769]*	10.0	**4.81 ***** (0.00) *[3.759]*	10.0	**5.44 ***** (0.00) *[3.928]*	11.7	**6.44 ***** (0.00) *[4.502]*	12.8
(IV2) Angel Final Capital SQUARED	**- 2.90 E-11 ***** (0.00) *[- 3.316]*	6.8	**- 2.68 E-11 ***** (0.00) *[- 3.101]*	6.9	**- 2.85 E-11 ***** (0.00) *[- 3.225]*	7.2	**- 3.61 E-11 ***** (0.00) *[- 3.305]*	11.0	**- 5.02 E-11 ***** (0.00) *[- 4.074]*	14.4
(IV3) Organizational Complexity	H1b		**- 8.91 ***** (3.28)	1.4	- 5.74 (4.76)	3.0	**- 10.68 *** (6.34)	5.4	2.90 (8.50)	9.9
(IV4) Org. Complexity * (IV1)					- 1.35 E-05 (0.00) *[- 0.920]*	3.1	2.21 E-05 (0.00) *[0.660]*	16.3	- 1.04 E-04 (0.000) *[- 1.651]*	58.6
(IV5) Org. Complexity * (IV2)							- 3.38 E-11 (0.00) *[- 1.179]*	12.0	**2.29 E-10 **** (0.00) *[1.991]*	198
(IV6) Org. Complexity * (IV1) * (IV2)			H3b						**- 1.25 E-16 **** (0.00) *[- 2.357]*	98.7
R^2	0.706		0.718		0.720		0.722		0.731	
Adjusted R^2	0.683		0.695		0.695		0.695		0.703	
F Statistic Change (p-value)	0.001		0.007		0.359		0.240		0.020	
Std. Error of the Estimate	21.56%		21.16%		21.17%		21.14%		20.86%	
Degrees of Freedom	13		14		15		16		17	
Observations	181		181		181		181		181	

Note: All beta figures are standardized coefficients; standard errors in parentheses; t-values in [brackets]; significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.10$); intercept=0

ESSAY 2: DEALING WITH ANGELS: THE ANCHORING EFFECT

Aydin S. Oksoy
Old Dominion University

ABSTRACT

I study how anchoring effects influence negotiations between entrepreneurs and angel investors. I argue that in negotiations involving new ventures there exists two tensions: *uncertainty* and *power differentials*. Entrepreneurial opportunities are inherently uncertain and the unfolding negotiation occurs along two interdependent dimensions of value (capital and equity) where each dimension adds a degree of uncertainty. Moreover, power differentials create an additional layer of tension. I explore how such tensions impact anchoring effects by studying negotiations on the TV show *Shark Tank*. I contribute to the anchoring literature by studying a context where true value is unknowable, and to the negotiation and power literatures by studying the direct impact of power in a natural negotiation setting. In terms of anchoring effects, I observe an effect with the capital dimension but not with the equity dimension. For this capital dimension, I raise the possibility that the observed effect is a function of the negotiation task and not necessarily due to cognitive bias. For the equity dimension, it appears angels may be less influenced by to the cognitive effects of anchoring. I also find that power can shift towards the benefit of the entrepreneur, allowing a larger final capital position and a lower final equity position, suggesting that the effects of power and cognition may be confounded during an actual negotiation.

Keywords: Keywords: Angel Investors, Entrepreneurs, Negotiation, Cognitive Bias, Anchoring Effect, Power, Power Tactics

INTRODUCTION

"…a large puzzle that will not go away – a search for the bounds of human rationality" (Kahneman, 1991: 142)

The influence of cognitive biases on judgements and decision-making has become canonical; as uncertainty increases, the impact of cognitive biases creates systemic errors in judgement (Furnham & Boo, 2011; Kahneman, 1991; Tversky & Kahneman, 1974; Tversky & Kahneman, 1986). Individuals facing increased uncertainty try to simplify their perceived environment using heuristics, and "in general, these heuristics are quite useful, but sometimes they lead to severe and systemic errors" (Tversky & Kahneman, 1974: 1124). Ironically, it seems that the circumstances where we are most likely to utilize heuristics, are the very circumstances where we are at the greatest risk of making a systemic error (Kahneman & Tversky, 1982). The anchoring effect represents one type of cognitive bias that becomes particularly acute as uncertainty increases (Kahneman & Tversky, 1982; Furnham & Boo, 2011).

I study a context of extreme uncertainty where systemic errors are more likely to occur; a buy-sell negotiation between an angel investor and an entrepreneur where both parties operate with an information deficit (Arrow, 1974). At the conclusion of the negotiation, the two parties will reach an agreement as to the amount of capital to be exchanged for equity ownership in the firm; and from these two points of exchange, a firm valuation is derived where capital divided by equity equals valuation. Naturally, the exchange of capital and equity is driven by the firm's future potential but there is little information to facilitate a shared understanding of this future. Agreements can thus be viewed as overlaps in the subjective expectations of the negotiators as opposed to calculated valuations from more formal methodologies such as discounted cash flow analyses (Graham & Harvey, 2001).

During the negotiation, the first offer not only introduces information into this information deficit environment, but also influences the perception of the counterparty by framing the basic parameters of what a potentially agreed upon valuation would look like (Bazerman, 1983; Tversky & Kahneman, 1991). Introducing such a reference point creates an anchoring effect that draws the counter-party's cognitive attention. The purpose of this study is to investigate how the initial information presented by the seller influences the negotiation behavior of the buyer; that is, I investigate if the seller can influence a cognitive bias in the buyer. If the anchoring effect is indeed

as prevalent as the literature indicates (Furnham & Boo, 2011), then it is quite important to understand its potential to distort judgement considering that on an annual basis since 2006, angel investment has fluctuated above $20.0 billion (UNH, CVR).

Studies that investigate the anchoring effort are typically experimentally designed and utilize three components: (1) an objectively identifiable true value associated with the focal topic that remains unknown to the study participant, (2) an anchoring value that is introduced by the experimenter, and (3) the response provided by the study participant (Slovic & Lichtenstein, 1971). The study by Northcraft and Neale (1987) stands out because they conducted their experiment in a natural setting, asking professional real-estate agents to value a local residential real estate unit. The negotiation object was a tangible asset within the agents' zone of influence. Prior to providing their valuations of the property, an anchoring value was introduced. This experiment was intended to reflect reality in that real estate agents for the buyer often have to assess the value of a residential unit and provide an independent valuation from that provided initially in the form of the seller's opening bid or asking price. The actual existence of the tangible asset provided a close enough proxy for an objective true value measure used as a barometer against the counter appraisals from the real estate agents. Through a repeated measurement design, the authors test the difference between the anchoring value and the counter-appraisals. The lack of a difference suggests an anchoring effect.

Similarly, I study the anchoring effect in a natural setting. The main difference is the lack of an objective true value, because the negotiation object is an embryonic firm that has an unknowable future; that future is based on the convergence of the entirely subjective expectations of negotiators (Knight, 1921). Another main difference is the lack of repeated measurements because each embryonic firm has its own strategic trajectory. This is the equivalent of saying the experimenter's question (within a designed experiment) changes with each subject. These two factors contribute to my study set in the opposite end of the uncertainty spectrum from that of Northcraft and Neale (1987). Set in this context of extreme uncertainty, I ask if *the anchoring effect influences angel investors' judgment during negotiations with entrepreneurs?*

A negotiation is a social phenomenon (Thompson, 2000; Thompson, Wang & Gunia, 2010) and a negotiated agreement requires mutual consent (Commons, 1934). I begin with the assumption that each entrepreneur seeks to resolve an asset deficiency – a capital investment to ensure firm survival. I also assume that each angel investor seeks to generate a return on investment

from any suitable investment opportunity. Further, I assume that each actor engages one another with the initial intention to reach an agreement[25], each actor is partially dependent upon the other. A negotiation pertaining to mutual dependencies then, invites a discussion of power, which per Emerson (1962) is the inverse of dependence. I position the entrepreneur at an initial power disadvantage because the capital need is immediate whereas the angel investor's need to invest is not immediate given that their funds are entirely discretionary (Benjamin, Margulis, & Margulis, 2000). After an investment, this initial power imbalance will shift because the angel investor is now beholden to the entrepreneur's ability to execute day-to-day tasks to generate the desired return on investment. However, power can also shift during the negotiation based on the communicated offers and counter-offers. As recent studies have raised the possibility that cognitive biases are influenced by power differentials among parties (Schaerer, Swaab & Galinsky, 2015; Pinkley, Conlon, Sawyer, Sleesman, Vandewalle & Kuenzi, 2017), I study the impact of power within the negotiation to examine whether cognitive biases or power have a more pronounced effect on negotiation outcomes.

My main contribution is to the cognitive biases literature by studying the anchoring effect under extreme uncertainty. I directly test the theoretical underpinning that uncertainty strengthens the anchoring effect. Rather than the knowable values associated with Northcraft and Neale's (1987) study that focused on tangible real estate, I focus on the entirely unknowable values of embryonic firms. Further, I contribute to the literature on organizational complexity; this is a construct developed by Oksoy (2020) and highlights the complexity of the firm-environment exchange (Thompson, 1962). As complexity increase, so does uncertainty (Simon, 1962), and so the uncertainty as reflected in the firm-environment exchange should strengthen the impact of any cognitive biases. I also contribute to the power literature by studying how power influences the negotiation; because of the negotiation setting, any effects of a cognitive bias introduced by the counter-party may be confounded by the influence of power shifting between negotiating parties.

[25] This is my 3rd assumption thus far and I recap each here: (1) the entrepreneur needs capital to ensure firm survival, (2) the parties are willing participants and being with the intention to agree, and (3) the angel investor is motivated by economic gains as opposed to philanthropy. It is also worth noting that I am only concerned with embryonic firms as characterized by the nature of the transaction. The exchange of capital for equity creates the most basic partition of ownership and control (Berle & Means, 1932) and provides the lowest form of protection for the angel investors because they only retain common stock. I ask the reader to keep this basic transaction in mind throughout the paper. Further, I assume these actors are pursuing an economizing purpose as opposed to a philanthropic one.

I also contribute to the negotiation literature by studying contexts where value is unknowable (Knight, 1921). Studies on buy/sell negotiations and anchoring effects have only utilized the total valuation of an object. This means that the portion over which the parties are negotiating is fixed at 100%, which reduces the focus of the negotiation to only that of the price as representing the full value. This negotiation study is unique because the negotiated positions pertain only to a portion of the firm. Further, because the total value is unknowable (Knight, 1921), buyers are granted the freedom to combine any equity percentage request for any offered amount of capital. In other words, capital and equity are untethered to one another (though they are also clearly interrelated), and I parse out the anchoring effects on the two components of value: capital and equity.

When considering only the *initial* negotiation positions advanced by the entrepreneur (initial offer) and the angel investor (counter-offer), positions advanced in relation to the *final* negotiated agreement, I find that while angel investors are generally less influenced by to the equity-based anchoring effect, they are impacted by a capital-based anchoring effect. For the capital dimension, there is no statistical difference between the initial offer and the counter offer, which suggests an anchoring effect is present. However, I question whether the effect can be attributed to cognitive factors. Rather, I suggest that the nature of the negotiation task itself can produce anchoring effects – the offered capital investment pertains to a firm-level need as representing the raison d'etre for the negotiation. Any agreement on this need may not necessary be a matter of cognitive forces at play, but of fairly objective and assessable economic forces (i.e.: costs).

For the equity dimension, comparing the *initial* offer with the counter-offer suggests that angel investors are generally able to resist the cognitive effects even though this dimension represents a higher degree of uncertainty. When comparing the *initial* position to the *final* negotiated position, however, the equity dimension does present some evidence of an anchoring effect *in certain cases*. It is however noteworthy that power can shift in favor of the entrepreneur drawing the final negotiated position closer to the initial offer. That is, power may present an alternative explanation to an anchoring effect (again, for those cases). Finally, I find that organizational complexity does not play a significant role during the negotiation of either capital or equity. Taken together, I raise questions as to the strength of the theoretical underpinning of uncertainty as a core driver of cognitive biases and highlight that both the structure of the

negotiation task and the associated shift in power may also give the impression of a cognitive bias based on how the literature measures anchoring effects.

I use the natural setting of the ABC TV show *Shark Tank* (Jeffrey, Levesque & Maxwell, 2016). In the show, a series of entrepreneur(s) walk into a room where five (5) angel investors who listen to the presentation and potentially communicate an offer. When the negotiation begins, there is no guarantee of anything and all intentions to invest pertain represent real companies (Smith & Viceisza, 2018). I argue that this TV show is a good proxy for angel investment because of the nature of the transaction (Commons, 1934) that is completed. Angel investors typically obtain the lowest form of protection in the form of common stock (Ibrahim, 2008; Prowse, 1998), which is exactly what the TV show reflects. Naturally, there are some limitations stemming from the TV show and my use of edited versions of each episode available for purchase on Amazon; I address these further below.

The remainder of this paper is structured as follows. I first discuss cognitive biases and delve deeper into the anchoring effect literature. I then present a detailed theoretical discussion of power. After setting the stage of the negotiation context, which serves as the natural setting, I develop our hypothesis and explain the methodology. I next present the results and conclude with their implications for both theory and practice.

THEORETICAL BACKGROUND
COGNITION

Cognitive Biases

Cognitive biases typically occur when decision-makers face highly uncertain conditions (Kahneman & Tversky, 1982). Facing such uncertainty, decision makers resort to the use of heuristics and this simplification process makes individuals particularly susceptible to systemic errors in judgment (Tversky & Kahneman, 1971; Tversky & Kahneman, 1974). This literature on cognitive biases literature seeks to identify the boundaries of human rationality (Kahneman, 1991).

In highlighting various ways that individuals deviate from rationality, Bazerman (1983) refers to the framing effect as a ‘perceived anchor” that has implications at a tactical level for negotiators. Negotiators can utilize positioning tactics by selecting or changing the reference point to frame or reframe the negotiation. This tactic is utilized to extract a concession from the counter-party but one that is perceived as a gain because of the new vantage point introduced into the negotiation. Complicating matters is that negotiations can include multiple different types of

reference points that can all coexist simultaneously (Bazerman, 1983; Kahneman, 1992; Kristensen & Garling, 1997); alongside the framing effect, there is the negotiator's reservation price (Raffia, 1982) as well as their aspirational price (Pruitt, 1983). The former is the walk-away or strike point, while the latter is one's hedonistic objective or goal (Kahneman, 1992; Kristensen & Garling, 1997; Tversky & Kahneman, 1983). In experimentally designed studies, these factors are carefully crafted through precise manipulations and controls.

There are negotiating circumstances however, where these internal reference points have not been formulated until the negotiation actually begins and their formulation is a function of the negotiation itself. In such circumstances, that which activates these internal reference points is the framing effect of the opening position that initiates the negotiation process. That is, the opening negotiation position activates the aspiration and reservation points because that opening position sets the frame for the negotiation. Such are the circumstances of the negotiation between angel investors and entrepreneurs. In this situation, the entrepreneur's opening bid acts as a stimulus that potentially introduces a reference point and anchors the subsequent offers from angel investors (Brown, 1953).

In perhaps the first systematic investigation of the anchoring stimuli, Brown (1953: 199) defined it as "a stimulus that acts as a standard referent for the stimuli under consideration[26]". The field has progressed tremendously since Brown's early work and while various mechanisms of the anchoring effect have been uncovered as will be discussed next, this early conceptualization of the anchoring effect as a stimulus has held.

The Anchoring Effect and its Mechanisms

Research on the anchoring effect has been found to be robust in a number of domains including (1) general knowledge, (2) probability estimates, (3) legal judgments, (4) purchasing and valuations, (5) forecasting, (6) negotiations, and (7) self-efficacy (Furnham & Boo, 2011). The anchoring effect is measured by relating the study participants' response to both the experimenter's introduced anchor and a true value (Slovic & Lichtenstein, 1971). The assessment of the anchoring effect's impact is thus a difference calculation (Jacowitz & Kahneman, 1995). If the study participant's response is closer to the true value than it is to the experimenter's introduced anchored

[26] In our context, the *stimuli* under consideration are the explicitly communicated negotiation positions, and the *stimulus* represents the opening offer on each of those negotiation positions; that is, the initial offer acts as a standard referent for the stimuli that I am studying.

value, then the anchoring effect is stated to not be observed. On the other hand, if the study participant's response is closer to the anchored value, then the effect is stated to have been observed. The present study differs from prior ones in that the entrepreneur and the type of embryonic firm changes for each measurement, while the group of respondents (angel investors) remain fairly consistent. In other words, a group of angel investors are presented with an anchoring value across wildly different scenarios and I study the angel investors' response.

The literature has sought to identify the mechanisms through which the anchoring effect takes hold. The first such mechanism was identified as an insufficient adjustment mechanism, where even though the introduced anchoring value doesn't seem correct, the study participant is unable to adjust sufficiently from the anchoring value (Chapman & Johnson, 1994; Jacowitz & Kahneman, 1995; Slovic & Lichtenstein, 1971). In effect, the respondent is cognitively trapped by the anchoring value, resulting in a subconscious effect that takes hold of the participant hindering their deliberate attempts in distance themselves from that anchoring value. Quite alarmingly, the effect of this cognitive bias was reported even when the anchoring value selected by the experimenter was selected entirely arbitrarily; such as by a wheel of chance (Tversky & Kahneman, 1974), a random card (Cervone & Peake, 1986), the market value of real estate (Northcraft & Neale, 1987), the study participant's telephone number (Russo & Shoemaker, 1989), the number of the experiment (Switzer & Sniezek, 1991), or even the study participant's social security number (Wilson, Houston, Etling & Brekke, 1994). In other words, the anchoring effect seems to hold even if the information contained within the anchoring value is completely irrelevant to the circumstances confronting a respondent.

Chapman and Johnson (1994) studied the limitations of the anchoring effect. The authors identify that the extremity of the anchoring value was found to have a non-linear diminishing effect; as the extremity of the anchoring value increases, the effect on the response diminishes. A second limitation pertained to the compatibility of the anchoring value. The authors identify that anchoring values have a priming effect as long as both the anchor and the response are on the same dimension. This second limitation highlights another mechanism through which the anchoring effect takes hold, which the authors refer to as the confirmatory search mechanism that builds upon the compatibility principal as introduced by Tversky, Sattath and Slovic (1988). The key insight is that there *are* apparently limitations to the impact of the anchoring effect when applied to circumstances that have a true value and where the plausibility of the information introduced by

the anchoring value can be strained. While the earlier studies highlight that the anchoring value doesn't necessarily have to contain information that is relevant to the specific circumstance, the confirmatory search mechanism appears to indicate otherwise. However, this raises the question for the angel investing context when the value of the firm is an unknowable quantity and purely a function of social construction (Berger & Luckman, 1967; Knight, 1921)[27].

Jacowitz and Kahneman (1995) present three ways the anchoring effect takes hold. The first is prohibiting a sufficient adjustment to occur (for a thorough discussion, see Slovic & Lichtenstein, 1971 and Tversky & Kahneman, 1974). The second is a more subliminal role and occurs in the form of a conversational hint where the counterparty grasps onto the information contained in the anchoring value. The third role is as a primer for the intuitive assessment process where the information associated with the anchoring value is treated as a potential option to consider. Jacowitz and Kahneman (1995) highlight that higher value anchors are more effective than lower value anchors, even though both sets of anchoring values were effective in their influence.

The experiment by Jacowitz and Kahneman (1995) highlights that while the prior literature's understanding of the effect under a simple model was that subjects compare the introduced anchoring value to an independently generated estimate, their results highlight that this might not be the only process through which the effect takes hold. Rather, the authors present an "alternative hypothesis that (a) the anchor alters the subject's beliefs and (b) the anchor is judged by the altered beliefs" (pg. 1164). Specifically, the authors highlight that the presentation of the question in the form of "is the quantity higher or lower than X" (pg. *1165),* where the study participant doesn't respond with a numerical value but rather with a verbal *higher* or *lower*, is also impacted by an anchoring effect. In other words, a numerical response is not necessary for the anchoring effect to be observed, rather the relational terms of higher or lower are sufficient to create a standalone effect.

Elaborating on this third role and building upon the confirmatory search mechanism (Chapman & Johnson, 1994), Strack and Mussweiler (1997) study the priming effects of an introduced anchor. The authors highlight that subliminal assimilation draws a subject towards

[27] I would like to draw a parallel to the discussion in Essay 1 of this dissertation that found a curvilinear relationship between capital and equity, a relationship that is positive but with a diminishing effect. While I had presented economic arguments for that relationship, this discussion by Chapman and Johnson (1994) would suggest cognitive factors also may contribute to the relationship between capital and equity.

rationalizing this introduced anchor. Under this mechanism, rather than try to unsuccessfully distance oneself from the anchored value, the study participant creates mental scenarios that justifies the appropriateness of the anchored value (Mussweiler & Strack, 1999; Mussweiler, Strack & Pfeiffer, 2000). The anchoring value is found to prime the response that increases "the possibility that the target possesses the anchor value and [subjects] try to construct a mental model that includes the information that is maximally consistent with the anchor value" (Strack & Mussweiler, 1997: 444). This selective accessibility model is effectively equated to the confirmatory hypothesis testing process (Furnham & Boo, 2011). Chapman and Johnson (1999) will later consider that this third "activation process may play a unifying role as an explanation for a number of other judgement phenomena…[such as]…over confidence, hindsight bias, belief persistence bias, confirmation bias, pseudodiagnosticity bias" (pg. 145-149) among others "because the presence of the anchor promotes consideration of target factors or reasons that are consistent with the anchor" (pg. 144).

The importance of this activation mechanism lies in the ability of the subject to de-bias themselves from the effects by simply considering factors that are *in*consistent with the introduced anchor. Thus, rather than some all-powerful subliminal factor that influences all decisions contexts, individuals can break free by simply maintaining thoughtful vigilance (Chapman & Johnson, 1994, 1999). These studies highlight the importance of the information contained within the anchoring value, and one can combat the effects by considering different information that counter balances the information provided by the anchor. Effectively, fighting fire with fire. The above does raise the question posed before: how are decisions impacted when true value is unknowable (Knight, 1921), and the plausibility of information is countered by the highly subjective expectations of respondents.

More recently, Turner and Schley (2016) presents a thorough overview of five major theories that explain what the authors consider "the anchoring effects". To these authors, anchoring is seen as a class of effects with a common antecedent and a common consequence. The first theory is an anchoring-adjustment theory as discussed before. The second is a numeric and magnitude priming theory, where "any number present in the judgement environment can act as an anchor, independent of context or relevance" (pg. 4). The third is the selective accessibility model as discussed earlier. The fourth is the attitudinal perspective of anchoring, where the difference between thoughtful and non-thoughtful people emerges thereby highlighting the importance of

one's state of consciousness. Fifth, is the scale distortion theory of anchoring, where "presentation of an anchor does not shift individual subjective representation of the target item, but informs the individuals about the scale used to make the judgment" (pg. 5).

There are still significant unknowns about the anchoring effect; for example, Turner and Schley (2016) state that a predictable model does not exist: we "are incapable of making quantitative predictions for say, an anchor value of 3,500 miles versus an anchor value of 1,500 miles" (pg. 2). Further, there is no study that tests the relative strength of these various mechanisms to better understand how they individually contribute to anchoring effects. That is, we don't know if all mechanisms are active and if only certain mechanisms over power others. For this study, I am unable to delineate which mechanism applies more or less, and can only highlight that these are the potential mechanisms at play. I am however able to focus on the information contained within the anchor and turn to the definition provided by Turner and Schley (2016); the authors state that anchoring effects are comprised of two components: (1) information the individual has prior to entering the situation and prior to any anchoring value, and (2) the information introduced by the anchor itself. And so regardless of the mechanism, the shared antecedent and consequence is the conveyance of information contained within the anchor into an information-deficit environment (Turner & Schley, 2016).

The Anchor as Conveyor of Information

Viewing the anchor as the marginal information introduced into a context, it seems that not only does the size of the anchoring value influence matters (Jacowitz & Kahneman, 1995), but so too does the plausibility of the anchor (Mussweiler & Englich, 2005). As discussed earlier however, there appears to be limitations in that unrealistically high anchors (Chapman & Johnson, 1994) or inconsistent formats (Strack & Mussweiler, 1997) do not appear to have as strong an effect.

This focus on the role of information centers the discussion on the theoretical underpinnings of uncertainty as driving the strength of the anchoring effect (Tversky & Kahneman, 1974). Uncertainty exists when there is too little information or when there is too much information that provides conflicting guidance on future behavior (Arrow, 1974). Arrow makes this point in consideration of the individual *"optimizer"*, that when faced with the lack of a market today, "must replace the market commitment to buy or sell at given terms by expectations: expectations of prices

and expectations of quantities to be bought or sold. But he cannot know the future. In short, the absence of the market implies that the optimizer faces a world of uncertainty" (pg. 6). Effectively, information is dispersed throughout "the market" and it is the incomplete diffusion of that information that creates the experienced uncertainty (Arrow, 1974).

Arrow (1974) captures the conditions under which both the angel investor and the entrepreneur are negotiating. The object of their negotiation has an unknowable value (Knight, 1921) and has never been negotiated before due to the novelty inherent in entrepreneurial opportunities (Shane & Venkataraman, 2000). The information contained within this informal market for risk capital inhabited by angel investors and entrepreneurs (Wetzel, 1983), is asymmetrically distributed; the entrepreneur has the inside lane with respect to the specifics of the opportunity, while the angel investor has the inside lane on investment and generating the demand function. Set in this light, the anchoring value introduced by the opening bid is information that is injected into a context that then potentially overpowers the rest of the information associated with that context. Driven by the extreme uncertainty of the context and the heavy reliance on subjective expectations, one can easily envision the use of deception by either negotiator. Kahneman (1992: 309-310) sums up the situation nicely:

> "The moral of studies of anchoring is that such efforts at deception can succeed and that deceptive messages can be effective in producing biased norms even when these messages are neither accepted nor even believed. A significant qualification is that anchors compete with other sources of information – anchoring effects are likely to be much stronger in the absence of other clues."

LeBoeuf and Shafir (2009) studied estimates given on both time and distance, examining the impact that different units of measure have on the response. With respect to the distance measures, the authors presented the two dimensions of *feet* (in terms of 12 inches) and *footsteps*. Participants were then asked to measure the distance to three campus landmarks. Some of the participants were warned about the implications of the insufficient adjustment bias in order to assess if thoughtful vigilance acts as a de-biasing methodology. The authors found generally that "in the absence of warning, participants in the specified-unit condition produced reliably lower estimates than did those in the unspecified-unit condition"; that is, when asked to capture distance, the more objective measure of feet carries less uncertainty than the more subjective measure of footsteps. The authors refer to these as "elicitation effects" (pg. 82) that represents the general

umbrella under which the anchoring effect is included, and conclude that "time and distance estimates were influenced by the suggestion of particular measurement units" *(pg. 89)* and highlight that small units of measure generated lower estimates.

Along similar lines, Greenstein and Velazquez (2017) studied the difference between semantic and numerical anchors to also test the invariance principle of rational decision models (LeBoeuf & Shafir, 2009; Tversky & Kahneman, 1986). The following argument is presented: "if anchoring occurs primarily as a result of semantic priming, then the presentation format should not affect anchoring because form does not change meaning" (Greenstein & Velazquez, 2017: 398-399). The authors found the semantic anchors to be less effective, stating: "if you want your anchor to exert the greatest possible influence, present it digitally and make sure they respond digitally" (Greenstein & Velazquez, 2017: 404). "Specifically, when there was a match between anchor and response format…the participants estimated the tower [the object]…as taller than when there was a mismatch" (Greenstein & Velazquez, 2017: 403). It seems that participants think of numbers in numerical terms as opposed to the verbal *twelve hundred*. These results run counter to the invariance principle and support the earlier study by Wong and Kong (2000) who found that higher absolute values lead to an anchoring effect. That is, an anchoring value of as 7,300 meters was more impactful than when the anchoring value was presented as 7.3 kilometers.

The earlier discussion pertaining to internal and external references points can be connected to Howell's (1971) article on decision making under uncertainty when subjects are able to influence the outcome in playing games of skill. Howell (1971) considered the internal and external sources of uncertainty of study participants playing a game of darts, and reported that individuals overwhelmingly prefer uncertainty that is more internal than is external; in other words, if individuals have some semblance of control in terms of how the future will unfold, that is far more preferable even if the odds are stacked against them.

In this study, the entrepreneur presents an anchoring value that is an external reference point for the angel investor, and per Howell's (1971) dichotomy, will potentially overpower the internal sources of uncertainty. As such, the anchoring effect has the ability to cloud one's judgement or alter one's evaluation of a given situation, and is thus a potentially very important tool during negotiations due to its contribution to either creating or eliminating uncertainty by way of the information that it contains. Set in this light, the weaponization or operationalization of this cognitive bias during a negotiation presents the anchoring effect as a force. I will return to the

notion of cognition as a force, after I discuss the relevance of power differentials in the context of negotiations.

POWER

A recent dialogue in the negotiation literature assesses if factors from a cognitive origin have a greater impact on negotiating behavior than factors originating from power (Schaerer, Swaab & Galinsky, 2015; Pinkley, Conlon, Sawyer, Sleesman, Vandewalle & Kuenzi, 2017). The results are mixed and I contribute to this discourse by presenting a study in a non-experimentally designed[28], natural setting (Strum & Antonakis, 2014; Jeffrey, Levesque & Maxwell, 2016). Complicating matters is that power is a 'big tent' construct that contains an array of different forces. In this section, I first take stock of pertinent aspects of the literature on power to provide a greater understanding to the context of an angel investor negotiating with an entrepreneur. In this context, some aspects of power can be objectively observed and measured while others are unmeasurable; further, some aspects of power shift during the negotiation while others remain structural components that only change in terms of beginning and end states of the negotiation. Therefore, I first present a brief discussion of fundamental aspects of power to then conceptually delineate among the various forces at play, to finally focus on the forces that are objectively observable and testable.

Fundamentals of Power

One fundamental understanding that we have of power is from Emerson's (1962) power-dependence theory, where power is the inverse of dependence. Set in this light, power is inherently social in nature. In Sturm and Antonakis' (2014: 138) review, social power is defined as representing "one's ability to act for one-self with agency, into the social domain…[that]…involves both power over and freedom from others' influence and the right to decide one's own fate". The authors highlight that past definitions of power have three essential characteristics: (1) the *discretion* to act, (2) the *means* to take that action, (3) and ability to *enforce* that desired action; that "is, a powerful agent is one who can exogenously affect his or her environment or others at will" (pg. 139).

[28] Sturm and Antonakis (2014: 137) make the following points: *"examination of the properties and outcomes of power"* is a fairly recent effort, and that *"much of the research that has been taken experimentally has confounded power manipulations with experimental demand effects"*

Clearly, having the discretion to do as one pleases indicates a higher power status that angel investors certainly enjoy (Benjamin, Margulis & Margulis, 2000), and this notion of discretion is effectively the absence of dependence from Emerson's (1962) perspective. Discretion is also a fundamental component of Weber's (1947) definition of power "as the probability that a person can carry his or her will despite resistance." (Sturm & Antonakis, 2014: 139). Another fundamental understanding is provided by Mechanic (1962: 351) where power is defined as "any force that results in behavior that would not have occurred if the force had not been present", and is specifically defined "as a force rather than a relationship because it appears that much of what we mean by power is encompassed by the normative framework of an organization, and thus any analysis of power must take into consideration the power of norms as well as persons". These two[29] perspectives of power represent the two sides of the current negotiation: the pre-negotiation power dynamic where a power imbalance is observed in favor of the angel investor, and the post-negotiation power dynamic where both actors join forces within the same organization and the angel investor is now beholden to the entrepreneur to generate a return on investment. I focus on the impact of power during the negotiation that acts as a bridge between the pre- and post-negotiation states of the world.

Ma, Rhee and Yang (2013) highlight how "different dependencies may play off against each other, such that one source of power may inhibit the effectiveness of another" (pg. 712). Therefore, there may be multiple forces at simultaneous play, creating difficulties in understanding which force is from which origin, having which impact. While the authors study the impact of status-power and ownership-power, these are effectively structural factors in the present context that are difficult to measure (Rucker, Galinsky & Duboi, 2012). The angel investor enjoys a status position while the entrepreneur enjoys an ownership position. At the beginning of a negotiation, the difference between each actor's "power score" (if knowable or quantifiable) on both power dimensions of status and ownership is effectively fixed. Clearly, these differences will shift if a negotiated agreement is reached, but the degrees of any shift are difficult to measure *during* the actual negotiation. However, there are other forces at play that I am more concerned with that *cause* the shift in these more structural factors

[29] I consider Weber's (1947) discretion-centric definition to be subsumed by Emerson's (1962) dependence-centric definition.

Bases of Power

P-D theory is a cornerstone of many later frameworks such as Porter's (1980) five forces where the power of both suppliers and buyers are calculated using Emerson's (1962) framework. Beyond Emerson's (1962) core focus on dependencies, power theory has identified various bases of power (French & Raven, 1959; Yukl & Falbe, 1991). These include: (1) expert power, (2) positional power, (3) reward power, and (4) legitimacy power.

Expert power states that those who have a greater command of a particular subject matter have greater power than individuals who are less knowledgeable (French & Raven, 1959; Yukl & Falbe, 1991). In the investment context, the angel investor is clearly the expert (Wiltbank, et al., 2009). Positional power is driven by the role of the party in a negotiation (Yukl & Falbe, 1991). In the present investment context, the angel investor enjoys the role of a buyer which per Bazerman et al., (1985) should command a greater power position particularly because of the angel investors' ability to walk away. Interestingly, even when subjects were exposed to a symmetrical simulation of a competitive market environment (a context that provided both parties with the expectation that other opportunities are available to complete a transaction), the buyers clearly outperformed the sellers. In support of this positional role, Ibrahim (2008) highlights that angel investors enjoy the ability to walk away and to dictate nearly any desired terms, yet they still settle upon the more 'unsophisticated' exchange of capital for common equity.

The third dimension is reward power (French & Raven, 1959). The argument presented here is straightforward in that angel investors have the discretion to make investments of their own personal wealth (Benjamin et al., 2000), and the embryonic firms need that capital for viability (Carpenter & Petersen, 2002; Cooper, et al., 1994). Angel investors therefore enjoy a power advantage because of their ability to reward the entrepreneur. The fourth and final dimension is legitimacy power and is considered as "*probably the most complex"* (French & Raven, 1959: 153). Legitimacy power is effectively "power which stems from internalized values in P which dictate that O has a legitimate right to influence P and that P has an obligation to accept this influence". Thus, it is P's perception of O's power that contributes to legitimacy power. In this sense, from the base line power differential, the entrepreneur is clearly viewing the angel investor as holding legitimacy power given their prior successes (Morissette, 2007).

Negotiation as a Change Mechanism

The negotiation then, acts as the change mechanism to facilitate shifts in power. With this in mind, Thompson's (2000: 2) definition of a negotiation is most appropriate: "interpersonal decision-making process by which two or more people agree how to allocate scarce resources". Not only must there be agreement, which implies that both parties have conceded at least once in order to reach agreement on value, but there must also be an allocation of scarce resources, which can include both time and money. Greenhalgh, Neslin and Gilkey (1985: 13) highlight that "power is a logical determinant of negotiation outcomes" and that a commonality of definitions of "social power is the notion of getting the other to do something [they] would not do in the absence of influence [and] settle for an outcome of less than his or her maximum utility". The authors continue to highlight that power can be obtained during a negotiation either through one's individual-level tactical skill (through the act of persuasion) or through one's structural power.

On the role of tactics, Kim et al., (2005) present the argument that power perceptions drive power tactic decisions, and that these power perceptions and power tactics account for the difference (if any) between potential power and realized power. The authors define power tactics as "behaviors designed to use or change the power relationships" (pg. 800). It seems then, that the entrepreneur's actions during a negotiation should influence any power-related changes. Yet the current negotiation poses some unique challenges for the entrepreneur in terms of actionable tasks to induce such a shift in power. Once the negotiation has begun, beyond remaining confident and conveying a favorable impression to the angel investor, there is little that the entrepreneur can individually do to change the power balance. I say little because the 'moving parts' of this negotiation include (1) the opening offer by the entrepreneur, (2) the opportunity associated with the embryonic firm, (3) the specific need to which the capital will be applied, and (4) any actions taken during the negotiation.

The majority of the actionable tasks have occurred at either the very beginning or prior to the start of the negotiation. First, the entrepreneur presents an opening offer that will potentially anchor any subsequent counter-offers. Next, the entrepreneur puts their best foot forward in terms of describing the future potential and the strategic direction to capture that future potential. Naturally, this strategic trajectory can change during the negotiation as influenced by the angel investor, steering the focus towards a potentially more lucrative path that may also require a different amount of capital investment. The angel investor may also simply accept the

entrepreneur's conceptualization of the future. However, once these points have been agreed upon (and I highlight that the strategic direction and the capital investment represents the baseline conditions for any agreement to occur), only the negotiators actions remain as a potential change stimulus. I caution against heroic expectations from negotiators within the thick of a negotiation and highlight that it was the entrepreneur's efforts prior to even entering the negotiation that play the heaviest role.

While power tactics as per Kim et al. (2005) gives the impression of an actual behavior taken during the negotiation to change the power dynamic, there is also the behavior of the counter-party (the angel investor in this case) which can cause a change in the power balance. This is especially true in the present context where an entrepreneur is facing a panel of five (5) angel investors, and each angel investor has the discretion to remain independent or form coalitions with any degree of fluidity. The entrepreneur could simply set the stage prior to the negotiation and allow the dynamics of the actual negotiation to flow in a seemingly natural manner. My point is, shifts in power can occur by actions taken by either negotiating entity, which means that power can shift even if the entrepreneur does not themselves take a specific action to shift the nature of power, rather allowing power to shift based on the actions of the counter party. This ccan be considered as an emergent strategy to negotiations, dependent upon the unknown future actions of the individual angel investors.

For there to be a negotiated agreement, the two parties must concede at least one time. The opening offer is a concession by the entrepreneur that more is not necessary. Any counter-offer provided by the angel investor is a concession that the opportunity does contain at least that much value as communicated in the offer. It then follows that concessions are one mechanism through which power can shift. However, I do not measure how many times actors concede or the magnitude associated with the concession. I only study if an offer was communicated or not, which translates to if a concession was made or not. The nuances of concession-behavior, I leave to a different study, but our lack of understanding as to how concession behavior can act as a mechanism through which power can be obtained, does not subtract from our ability to identify how power shifts based on action and reaction; offer and counter-offer.

It is also important to note that the above discussion is only the pre-investment side of the story. In some ways, the initial '*magnitude'* of the power dynamic in favor of the angel investor lasts only until and if there is a negotiated agreement, after which point the dynamic partially shifts

in the opposite direction. After investment, the angel investor is dependent on the entrepreneur in order to generate a return on their investment. As Mechanic (1962) noted "lower participants in organizations can often assume and wield considerable power which is not associated with their positions as formally defined within these organizations" (pg. 351). This indicates that after a negotiated agreement, both the entrepreneur and the angel investor have considerable power to influence the outcome of the business. Thus, the initial advantage held by the angel investor gets more complicated after investment and per Mechanic (1962), is due to the control over information that either participant will have in that future. The potential that more funds may be needed from the angel investor after the initial investment retains the entrepreneur's power disadvantage, but they clearly enjoy a stronger power position as compared to when they started the negotiation.

Power versus Cognition

Any realized shifts in power during the negotiation represents shifts in the dependencies between the actors (Emerson, 1962), whereas the impact of any cognitive forces represents shifts within the individual actor (angel investor), even though the force that causes the cognitive shift originated from a different actor (the entrepreneur). From the present context it seems that because entrepreneurs initiate the negotiation, that cognition is one force that impacts power. In support, Rucker, Galinsky and Duboi (2012) organized the antecedents of power into structural factors, cognitive factors, and factors from individual inducement. In the present context, the entrepreneur's initial offer sets the anchor and thus clearly cognition is an antecedent.

However, an argument can be made for the opposite relationship – that power impacts cognition. Smith and Trope (2006) highlight that individuals with greater power tend to grasp the gist of new information better. Similarly, Galinksy, Magee, Inesi and Gruenfeld, (2006) state that individuals with greater power are less likely to take another's perspective into account; which may offset the impact of cognition. And per the review by Sturm and Antonakis (2014: 143), "power induces a simplified processing orientation that emphasizes single sources of information as well as reliance on ease of retrieval". Viewed from this perspective, the starting power imbalance between actors may overpower the cognitive effects of anchoring. These articles clearly draw into question if power impacts cognition or if cognition impacts power, and I contribute to this discourse

Schaerer, Swaab and Galinsky (2015) found that anchoring effect was stronger than the power effect. The authors utilized an individual's best alternative to a negotiated agreement (BATNA) as their proxy for power. "Thus, the very same resource (BATNA) that enables individuals to achieve superior outcomes when it is strong is constrained if it is weak, and its complete absence is liberating"[30] (pg. 179). Quite interestingly, the authors present their finding that those with no power are least impacted by cognitive biases such as the anchoring effect. Taken together, it seems that the angel investor has the potential to be impacted due to their initial power advantage, however that power advantage may overpower the impact of any cognitive biases.

With respect to BATNA, our unique context again presents complications. First, it is unknown if the entrepreneur has a BATNA at all, and this information is not necessarily provided in a real negotiating context anyway. Next, as a core objective of the negotiation, the entrepreneur must secure capital to fulfills the need of the business, which is the driving force behind why the parties are negotiating in the first place. Therefore, the entrepreneur's BATNA must be in the form of another offer, and cannot be the retention of 100% equity because that implies an impasse where the firm's capital requirements remain unfulfilled. In most negotiation studies, the object of the negotiation has a value that is retained by the seller in the event of an impasse, and yet the entrepreneur is afforded no such luxury as an investment is often times viewed as a critical aspect of firm survival. That is, the entrepreneur's BATNA must be another offer of capital in exchange for equity.

Further complicating matters is the angel investor's ability to create value in the future. Reaching a negotiated agreement does not end the relationship, but rather is the beginning of a relationship into the foreseeable future. Hsu (2004) highlights that entrepreneurs take into consideration not only the amount of investment offered, but also the network that the investor brings to the table alongside advising mentoring capabilities. As such, an entrepreneur may accept a lower offer in terms of capital or a higher offer in terms of equity, thereby accounting for the future value generating capability of the angel investor. The importance of the above discussion pertains to Raffia's (1982) statement that "a negotiator's reservation price or bottom line should depend on how well he or she can expect to do elsewhere if the current negotiation ends in an impasse." (Sondak & Bazerman, 1991: 4). When value is unknowable, how can there really be a reservation price? Further, if the firm's future value is more important than the presently negotiated

[30] It is worth noting their studies were experimentally designed, using students and MTurk participants.

value, then this further confounds reservation prices. In other words, I would not expect to see a strong stance on any reservation price because everything is so nebulous.

In contrast, the angel investor's BATNA is the retention of the capital; that is, an impasse in the negotiation. If the angel investor does not make an investment, they simply revert to their pre-negotiation position and retain their discretionary funds. Therefore, I will avoid any discussion of external BATNAs and limit our attention to the events occurring within the current negotiation. This presents a straight-forward usage of BATNA as will be explained further in our development of the hypotheses.

My point is that while Schaerer et al. (2015) present their results that cognition overpowers power, their notion of power (BATNA) behaves differently in the angel investment context and so their results may not hold. Further, these results were not replicated by Pinkley, Conlon, Sawyer, Sleesman, Vandewalle, and Kuenzi (2017) who also utilize BATNA, but find that power overpowers cognition.

Quite interestingly, Pinkley et al., (2017) find that even phantom BATNAs play a significant role; these are options that look real but that do not exist as an available and actionable option during the existing negotiation. "This pattern of results is consistent with neither expected utility theory nor the Schaerer et al. (2015) argument that anchors alone explain the benefits associated with negotiator alternatives…Rather, our results suggest power is alive and well when it comes to the impact of negotiator alternatives" (pg. 6). The authors highlight that although "it is power that has always been assumed to be the mediating mechanism behind BATNA availability, this has never been directly tested" (pg. 2). They specifically find that "the greater the availability of the BATNA possessed by the holder, the higher the holder's own perceived power…and the higher their opponent's perception of the holder's power" (pg. 5). I would like to point out that these findings may be a function of the experimentally designed setting, and when considering the reality of a negotiation when decisions have real and long-term consequences, it is reasonable to expect different findings.

HYPOTHESES DEVELOPMENT

The above discussion highlights two main tensions: the degree of uncertainty and the impact of power. Based upon the theoretical underpinnings, we know that anchoring values strengthen as the uncertainty associated with a given context increases (Kahneman & Tversky,

1982; Tversky & Kahneman, 1974). Second, there is a power imbalance in favor of the angel investor because they have the capital that entrepreneurs need, but they themselves do not need to make any investment. However, because a negotiation is an interactive process that unfolds over time, the power position that any party enjoys at any given time may change as the interaction progresses. These two tensions are naturally interrelated —incremental change in uncertainty at the beginning of the negotiation is followed by the subsequent shift in power balance as the negotiation unfolds over time.

Degrees of Uncertainty

Very little that occurs during negotiations between an angel and entrepreneur is certain. The viability of the business opportunity is perhaps most uncertain (Shane & Venkataraman, 2000). The entrepreneur's ability to manage the future effort is also uncertain due to their comparatively novice status as an entrepreneur (Wiltbank, Read, Dew & Sarasvathy, 2009). On the other side, the angel investor might not be able to deliver on the value creation expectations and could provide poor advice. Further, the collective effort could simply pursue an improper strategy. On the other hand, though highly unlikely, everything could work out exactly as intended (Mintzberg, 1978).

Beyond these larger unknowns, we also do not know reservation prices (Raffia, 1982) or aspiration prices (Pruitt, 1983). Even if an entrepreneur enters the negotiation with these internal reference point in mind, the unknown nature of the firm's future value suggests that these would be tentative positions and that the entrepreneur could be easily swayed depending upon who the investor is and the capital offer. The angel investors internal reference points are also unknown (even to themselves), and will be primed by the entrepreneur's opening offer. Further adding to the uncertainty, each embryonic firm will interact with its environment in a certain manner, and some firm-environment exchanges (Thompson, 1962) are more complicated than others. As complexity increases, so too does uncertainty (Simon, 1962; Arrow, 1974). Finally, the opening positions by the entrepreneur injects two additional sources of uncertainty in terms of the information content (Turner & Schley, 2016): the capital required to generate returns, and the equity ownership required to secure those returns.

Given these uncertainties, I expect to find evidence of the anchoring effect in the negotiation between angels and entrepreneurs. Heath and Tversky (1991) found that the greater

the knowledge or competence, the more people prefer to bet on their vague beliefs. Given that the angel investor is a hands-on investor (Mason & Stark, 2004; Van Osnabrugge, 2000), their active involvement in the outcome implies they would be more likely to bet on the vague expectations as was also found of investors who engaged in games of physical skill (Cohen & Hansel, 1959; Howell, 1971). Mason, Lee, Wiley and Ames (2013) found that the greater the precision associated with the number, the greater are the anchoring effects. In the angel investment world where any valuation is entirely subjective, any offer could present the appearance of precision. As over 70 years of studies have highlighted the role of the anchoring effect (Brown, 1953; Furnham & Boo, 2011), I start off by testing the following base-line model:

> **H1a:** The Initial Capital Position (Request) has a *stronger* impact on the Final Capital Position than does the Initial Capital Counter-Position (Offer) on the Final Capital Position
> **H1b:** The Initial Equity Position (Offer) has a *stronger* impact on the Final Equity Position than does the Initial Equity Counter-Position (Request) on the Final Equity Position

The angel investor is not only a buyer (Bazerman, Magliozzi & Neale, 1985), but also a buyer that does not need to buy anything (Ibrahim, 2008). In other words, they have full discretion to act or not act (Benjamin, Margulis & Margulis, 2000), and their starting power advantage would support the argument that the anchoring effect does not affect the angel investor. Sugden, Zhang and Zizzo (2013: 31) make this point explicitly, stating "that anchoring effects are stronger in the context of selling than in the context of buying" (see also Fudenberg, Levine & Maniadis, 2012).

Further, because the angel investor is typically characterized as successful (Morissette, 2007) and as an expert entrepreneur (Wiltbank et al., 2009), they may be able to de-bias themselves from any anchoring effects. There is a growing body of experimental evidence that the thoughtful vigilance of individuals can indeed de-bias the anchoring effect (Chapman & Johnson, 1994; Mussweiler et al., 2000; Epley & Gilovich, 2005) and individuals with greater cognitive skills are reportedly better de-biasers (Bergman, Ellingsen, Johannesson & Svensson, 2010; Benjamin, Brown & Shapiro, 2006; Burnham, Cesarini, Wallace, Johannesson & Lichtenstein, 2009). Bergman et al. (2010: 68) state: "our findings are in-line with other recent tests of the general hypothesis that smarter people behave more like the textbook model of economic man".

In the present context where value is unknowable, it is likely that the entrepreneur may have selected an improbable anchor and the literature has highlighted that the improbability of

anchors does influence the response (Quattrone, Lawrence, Finkel & Andrus, 1981). Though the anchoring value is presented in the same dimension as the context of the negotiation and this matching of dimensionality is supposed to enhance anchoring effects (Adame, 2016; Cheek, 2016), when the anchoring value is far outside of the conceptual boundaries (however determined), there is a diminishing effect (Chapman & Johnson, 1994). That is, there seems to be boundary conditions beyond which anchoring effects may be attenuated. While it could potentially even be argued that the angel investor does not necessarily know what the conceptual boundaries are either, the greater expertise that the angel investor has coupled with the less experience of the entrepreneur could certainly contribute to the anchoring effect not taking hold:

> **H2a:** The Initial Capital Position (Request) has a *weaker* impact on the Final Capital Position than does the Initial Capital Counter-Position (Offer) on the Final Capital Position
>
> **H2b:** The Initial Equity Position (Offer) has a *weaker* impact on the Final Equity Position than does the Initial Equity Counter-Position (Request) on the Final Equity Position

The negotiation pertains to an embryonic firm's ability to generate a return on investment, and this is accomplished through the firm-environment exchange. Commons (1934) refers to these as routine transactions, which represent the firm's ability to generate sales and a return on the angel investment. The degree of complexity associated with this firm-environment exchange (Thompson, 1962) provides information to the angel investor. As this exchange complexity increases, so too does the associated uncertainty (Simon, 1962; Arrow, 1974). That is, as the entrepreneurial effort increases in complexity, not only is the business viability further questioned, but also the entrepreneur's ability to manage the coordination effort that will ultimately generate the return on angel investment. As a result, I expect that greater organizational complexity associated with a firm-environment exchange will strengthen the anchoring effects:

> **H3a:** Organizational complexity will *positively* moderate the relationship between the Initial Capital Position (Request) and the Final Capital Position such that higher organizational complexity will *strengthen* the anchoring effect of the Initial Capital Position (Request) on the Final Capital Position
>
> **H3b:** Organizational complexity will *positively* moderate the relationship between the Initial Equity Position (Offer) and the Final Equity Position such that higher organizational

complexity will *strengthen* the anchoring effect of the Initial Equity Position (Offer) on the Final Equity Position

Building upon the discussion by LeBoeuf and Shafir (2009) where different units of measure produced different anchoring effects, I study the impact of the two components of valuation: capital and equity. The former is expressed in dollars, is known in that it represents the unit of measure that we typically judge value upon, represents an immediate and tangible reduction in the angel investor's personal wealth, and thus has less uncertainty associated with the information that it conveys. In contrast, equity is expressed in terms of percentages, represents ownership in an entity that is itself intangible and has an unknowable value (Knight, 1921), and thus has more uncertainty associated with the information that it conveys.

These two components of valuation represent the uncertainty associated with the marginal information provided by the anchor itself (Turner & Schley, 2016). If the type of information influences the degree of uncertainty (Greenstein & Velazquez, 2017; LeBoeuf & Shafir, 2009; Wong & Kong, 2000), then the variation in uncertainty caused by the type of information contained in the anchoring value should influence the response. That is, information that is more *un*certain should influence a stronger anchoring effect than information that is less *un*certain. Thus,

H4: The equity-based anchoring effect on the Final Equity Position will be *stronger* than the capital-based anchoring effect on the Final Capital Position

Shifting of the Power Balance

The angel investor enjoys a baseline power advantage that has the potential to shift towards the entrepreneur's favor as the negotiation unfolds. At a baseline, the angel investor enjoys a power advantage that builds directly upon Emerson's (1962) power-dependence (P-D) theory. P-D theory effectively states that power and dependence are inverses of one another, in that, if an individual A (entrepreneur) is dependent upon an individual B (angel investor), then B holds power over A. If A (entrepreneur) has more options than only that of B (angel investor), then A's dependence upon B has decreased thereby reducing A's dependence on any single offer and increasing A's power position.

It is worth mentioning that this does not necessarily mean that A has more absolute power over B, only that the power differential between A and B has reduced in favor of A. Beyond

Emerson's (1962) focus on dependencies, the literature has highlighted various other dimensions of power (French & Raven, 1959; Yukl & Falbe, 1991). As discussed earlier, these include: (1) expert power, (2) positional power, (3) reward power, and (4) legitimacy power.

Across each of the four (4) dimensions of power (French & Raven, 1959; Yukl & Falbe, 1992), driven by the entrepreneur's absolute dependency in terms of securing a capital investment (Emerson, 1962), the angel investor enjoys a baseline power advantage. However, across two of these dimensions, the power differential can shift in favor of the entrepreneur. These dimensions are specifically the positional power and the legitimacy power. The other two dimensions of expert power and reward power are effectively constants throughout each negotiation event.

Once the negotiation begins, the circumstances for the entrepreneur could change in at least two objectively observable manners: (1) the number of unique offers that the entrepreneur obtains from the angel investment group could be greater than a single offer, and (2) the participation rate of the angel investor group could be greater than a single angel investor. These two factors are effectively a function of not only the underlying entrepreneurial opportunity (Shane & Venkataraman, 2000), but also of the perceived ability of the entrepreneur to execute and deliver upon expectations. The intuitive argument is that, the stronger the management team and the greater the perceived value of the opportunity, the stronger should be the entrepreneur's overall power position.

I first test the positional power dimension (Yukl & Falbe, 1991). Though the angel investor's position as a buyer does grant a certain baseline advantage (Bazerman et al., 1985; Sugden et al., 2013), in a direct application of Emerson's (1962) P-D theory, the ability for the entrepreneur to obtain a second and unique offer would reduce the entrepreneur's dependency on the initial offer from angel investors. If shifts during the actual negotiation improve the entrepreneur's position, it is reasonable to expect that the final negotiated agreement will be closer to the entrepreneur's opening position as the negotiation unfolds over time. This would confound the power effect with the cognitive effect; that is, any observed anchoring effects might not be from cognitive origins, but rather from shifts in positional power.

I test the impact of power on the two dimensions of capital and equity. These two dimensions represent the bid and ask positions for both negotiators; if a negotiated outcome is reached, then the bid and ask positions for each actor will be mirror images of one another. Therefore, if the power position of the entrepreneur improves, the directionality of the capital and

equity coefficients should be opposite one another: the entrepreneur obtains an improved capital position while expending less equity to secure that capital; likewise, this implies that the angel investor's power position has eroded and that the price per share of equity has increased:

H5a: The entrepreneur's ability to obtain additional unique offers from the angel investors will have a *positive* impact on the Final Capital Position

H5b: The entrepreneur's ability to obtain additional unique offers from the angel investors will have a *negative* impact on the Final Equity Position

I next test the legitimacy power (French & Raven, 1959) dimension. Angel investors represent an expert entrepreneur (Wiltbank et al., 2009) who has successfully cashed-out (Morrissette, 2007), and any favorable response by the investor in terms of a communicated offer conveys a degree of legitimacy to the opportunity as presented by the entrepreneur. This might be a double-edged sword however, in that the total valuation for the firm as requested by the entrepreneur might be wildly higher than the valuation that the angel investor is comfortable with providing. Regardless, any conveyance of value of the firm is better than no offer at all.

Thus, the entrepreneur's ability to engage an angel investor or multiple angel investors should shift that power dynamic in the entrepreneur's favor because of the bestowment of legitimacy (French & Raven, 1959). As with positional power, the earned legitimacy by the entrepreneur may confound power effects with cognitive effects; that is, any observed anchoring effects might not be driven from cognitive origins, but again, rather from shifts in legitimacy power. As with positional power, capital will be positively impacted by the increase in legitimacy power while equity will be negatively impacted; where greater capital is secured by expending less equity:

H6a: The greater the number of angel investors participating in the negotiation (by communicating an offer) will have a *positive* impact on the Final Capital Position

H6b: The greater the number of angel investors participating in the negotiation (by communicating an offer) will have a *negative* impact on the Final Equity Position

METHODOLOGY

I study the negotiation between angel investors and entrepreneurs in a natural setting – the ABC TV show *Shark Tank* (Jeffrey et al., 2016). The *Shark Tank* is a good proxy because of the

characteristics of the transaction that is completed can be generalized to the angel investment market because of the unsophisticated nature of the contract and the basic transaction structure of capital for common stock (Ibrahim, 2008; Prowse, 1998). This is reflected in the negotiation task, which is two-pronged: (1) the entrepreneur needs a capital investment to maintain firm viability, and (2), the angel investor wants equity ownership to secure rights over the future cash flow in order to generate a return on investment.

In the game show, negotiators exchange explicitly communicated offers and counter-offers. Each negotiation represents the event, and each event is comprised of a series of offers and counter-offers. There are a wide range of embryonic firms showcased on the show and approximately half of the negotiations end in an impasse. For this study, I consider only those cases where an agreement is reached in the form a handshake (Freund, 1975) or an intention-to-fund per Smith and Viceisza (2017)[31]. The actual negotiation pits an entrepreneur against a panel of five angel investors who are free to act independently, form a coalition, or choose not to participate; I treat the angel investor as one collective body.

Data & Sample

I utilized the edited version of the show made directly available for purchase on Amazon. The data set includes 90 episodes across four seasons, ranging seven years. I transcribed every other season corresponding to the years 2009, 2011, 2013, and 2015. Each 45-minute episode took approximately 5 hours of raw transcription time and generated a total of 343 cases of a unique entrepreneurial opportunity (Shane & Venkataraman, 2000). Following an accounting technique called analytical review (Stringer & Stewart, 1986), the 343 cases were then reduced to a homogenous subset of 307 cases representing an exchange of capital for partial equity ownership. Analytical review is an accounting technique that aggregates a homogenous set of transactions to derived patterns that will then be subsequently inferred upon the individual transactions (Stringer & Stewart, 1986). Excluded from the sample are instances where the angel investor purchases

[31] The pre-handshake (Freund, 1975) exchange of negotiation positions is typically subject to due diligence and is not a guarantee of investment; it is rather an "intention-to-fund" (Smith & Viceisza, 2017). It stands to reason that a post due diligence value will typically be lower in value than the initial handshake position. The assumption (reasonably made) is that the additional information obtained by the buyer during due diligence would not increase the value unless the negotiation is structured to account for changes in information. This is perhaps why more experienced angel investors are found to spend more time on due diligence (Forrester, 2014).

100% of equity, or utilizes a venture debt structure[32]. The final sample is 148 cases after further constraining the set to only those cases with negotiated agreements.

Measures

Dependent variable. Buy/sell negotiation studies typically focus on the entirety of the object (e.g.: Boulton et al., 2019), which reduces the negotiated positions to value or price. However, the circumstances of this negotiation are such that explicitly communicated positions are directly on capital and equity; value (or price) is a by-product of these positions. Further, the context of this particular negotiation allows the angel investors to offer any combination of capital and equity; that is, capital and equity are untethered though they are clearly interrelated. Because offers are explicitly communicated on these two components, the two dependent variables are the *final equity position* (DV1) and the *final capital position* (DV2) for each negotiated agreement. Capital has a lower bound of zero (0) and remains unbounded at the higher end, while equity is bounded between 0% and 100%.

Independent variables. For hypotheses H1 and H2, the first four independent variables pertain to the initial positions of both parties: the *initial capital request* (IV1) and the *initial equity offer* (IV2) by the entrepreneur; the *initial capital counter offer* (IV3) and the *initial equity counter request* (IV4) by the angel investor.

Next I include *organizational complexity* (IV5) to represent the complexity associated with the firm-environment exchange (Thompson, 1962). Per Thorelli (1967, 1986), the points at which the firm interacts with the environment will determined the domain of a node within a network[33]. If we associate the network with the economic market (that is, rather than a supply chain, there is a supply network comprised of various chains – see Harland, 1996), then the single node in that network can represent the firm (Coase, 1937; Alchian & Demsetz, 1972). From the perspective of the angel investor observing each opportunity, each associated firm will interact with its environment in a manner that is specific to their respective strategic trajectory. This nature of the

[32] The angel investment context presents multiple types of offers. I am only concerned with the most basic, and unsophisticated form (Ibrahim, 2008) where a capital investment is exchanged for partial equity ownership. This allows for the generalizability of the TV show to the phenomenon of angel investment (Ibrahim, 2008; Prowse, 1998). See also footnote #1 for my initial assumptions.

[33] Thorelli is effectively building upon Thompson's (1962) work regarding the firm-environment exchange. Thorelli (1986) will later highlight how networks are constructed by using the domains of organizations; if two organizational domains overlap, a network is formed. I am more interested in the domain of a single organization and not in the network discussion.

firm-environment exchange can be either more complex or less complex based on the activities selected by the firm so that it can interact with its environment. I adapt Thorelli's framework to the embryonic firm operating in the modern economy. I present Figure 3.1 for visual clarity:

[INSERT FIGURE 3.1 ABOUT HERE]

Each case is assigned an organizational complexity score, a formative index derived from six indicators adapted from Thorelli's (1967). The *target market consumption* indicator pertains to how the ensure will consume the firm's unit of measure from which sales and profit metrics will be determined; this indicator is coded one if intangible (Soda Crush), two if tangible (food), and three if hybrid. The *factor input variety* indicator pertains to how the firm absorbs its inputs; this indicator is coded one for an internet firm (human time), two for a limited or handful of inputs, and three for a clothing store with many inputs. Similarly, the *product variety (offered choices)* indicator pertains to how many output options are available to the ensures; this indicator is coded one if an internet application, two for a limited or handful of outputs, and three for a clothing store with many outputs. The *business domain* pertains to Thorelli's geographic area indicator, acknowledging that the modern economy has two domains; this indicator is coded one of the firm is entirely virtual, two if the firm is entirely physical, and three if the firm is a hybrid. Thorelli's notion of time is split into two indicators. The *asset perishability* indicator pertains to the time constraints on the inventory and its faster decay in value as time passes; this indicator is coded one if the unit of measure is durable and two if the unit of measure is non-durable. The difficulty indicator pertains to the firm's relative position on its growth trajectory – we know they are all in their embryonic stage, but some firms can walk while others are just finding their legs; this indicator is coded 1 for the grow stage where an investor only has to supply funds to facilitate the current going concern, and coded 2 for the build stage where an investor's funds are expended to help begin economic activity.

Four of the indicators have three levels, while the remaining two indicators have two levels. All six indicators were first standardized, and after a factor analysis, the four 3-level indicators reduced to a single factor (Eigen value of 1.807, accounting for 47% of the total variance). I then constructed a formative index by taking the median of the new variable and two remaining 2-level indicators. This allows for a singular organizational complexity score for each embryonic firm;

this organizational complexity variable was first operationalized by Oksoy (2020) in Essay 1 of his dissertation. Because I've standardized the variables before constructing the index, the total range for the index is -7.5 to +7.5 (z-scale); the range within the dataset is -0.46 to 2.21. Further, I had a 4th year PhD student in the Strategic Management program independently code the six complexity indicators for all cases and reached an interrater reliability kappa coefficient of 0.70 for the initial pass (Miles & Huberman, 1994); I have therefore retained the original coding and we are actively working on fine tuning the organizational complexity construct in a new project.

The angel investor becomes aware of the organizational complexity associated with an opportunity immediately after hearing the initial offer – but before submitting a counter-offer. Therefore, this information that addresses the context of the negotiation is sandwiched between the initial offer and the counter offer (if any) and serves as a fitting variable that I incorporate into the analysis sometimes as a moderating factor and sometimes as a simple control. For the moderating role, the following two variables are computed and pertain to hypotheses 1 and 2: *org. complexity*initial capital position* (IV6), and *org. complexity*initial equity position* (IV7).

The next two independent variables are derivations from the above and directly pertain to H4. The *capital-based anchoring effect* (IV8) will be compared to the *equity-based anchoring effect* (IV9). I construct a single value per each case that identifies the *percentage of change* between the initial offer and the initial counter offer for both capital and equity. For example, the entrepreneur's initial capital request of $150,000 in Case #031 is compared to the angel investor's initial capital counter offer of $50,000; I do the same for the initial equity offer (20%) and the initial equity counter offer (50%). The percentage of change for capital is -66.7%, while the percentage change for equity is -60.0%; I compare these percentage changes to see if there is a significant difference.

To measure power, I developed two variables. The first variable is the *positional power of the entrepreneur* (IV10), which is based on the number of unique offers obtained from a unique angel. If there are two independent offers from the angel investor collective body, the positional power of the entrepreneur is (2.0) as compared with a positional power of (1.0) if only one offer is provided. The second variable is the *legitimacy power of the entrepreneur* (IV11), which is the number of angel investors participating in the negotiation. In other words, this variable assesses the number of angel investors that are engaging with the entrepreneur. If there is an offer from only one angel investor, then the legitimacy position is (1.0), while if there is an offer from two

angel investors that have formed a coalition, then the legitimacy position is (2.0). These two power variables relate to H5 and H6, respectively. They will be tested in relation to the impact that the entrepreneur's initial capital and the entrepreneur's initial equity positions have on the final capital and final equity positions, respectively.

It is important to note that I study *implied* power shifts within this study. That is, I do not measure the negotiation in terms of its incremental temporal steps comprising the various durations of each case. Rather, I measure each event within the negotiation in terms of their totals, representing a historical perspective to the negotiation that just occurred. For example, while there may be 3 unique offers throughout the negotiation, there may also be events where an offer backed off during the negotiation that reduced the offers on the table to one before climbing back to two offers. This I highlight as a limitation, however, I also highlight as justification for my ability to study implied power shifts.

In a post-hoc analysis, I took the ratio of the two power variables to see if their interaction had an impact on the negotiation. This ratio however, isn't as straight forward as one might expect. Table 3.1 and Figure 3.2 presents the possible scenario combinations for the two power variables, which is constructed as follows [# of Unique Offers / (1 + Total Pool of Angel Investors – # of Unique Angels)][34]. For example, a single unique offer combined with a single interested angel investor, presents the lowest degree of power for the entrepreneur. However, if there are two interested angel investors within that same single offer, the entrepreneur's power position shifts slightly positive. As additional angel investors decide to participate in the offer, there is a greater likelihood that any given one of them can splinter off to compete against the rest. In other words, the alliance between angel investors becomes a bit weaker as additional angel investors become part of the negotiated offer. As the number of unique offers increases, the entrepreneur's power position recognizes greater gains to reach its maximum position when all five angel investors are separately negotiating and competing against each other.

[34] I include a (1) in front of the denominator to account for the "phantom BATNA" (Pinkley et al., 2017) that each entrepreneur is presumed to have. Perhaps the entrepreneur doesn't even know of their potential opportunity, but in a hopeless world there is no strategy. This would be the equivalent of a two strikes and you're out mentality, loosely borrowed from Baseball. But on a more practical level, it is reasonable to expect that the negotiating counterparty has at least one additional potential strike by the very reason that they are negotiating in the first place; if the negotiation is occurring, it can certain occur again elsewhere. The formula can therefore be written as follows X1/(n+1-X2), where n equals the total number of investors available.

[INSERT TABLE 3.1 ABOUT HERE]

[INSERT FIGURE 3.2 ABOUT HERE]

Control variables. For controls, I build upon the timely study by Boulton, Shohfi & Zhu (2019), who also studied the ABC TV show Shark Tank. The authors analyzed factors impacting the entrepreneur's valuation, the factors impacting if a venture receives an offer, and the factors impacting the entrepreneur's acceptance of the offer. I am only concerned with the receipt of an offer because my focus is on the angel investor and not on the entrepreneur. The different theoretical focus thus constrains the available cases, burdening the results with the associated data limitation issues. This is one reason why the studied variables will differ from Boulton et al. (2019). I've selected the controls most pertinent to the research focus, and so I use the Boulton et al. (2019) student as more of a guideline. Some are taken as is, some are modified, and some new variables are added; these choices are based on what the angel investor objectively is able to observe (as independently observed by the authors) when presented with an opportunity.

I include if the opportunity has a *patent (Y/N) (C1),* if the offer included a royalty (Y/N) (C2), and if the offer includes a *contingency (Y/N)* (C3). One point of departure from Boulton et al. (2019) is the lack of focus on the valuation of the firm. Therefore, I adapt their *sales to requested valuation* ratio to the ratio of *lifetime sales to offered capital* (C4). Along the same lines, I add the ratio of *offered capital to unit price* (C5) that provides a sense of how many units of activity it will take to generate the equivalent of the invested capital in terms of sales dollars. I likewise adapt the *gross margin* variable to the ratio of *offered capital to margin contribution* (C6), where the margin contribution is the difference between the unit sales price and the unit cost, providing another sense of how much unit activity is required to recoup the initial investment in terms of gross profit dollars.

I also add if the firm is a manufacturing operation with a clearly defined cost per unit of activity or if the opportunity is a service via the *Industry* indicator *(1=Manufacturing, 0=Service)* (C7). I identify a collective *race* (C8) variable for the entire entrepreneurial team, where an all-white-looking team is 100% and an all-non-white-looking team is 0%. I do the same for *gender* (C9), where an all-female team is 0% and an all-male team is 100%. I chose to exclude if a *venture had one member* or not (seemed less important), the *venture's age* (all of these firms are effectively

in the embryonic stage), if the *average age of the entrepreneur was over 50* (difficult to objectively identify), and if there was *geographic proximity* between investor and entrepreneur (modern communications and travel make this a manageable situation).

Statistical Techniques

I predominantly employ linear regressions in both single and multivariate form; regression analysis is used to test hypotheses 1, 2, 3, 5, and 6. Though hypothesis 4 didn't require an analysis and the conclusion can be derived based on the results of hypotheses 1a-2b, I do present a paired-means difference t-test for clarity. Regression is an appropriate method because anchoring effects are calculated by obtaining the difference between the stimulus and the response that is held in relation to a true value (Slovic & Lichtenstein, 1971; Jacowitz & Kahneman, 1995). In the angel investment context, this true value isn't knowable to the negotiating parties until after the negotiated agreement has been reached (Knight, 1921; Commons, 1934). Further, even though two willing individuals agreed upon a value, the truth of that value is completely unknowable because it depends on knowing the future. I therefore consider the negotiated agreement, representing n=1 in the market for that firm, as the *bounded true value*[35]. I assume that the negotiated agreement is that which would have always been, and the anchoring effect is investigated in relation to this bounded true value that was unknowable at the time the anchoring effects occurred.

Each regression analysis for hypotheses 1a-2b is supplemented with a paired means difference test. Each case is its own event within the analysis, therefore each case has both an initial position and an initial counter position; both are in relation to their respective final position – the bounded true value. The use of both a regression analyses and a paired means difference test allows for two separate measurements of difference to corroborate one another. The remainder of the hypotheses 3a, 3b, 5a-6b are regression analyses testing the impact of organizational complexity and power, respectively.

[35] The bounded true value is a product of the bounded rationality of the negotiating parties, exhibiting a satisficing event (Simon, 1957) should they reach a negotiated agreement.

RESULTS

Tables 3.2 and 3.3 present descriptive statistics and Pearson correlations for the variables in the study. There are several significant bivariate correlations that may suggest multicollinearity, but I argue this is a function of this specific negotiation.

[INSERT TABLE 3.2 ABOUT HERE]

[INSERT TABLE 3.3 ABOUT HERE]

For hypotheses 1a through 2b, I utilize both a regression analysis and a paired-means difference t-test to then corroborate results. Tables 3.4 presents the results for competing hypotheses 1a and 2a, testing the anchoring effect of the initial capital request on the initial capital counter offer. I run three models; model 2 tests the effect of the initial capital request (IV1) on the final capital position (DV1); model 3 is a separate regression that tests the effect of the initial capital counter offer (IV3) on the final capital position (DV1); and model 4 is an additional regression where both IV1 and IV3 are regressed on DV1. I find the initial capital counter offer has a stronger impact on the final capital position than does the initial capital request. Though both variables had a similar individual impact on the final capital offer (DV1), when combined within the same model (4), the initial capital counter offer (IV3) has a stronger beta coefficient (0.64 at $p<0.01$; t-value 4.657) than does the initial capital counter offer (IV1) (0.40 at $p<0.01$; t-value 3.112).

The regression analysis alone doesn't help determine if there is a statistically significant difference between these two variables, and I perform a subsequent paired means difference t-test between the main variables of interest (IV1 and IV3), and between each main variable and the final capital position (DV1). If there is an anchoring effect, then the paired means of the initial positions should not be significantly different from one another; I present this in Table 3.5. There is no significant difference ($p<0.903$) between the initial capital request and the initial capital counter offer, indicating that though the counter-position seems to have a stronger impact on the final capital position, there may still exist an anchoring effect from the initial capital request. Interestingly, both of these variables are statistically significant from the final capital position; implying that while there is an anchoring effect observed between the initial round of the

negotiation, the final negotiated agreement can settle at a significantly different point. That is, the negotiation itself influences the final outcomes beyond just that of a given cognitive bias.

I initially hypothesized that the initial position would be stronger than the initial counter position for the capital dimension (H1a). This hypothesis is PARTIALLY SUPPORTED because there is an anchoring effect as indicated by the added paired means difference t-test, even though the counter position was stronger. Therefore, there is also PARTIAL SUPPORT for hypothesis 2a. However, an alternative explanation could explain the observed lack of a statistically significant difference between the initial capital and initial counter positions. Considering that all cases have reached a negotiated agreement, there was a meeting of the minds between the angel investor and the entrepreneur as to the future strategic direction of the firm. Further, because the purpose of the capital investment is communicated explicitly and is agreed upon by the negotiators, the capital component is partially related to the barometer of that potential and envisioned strategic future[36]. That is, both negotiators can provide a rough estimate of how much capital is needed to start a beef jerky business (Three Jerks Jerky – Case 243), or a skateboarding business (Hamboards – Case 128), etc. Therefore, I raise into question if the appearance of an anchoring effect between the initial negotiation positions is a function of cognitive biases especially when (1) the final capital position is significant different from either the initial or the initial counter (paired means t-tests #2 and #3 in Table 3.5), and (2) when the purpose for the capital investment is explicitly stated and agreed upon as to how that capital will be deployed.

[INSERT TABLE 3.4 ABOUT HERE]

[INSERT TABLE 3.5 ABOUT HERE]

Therefore, the potential for the capital component to be influenced by the structure of the negotiation itself can explain the earlier mentioned multicollinearity concern. As specified in model 4, the presence of both the initial capital request and the initial capital counter offer yields

[36] Naturally there is subjectivity in identifying costs as well, but it is a reasonable position that costs are more objectively known than are future sales. Fisher (1930: 6-7) would seem to agree: "You cannot measure in dollars…while eating your dinner…but you can find out definitely how much money that dinner cost you". My point is that because these angel investors are themselves expert entrepreneurs (Wiltbank, et al., 2009), they can fairly accurately estimate how much that dinner will cost before they sit down to eat.

a variance inflation factor (VIF) of 14.0 and 13.8, respectively. These two negotiation positions are naturally highly correlated with each other given the explanation that the capital investment will be deployed for a specific strategic purpose and can therefore be approximated against reality. By providing an offer, the angel investor has implicitly accepted this vision and is in alignment with respect to the specific usage of the funds. That is, the two negotiators agree as to the cost of this future vision, which is much more knowable than the return on investment of that future vision. This initial capital investment (cost of equity) can be equated to an 'ante' in poker; I therefore argue that multicollinearity is a function of the negotiation structure.

In Table 3.6 I present the results for competing hypotheses 1b and 2b, testing the anchoring effect of the initial equity offer on the initial equity counter request. As before, I run three models; model 6 tests the effect of the initial equity offer (IV2) on the final equity position (DV2); model 7 is a separate regression testing the effect of the initial equity counter request (IV4) on the final equity position (DV2); and model 8 incorporates both variables to then regress on DV2. As shown with the beta coefficients, the initial equity counter request (0.57 @ $p<0.01$; t-value 9.535) has a stronger impact on the final equity position than does the initial equity offer (0.47 @ $p<0.01$; t-value 4.225).

As with the capital dimension however, I then performed a paired sample means difference test to see if there is a statistically significant difference between not only the initial equity offer (IV2) and the initial equity counter request (IV4), but also between each independent variable and the final capital position (DV2). As before, if there is an anchoring effect, then the paired means of the initial positions should not be significantly different from one another; I present this in Table 3.7. For the equity portion, the earlier inconsistency does not appear. That is, the counter offer has a stronger impact on the final outcome, and there is a statistically significant difference between the initial equity offer and the initial equity counter request. Based on the combination of these two tests, I can conclude that there does not appear to be an anchoring effect for the equity side of the negotiation, thereby SUPPORTING hypothesis 2b and NOT SUPPORTING hypothesis 1b.

[INSERT TABLE 3.6 ABOUT HERE]

[INSERT TABLE 3.7 ABOUT HERE]

In Tables 3.8 and 3.9 I present the results for hypotheses 3a and 3b testing the influence of organizational complexity on the anchoring effects. The expectation was that the additional uncertainty introduced by the complexity of the embryonic firm-environment exchange should strengthen the influence of any anchoring effect. However, there organizational complexity does not play a moderating role for either of the capital or equity anchoring effects when testing the moderation on the relationship between the initial position and the final position. Therefore, hypotheses 3a and 3b are NOT SUPPORTED. In post-hoc analysis, I investigated the potential for organizational complexity to influence the initial counter-offer of capital (Table 3.8) and the initial counter-request for equity (Table 3.9). Interestingly, while there was no change in the equity dimension, organizational complexity proved to moderate the initial capital request positively (beta coefficient of 0.92) while moderating the initial capital counter-offer negatively (beta coefficient of -1.07); both significant at $p<0.01$.

[INSERT TABLE 3.8 ABOUT HERE]

[INSERT TABLE 3.9 ABOUT HERE]

Hypothesis 4 tests if the capital-based anchoring effect is stronger than the equity-based anchoring effect. Table 3.10 presents the result of a paired-means difference t-test comparing the percentage change in the capital position between the opening and the initial counter-offer with percentage change in the equity position between the opening and the initial counter offer. The lack of an equity-based anchoring effect (h2b), and the greater variation in the equity positions (Table 3.10) indicate H4 is NOT SUPPORTED.

[INSERT TABLE 3.10 ABOUT HERE]

The remaining hypotheses pertain to the direct impact that power has on the final negotiated outcomes. I argued that the power-related factors inherent within the negotiation will influence final negotiation outcomes, thereby confounding the results associated with cognition. The argument is that if the entrepreneur is able to secure greater power, the final capital and equity positions should be closer to their opening capital and equity positions. Incidentally, this also is the manner in which the anchoring effect is measured, highlighting the potential confounding.

In Table 3.11, I present the direct impact of the two power dimensions on the final *capital* position that adheres to hypotheses 5a and 6a. In Table 3.12, I present the direct impact of the two power dimensions on the final *equity* position that adheres to hypotheses 5b and 6b. All four hypotheses are SUPPORTED. As presented in Table 3.11, power has a significantly positive impact on the final capital position, pushing the final position closer (if not beyond) the entrepreneur's initial capital request; whereas for the final equity position as presented in Table 3.12, power has a significantly negative impact, again pushing the final position closer to the entrepreneur's initial equity offer.

I then ran two post-hoc regressions for both the capital and the equity dimensions, and incorporated the power ratio. As a reminder, the power ratio is a novel construction of the possible options available for the entrepreneur built upon the positional power dimension and the legitimacy power dimension. For the capital dimension, I initially added the power ratio variable (Model 19) as an additional factor; this didn't change the lack of significance when both power dimensions are included together into the model (Model 18), though the power dimension did prove to be highly significant (beta coefficient of 58,474.44 @ $p<0.01$). I then removed the two individual power variables and included only the power ratio (Model 20) to again obtain high significance for the power ratio (beta coefficient of 42,587.56 @ $p<0.01$).

The story is slightly different for the equity dimension. As with capital, the two power variables when included together did not present significant (Model 24). However, when incorporating the power ratio (Model 25), legitimacy power became marginally significant (beta coefficient of -0.03 @ $p<0.10$), as was the power ratio itself (beta coefficient of 0.04 @ $p<0.05$). It is surprising however to see the positive sign in front of the power ratio given that an entrepreneur's ability to secure more power should reduce equity. Including only the power ratio and removing the two individual power variables eliminated significance. This is interesting due to the difference from the capital dimension. I present a summary of all hypotheses in Table 3.13.

[INSERT TABLE 3.11 ABOUT HERE]

[INSERT TABLE 3.12 ABOUT HERE]

[INSERT TABLE 3.13 ABOUT HERE]

DISCUSSION AND CONCLUSION

Discussion

The true value of an embryonic firm is unknowable (Knight, 1921). There are simply too many unknowns associated with the potential viability of the opportunity, the strategic direction taken, and the ability of the entrepreneur to execute the strategy and generate a return on angel investment. Further complicating matters, each opportunity is in its embryonic stage and there is little (if any) historical operating performance. Therefore, any agreement that emerges from this negotiation is driven almost entirely by the subjective expectations of the angel investor and entrepreneur. Appropriately, resource allocation within this context is considered to be inefficient (Arrow, 1974; Wetzel, 1983).

This context of extreme uncertainty is in contrast to the study by Northcraft and Neale's (1987) where the participants of that study had the benefit of a local real-estate property (a tangible asset) that served as a proxy for the true value. The difference is in how value is constructed from the lack of a tangible property or historical information to use as a barometer. The value that is determined for the angel investor is a derivation of the agreement and is typically the first value-conveying agreement event for the embryonic firm. While there is no true value to compare anchoring effects to, I advance the notion of a *bounded true value*, as representing the negotiated agreement *that would have always been reached*; I relate all anchoring effects in relation to this figure that changes for each of the negotiation events pertaining to each unique embryonic firm. My first contribution is therefore extending the anchoring effect literature to study a context where the true value is unknowable (Knight, 1921). This notion of bounded true value is built directly upon Simon's (1957) work on satisficing because the agreement that is reached cannot be gauged against optimality and is a result of the social construction of value (Berger & Luckman, 1967; Weick, 1979).

A second contribution follows in that both the anchoring effect literature and the negotiation literature in a buy-sell context, have only considered total valuation (e.g.: Boulton et al., 2019). This means that in a buy-sell context, the portion over which the parties are negotiating is effectively fixed at 100% which reduces the focus of the negotiation to only that of the price for that full portion. Considering that valuation is comprised of capital divided by equity, capital becomes equal to the valuation, when equity is 100%. However, the explicitly communicated negotiation positions in this context are not on the valuation but rather directly on its two components of capital and equity. If an agreement is reached on these two components, then a

valuation will be derived. I therefore extend the literature by studying the anchoring effect on these two components of value.

The initial assumption I made was that the firm has a capital deficiency, which implies its value is entirely intangible. In this highly uncertain context, the anchoring effect as driven by uncertainty should have a stronger impact on the negotiation outcomes (Tversky & Kahneman, 1974). Interestingly, I find that the observed anchoring effect is on the less-uncertain capital component, rather than the more-uncertain equity component. This finding goes against the grain of long-standing theory (Tversky & Kahneman, 1974; Furnham & Boo, 2011). I suggest that this means an angel investor and an entrepreneur reach an agreement on the specific usage of the potential capital investment first, thereby representing an alignment between the two negotiating parties as to the future strategic direction of the firm. This explanation suggests that the observed effect might not have cognitive origins, but might rather be the result of the objectively identifiable next steps that the business needs to take in order to reach its potential that both parties agree exists.

The findings on the lack of an equity-related anchoring effect suggest that perhaps angel investors are less influenced by such a cognitive bias. Perhaps this is because the entrepreneur is typically a novice in relation to the angel investor's expert status (Morrissette, 2007; Wiltbank et al., 2009). Perhaps this result is because of the baseline power imbalance that is initially in favor of the angel investor given their access to capital that the entrepreneur needs. Or perhaps this is simply a function of the angel investor's position as a buyer (Bazerman et al., 1985; Fudenberg et al., 2012; Sugden et al., 2013). Regardless of why, our study stands out in its lack of a finding of an anchoring effect on professionals; a finding contrary to Northcraft and Neale (1987).

My third contribution relates to the influence of power on the anchoring effect. Each angel investor has the full discretion over resource allocation decisions (Benjamin et al., 2000), and thus enjoys full freedom to act independently or collaboratively with other angel investors; to make an investment or not participate at all. As such, angel investor interest can be gauged in two distinct manners: (1) the angel investor participation rate which pertains to the number of angel investors involved in any explicit offer, and (2) the number of unique angel investor offers. The participation rate I associate with French and Raven's (1959: 153) legitimacy power. The number of unique offers strikes at Emerson's (1962) Power Dependence Theory which states that power and dependence have an inverse relationship. I find that there is indeed a power dynamic that may

suggest an alternative explanation to that of a cognitive bias when considering the initial position in relation to the final negotiated agreement.

There are cases where the initial equity position was statistically similar to the final equity position, and for those cases, I suggest that the participation rate and/or the number of unique offers made available to the entrepreneur may contribute to the impression of an anchoring effect. That is, any observed effects might be an outcome of an unfolding negotiation process where power shifts in favor of the entrepreneur. This finding is supported by the earlier work of Galinsky, Magee, Inesi and Gruenfeld (2006), who find that individuals are less likely to adapt another's frame of reference when holding onto power due to less perspective taking behavior. Using the two dimensions of positional power and legitimacy power, I derived a power ratio based on the potential combinations available from those two power dimensions. I therefore also contribute to the power literature by highlighting that different forces can be combined and incorporated into analysis of power as a ratio that is itself significant. Future research should consider additional combinations across all bases of power (French & Raven, 1959; Yukl & Falbe, 1991).

Typically, organizational complexity is measured as a function of size and diversification (Child, 1973; Dewer & Hage, 1978; Baccarini, 1996) and not directly in terms of the firm-environment (Thompson, 1962; Thorelli, 1967). I therefore extend nascent research on this novel construction of organizational complexity in terms of the firm-environment exchange and its potential impact on cognition during a negotiation. Though organizational complexity did not moderate the relationships between the initial positions in relation to the final position, organizational complexity did play a moderating role for the initial counter-position on capital; the equity dimension for the initial counter-position was not impacted. I intend to tease out these nuances in future research.

Conclusion, Practical Implications and Future Direction

In the US, annual angel investment exceeds $20.0 billion (UNH, CVR) and plays a critical role in fostering entrepreneurship and economic growth. Understanding factors that lead to investment decisions thus has implications for several stakeholders in the entrepreneurial ecosystem. I examined the negotiation between angels and entrepreneurs and identified the role of uncertainty and power differences on the anchoring effect during a negotiation. On the one hand, the anchoring effect literature suggests that information injected into the uncertainty of a

negotiation by the initial mover has a cognitive impact on the counter-party. On the other hand, there is an initial power differential between the negotiators that shifts over the course of the negotiation. I unpack these factors by observing actors as they negotiate in a natural setting, in real-time.

I present three main findings. First, I find that the *less*-uncertain capital dimension does present an anchoring effect. Second, I find that the *more*-uncertain equity dimension does *not* present an anchoring effect. Third, I highlight how power can shift during the negotiation and that it does indeed strengthen the entrepreneur's negotiation position, contributing to a greater capital position (received) and a lower equity position (offered).

These findings have implications for practitioners. For the capital dimension, requests should be associated with a specific set of actions that the firm must take in order to pursue the intended strategic direction. Thus, acceptance by the angel investor of the capital dimension is simply an acknowledgement that the requested amount is not only appropriate given the intended future steps but also that the strategic intention is worthy endeavor to be pursued. For the equity position, entrepreneurs should be aware that sophisticated angel investors appear to be less influenced by to the cognitive effects of anchoring, and that in the absence of other offers, an angel investor commands a more powerful position. However, entrepreneurs should also be aware that their position may improve over the course of a negotiation, allowing entrepreneurs to partially regain lost ground. The point is, prior to entering into a negotiation, practitioners should be aware as to how a negotiation unfolds over time along both dimensions of valuation that is subject to the dual tensions discussed above. I further suggest that practitioners should view these two dimensions of valuation as separate issues in a negotiation, though they are also clearly interdependent.

One major criticism of most designed experiments is the generalizability of the results to similar and actually-experienced contexts (Kahneman & Tversky, 1982). This is a serious issue because nearly all empirical studies on negotiations are experimentally designed (Buelens, Van de Woestyne, Mestdagh & Bouckenooghe, 2008). In a clever use of context, Holm, Opper & Nee (2013) conducted a study in China where the currency differential with the dollar provided the opportunity to assess the impact of a high stakes environment. The authors use *"controlled incentivized tasks"* (pg. 1672) to replicate scenarios that entrepreneurs typically encounter but that is not represented in typical experimentally designed studies.

More than the finding that entrepreneurs were not necessarily more risk-takers or more averse to ambiguity, the study implicitly highlighted the importance of designed experiments with respect to its benefits and limitations. Namely, the observed results are a function of the nature of the questions and design of the experiment as created by the investigator – and the risk is a potential misinterpretation of the answer or simply an answer to the wrong question (Kahneman & Tversky, 1982). There are of course benefits to experimental designs because they allow for a nuanced investigation of a complex domain (such as that of a negotiation) to assess the origin of a particular effect. My point is that insights obtained in laboratories need to be tested whenever possible in their related actual domain because though laboratory results do allow for an understanding of which forces are active at any given time, it is important to not overstate their importance when applied to non-laboratory settings.

As such, I contribute to the negotiation literature by testing the impact of the anchoring effect within an actual setting, where the negotiation is occurring in real-time, between two professionals, for real dollars invested into a real opportunity. I therefore cannot rule out the potential of an additional reason to those presented above as to why an anchoring effect was not observed – the stakes are simply too high for the angel investor who is in a high state of alertness (Kirzner, 1997) and therefore maintains thoughtful vigilance that counter-acts the impact of a cognitive bias (Chapman & Johnson, 1994; Epley & Gilovich, 2005; Mussweiler et al., 2000). The implication of this is that within negotiations where the stakes are so high, even if the uncertainty is also high (at an extreme level, even), the entrepreneur does not have advantage in making the first move (Galinsky & Mussweiler, 2001; Ku et al., 2006). Future research should address this question by having the entrepreneur not make an initial offer, rather having them simply provide a presentation of the opportunity – the angel investor would then initiate the negotiation by presenting a first offer to which the entrepreneur would respond. By reversing the order, I will be able to get a better understanding of the present context.

This study does have some limitations because it is based on data from a natural setting. Future research should construct similar negotiations but in a more controlled setting to strengthen our understanding of the relationships identified in this paper. Also, future research should examine if as organization complexity increases there is an optimum opening position on both capital and equity dimensions that does create an actual cognitive bias or that facilitates power differential in the entrepreneur's favor. Future research should also consider the stickiness of the

anchoring-effect. Because these results compared the initial offer and initial counter-offer positions in relation to the final negotiated agreement, I raise the potential for anchoring effect to take hold at the outset of the negotiation, even if not immediately observable, to then appear at the end of the negotiation where it is observable. Is this from power or a subconscious cognitive trap, we do not know.

The above needs to be taken with a grain of salt. I only analyzed cases where an angel investor has not only indicated interest in the venture by explicitly communicating an offer, but also where the entrepreneur has accepted that offer. As such, the focus of this study is quite narrow. However, for the purposes of determining if a cognitive bias impacts the negotiation or if power plays a role, I argue that this narrow focus presents an ideal context to study an extreme version of their behavior when an anchoring effect should be most likely perceived. My logic is as follows: if the angel investor has expressed such an interested in the venture, then the unknown subjective forces that led the angel investor to communicate an offer in the first place may have facilitated the anchoring effect. That is, the angel investors may be more inclined and may have left their guard down when interested. The results indicate that is not the case – especially not for the greater uncertain dimension of equity. Therefore, the above findings indicate that angel investor's may be less influenced by cognitive biases than has been typically found in experimentally designed settings. This is important for the entrepreneur to keep in mind because this would indicate that angel investors are quite attentive even when biased on firms they have high expectations for.

Another limitation is my use of totals for each case event without assessing the nuances of temporal effects during the negotiation itself. Future research should incorporate the role of time to parse out the effects of cognitive and power from the natural messiness of a negotiation as it unfolds in real-time. Finally, another limitation is the use of angel investors found on the TV Show Shark Tank, which does pose questions as to the generalizability of the sample to the population of total angel investors. While the narrow focus may create issues, the sampled angel investors can also be considered to be the crème de la crème of the total population, anchoring (so-to-speak) an example for the others to emulate.

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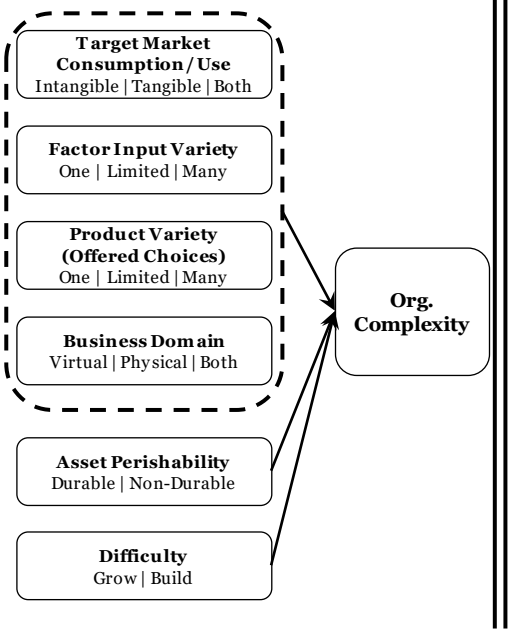
TABLES AND FIGURES

Figure 3.1: The Organizational Complexity Construct



Theoretical Framework

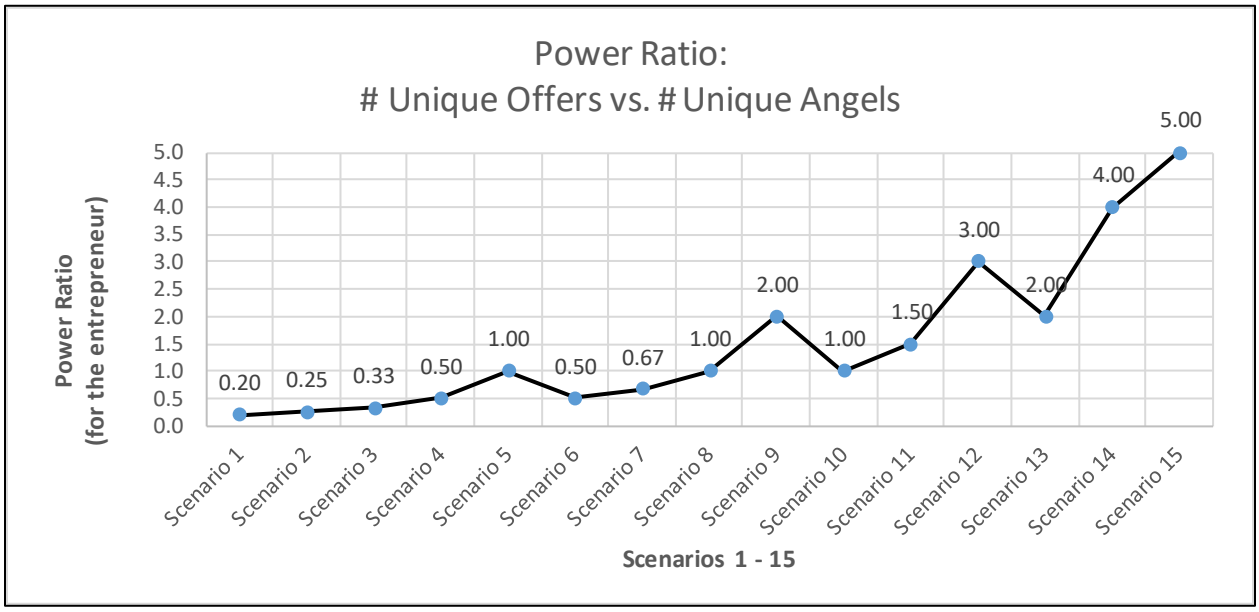
Thorelli's (1967/1986) Framework	Adapted Framework	Post-Factor Analysis Groupings
Product (Service, Output); *Offered to the Environment*	Target Market Consumption	The Coordination Mechansim
Clientele *Served*		
Functions Performed *(Modus Operandi)*	Factor Input Variety	
	Product Variety	
"Area" (Geographical)	Business Domain	
Time	Asset Perishability	Asset Perishability
	Difficulty	Difficulty

Table 3.1: Power Ratio (Potential Scenarios)

Scenario	# of Unique Offers	# of Unique Angels	Power Ratio
Scenario 1	1	1	0.20
Scenario 2	1	2	0.25
Scenario 3	1	3	0.33
Scenario 4	1	4	0.50
Scenario 5	1	5	1.00
Scenario 6	2	2	0.50
Scenario 7	2	3	0.67
Scenario 8	2	4	1.00
Scenario 9	2	5	2.00
Scenario 10	3	3	1.00
Scenario 11	3	4	1.50
Scenario 12	3	5	3.00
Scenario 13	4	4	2.00
Scenario 14	4	5	4.00
Scenario 15	5	5	5.00

Note: Where the Power Ratio = [#Unique Offers / (1 + Total Pool of Angels - #Unique Angels)]; and where the total pool of angel investors is 5 given the analysis of Shark Tank

Figure 3.2: Power Ratio (Potential Scenarios Graphed)



Note: Where the Power Ratio = [#Unique Offers / (1 + Total Pool of Angels - #Unique Angels)]; and where the total pool of angel investors is 5 given the analysis of Shark Tank

Table 3.2: Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Dev
(C1) Patent_Y1N0	149	0.00	1.00	0.32	0.47
(C2) Royalty_Y1N0	149	0.00	1.00	0.03	0.16
(C3) Contingent_Y1N0	149	0.00	1.00	0.15	0.36
(C4) Z_SalesLife_CapOff_Ratio	149	(0.72)	4.33	(0.08)	0.84
(C5) Z_CapOff_UnitPrice_Ratio	149	(0.15)	12.87	0.02	1.10
(C6) Z_CapOff_MarginContrib	149	(0.14)	13.09	0.02	1.10
(C7) Industry_M1_S0	149	0.00	1.00	0.82	0.39
(C8) Z_Race_EntrepTeam_W100	149	(2.74)	0.41	(0.05)	1.06
(C9) Z_Gender_EntrepTeam_M100	149	(1.61)	0.74	(0.03)	0.99
(IV1) Initial Capital Request	149	10,000.00	2,000,000.00	224,093.96	274,426.95
(IV2) Initial Equity Offer	149	0.04	0.51	0.16	0.09
(IV3) Initial Capital Counter Offer	149	0.00	2,000,000.00	224,848.99	267,315.58
(IV4) Initial Equity Counter Request	149	0.00	0.80	0.32	0.17
(IV5) Org. Complexity	149	(0.46)	2.21	(0.25)	0.48
(IV6) Org. Complexity * Initial Capital	149	(900,000.00)	728,000.00	(52,004.03)	149,240.62
(IV7) Org. Complexity * Initial Equity	149	(0.23)	0.43	(0.04)	0.09
(IV8) Capital-Based Anchoring Effect	149	0.00	3.00	0.17	0.54
(IV9) Equity-Based Anchoring Effect	149	0.00	7.00	1.05	1.00
(IV10) Z_# Unique Offers	149	1.00	7.00	2.14	1.26
(IV11) Z_# Unique Angels	149	1.00	5.00	2.21	1.13
(IV12) Power Ratio	149	0.20	7.00	0.81	1.03
(DV1) Final Capital Position	149	25,000.00	2,000,000.00	251,621.93	298,624.97
(DV2) Final Equity Position	149	0.05	0.80	0.30	0.15

Table 3.3: Descriptive Statistics and Correlation Matrix

	(C1)	(C2)	(C3)	(C4)	(C5)	(C6)	(C7)	(C8)	(C9)	(IV 1)	(IV 2)	(IV 3)	(IV 4)	(IV 5)	(IV 6)	(IV 7)	(IV 8)	(IV 9)	(IV 10)	(IV 11)	(DV 1)	(DV 2)
(C1) Patent (Y=1, N=0)	1.00																					
(C2) Royalty (Y=1, N=0)	0.06	1.00																				
(C3) Contingent (Y=1, N=0)	**0.14 ***	0.04	1.00																			
(C4) Z_SalesLifetime / Capital Offer	**-0.20 ** **	-0.01	0.00	1.00																		
(C5) Z_Capital Offer / Unit Price	**0.14 ***	-0.02	-0.03	-0.04	1.00																	
(C6) Z_Capital Offer / Margin Contribution	**0.14 ***	-0.02	-0.03	-0.03	**1.00 *** **	1.00																
(C7) Industry (Manu=1, Service=0)	**0.25 *** **	0.08	0.06	0.10	0.05	0.05	1.00															
(C8) Z_Race (Team) (W=100%, NW=0)	0.00	0.07	-0.06	0.11	0.06	0.05	0.10	1.00														
(C9) Z_Sex (Team) (M=100%, F=0)	**0.17 ** **	0.08	0.02	-0.07	0.08	0.07	**-0.18 ** **	0.12	1.00													
(IV1) Initial Capital Request	-0.02	0.13	0.10	0.03	0.01	0.01	**-0.19 ** **	0.06	0.04	1.00												
(IV2) Initial Equity offer	**0.14 ***	-0.07	0.00	**-0.20 ** **	-0.02	-0.01	**0.15 ***	-0.04	**-0.22 *** **	**-0.23 *** **	1.00											
(IV3) Initial Capital Counter Offer	0.03	0.13	0.10	0.01	0.00	0.01	**-0.16 ***	0.07	0.07	**0.96 *** **	**-0.20 ** **	1.00										
(IV4) Initial Equity Counter Request	0.12	-0.08	0.10	**-0.24 *** **	-0.10	-0.09	**0.14 ***	-0.09	-0.11	-0.11	**0.54 *** **	-0.05	1.00									
(IV5) Organizational Complexity	0.01	0.01	0.13	**-0.16 ***	0.13	0.09	**0.20 ** **	0.05	0.05	0.02	-0.05	0.05	-0.02	1.00								
(IV6) Org. Complexity * Initial Capital Request	-0.01	**0.22 *** **	0.07	**-0.18 ** **	0.01	-0.01	**0.28 *** **	-0.04	0.02	**-0.39 *** **	0.07	**-0.30 *** **	0.12	**0.58 *** **	1.00							
(IV7) Org. Complexity * Initial Equity Request	0.00	0.00	0.08	-0.04	**0.15 ***	0.11	0.10	0.06	0.12	0.08	**-0.31 *** **	0.11	**-0.20 ** **	**0.87 *** **	**0.40 *** **	1.00						
(IV8) Capital-Based Anchoring Effect	0.07	-0.05	-0.10	-0.12	0.00	-0.01	-0.10	-0.02	0.06	-0.05	-0.08	0.00	**-0.16 ***	**0.16 ***	0.09	0.10	1.00					
(IV9) Equity-Based Anchoring Effect	-0.11	-0.12	-0.03	-0.13	-0.05	-0.05	0.01	0.00	0.03	-0.09	**-0.32 *** **	-0.13	**0.26 *** **	0.03	-0.01	0.09	0.14	1.00				
(IV10) Positional Power (Unique Offers)	-0.01	0.08	-0.09	**0.27 *** **	-0.05	-0.06	0.11	-0.02	0.05	0.12	**-0.15 ***	**0.16 ***	-0.05	0.05	0.06	0.09	**0.21 ** **	-0.10	1.00			
(IV11) Legitimacy Power (Unique Angels)	0.01	0.08	-0.06	**0.24 *** **	-0.07	-0.08	**0.15 ***	-0.01	-0.04	**0.14 ***	-0.05	**0.20 ** **	0.02	0.03	0.05	0.04	**0.19 ** **	**-0.16 ***	**0.89 *** **	1.00		
(DV1) Final Capital Position	0.04	0.10	0.04	0.00	0.01	0.01	**-0.16 ***	0.04	0.08	**0.90 *** **	**-0.24 *** **	**0.91 *** **	**-0.18 ** **	0.07	**-0.33 *** **	0.10	**0.30 *** **	-0.05	**0.22 *** **	**0.25 *** **	1.00	
(DV2) Final Equity Position	0.07	-0.13	0.01	**-0.30 *** **	-0.06	-0.05	0.12	-0.06	**-0.18 ** **	**-0.25 *** **	**0.57 *** **	**-0.27 *** **	**0.72 *** **	-0.06	0.03	**-0.26 *** **	0.01	**0.52 *** **	**-0.23 *** **	**-0.17 ** **	**-0.25 *** **	1.00
Mean	0.32	0.03	0.15	-0.08	0.02	0.02	0.82	-0.05	-0.03	224,094	0.16	224,849	0.32	-0.25	-52,004	-0.04	0.17	1.05	2.14	2.21	251,622	0.30
Standard Deviation	0.47	0.16	0.36	0.84	1.10	1.10	0.39	1.06	0.99	274,427	0.09	267,316	0.17	0.48	149,241	0.09	0.54	1.00	1.26	1.13	298,625	0.15
Min	0.00	0.00	0.00	-0.72	-0.15	-0.14	0.00	-2.74	-1.61	10,000	0.04	0	0.00	-0.46	-900,000	-0.23	0.00	0.00	1.00	1.00	25,000	0.05
Max	1.00	1.00	1.00	4.33	12.87	13.09	1.00	0.41	0.74	2,000,000	0.51	2,000,000	0.80	2.21	728,000	0.43	3.00	7.00	7.00	5.00	2,000,000	0.80
N	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149

Notes: Pearson correlations; bolded highlights significance, where *** is <0.01 (2-tailed), ** is <0.05 (2-tailed), and * is <0.10 (2-tailed)

Table 3.4: Anchoring Effect (Capital)

	DV1: Final Capital Offer							
	Model 1	VIF	**Model 2**	VIF	**Model 3**	VIF	**Model 4**	VIF
(C1) Patent (Y=1, N=0)	45,585.49	1.8	34,539.18	1.8	11,056.59	1.8	20,112.66	1.8
	(64,872.75)		(24,866.45)		(23,938.84)		(23,406.11)	
(C2) Royalty (Y=1, N=0)	186,427.32	1.1	-35,090.54	1.1	-31,031.66	1.1	-36,036.63	1.1
	(171,365.57)		(66,135.66)		(63,580.66)		(61,704.29)	
(C3) Contingent (Y=1, N=0)	76,429.14	1.2	**-51,914.24 ***	1.2	-43,118.94	1.2	**-48,550.39 ***	1.2
	(76,478.03)		(29,654.48)		(28,471.31)		(27,676.78)	
(C4) Z_SalesLifetime / Capital Offer	-8,377.52	1.1	-5,300.86	1.1	-1,750.39	1.1	-3,097.96	1.1
	(33,782.09)		(12,947.93)		(12,453.43)		(12,089.56)	
(C5) Z_Capital Offer / Unit Price	39,358.32	186	102,050.14	186	172,100.60	186	145,543.46	187
	(340,237.77)		(130,419.65)		(125,484.10)		(122,038.25)	
(C6) Z_Capital Offer / Margin Contrib	-42,911.54	185	-105,771.58	185	-172,664.12	186	-147,350.28	187
	(339,662.28)		(130,199.21)		(125,268.60)		(121,802.36)	
(C7) Industry (Manu=1, Service=0)	**196,397.15 *****	1.8	25,279.01	2.1	18,180.40	2.1	18,335.02	2.1
	(40,511.08)		(16,644.52)		(16,080.40)		(15,600.61)	
(C8) Z_Race (Team) (W=100%, NW=0)	-2,265.29	1.1	-8,501.76	1.1	-8,566.19	1.1	-8,636.89	1.1
	(26,541.25)		(10,174.68)		(9,784.89)		(9,492.92)	
(C9) Z_Sex (Team) (M=100%, F=0)	27,963.90	1.1	10,982.31	1.1	3,734.42	1.1	6,320.63	1.1
	(28,955.86)		(11,113.71)		(10,703.40)		(10,417.20)	
(IV1) Initial Capital Request			**1.01 *****	1.4			**0.41 *****	22.9
			(0.04)				(0.13) [3.112]	
(IV3) Initial Capital Counter Offer					**1.05 *****	1.5	**0.64 *****	23.7
					(0.04)		(0.14) [4.657]	
R^2	0.309		0.899		0.907		0.913	
Adjusted R^2	0.265		0.892		0.900		0.906	
F-Statistic (Change, p-value)	0.000		0.000		0.000		0.000	
Std. Error of the Estimate	334,229.855		128,095.515		123,190.915		119,514.706	
Degrees of Freedom	9		10		10		11	
Observations	148		148		148		148	

Note: Significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.01$); t-values in [brackets]; intercept=0

Table 3.5: Paired Means Difference Test (Capital)

		Mean	Std. Dev	Mean Std. Error	t-value	Sig (2-tailed)
Pair 1	IV1 : IV3	755.03	75,729.40	6,203.99	0.122	0.903
Pair 2	IV1 : Final Capital (DV1)	27,527.97	127,580.37	10,451.79	2.634	0.000
Pair 3	IV3 : Final Capital (DV1)	26,772.93	121,253.98	9,933.51	2.695	0.000

Table 3.6: Anchoring Effect (Equity)

	DV1: Final Equity Request							
	Model 5	VIF	**Model 6**	VIF	**Model 7**	VIF	**Model 8**	VIF
(C1) Patent (Y=1, N=0)	0.01	1.8	-0.02	1.8	-0.01	1.8	-0.02	1.8
	(0.03)		(0.03)		(0.02)		(0.02)	
(C2) Royalty (Y=1, N=0)	-0.14	1.1	-0.09	1.1	-0.06	1.1	-0.05	1.1
	(0.09)		(0.07)		(0.06)		(0.05)	
(C3) Contingent (Y=1, N=0)	0.04	1.2	0.02	1.2	-0.02	1.2	-0.01	1.2
	(0.04)		(0.03)		(0.03)		(0.02)	
(C4) Z_SalesLifetime / Capital Offer	**-0.07 *****	1.1	**-0.04 *****	1.2	**-0.03 ****	1.2	**-0.02 ****	1.2
	(0.02)		(0.01)		(0.01)		(0.01)	
(C5) Z_Capital Offer / Unit Price	-0.18	186	-0.01	186	0.05	189	0.02	190
	(0.18)		(0.13)		(0.11)		(0.11)	
(C6) Z_Capital Offer / Margin Contrib	0.17	185	0.13	185	-0.05	188	-0.02	189
	(0.18)		(0.13)		(0.11)		(0.11)	
(C7) Industry (Manu=1, Service=0)	**0.30 *****	1.8	**0.12 *****	3.8	**0.07 *****	4.1	**0.05 *****	4.4
	(0.02)		(0.02)		(0.02)		(0.02)	
(C8) Z_Race (Team) (W=100%, NW=0)	-0.01	1.1	-0.01	1.1	0.00	1.1	0.00	1.1
	(0.01)		(0.01)		(0.01)		(0.01)	
(C9) Z_Sex (Team) (M=100%, F=0)	-0.01	1.1	0.01	1.1	-0.01	1.0	0.00	1.1
	(0.02)		(0.01)		(0.01)	1.0	(0.01)	
(IV2) Initial Equity Offer			**1.14 *****	3.4			**0.47 *****	5.9
			(0.11)				(0.11) [4.225]	
(IV4) Initial Equity Counter Request					**0.73 *****	3.8	**0.57 *****	6.6
					(0.05)		(0.06) [9.535]	
R^2	0.741		0.857		0.903		0.914	
Adjusted R^2	0.725		0.847		0.896		0.907	
F-Statistic - Change (P-Value)	0.000		0.000		0.000		0.000	
Std. Error of the Estimate	0.765		0.131		0.108		0.102	
Degrees of Freedom	9		10		10		11	
Observations	148		148		148		148	

Note: Significance is highlighted as follows: *** (p < 0.01); ** (p < 0.05); * (p < 0.01) ; t-values in [brackets] ; intercept=0

Table 3.7: Paired Means Difference Test (Equity)

		Mean	**Std. Dev**	**Mean Std. Error**	**t-value**	**Sig (2-tailed)**
Pair 1	IV2 : IV4	0.159	0.139	0.011	13.948	0.000
Pair 2	IV2 : Final Equity (DV2)	0.139	0.122	0.010	13.917	0.000
Pair 3	IV4 : Final Equity (DV2)	0.020	0.119	0.009	2.054	0.042

Table 3.8: Organizational Complexity (Impact on Capital)

	DV1: Final Capital Offer					
	Model 9	VIF	**Model 10**	VIF	**Model 11**	VIF
(C1) Patent (Y=1, N=0)	20,112.66	1.8	17,652.49	1.9	15,995.81	1.9
	(23,406.11)		(24,115.63)		(22,738.45)	
(C2) Royalty (Y=1, N=0)	-36,036.62	1.1	-7,732.60	1.2	-15,155.78	1.3
	(61,704.29)		(66,941.15)		(63,133.23)	
(C3) Contingent (Y=1, N=0)	**-48,550.39 ***	1.2	**-47,691.03 ***	1.3	**-54,441.31 ***	1.3
	(27,676.78)		(27,975.19)		(26,421.61)	
(C4) Z_SalesLifetime / Capital Offer	-3,097.96	1.1	-4,804.47	1.1	-7,630.21	1.1
	(12,089.56)		(12,336.32)		(11,649.14)	
(C5) Z_Capital Offer / Unit Price	145,543.46	187	91,201.46	260	-13,261.49	269
	(122,038.25)		(144,274.78)		(138,224.00)	
(C6) Z_Capital Offer / Margin Contribution	-147,350.28	186	-94,211.20	257	7,548.50	264
	(121,802.36)		(143,237.34)		(137,148.93)	
(C7) Industry (Manu=1, Service=0)	18,335.02	2.1	24,538.04	2.3	22,459.78	2.3
	(15,600.61)		(16,606.14)		(15,663.15)	
(C8) Z_Race (Team) (W=100%, NW=0)	-8,636.89	1.1	-9,740.48	1.1	-13,440.83	1.1
	(9,492.92)		(9,568.65)		(9,062.90)	
(C9) Z_Sex (Team) (M=100%, F=0)	6,320.63	1.1	6,519.67	1.1	10,633.67	1.1
	(10,417.20)		(10,443.09)		(9,892.85)	
(IV1) Initial Capital Request	**0.41 *** **	22.9	**0.35 ** **	28.9	**0.40 *** **	29.2
	(0.13)		(0.01)		(0.01)	
(IV3) Initial Capital Counter Offer	**0.64 *** **	23.7	**0.68 *** **	26.5	**0.66 *** **	26.5
	(0.14)		(0.15)		(0.14)	
(IV5) Org. Complexity			29,809.61	2.9	40,539.67	2.9
			(30,782.56)		(29,130.25)	
(IV6) Org. Complexity * (IV1)			-0.13	3.1	**0.92 *** **	20.7
			(0.11)		(0.27)	
Post-Hoc (Org. Complexity * IV3)					**-1.07 *** **	18.0
					(0.25)	
R^2	0.913		0.914		0.924	
Adjusted R^2	0.906		0.906		0.916	
F-Statistic - Change (P-Value)	0.000		0.508		0.000	
Std. Error of the Estimate	119,514.71		119,792.19		112,934.51	
Degrees of Freedom	11		13		14	
Observations	148		148		148	

Note: Significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.01$) ; intercept=0

Table 3.9: Organizational Complexity (Impact on Equity)

	DV2: Final Equity Request					
	Model 12	VIF	**Model 13**	VIF	**Model 14**	VIF
(C1) Patent (Y=1, N=0)	-0.02	1.8	-0.02	1.9	-0.02	1.9
	(0.02)		(0.02)		(0.02)	
(C2) Royalty (Y=1, N=0)	-0.05	1.1	-0.06	1.1	-0.06	1.1
	(0.05)		(0.05)		(0.05)	
(C3) Contingent (Y=1, N=0)	**-0.01****	1.2	-0.01	1.2	-0.01	1.3
	(0.02)		(0.02)		(0.02)	
(C4) Z_SalesLifetime / Capital Offer	-0.02	1.2	**-0.03 ****	1.3	**-0.03 ****	1.3
	(0.01)		(0.01)		(0.01)	
(C5) Z_Capital Offer / Unit Price	0.02	190	0.19	293	**0.25 ***	346
	(0.11)		(0.13)		(0.14)	
(C6) Z_Capital Offer / Margin Contribution	-0.02	189	-0.19	189	**-0.25 ***	340
	(0.11)		(0.13)		(0.14)	
(C7) Industry (Manu=1, Service=0)	**0.05 *****	4.4	**0.06 *****	4.7	**0.06 *****	4.7
	(0.02)		(0.02)		(0.02)	
(C8) Z_Race (Team) (W=100%, NW=0)	0.00	1.1	0.00	1.1	0.00	1.1
	(0.01)		(0.01)		(0.01)	
(C9) Z_Sex (Team) (M=100%, F=0)	0.00	1.1	0.00	1.1	0.00	1.1
	(0.01)		(0.01)		(0.01)	
(IV2) Initial Equity Offer	**0.47 *****	5.9	**0.38 *****	7.4	**0.34 *****	7.9
	(0.11)		(0.12)		(0.13)	
(IV4) Initial Equity Counter Request	**0.57 *****	6.6	**0.56 *****	6.7	**0.58 *****	7.6
	(0.06)		(0.06)		(0.06)	
(IV5) Org. Complexity			-0.02	5.9	-0.04	6.9
			(0.04)		(0.04)	
(IV7) Org. Complexity * (IV2)			-0.17	7.7	-0.36	11.6
			(0.24)		(0.30)	
Post-Hoc (Org. Complexity * IV4)					0.15	8.5
					(0.14)	
R^2	0.914		0.918		0.918	
Adjusted R^2	0.907		0.910		0.910	
F-Statistic - Change (P-Value)	0.000		0.056		0.274	
Std. Error of the Estimate	0.102		0.10		0.101	
Degrees of Freedom	11		13		14	
Observations	148		148		148	

Note: Significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.01$) ; intercept=0

Table 3.10: Relative Strength of Anchoring Effect (Capital vs. Equity)

Dimension	Capital	Equity
Mean (of percentage changes) * IV5: Capital [(IV3 – IV1) / IV1] * IV6: Equity [(IV4 – IV2) / IV2]	0.174	1.051
Std. Deviation (of percentage changes)	0.536	1.001
Std. Error of Mean (of percentage changes)	0.044	0.820
Correlation		0.138
Correlation (Significance)		0.094
Paired-Means Difference t-Test		
Paired-Means Difference t-Test (IV5 : IV6)		-0.876
Std. Deviation (IV5 : IV6)		1.068
Std. Error Mean (IV5 : IV6)		0.088
Significance (IV5 : IV6)		**0.000**

Table 3.11: Power (Impact on Capital)

	DV1: Final Capital Offer											
	Model 15	VIF	**Model 16**	VIF	**Model 17**	VIF	**Model 18**	VIF	**M19 - Post Hoc**	VIF	**M20 - Post Hoc**	VIF
(C1) Patent (Y=1, N=0)	20,112.66	1.8	20,499.54	1.8	19,534.91	1.8	20,120.25	1.8	33,768.24	1.9	30,351.47	1.9
	(23,406.11)		(22,847.63)		(22,886.53)		(22,916.56)		(22,456.89)		(22,153.70)	
(C2) Royalty (Y=1, N=0)	-36,036.63	1.1	-48,269.83	1.1	-47,534.28	1.1	-48,735.12	1.1	-24,270.18	1.1	-33,439.40	1.1
	(61,704.29)		(60,389.26)		(60,480.82)		(60,549.84)		(58,813.17)		(58,073.22)	
(C3) Contingent (Y=1, N=0)	**-48,550.39 ***	1.2	-37,808.45	1.3	-40,114.05	1.3	-38,094.55	1.3	-36,364.39	1.3	-34,246.73	1.3
	(27,676.78)		(27,287.14)		(27,239.56)		(27,361.98)		(26,379.29)		(26,254.65)	
(C4) Z_SalesLifetime / Capital Offer	-3,097.96	1.1	-13,608.81	1.2	-11,928.41	1.2	-13,569.78	1.2	-8,337.01	1.2	-12,161.44	1.1
	(12,089.56)		(12,383.97)		(12,261.25)		(12,415.89)		(12,067.85)		(11,567.83)	
(C5) Z_Capital Offer / Unit Price	145,543.46	187	109,072.73	189	117,621.73	188	110,345.91	189	101,900.70	189	95,247.42	189
	(122,038.25)		(119,834.70)		(119,767.69)		(120,163.98)		(115,853.50)		(115,434.56)	
(C6) Z_Capital Offer / Margin Contribution	-147,350.28	186	-109,676.11	189	-117,869.44	188	-110,724.36	189	-102,589.16	189	-95,699.68	188
	(121,802.36)		(119,653.42)		(119,588.83)		(119,975.03)		(115,669.47)		(115,245.54)	
(C7) Industry (Manu=1, Service=0)	18,335.02	2.1	16,772.97	2.1	18,289.53	2.1	17,308.99	2.1	-28,408.27	3.9	-16,629.05	2.7
	(15,600.61)		(15,238.32)		(15,253.65)		(15,308.55)		(20,036.28)		(16,749.19)	
(C8) Z_Race (Team) (W=100%, NW=0)	-8,636.89	1.1	-6,218.11	1.1	-7,323.88	1.1	-6,528.06	1.1	-3,111.16	1.1	-3,325.03	1.1
	(9,492.92)		(9,306.45)		(9,294.42)		(9,347.37)		(9,066.73)		(9,017.37)	
(C9) Z_Sex (Team) (M=100%, F=0)	6,320.63	1.1	4,422.42	1.1	7,730.88	1.1	5,687.19	1.2	-1,860.98	1.2	-919.20	1.1
	(10,417.20)		(10,191.05)		(10,198.79)		(10,473.95)		(10,340.93)		(9,944.74)	
(IV1) Initial Capital Request	**0.41 ***	22.9	**0.46 ***	23.3	**0.48 ***	23.8	**0.48 ***	24.0	**0.52 ***	24.3	**0.52 ***	23.7
	(0.13)		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)	
(IV3) Initial Capital Counter Offer	**0.64 ***	23.7	**-0.57 ***	24.4	**0.55 ***	25.1	**-0.56 ***	25.3	**0.47 ***	26.2	**0.49 ***	25.4
	(0.14)		(0.14)		(0.14)		(0.14)		(0.14)		(0.13)	
(IV10) Positional Power (Unique Offers)			**27,966.55 ***	1.2			18,028.78	5.0	-22,750.45	6.9		
			(9,991.75)				(20,697.94)		(23,328.22)			
(IV11) Legitimacy Power (Unique Angels)					**27,610.97 ***	1.2	11,556.44	5.0	4,205.44	5.1		
					(10,184.81)		(21,062.52)		(20,418.87)			
(IV12) Power Ratio (Post Hoc) *[Position Power / (1+ Total Angels - Legitimacy Power)]*									**58,474.44 ***	6.0	**42,587.56 ***	1.9
									(17,336.34)		(9,818.66)	

R^2	0.851		0.860		0.859		0.860		0.870		0.869	
Adjusted R^2	0.839		0.847		0.847		0.847		0.857		0.857	
F-Statistic - Change (P-Value)	0.000		0.004		0.005		0.014		0.002		0.000	
Std. Error of the Estimate	119,802.986		116,690.058		116,777.278		116,920.719		113,063.089		112,887.735	
Degrees of Freedom	11		12		12		13		14		13	
Observations	148		148		148		148		148		148	

Note: Significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.01$) ; intercept=0

Table 3.12: Power (Impact on Equity)

	DV2: Final Equity Offer											
	Model 21	VIF	**Model 22**	VIF	**Model 23**	VIF	**Model 24**	VIF	**M25 - Post Hoc**	VIF	**M26 - Post Hoc**	VIF
(C1) Patent (Y=1, N=0)	-0.02	1.8	-0.02	1.8	-0.02	1.8	-0.02	1.8	-0.01	1.9	-0.02	1.8
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
(C2) Royalty (Y=1, N=0)	-0.05	1.1	-0.04	1.1	-0.04	1.1	-0.04	1.1	-0.03	1.1	-0.05	1.1
	(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)	
(C3) Contingent (Y=1, N=0)	-0.01	1.2	-0.02	1.3	-0.02	1.2	-0.02	1.3	-0.02	1.3	-0.01	1.2
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
(C4) Z_SalesLifetime / Capital Offer	**-0.02 ****	1.2	-0.01	1.3	-0.01	1.3	-0.01	1.3	-0.01	1.3	-0.02	1.2
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
(C5) Z_Capital Offer / Unit Price	0.02	190	0.05	192	0.04	191	0.04	193	0.03	193	0.03	192
	(0.11)		(0.10)		(0.10)		(0.10)		(0.10)		(0.11)	
(C6) Z_Capital Offer / Margin Contribution	-0.02	189	-0.05	192	-0.04	190	-0.04	192	-0.03	192	-0.03	191
	(0.11)		(0.10)		(0.10)		(0.10)		(0.10)		(0.11)	
(C7) Industry (Manu=1, Service=0)	**0.05 *****	4.4	**0.06 *****	4.5	**0.06 *****	4.5	**0.06 *****	4.5	0.03	5.6	0.06	5
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
(C8) Z_Race (Team) (W=100%, NW=0)	0.00	1.1	0.00	1.1	0.00	1.1	0.00	1.1	0.00	1.1	0.00	1.1
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
(C9) Z_Sex (Team) (M=100%, F=0)	0.00	1.1	0.00	1.1	0.00	1.1	0.00	1.1	-0.01	1.3	0.00	1.2
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
(IV1) Initial Capital Request	**0.47 *****	5.9	**0.43 *****	6.0	**0.43 *****	6.0	**0.44 *****	6.1	**0.41 *****	6.1	**0.46 *****	5.9
	(0.11)		(0.11)		(0.11)		(0.11)		(0.11)		(0.11)	
(IV3) Initial Capital Counter Offer	**0.57 *****	6.6	**0.58 *****	6.6	**0.58 *****	6.6	**0.58 *****	6.6	**0.56 *****	6.7	**0.57 *****	6.7
	(0.06)		(0.06)		(0.06)		(0.06)		(0.06)		(0.06)	
(IV10) Positional Power (Unique Offers)			**-0.02 ****	1.2			0.00	5.1	-0.02	6.9		
			(0.01)				(0.02)		(0.02)			
(IV11) Legitimacy Power (Unique Angels)					**-0.03 *****	1.1	-0.03	4.9	**-0.03 ***	5.0		
					(0.01)		(0.02)		(0.02)			
(IV12) Power Ratio (Post Hoc) *[Position Power / (1+ Total Angels - Legitimacy Power)]*									**0.04 ****	5.8	-0.01	1.7
									(0.02)		(0.01)	

R^2	0.914		0.918		0.919		0.919		0.923		0.915	
Adjusted R^2	0.907		0.911		0.912		0.911		0.915		0.907	
F-Statistic - Change (P-Value)	0.000		0.015		0.004		0.015		0.017		0.390	
Std. Error of the Estimate	0.102		0.101		0.100		0.100		0.098		0.103	
Degrees of Freedom	11		12		12		13		14		12	
Observations	148		148		148		148		148		148	

Note: Significance is highlighted as follows: *** ($p < 0.01$); ** ($p < 0.05$); * ($p < 0.01$) ; intercept=0

Table 3.13: Summary of Hypotheses

Hypothesis	Formula(s)	Table(s)	Observed Result
1a & 2a (Anchoring Effect on Capital Dimension)	DV1 = Controls + IV1 + e DV1 = Controls + IV3 + e DV1 = Controls + IV1 + IV3 + e Paired-Mean Difference T-Test IV1:IV3 | DV1:IV1 | DV1:IV3	2 & 3	**1a – PARTIALLY SUPPORTED** 2a – NOT SUPPORTED
1b & 2b (Anchoring Effect on Equity Dimension)	DV2 = Controls + IV2 + e DV2 = Controls + IV4 + e DV2 = Controls + IV2 + IV4 + e Paired-Mean Difference T-Test IV2:IV4 | DV2:IV2 | DV2:IV4	4 & 5	1b – NOT SUPPORTED **2b – SUPPORTED**
3a (Organizational Complexity as Moderator on Capital Dimension)	DV1 = Controls + IV1 + IV3 + Org Complexity + Org Complexity * IV1 + e	6	3a – NOT SUPPORTED
3b (Organizational Complexity as Moderator on Capital Dimension)	DV2 = Controls + IV2 + IV4 + Org Complexity + Org Complexity * IV2 + e	7	3b – NOT SUPPORTED
4 (Capital-based anchoring vs. Equity-based anchoring effect)	Percent Change abs[(IV3-IV1)/IV1] Percent Change abs[(IV4-IV2)/IV2]	8	4 – NOT SUPPORTED
5a & 5b (Power's direct effect on the final capital position)	DV1 = Controls + IV1 + IV3 + IV10 + e DV1 = Controls + IV1 + IV3 + IV11 + e DV1 = Controls + IV1 + IV3 + IV10 + IV11 + e	9	**5a – SUPPORTED** **5b – SUPPORTED**
6a & 6b (Power's direct effect on the final equity position)	DV2 = Controls + IV2 + IV4 + IV10 + e DV2 = Controls + IV2 + IV4 + IV11 + e DV12 = Controls + IV2 + IV4 + IV10 + IV11 + e	10	**6a – SUPPORTED** **6b – SUPPORTED**
Post-Hoc (1) (Power Ratio's direct effect on the final capital position)	DV1 = Controls + IV1 + IV3 + IV12 + e	9	**SUPPORTED**
Post-Hoc (1) (Power Ratio's direct effect on the final equity position)	DV2 = Controls + IV2 + IV4 + IV12 + e	10	**NOT SUPPORTED**

CONCLUSION

Entrepreneurship is considered to be the engine of economic growth within the United States where an average of 902,000 new firms enter the economic fray each year (between 2009-2018). I should also point out that an average of 832,000 firms exit each year (see Figure 4.1). Within this ebb and flow of entrepreneurial effort, not all firms are destined to pursue the path of economies of scale; these entrepreneurs will remain content with a salary and a modest profit to compensate for their efforts while maintaining their independence from the fickle whims of the labor market. I am not concerned with these types of entrepreneurs, though I equally do not mean to cast a shade over them.

Figure 4.1: Quarterly Firm Births and Deaths in the U.S.

For the purposes of this research project, I only study those entrepreneurs that seek to ring the brass bell, and even more specifically, those that choose to engage the angel investor community. This category of entrepreneurs willingly engages with high net worth individuals (Morrisette, 2007) and accept the potential of exchanging a portion of their embryonic firm for the capital needed to attain economies of scale. This dissertation therefore seeks to educate the entrepreneurial community by studying the behavior of angel investors when they are actually negotiating. The actual negotiation is, after all, where the rubber meets the road. As mentioned in

the introduction, I study two levels of analysis; Essay 1 is focused on the firm level, while Essay 2 is focused on the individual level. I'll address the conclusions of each essay individually.

Essay 1

Essay 1 uncovered that the complexity of the organization in terms of the firm-environment exchange (Thompson, 1962) explains a significant portion of the angel investor's behavior when taking positions on equity. The nature of the firm-environment exchange influences the firm's ability to generate routine transactions that will ultimately allow the angel investor to earn a return on their investment (Commons, 1934). This focus on the nature of the routine transaction directly strikes at the notion of a coordination mechanism (Coase, 1937), that influences the strategic transaction about to be completed between the angel investor and entrepreneur. This finding makes intuitive sense when we consider the interrelated nature of these two transactions.

Intuitive as it may be however, there is a surprising lack within the literature of an operationalization for the complexity of an organization's interaction with its environment. In some manners, this is not surprising because at the embryonic stage of the firm, the firm is arguably at its most simplistic form in relation to its anticipated future size and scale. If we associate complexity on Simon's (1962) early work related to hierarchies, there are little assets or activity within the embryonic firm to be considered as complex. However, Simon (1962) also states that complexity is matter of one's perspective (and others: Jensen, 1983; Kellert, 1993), and my perspective is on the exchange points between a firm and its environment; this focus presents useful nuances.

First, the nature of the firm's interaction with its environment does not necessarily have to change over time, and so, the notion of complexity can be fully divorced from the notion of size; research in the 1960's and 1970's highlighted that size and complexity are not necessarily a singular concept (see Anderson & Warkov, 1961; Hall, Johnson & Haas, 1967; Scott, 1975). Second, the points of exchange between a firm and its environment effectively establish the domain of the firm and therefore falls squarely in-line with the foundations of transaction cost economics that identifies a firm's domain in relation to the larger market; while Coase (1937) presents a conceptual delineation, I provide an operationalize-able delineation. Third, I highlight that the complexity of an organization's exchange with its environment is a function of the choices that the entrepreneur made when constructing the firm; that is, this form of complexity is a function

of the activities that the entrepreneur has decided to internalize within its domain (Coase, 1937) and there is clearly an embedded relationship between what the organization does and how that impacts the nature of the firm-environment exchange.

However, I realize that the presented construction is not the only way to depict the firm-environment exchange, and perhaps other constructions will generate different results when incorporated into research. For example, one surprising finding is the directionality of organizational complexity's impact on equity – the linear direct effect was negative. That is, as the complexity of the organization increases, the angel investor requests less equity. I choose to not speculate as to *why* this is the case, but it appears that at low levels of capital, the angel investor would prefer to incentivize the entrepreneur to a greater degree if the embryonic firm is also highly complex. Equally surprising was the lack of finding that when organizational complexity is studied as a moderating variable that impacts the relationship between capital and equity. An intuitive expectation would be to not only observe a highly significant effect, but also a reversal in the directionality from a negative impact to a positive impact. That is, the angel investor should seek more equity when the coordination mechanism becomes more complicated in relation to a greater capital investment. It seems quite appropriately that organizational complexity is a complicated concept.

Essay 1 has also uncovered inconsistencies in terms of the guidance provide by logics core to the strategic management field. Before addressing each inconsistency, it is important to note that the narrow focus of this study may be the contributing factor of these inconsistencies: I do not study angel investor behavior to understand if an investment decision will be made, but rather investigate the degree of risk-taking behavior once they have decided to engage an opportunity by explicitly communicating a negotiation position. It is also noteworthy that transaction cost economics provided the most straightforward and consistent logic – that of a tighter grip as organizational complexity increases (Demsetz & Lehn, 1985). The internal consistency of transaction cost economics is both surprising and reassuring. It is reassuring because it implies that the studies fall within the proper theoretical framework. However, this consistency is surprising because I had to abandon a central tenant of Williamsonian transaction cost economics stating that the specificity of the asset is the most important characteristic driving decision. For angel investors faced with a choice between investing in firm A with an unknowable future versus firm B with an unknowable future, both choices represent specificity when considering their

strategic trajectory. Incidentally, this fundamentally different problem as faced by angel investors is the driving need for the construction of an organizational complexity construct.

The first inconsistency is within the managerial risk taking literature as popularized by March and Shapira (1987) (see also Larcker, 1983; MacCrimmon & Wehrung, 1984). As mentioned, I only loosely apply the findings from this prior literature because studies have focused on the difference between more risk-taking behavior and less risk-taking behavior; that is, in terms of the frequency of their decision to act or not. The loose application is that more risk-taking behavior is associated with a less conservative stance when angel investors engage in risk-taking behavior, while less-risk taking behavior is associated with a more conservative stance. Empirical studies document *more risk-taking* behavior once the firm moves beyond bankruptcy (March & Shapria, 1987), when decision makers are playing with 'house money (Thaler & Johnson, 1990), when decision makers experience prior success, and in the presence of organizational slack (Miller & Leiblein, 1996). However, empirical findings also document *less risk-taking* behavior when decision makers experience prior success (Dickson & Giglierano, 1986; Das & Teng, 1997; Busenitz, 1999; Miller & Chen, 2004).

If we view the angel investor as a firm that is acting with the benefit of full discretion to invest their own personal funds to create a single-owner portfolio company (Benjamin, Margulis & Margulis, 2000; Morrissett, 2007; Wiltbank, Read, Dew & Sarasvathy, 2009), then the managerial risk-taking literature provides conflicting guidance. The overall guidance of a *more conservative stance* to angel investor risk taking behavior is driven by the less risk-taking behavior observed when the firm is at a young age and requires high capitalization for entry into the market (March, 1988), and when the size of the prize increases (Kachelmeier & Shehata, 1992). The point is, future research needs to tailor the notion of risk-taking to angel investors that are already operating in a high-risk environment. In addition, this dissertation highlights the need to explicitly create studies that focus on the degrees or risk taking once a decision engage has been made, as opposed to focusing (almost entirely) on the decision to take a risk or to not take a risk; this latter choice seems to have a lot of noise that confounds interpretation of the results.

The next inconsistency is the conflicting guidance provided by the logics of transaction cost economics and those theories addressing the agency problem more directly. While transaction costs economics also seeks to resolve the agency problem that is inherently[37] present due to the

[37] Inherent in terms of the potential for agency to arise and that must be guarded against (Williamson, 1979)

bounded rationality of human actors (Simon, 1947), there is a slight nuance from that of agency theory. TCE is primarily concerned with the decision to internalize a given activity that exists in the market – to internalize that activity within the firm. Per TCE, it is the characteristics of the transaction that should determine the governance structure to be imposed on that internalized activity, and clearly the governance structure is meant to guard against the opportunistic behavior of a guileful sort (Williamson, 1979). In contrast, the various lenses investigating the agency problem (see Lan & Heracleous, 2010) are not necessarily concerned with only internalization decisions but governance at a more general level as evident by Eisenhardt's (1989) discussion between behavioral controls and output controls. The observed inconsistency may very well be due to this slight nuance between these two logics.

As mentioned, TCE appears to be internally consistent in that the guidance provided within this literature all points towards greater internalization. At the most basic level, Williamson's (1973, 1985) guidance driven by asset specificity leads to this conclusion; all angel investments are highly specific to their own strategic trajectories. If we focus on the characteristic of organizational complexity, we again reach this same conclusion (Coase, 1937; Demsetz & Lehn, 1985; Hennart, 1988). Further, if we focus on the ability (or inability) to redeploy invested assets, we again reach this same conclusion (Williamson, 1988; Balakrishnan & Fox 1993), because the angel investor is injecting highly liquid capital to a specific purpose that is meant to improve the specific firm.

Agency logics provides conflicting guidance. If rooting the conversation in the initial fracture of ownership and control and therefore in the literature on private property rights and team production theory as pertaining to the corporate mechanism (Berle & Means, 1932; Alchian & Demsetz, 1972; Holmstrom & Milgrom, 1991), the guidance is for a looser grip (Demsetz & Lehn, 1985). Jones & Butler (1992) likewise provides this guidance. However, other seminal discussions within the agency theory umbrella are less beneficial. From a joint venture perspective, Child and Rodrigues (2003) highlight how output controls are problematic therefore suggesting a tighter grip as the governance mechanism. Further, neutral guidance is provided by Hennart (1993) who states that employers will use price incentives when they have limited knowledge and expertise in the business; an angel investor is however an expert entrepreneur and has presumably invested their capital because of their comfort level in the space filled by the embryonic firm (Wiltbank, Sudek & Read, 2009). In addition, Ouchi and Maguire (1975)

highlight that output measured are used (paradoxically) when least appropriate, under conditions of high complexity, interdependence, and a lack of experience. The angel investment context clearly exhibits high complexity and interdependence; does that mean output controls should be observed and does that mean that angel investors would be ill-advised to employ such measures? Further inconsistencies are highlighted when reviewing Eisenhardt's (1989) theoretical reexamination of agency theory when focusing only on her output-related propositions. In proposition #3, she states information systems will be negatively related to output measures – does this mean the angel investor would prefer to internalize the firm more because typically embryonic firms only have an information system at its most basic level of sales and profit. Proposition #4 states outcome uncertainty is negatively related to output measures while proposition #8 states lower task programmability is positively related to output measures. Inconsistent for the angel investor who is investing into an embryonic firm with high outcome uncertainty and very low task programmability. Proposition #9 states outcomes measurability is positively related to output measures while proposition #10 states the length of the relationship is negatively related. Again, an angel investor is searching for a long-term partnership with the entrepreneur and the output of their effort is clearly measurable – either the firm makes money or it doesn't and modern accounting systems allow for a clear answer (Bushman, Chen, Engel & Smith, 2004). Therefore, it seems that not only is the guidance provided by logic within various agency studies is inconsistent with that of transaction cost economics, but also that agency discussions are inconsistent within themselves when I apply those theories to the embryonic firm context. It is no surprise that empirical investigations of the agency problem have not found clear support for the theories (Lan & Heracleous, 2010; Bosse & Phillips, 2016).

The angel investment context allows for an exciting new context to study the age-old phenomenon of the agency problem given that the actors are navigating risk-sharing scenarios (Eisenhardt, 1989). This context is also exciting because the importance of strategy takes center stage where the angel investor does not have control over the day-to-day tasks, but rather relinquishes that control to the entrepreneur. The angel investor can only 'indirectly induce' (Makadok & Coff, 2009) the agent (entrepreneur) by setting a strategic direction for the firm – but alas, the future is unknowable (Knight, 1921).

Essay 2

The findings at the individual level of analysis within Essay 2 have been no less surprising. The discussion within Essay 2 centered around the dual tensions of uncertainty and power dynamics that converge simultaneously on the negotiation. The benefit of studying the anchoring effect on angel investors is the extreme uncertainty of the context where the value of the embryonic firm is unknowable (Knight, 1921). Further, the two dimensions of value (capital / equity) themselves inject different degrees of uncertainty. Though a capital investment is tangible and clearly known in terms of the magnitude of the risked investment, it is unknown if that magnitude is enough to generate the anticipated return on investment. It is also unknown if the capital will be deployed as intended, or even if the strategic trajectory as implied by the invested capital is accurate. Therefore, the capital investment does inject a degree of uncertainty. The equity component represents an even greater degree of uncertainty because it is simply ownership of a firm with an unknowable future and value (Knight, 1921).

Essay 2 represents the opposite end of the uncertainty spectrum from that of Northcraft & Neale's (1987) study that investigates tangible residential real estate (where the authors did observe an anchoring effect). The lack of a finding on the more uncertain equity component of value is quite surprising. I choose not to speculate as to why an anchoring effect was not observed. Further, the anchoring effect observed on the capital dimension can be associated with the context of the negotiation instead of a cognitive bias. If the entrepreneur is presenting an opportunity that has a strategic trajectory that the angel investor also agrees to, the invested capital can simply be viewed as an 'ante' in poker required to begin the game. Further, the specification of how those funds will be deployed provides a tangible sense of if that capital is too much or too little. The simple fact that the parties reach a negotiated outcome may therefore be a function of a shared agreement as to the future strategic direction of the firm as opposed to any cognitive bias that entraps the angel investor. This finding therefore requires that we re-evaluate experimentally designed studies on this topic.

The second tension associated with power dynamics also yielded interesting results. This tension is effectively a direct test of Emerson's (1962) power dependence theory, and set within a competitive bidding scenario, the entrepreneur can potentially improve their power position during the actual negotiation. This is however quite tricky and not as easy as the results would imply. Observations from the show highlight that angel investor interest can change quite rapidly and any

value that the entrepreneur gains early on during the negotiation can quickly erode. Further, this study also doesn't highlight what type of companies draw angel investor interest. Therefore, these findings are limited in that only those cases where an angel investor has shown interest are considered – given the 3 to 5% success rate highlighted earlier, this simple constraint is itself a massive hurdle. Beyond this limitation however, the more important implication is that the effects of power in real-life negotiation setting may confound the cognitive impact of an anchoring effect. This also has important implications for future experimentally designed studies.

Power is effectively a social construct (Thompson, 2000). Anchoring is effectively a inter-personal construct. During a negotiation however, they both come into play and the forces of power converge on forces from cognition. This has implications for how cognitive biases can be weaponized by one negotiating party to further their power position; or conversely, how one's power position can defend again the weaponization of cognitive biases. Overall, I have uncovered exciting new ground and look forward to elaborating on these nuances in future research.

APPENDIX A – THE TRANSACTION

The negotiation that I investigate is a naturally occurring phenomenon, and there are factors that must be accounted for that influence negotiator behavior. Because the outcome of a negotiated agreement completes a transaction, I consider these factors as fully underneath the umbrella of the transaction itself. Though negotiators are willing participants (Commons, 1934), their decision to engage one another is set within the larger context of completing a transaction that creates a structure, which influences behavior

In this section I will address three fundamental nuances to this transaction: (1) the angel investment is made directly to the firm, (2) the value is unknowable, but is rather derived from the two components of value (capital / equity), and (3) the two components of value effectively represent *different* issues. To address the first point, an angel investment does not directly contribute to the entrepreneur's wealth. Falling in-line with the private property rights literature pertaining to 'ownership of the corporate mechanism' (Berle & Means, 1932; Alchian & Demsetz, 1972; Lan & Heracleous, 2010), the invested capital is rather directly injected to the firm. Lan and Heracleous (2010: 301) remind us that once "shareholders subscribe to shares in the corporation, payment made in consideration for the shares is considered property of the corporation, and the shareholders are not free to withdraw the sum invested except for payments through dividends, selling their shares, and other permitted means" (Lan & Heracleous, 2010: 301). In the event of a negotiated agreement, both parties will be partial owners of the firm that has the invested capital as an asset base. The real implication for this is that angel investors require entrepreneurs to specify how the investment will be deployed, which effectively establishes a strategic trajectory for the firm and a strategic alignment between the negotiators. By limiting the investment to the firm-level need, the angel investor is able to partially constrain the entrepreneur's future behavior and to 'indirectly induce' (Makadok & Coff, 2009) the entrepreneur to stay focused on tasks that they may not be able to directly influence.

The second nuance pertains to the nature of the negotiation. Studies of buy/sell negotiations are typically price-centric and pertain to the full portion of the object of the negotiation. In this angel investment context, the negotiation revolves around the two components of price (i.e.: value): that of capital and equity, where capital / equity equals value. The resulting value is therefore a derived outcome from the explicitly communicated positions on these two dimensions. Traditional investors (think mergers & acquisitions, or joint ventures) employ various

financial analysis tools to analyze the past operating performance of the firm; tools such as discounted cash flow analyses, among others (Graham & Harvey, 2001). These financial tools facilitate a shared understanding of the value of the total firm, which then allows parties to partition the firm among themselves. However, in the angel investment context there is little (if any) operating history to allow for a comparison of past samples of information to future samples (Davidson, 1996). Financial analysis tools therefore provide a poor mechanism to facilitate a shared understanding of the value of the firm. Rather, any shared understanding of value is simply a function of the overlap of entirely subjective expectations of an unknowable future. That is, rather than negotiators determining the value of a portion of the firm after first identifying the firm's total value, the total value of the firm is derived from an agreement over a portion of the firm – the portion purchased by the angel investor. Value is still socially constructed, but its construction flows in the opposite direction.

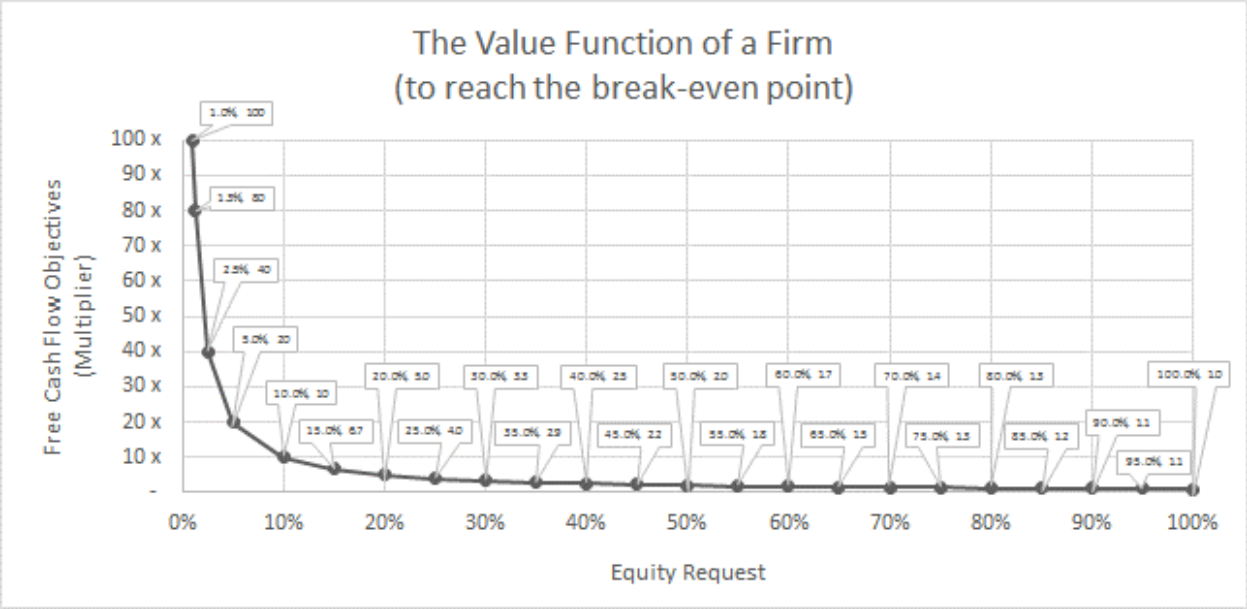
These nuances combined with the entrepreneur's need to obtain a capital investment else risk the firm's future survival leads to a circumstance where the angel investor can offer any combination of capital for any amount of equity. In other words, the two positions of capital and equity are untethered to one another and can move independently (though they are clearly interrelated) because the only barometer to measure the firm's value is a convergence of subjective expectations of an unknowable future. Further, I make no claim that these pairs are untethered for the entrepreneur; I only make this claim for the angel investor as representing the focus of the study. This third nuance highlights that capital and equity are two separate issues. These two issues are of course inherently connected to one another not only because these positions are communicated in pairs, but also the they comprise the two components of value for the embryonic firm.

The capital portion, I effectively consider to be quasi-fixed in terms of identifying the specific needs for the deployment of capital. Based on their status as expert entrepreneurs (Wiltbank, et al., 2009), angel investors will be able to more-or-less determine if that capital request will meet the identified firm-level need. This would be parallel to the concept of feasibility to determine if the requested capital investment will allow the firm to implement the strategic trajectory of the firm. I use the word 'quasi-fixed' because there still isn't a guarantee that the investment will allow the firm to attain its strategic objectives. That is, the identified firm-level need could be misidentified due to the associated unknowns with the future. However, the act of

communicating an offer signals that the angel investor has accepted the feasibility of the venture. As such, the capital portion of the negotiation can be viewed in terms of 'an ante' in poker that has a specific purpose, and agreement on how the capital will be deployed (Williamson, 1988; Balakrishnan & Fox, 1993) effectively represents an agreement on the strategic direction of the firm. This reduces the negotiation to the equity portion of the firm and the angel investor is able to request any amount of equity – so long as the entrepreneur says yes. When we fix capital and allow equity to vary, a highly surprising relationship is observed between capital and equity that takes on the function of 1/x (where x is equity); in other words, the value function (capital / equity). When graphed (see Figure 5.1 below) we can see that the benefit of the marginal equity percentage for the angel investor diminishes at an exponential rate in terms of the investor reaching the break-even point.

This initially determined value of an item is after all the point that the investor must reach before any return on that initial investment can be calculated. Therefore, it is important to re-emphasize that this exponentially diminishing benefit is in relation to the break-even point. While breaking-even may not hold a candle in the face of profit (return) maximizing objectives as prescribed in nearly all other avenues of investing, breaking-even is a feat onto itself in the angel investment context. The challenges of the angel investor can be highlighted with statistics provided by Mason and Harrison (2002): of 128 exits, 44 (34.4%) were for a total loss, 7 (5.5%) was for a partial loss, and 9 (7.0%) broke-even; that is, approximate 47.0% never saw positive returns and only 10% of investments generated a return greater than 100%. Ultimately, I agree with Graham and Harvey (2001: 405) that while unsophisticated in nature, "the payback [break-even analysis] approach is rational for severely capital constrained firms."

Figure 5.1: The Value Function of a Firm



When interpreting the curvature in Figure 5.1, it is important to anchor oneself to the break-even point. Because the angel investor can request any amount of equity for any given amount of capital (assuming capital is agreed upon first and is fixed), this curvature represents the distribution of all break-even points for any given amount of capital. For example, if the angel investor requests 10% equity, the firm must generate profit to a magnitude of 10x the initial investment in order to recoup that initial investment; this is because the future cash flows of the firm will be divided between the parties at a ratio of 90% (for the entrepreneur) to 10% (for the angel investor). If the angel investor request 20% equity, this multiplying factor reduces to 5%; and so on and so forth.

There is however another way to consider the presented curvature. Professor Knight (1921) equated risk with the measurable and uncertainty with the unmeasurable. I start with the premise that for economic actors, risk does not exist without the expectation of recouping one's initial investment. Therefore, risk can be presented in terms of returns, ranging from -100% to positive infinity. The economics and finance literature associates risk with return volatility, representing an ex-poste analysis that retrospectively quantifies risk based on historical returns. In contrast, the management literature associates risk with the initial capital outlay, an ex-ante analysis that is driven by the cost to initiate the intended action (March & Shapira, 1987; Sanders & Hambrick, 2007). I present a third way of viewing risk as a combination of the above; *an ex-ante risk-return relationship*, where the facilitating mechanism is equity to directly influences the

risk-return relationship from an ex-ante perspective. The main insight *is that additional equity has an exponentially diminishing benefit for the investor between a return range from -100% to 0%*; that is, for the period of returns until the investor is able to recoup their initial investment. Because equity can be directly associated with returns from an ex-ante perspective (i.e.: expected returns), and because risk can be quantified as varying degrees of returns for any amount of capital outlay, equity for the investor can be viewed as a risk mitigating mechanism.

I present this relationship as a fundamental backdrop against which capital and equity offers are communicated during a negotiation. Therefore, before we consider the issues of governance, risk, cognition, or power dynamics, it behooves parties in this particular negotiation context to be aware of the landscape upon which they negotiate.

VITA

AYDIN SELIM OKSOY
Old Dominion University, Strome College of Business, Department of Management,
Constant Hall 2183, Norfolk, VA 23529

EDUCATION

2014 – 2020: Ph.D. in Business Administration, Old Dominion University, Norfolk, VA
Concentration: Strategic Management *and* International Business

2004 – 2005: M.B.A., Union College, Schenectady, NY

1998 – 2002: B.S., in Business Administration, Alfred University, Alfred, NY

RESEARCH INTERESTS

I research the nexus of *strategy* and *entrepreneurship*, primarily focused on the embryonic firm.

- *Macro focus:* Institutional Economics and Organizational Theory
- *Micro focus:* Negotiation, Cognition and Power Dynamics

PRACTITIONOR EXPERIENCE

2014 – 2019: Founder / CEO of Starfish Textiles LLC

2012 – 2014: Consulting (ResiModel, Tambour, New York Stone)

2011 – 2012: Strategic business unit manager for a $15.0 million distribution operation

2005 – 2011: Corporate development (M&A) as strategic buyer acquiring $1.0 billion in sales

PUBLICATIONS

Bennett, A.A. & Oksoy, A.S. (*Forthcoming*). Football Stadium Expansion: A Multi-Party Negotiation Exercise. *Management Teaching Review*

Nair, A., Oksoy, A.S., Chen, M.J. (*Forthcoming*). Portfolio Recovery Associates: Growth through Data Analytics. *SAGE Business Cases*