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RISK, REPUTATION, AND INTERDEPENDENCE IN THE MARKET FOR INITIAL PUBLIC OFFERINGS: EMBEDDED NETWORKS AND THE CONSTRUCTION OF ORGANIZATION VALUE

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THESIS

Submitted in partial fulfillment of the requirements for
the degree of Doctor of Philosophy in Business Administration
in the Graduate College of the
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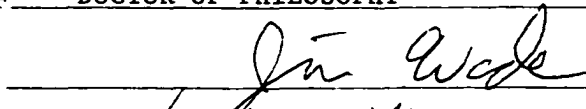_____
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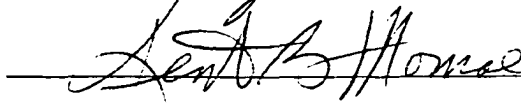
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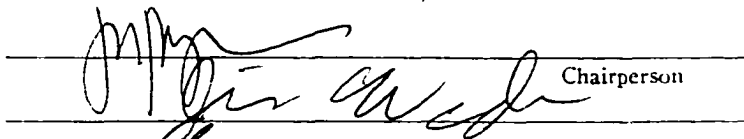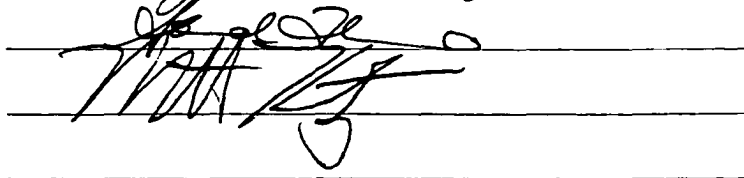
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ABSTRACT

Recently organizational theorists have become increasingly interested in the study of markets and have provided insights regarding how distinctly social phenomena such as reputation and embedded networks of relationships among the transacting parties affect market behaviors and outcomes. These theorists have not, however, examined the role these social resources play in mediated markets where buyers and sellers do not interact directly, but instead conduct their exchanges via a transaction intermediary. This dissertation takes the social bases of markets as a given and examines how investment banks, acting as transaction intermediaries, use their reputations and networks of relationships with institutional investors and venture capitalists to influence transaction outcomes among buying and selling organizations in the market for initial public offerings. I develop a dual-process model of market mediation to explain how investment banks, acting as transaction intermediaries, use their organizational reputation and networks of relationships with institutional investors and venture capitalists to manage uncertainty and opportunism in the market for initial public offerings. Using a sample of 246 companies which went public in 1992, this study found that greater investment bank embeddedness with institutional investors led to higher stock price premiums over book value and greater post-IPO stock ownership concentration. Underwriter reputation had a positive main effect on ownership concentration and a negative main effect on the level of underwriting commissions paid by the offering firm. Underwriter reputation also had a negative moderating effect on premium over book value when interacted with embeddedness with investors, and a positive moderating effect on underwriting commissions when interacted with IPO firm quality and embeddedness with investors.

DEDICATION

This dissertation is dedicated to my parents, Russell and Mickey Pollock, who have unfailingly

supported me in all of my academic endeavors.

ACKNOWLEDGMENTS

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CHAPTER 1: INTRODUCTION

In economic research, a market is treated as an abstract pricing mechanism (Barber, 1977; Coase, 1988; North, 1977) or as a "featureless plain" upon which information is exchanged and efficient prices are determined (Baker, 1981). Economists have generally ignored the role played by social and political factors in market dynamics. These factors include such things as cultural belief systems, friendship networks, political ideologies, family ties, and reputational capital. Both economic sociologists and organizational researchers have reacted against this exclusion. Economic sociologists in the nineteen forties and fifties became interested in the relationship between social and economic forces in society but tended to treat social and economic domains as separate and nonintersecting spheres of action (e.g., Parsons & Smelser, 1956; Polanyi, 1957). As Swedberg (1994) noted, sociological research on markets generally languished until Granovetter (1985) revived interest in the subject matter. Unlike earlier theorists, Granovetter suggested a partitioned variance model where social factors explain additional variance not explained by economic factors alone. Other social theorists (e.g., Zelizer, 1988; Swedberg, 1994) have suggested that economic and social variables should be treated as interdependent, with both domains mutually shaping and constraining each other. A number of organizational researchers have begun to explore the relationship between different various market phenomena and certain social constructs (e.g., Abolafia, 1996; Baker, 1984, 1990; Burt, 1992; Fombrun, 1996; North, 1990; Uzzi, 1996) Two recent streams of empirical research in particular have examined how organizational reputations (e.g., Carter & Manaster, 1990; Fombrun, 1996; Hall, 1992; Hayes, Spence & Marks, 1983; Podolny, 1994; Srivastiva, et al., 1997) and social structure (e.g., Abolafia, 1996; Baker, 1984, 1990; Larson, 1992; Uzzi, 1996, 1997) influence market outcomes.

In this dissertation, I draw from reputation and social structure research and develop a dual-process model to explain how investment banks, as transaction intermediaries, use their organizational reputation and networks of social relationships to manage uncertainty and opportunism in the market for initial public offerings. In the remainder of this chapter, I will briefly describe the theoretical literatures on reputation and social embeddedness that form the basis of my model, and describe the data sources and methods which will be used to test these hypotheses in the market for IPOs.

1.1 Theoretical Background

Sociologists and other organizational theorists have argued that markets often do not conform to the classic efficient market ideal suggested by finance researchers (e.g., Swedberg, 1994). This is especially true in the case of new entrants to a market as well as in the case of markets where the transactions are one time affairs, and thus the opportunity for developing trading histories in the asset do not exist. In these markets, information costs and asymmetries are high, and the future value of the asset being traded is very uncertain (Smith, 1989). In such markets, investors can demand greater discounts in pricing to compensate for the additional risk they incur by investing in an asset of uncertain value. They may also be reluctant to take a large position in a single asset and may be more sensitive to short-term changes in asset performance. These markets should, therefore, exhibit high price volatility; asset ownership should be scattered among many investors; and high levels of asset turnover should be the norm. Every day observation, however, suggests that many markets which fail to meet the efficient market ideal do not exhibit these characteristics. Sociological and organizational theorists have suggested that, in these cases, market stability and allocative efficiencies are maintained because (a) the reputational

capital of market actors reduces asset uncertainties and (b) embedded transactional relationships moderate opportunistic behavior.

1.1.1 Organizational Reputation

Reputation has long played and important role in influencing market activities when information asymmetries are high. For example, prior to the Securities Act of 1933, a company wishing to conduct a securities offering of any significant size required the participation of a highly reputable bank as the lead underwriter on the deal (Chernow, 1997). The willingness of the bank to risk its reputational capital was an important signal to investors about the quality of the offering since other information on the financial condition and prospects of the company was generally unavailable. Recent empirical work on the strategic importance of reputation has demonstrated that a company's reputation can be one of its most valuable assets (Hall, 1992; Roberts & Dowling, 1997; Weigelt & Camerer, 1988) and can lead to sustained competitive advantage (Hall, 1993).

According to Fombrun (1996), high reputation firms can command premium prices for products they sell, pay lower prices for purchases, attract and retain top talent, experience greater customer loyalty, have more stable revenues, and are granted greater discretion to act by their constituents. A recent study by Srivastiva et. al (1997) lends support to some of these assertions. They found that investors were willing to assume more risk for the same expected return or lower returns for an equivalent amount of risk, if a portfolio of companies was composed of firms with high reputations. A number of studies examining stock price volatility and trading activity in the IPO market have examined the role that underwriter reputation (e.g., Carter & Dark, 1993; Carter & Manaster, 1990; Ferris et. al, 1992), auditor reputation (e.g., Balvers, McDonald & Miller, 1988; Beatty, 1989), and venture capitalist reputation (e.g., Gompers, 1996; Lin, 1993) play in

influencing the market outcomes of offering firms with which these actors are involved. The findings from these studies also tend to support Fombrun's claims in that offering firms associated with highly reputable supporting organizations experience less underpricing (the run-up in a stock's price once it begins trading in the secondary market) and less ownership turnover. This stream of research suggests that the reputational capital of a firm can influence the prices buyers are willing to pay and the risk/return ratios they are willing to tolerate. It also suggests that reputation is a valuable resource which can be used to increase profits from market exchanges.

1.1.2 Social Embeddedness

A second stream of research that has also attacked the problem of how social factors can influence allocative efficiencies has focused on the effects of embedded transactional relationships on market outcomes (e.g., Baker, 1984, 1990; Granovetter, 1985; Uzzi, 1996; White, 1981). Social embeddedness researchers have examined dyadic relationships between buyers and sellers (see Figure 1) and have characterized these relationships as either "embedded" or "arm's length." Granovetter (1985) considered the frequency of exchange in determining the level of embeddedness, while Baker (1990) and Uzzi (1996) also considered the concentration, or volume, of exchange. Combining these two approaches suggests that an embedded relationship exists when two parties engage in frequent and high volume exchanges.

Embeddedness researchers have contrasted their approach with economic market explanations by suggesting that the benefits of embedded relationships derive from three conditions that characterize many market contexts: 1) search and information costs are sufficiently high to create equivocality between buyers and sellers, thereby opening the relationship to the potential for opportunistic behavior on both sides of the market; 2) buyers and sellers transact

Figure 1

Previous research has assumed direct interactions between buyer and seller
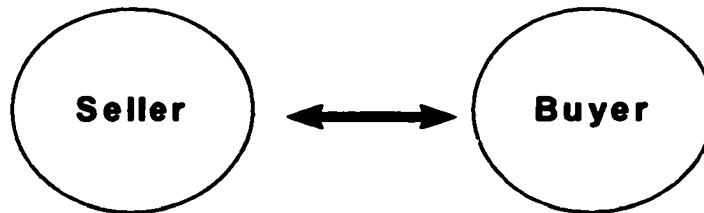
This study focuses on mediated markets where buyers and sellers deal with a transaction intermediary
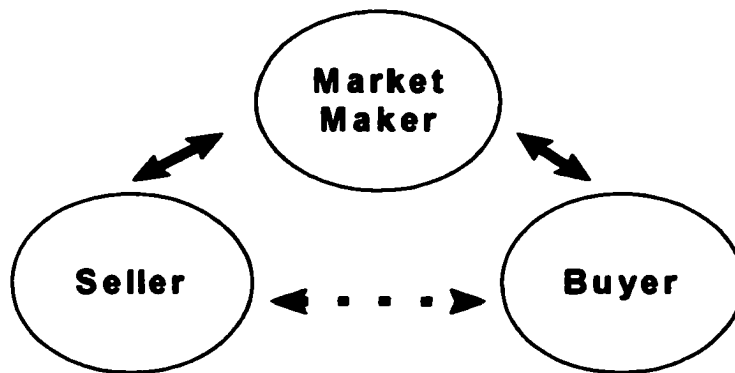
directly and obtain detailed information about each other through such direct interactions; and 3)

both buyers and sellers conduct repeated transactions in the market over time. Under these

market conditions, a number of benefits accrue to those firms which develop embedded

transactional ties. Various studies suggest that embedded relationships linking buyers and sellers

decrease opportunistic behavior (Uzzi, 1996, 1997), facilitate information transfer (Larson, 1992;

Uzzi, 1996), influence the acquisition and use of power (Baker, 1990), build trust between the

transaction partners (Uzzi, 1996, 1997), and reduce market volatility (Baker, 1984). Trust,

detailed information sharing, market stability, and the other benefits associated with embedded

relationships are viewed as the cumulative result of the direct and repeated interactions. The

economic outcomes found to be influenced by embedded social structures include organizational survival (Uzzi, 1996), option price volatility (Baker, 1984), business concentration (Baker, 1990), and adaptation to shifting business conditions (Uzzi, 1997).

1.1.3 Mediated Markets

Markets exist, however, that are characterized not only by significant information asymmetries and high costs for gathering additional information, but also by violations of embeddedness researchers' assumptions regarding direct and repeated interactions between buyers and sellers. Such markets include certain financial markets; auctions for art, livestock, and autos; markets for talent such as professional sports drafts; and the market for temporary services. According to current theorizing, the transactional relationships between buyers and sellers in these markets should all be arm's length. In such cases, market behaviors and outcomes should be characterized by a short-term focus on the price of the immediate transaction by both parties, widely dispersed transactional networks, and significant levels of opportunistic behavior. Moreover, in such markets, reputational effects may exacerbate rather than stabilize the market, as high reputation actors use the power their reputations afford them to behave opportunistically by extracting even greater profits from their transaction partners.

Evidence exists (e.g., Ibbottson & Ritter, 1995; Smith, 1989), however, that at least some of these markets exhibit pricing and trading behaviors similar to those observed in markets where buyers and sellers have the opportunity to interact directly and repeatedly. This evidence suggests that it is transaction intermediaries and the role they play in buyer-seller exchanges which are responsible for the relative stability observed in these markets. Although buyers and sellers do not have the opportunity to develop embedded relationships with each other in one period markets,

they may develop such relationships with transaction intermediaries, and the intermediaries may use these embedded relationships to reduce market ambiguities.

With the exception of Abolafia (1996) and Baker (1984), very little organizational research has been done on the role of transaction intermediaries in market exchange. Abolafia examined the ways in which intermediaries in financial markets regulate themselves and create institutional structures that limit regulation by market outsiders. This allows the market intermediaries to accomplish their dual objectives of earning profits while at the same time maintaining the integrity of the market. Baker (1984) examined how the size and structure of trading networks among brokers on an options exchange influenced price volatility. He found that small and tightly knit trading networks among these intermediaries were characterized by greater price stability than larger and more dispersed trading networks.

In this dissertation, I examine the market for initial public offerings (IPOs) and attempt to answer the following question: *How do investment banks, as transaction intermediaries, use their reputation and embeddedness with buyers and sellers to influence the economic outcomes of all parties to the mediated exchange?* The dual process model of market-making I propose in this dissertation incorporates both the short-term profit motives of investment bank intermediaries as well as their long-term interests in maintaining a viable market in the future. Specifically, the model proposes that in the short-term, i.e.,, in the context of single deals, banks with high reputational capital use this capital to extract greater profits for both themselves and the companies they underwrite. Given that banks must participate in multiple deals in this market, however, they also realize that they cannot continually operate with a short-term opportunistic mentality and continue to reap the benefits of participating in a relatively stable and orderly market over time. As a consequence, underwriters often use the network of past relationships

which they have developed with buyers and/or sellers to moderate raw profit-seeking behaviors. The combined effect of short-term reputational leveraging and the long-term accumulation of embedded ties provides underwriters with the flexibility and clout to ensure a profitable and stable market.

1.2 The Market for Initial Public Offerings

An initial public offering occurs when a privately held company sells stock on one of the national exchanges for the first time. For a vast majority of these companies, it is their first experience in both accessing the public markets for capital and using the services of an investment bank. The primary market for IPOs is created and managed by the investment banks that underwrite these offerings. It is their job to guide the offering firm through the registration process with the SEC, determine the price of the stock and the number of shares to be offered, place these shares with investors, and continue to maintain a liquid secondary market for the company's stock after the IPO. IPOs also generate a tremendous amount of publicly available information about the offering company. This information is contained in the S-1 registration statement that the offering company must file with the SEC before it is granted the right to sell shares to the public. The one period nature of the IPO transaction, the depth of involvement of investment banks in market making activities, and the availability of market information all make this an excellent venue in which to study the effects of reputation and embeddedness in a mediated market.

IPOs have been the subject of scholarly research in finance for some time. Over the last twenty years, financial scholars have attempted to explain important theoretical anomalies in the market for IPOs. Efficient market theories have failed to provide satisfactory explanations for why IPO stocks experience surges in price during the first hours or days following the IPO

(known as the "underpricing phenomenon") and then consistently underperform the market for the next several years (Ritter, 1991). Many explanations have been put forth attempting to account for the pricing mechanisms at work (Ibbotson & Ritter, 1995), but none has satisfactorily uncovered the root of this unique phenomenon. Although financial scholars are beginning to search for social explanations of IPO market behaviors, they lack the theoretical constructs necessary to provide a broad generative framework for understanding the potential role that such variables as reputation and social embeddedness play in IPO pricing and allocation as well as long-term IPO stock performance. This suggests that a unique opportunity exists to take a distinctly sociological and organizational approach in understanding this market. In this dissertation, I attempt to provide the necessary theoretical framework missing in the financial literature, and hopefully will begin to bridge the gap between economically-based and sociologically-based theories of market activity.

1.3 Contributions of This Study

My dissertation makes three primary contributions to the theoretical literature on markets and organizations. First, this study extends research on markets to a market form which has not received much attention in the organizational literature -- the mediated market. Examining this market form will allow me to test and refine current theorizing regarding the ways in which reputation and embeddedness shape market outcomes. Second, this study examines market transactions in a more complex way than prior research by explicitly measuring the interests and resources controlled by an actor (i.e., the investment bank) other than the buyer and seller, thus expanding power and dependence considerations from the dyadic to the triadic level. Finally, this study moves beyond purely short-term interests to examine how short-term profit motives combine with long-term interests in ensuring the viability of this particular market form. In doing

so, this study separates the direct short-term effects of banker reputation from the long-term moderating effects of network embeddedness on the market outcomes of buyers and sellers.

In the remainder of the dissertation I will outline the theoretical framework, research hypotheses, and analytical tools used in my dissertation; present the results of the analysis; and discuss the implications of the present study, as well as the potential for future research in this area. Chapter 2 describes the IPO process. Chapter 3 reviews the financial and organizational literatures on IPOs. Chapter 4 uses resource dependence and social embeddedness theory to develop a model of IPO market interdependencies and presents a set of testable research hypotheses. Chapter 5 describes the data and analytical tools used. Chapter 6 presents the results of the analysis, and Chapter 7 discusses the implications and limitations of this study.

CHAPTER 2: THE PROCESS OF GOING PUBLIC

Despite its increased profile in recent years, the initial public offering is still an infrequently examined subject in the organizational literature. In order to gain a better understanding of the organizational issues involved in taking a company public, in this chapter I will describe the IPO process and the roles different parties play in the transaction.

2.1 The Players

Figure 2 presents the major players, and their roles, in an initial public offering. The

Figure 2

Parties to the IPO Transaction

Issuer

Company Going
Public

Early Financiers
(VCs & Angels)

Transaction
Intermediary

Investment Bank(s)
Underwriting the
Offering

Company's
Attorney

Underwriter's
Attorney

Auditor

Fiduciaries

Securities and Exchange Commission

Purchasers

Institutional
Investors

Individual
Investors
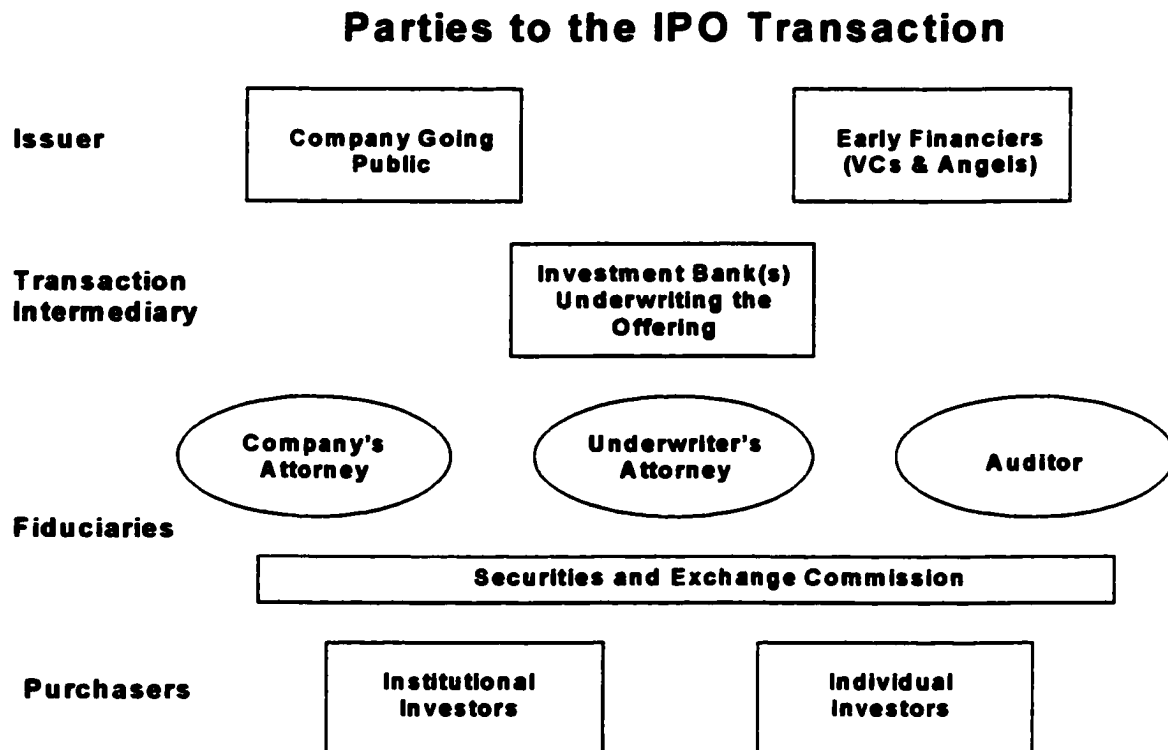
company and its insiders provide the stock to be sold. Underwriters function as intermediaries in the transaction by bringing buyers and sellers together and handling the offering's technical aspects. The auditor and attorneys representing the company and the underwriter provide the first

line of fiduciary assurance that all material information which could affect the performance of the company in the near future has been included in the prospectus. The Securities and Exchange Commission provides the second line of fiduciary assurance. The SEC double checks all of the information included in the prospectus prior to granting the company the right to issue stock. The final actors are the institutional investors and individual investors who purchase the stock.

2.2 The Process

2.2.1 Deciding to Go Public

The IPO process may begin months or even years before the actual transaction takes place (Price Waterhouse, 1995; Gutterman, 1991). It begins when those running the company decide that at some point they would like to take the company public and begin to take actions which they hope will increase the probability that company will successfully complete an IPO. These activities may include building the company's public image through advertising, making appearances at conferences and trade shows, hiring a financial public relations firm, developing the proper legal and shareholder structure, resolving any pending litigation in which the firm is involved, developing a board of directors, and formalizing financial and operating systems (Gutterman, 1990; Price Waterhouse, 1995). These activities eliminate factors which increase the risk, or the perception of risk, associated with investing in the firm.

Taking a company public has both positive and negative implications for the firm. Table 1 includes some of the frequently cited pros and cons associated with going public (Gutterman, 1990; Price Waterhouse, 1995). Companies go public for a variety of reasons, including access to equity and debt markets, increased prestige and reputation, and liquidity for the major stockholders, especially the venture capitalists providing the seed financing for the company. The costs of going public, however, can be steep. Aside from the financial expenses associated with

Table 1

Pros and Cons of Going Public	
Pros of Going Public	**Cons of Going Public**
Cash	Initial and Ongoing Expenses
Access to Capital Markets	Loss of Top Management Time & Focus
Increased Company Value	Loss of Confidentiality
Increased Prestige/Reputation	Loss of Control & Reduced Management Flexibility
Liquidity	Increased Performance Pressure
Ability to Engage in Mergers & Aquisitions	Change in Nature of Investor Relations
Potential for Market Based Incentive Plans	Restrictions on Insider Sales of Stock

taking a company public, there are also enormous costs in terms of time, effort, and stress. Firms going through IPOs, and especially their top management teams, are able to focus on little else. Once a company has successfully made the transition from private to public status, it must deal with the loss of control and confidentiality it enjoyed as a private company. It must also deal with new sets of shareholders who may have very different time horizons and perspectives regarding how the business should be run. These shareholders will hold management accountable for fluctuations in the company's stock price, fluctuations which may have very little to do with the actual performance of the company and over which management has little or no control.

2.2.2 Selecting an Underwriter

Selecting the investment bank, or banks, to handle the underwriting of the IPO is one of the most important decisions the company makes. The underwriter and the company's outside legal counsel are responsible for leading the company through the IPO process. The underwriter should be experienced in dealing with the SEC and in pricing stocks, and it should have an

effective distribution network in place. If the underwriter is lacking in one or more of these areas, the offering, assuming it goes through, will generate far less income and far more problems for the issuing corporation than should be the case. Firms conducting larger, and more hotly anticipated, IPOs may choose from among several top tier investment banks. Lesser known firms with shorter or more problematic operating histories must choose from a pool of smaller regional banks which have less to offer (and to lose) in terms of reputation and experience, but which are willing to underwrite riskier offerings.

When negotiating the underwriting agreement, three important considerations are a) the underwriting fee, b) whether the offering will be conducted on a firm commitment or best efforts basis, and c) whether an overallotment option will be granted to the underwriter. These factors affect the amount of an underwriter's compensation and its risk exposure. The underwriting fee is calculated as a percentage (5%-12%) of the total value of the offering (Welch, 1997). Underwriters are willing to negotiate their fees, lowering the percentage for larger offerings, when competing with other underwriters (Chishty, Hasan & Smith, 1996) and when the underwriter hopes to conduct offerings for the issuer in the future (James, 1992). The investment bank must also decide whether it is willing to underwrite the offering on a firm commitment or a best efforts basis. Firm commitment offerings are more common. In a firm commitment offering, the underwriter agrees to buy the entire offering from the company, guaranteeing the issuer's proceeds from the offering. The underwriter bears the risk and cost of absorbing any unsold stock. In a best efforts offering, the underwriter agrees to put forth its best efforts in selling the stock of the corporation but does not guarantee the issuer's proceeds from the offering. Best efforts offerings are conducted when the underwriter believes the stock will be difficult to sell. Finally, the underwriter typically requests an overallotment option, which allows the underwriter

to sell an additional number of shares, usually 15% of the original offering, if there is excess demand for the stock.

2.2.3 The Registration Process

The first step in the registration process is drafting the registration statement to be filed with the Securities Exchange Commission. An S-1 registration statement[1] must be filed with the SEC whenever a company wishes to issue equity or debt on the public market. Since companies conducting IPOs typically have no prior market history (Afterman, 1995), their S-1s contain far more detailed information than the S-1s of companies conducting "seasoned" offerings. Table 2 summarizes the information required by the SEC in the S-1s. Part 1 of the S-1 contains information about the issuer's business, details of the offering itself, the type of securities being offered, the officers and directors of the company, the interests of other parties in the offering, audited financial statements, and management's discussion and analysis of the financial statements. This part of the registration statement also serves as the offering prospectus furnished to potential investors. Part 2 of the registration statement includes any other documents, such as underwriter agreements, leases, employment contracts, etc., which may be of importance to the offering. The information in Part 2 is not included in the offering prospectus but is available for public inspection through SEC reading rooms in Washington D.C, Chicago, and New York.

Drafting a registration statement is a group activity combining the efforts of the company's executives, the underwriters, both outside counsels, and the auditors (Price Waterhouse, 1995). In addition to participating in the drafting sessions, the underwriter and its counsel must perform due diligence. Due diligence includes interviewing management, directors,

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[1] Other forms, such as the SB-1 for small offerings and the F-1 for foreign company offerings on U.S. exchanges may be required in lieu of the S-1. S-2 and S-3 forms may be used in secondary offerings if the firm meets certain requirements.

Table 2

```
┌─────────────────────────────────────────────────────────────────────────┐
│        Information Required in the Registration Statement                 │
├─────────────────────────────────────────────────────────────────────────┤
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Issuer's Business
- Products/Services
- Customer Base
- Competitive Factors
- Description of Market
- R&D Activities
- Strategy for Future

Financial Statements
- 2 yrs Balance Sheets
- 3 yrs Cash Flow & Income Statements
- Quarterly Income Statement
- Management's Comments on Financial Statements

Description of Securities
- Type of Security
- Dividend Policy

Officer & Director Information
- Biographies
- Executive Compensation
- Security Ownership of Management & Certain Beneficial Shareholders
- Description of Relationships

Offering Information
- Risk Factors
- Use of Proceeds
- Determination of Stock Price
- Dilution of Ownership Due to Offering
- Plan to Distribute Securities

Interest of Others in Offering
- Experts or Counsel
- Disclosure of Indemnification of Directors, Officers & Others

Underwriter Information
- Identify Principal Underwriters
- Number of Shares to which Underwriter is commited
- Underwriting Fees

Contracts (Part 2)
- Shareholder Agreements
- Employment Agreements
- Underwriter Agreements
- Leases
- Other Contractual Agreements

suppliers, customers, and others to verify information and ascertain what needs to be included in the prospectus; visiting the company's facilities; and reviewing its legal documents and articles of incorporation, etc. for any inconsistencies or potential problems (Gutterman, 1990). Under the 1933 Securities Act, *all* parties who sign the S-1, including the officers and directors of the entity in question, its auditor, and each underwriter participating in the offering, may be held liable for losses suffered by shareholders due to a defective registration statement (Afterman, 1995). In the event of a lawsuit, underwriters avoid paying damages by providing evidence that they performed reasonable due diligence regarding the accuracy and completeness of the registration documents.

Once the final drafting of the registration statement has been completed and signed, a final meeting takes place at the financial printers for proofing and printing of the registration statement and prospectus. At this stage the prospectus is referred to as a "red herring" prospectus and does not include the final offering price or number of shares to be offered. In conjunction with the SEC filing, the red herring prospectus will be distributed to potential investors.

The next stage of the process begins once the registration statement is filed with the SEC. The SEC was created by the 1933 and 1934 Securities Acts, which were passed following the 1929 stock market crash (Afterman, 1995). The purpose of registering securities with the SEC is to ensure that investors are provided with an adequate and informed basis upon which to make their investment decision (Afterman, 1995). The SEC accomplishes this by ensuring that all relevant information, and no false or misleading information, is included in the registration statement. The SEC reviews the registration statement for any omissions or misstatements, requesting clarification when necessary. These requests are made via a comment letter which the SEC presents to the issuing company within thirty days of the filing. Before the process is over the SEC will most likely issue several comment letters. Although the initial comment letter is delivered within thirty days, this stage of the registration process may extend over eight weeks. The company may be required to file one or more amendments to their S-1 during this period. These amendments may be in response to the SEC's comment letters, to a material change in the company's business, or to update financial information about the company. Finally, the firm must also register the offering in all states where it may sell its stock. This necessitates that the firm provide any information these states require.

Filing with the SEC also triggers the firm's "quiet period." During the quiet period, which begins when the registration statement is filed and lasts ninety days after the effective date of the

offering, the company is expected to keep a low profile in the press. The company is not to grant interviews or otherwise promote the company while the registration is taking place. If the SEC feels that such activities are occurring during the quiet period, it may object to, or even postpone, the offering. The company is permitted, however, to conduct "road shows" where the underwriters and the top management team travel around the country, and sometimes the world, to meet with investors, analysts, and potential members of the underwriting syndicate. Although the company is prohibited from presenting information that differs from the information provided in the prospectus, it may clarify issues and respond to audience questions. Road shows extend over several weeks, and the road show team may visit as many as two or three cities a day.

During the registration period the underwriter must also determine the offering price of the stock. (Benveniste & Spindt, 1989). The underwriter contacts various institutional investors and determines the number of shares they are willing to purchase at various price levels The underwriter uses this information to assess how the market initially values the company and to identify potential investors.

Once the SEC is confident that all material information has been disclosed in the prospectus, the company files the final pricing amendment, which includes information on the price of the stock, the number of shares to be sold, the underwriter's commission, and the anticipated effective date. The effective date is the date on which the company has the right to offer its stock to the public. Although this occurs automatically twenty days after the final pricing amendment is filed, the company can request that the SEC accelerate the effective date. Twenty-four hours before the effective date the company signs the underwriting agreement with its investment banks and sets the offering price of the stock. The company's stock is sold to the public shortly after the stock goes effective. The closing of the offering occurs approximately

seven days later. The money and certificates are exchanged, and any final documents are signed.

CHAPTER 3: EMPIRICAL RESEARCH ON IPOs

In this chapter I will review the existing empirical literature on IPOs. Most of the research in this area has been conducted by scholars in finance. Their research has focused on three primary issues: underpricing, the "hot market" phenomenon, and the long-run performance of companies that have gone public. The following review of the finance literature will illustrate how financial scholars have begun to search for social explanations of these market phenomena, and how they have struggled to recast these social explanations in economically rational terms. The second section of this chapter will review the ways in which organizational scholars have begun to approach the IPO market. The final section of this chapter summarizes and discusses the implications of these findings for the present study.

3.1 Financial Research on IPOs

3.1.1 Underpricing

The underpricing of new issues is a well-documented phenomena in the finance literature (Carter & Manaster, 1990; Chemmanur, 1993; Ibbotson, 1975; Ibbotson, Sindelar & Ritter, 1988; Ibbotson & Ritter, 1995; Loughran & Ritter, 1995; Michaely & Shaw, 1994; Miller & Reilly, 1987). Underpricing is often measured as the run-up in an offering firm's price during the first day of trading. The smaller the run-up, the less the stock was underpriced. Research has shown that unseasoned new issues of stock tend to experience greater underpricing than equivalent seasoned issues (Ibbotson, 1975; Ritter, 1991; Tinic, 1988). Various studies place the average level of underpricing between 15.3% (Ibbotson & Ritter, 1995) and 20.25% (Ibbotson, Sindelar & Ritter, 1988). Underpricing has attracted interest because it violates efficient market assumptions about stock valuation, and many researchers have attempted to buttress classic valuation theory with one or more additional explanatory assumptions. Ibbotson & Ritter (1995)

chronicle eleven different hypotheses proffered to explain IPO underpricing. These can be broadly divided into remuneration and market signaling hypotheses.

Remuneration. Rock (1986) suggests a "winner's curse" phenomena to explain IPO underpricing. He argues that rationing shares among investors will occur when a fixed number of shares are being offered at the IPO and there are more willing purchasers than shares available. Informed investors will actively compete for larger blocks of the more desirable issues and will not compete for less desirable issues. Uninformed investors, however, do not know which issues are more desirable, and therefore compete equally for all issues. The uninformed investor thus receives smaller shares of desirable issues and larger shares of undesirable issues. Faced with this adverse selection problem, uninformed investors will only submit purchase orders if, on average, IPOs are underpriced sufficiently to make up for their increased risk.

Tinic (1988) suggests that underpricing is motivated by the desire to avoid lawsuits. Investment banks can be held liable for subsequent losses due to material omissions or misstatements in the offering prospectus. Tinic argues that investment banks underprice new issues as a form of insurance against legal liability and to protect their reputations. Because investors rely upon the bank to perform due diligence, the bank is likely to be named in any lawsuits filed due to a substantial drop in stock price soon after the offering. Tinic argues that underwriters attempt to indemnify themselves against potential liability claims by systematically underpricing offerings in order to provide investors with a large initial gain. Others (e.g., Ibbotson & Ritter, 1995) have noted that even though Tinic provides empirical evidence supporting his hypothesis, his findings support several alternative hypotheses as well.

Benveniste and Spindt (1989) suggest that underwriters solicit information regarding interest levels in a new issue from potential investors prior to pricing the stock. They argue that

underwriters then use their power to allocate portions of the new issue among investors to encourage investors with positive information about the company to reveal it prior to the IPO. In return, underwriters underprice the stock and give these investors larger allocations of the offering. Benveniste and Spindt argue that if underwriters deal repeatedly with the same investors and give them priority in allocations, the threat of future allocation reductions allows the underwriter to change "the rules of the auction" in favor of the issuing company. This argument is supported by Hanley's (1994) finding that IPOs which are priced above the initial anticipated offering range are associated with greater levels of underpricing than those with offering prices either in or below the anticipated offering range. Hanley and Wilhelm (1994) found that institutional investor activity is essentially equal in both strong and weak offerings, suggesting that investors must participate in weak offerings in order to participate in strong offerings as well.

Market Signaling. Market signaling theorists argue that firms have private information which they may or may not wish to divulge prior to the IPO. If firms want to release favorable information, they will engage in signaling behavior which provides the market with indicators of company quality. Welch (1989) argues that high value firms deliberately underprice so that they may obtain higher stock prices on subsequent offerings. Underpricing the IPO compensates outsiders for generating information about a company. This reduces the information asymmetry between the company and the market prior to the secondary offering. Welch (1992) also argues that investors look to other investors when making their purchase decisions. Even with favorable information about the company, one investor will be less likely to purchase the firm's stock if other investors are reluctant to purchase the stock. Welch argues that underpricing induces some initial investors to buy, which then creates a cascade effect among other observant investors who subsequently move to invest in the stock.

Grinblatt & Hwang (1989) suggest an equilibrium model in which both the amount of ownership retained by insiders and the offering price of the stock signal insider views regarding the company's expected future cash flows. Greater ownership retention by insiders, and greater underpricing, indicate a higher true value of the firm. Allen & Faulhaber (1989) also propose a signaling model. They argue that good firms will underprice because they expect to recoup the initial loss in the future after their quality and performance is realized. Weak firms cannot afford to underprice because their poor quality will eventually be discovered by the market and they will be unable to recoup their initial losses. Instead, weak firms will exploit their IPO as an opportunity for a "big score."

Michaely & Shaw (1994) found no support for the signaling theories proposed by Welch, Grinblatt and Hwang, and Allen and Faulhaber. However, researchers have also examined the signaling by other parties participating in the offering, i.e., the auditors, investment banks, and venture capitalists. Auditor reputation has been found to have an inverse relationship with underpricing (Balvers, McDonald & Miller, 1988; Beatty, 1989). Issuers using Big 6 accounting firms show less underpricing than issuers using non-Big 6 firms. Investment bank reputation has also been found to have an inverse relationship with underpricing (Beatty & Ritter, 1986; Carter & Manaster, 1990; Chemmanur & Fulghieri, 1994; Michaely & Shaw, 1994). Bank reputation signals the quality of the issue in markets where information asymmetries exist because banks are better informed than investors and act to safeguard their reputations. Firms with high reputations will screen prospective IPOs and underwrite only those which they perceive to be less risky. The importance to banks of maintaining their reputations has been well documented in the organizational literature (Eccles & Crane, 1988; Haunschild, 1994; Podolny, 1993).

An underwriter's reputation plays a key role in its ability to distribute IPO stocks. In a survey of institutional investors and wealthy individuals, Shiller (1990) found that 57% of the respondents claimed they would be more likely to purchase an IPO that is underwritten by a particular bank or bank consortium. Only 26% of the sample reported comparing the offering price to the "true" value of the company. Wolfe, Cooperman, and Ferris (1994) found empirical evidence suggesting that prestigious banks are less likely to underwrite smaller and more speculative IPOs. They also found that market and industry conditions influence prestigious banks' decisions to underwrite IPOs. The evidence regarding the relationship between underwriter reputation and underwriting commissions is more mixed. James (1992) identified a negative relationship between the gross underwriting spread for an offering and investment bank reputation. Chishty, Hasan, and Smith (1996) found no relationship between underwriter reputation and the fees they charge for their services. These studies present no specific hypothesis regarding the relationship between bank reputation and underwriting commissions. In both studies, underwriter reputation was included as a control variable.

Finally, if a firm has received backing from venture capitalists, the VC's reputation and selling activities during the IPO also influence the level of underpricing. Megginson and Weiss (1991) found that the involvement of venture capitalists in a company tends to reduce the amount of underpricing as well as the commissions paid to the underwriters. Other research suggests that the involvement and inside selling of younger (Gompers, 1996; Lin, 1993) and less reputable (Lin, 1993) venture capital firms have been associated with greater underpricing. Sales by more reputable venture capitalists, however, seem to have no effect on underpricing.

3.1.2 Hot Market Phenomenon

A second issue which has received attention in the financial literature is the variance in IPO underpricing from one year to the next (Ibbotson & Jaffe, 1975; Ritter, 1984; Shiller, 1990). A "hot" market year is defined as a year with large numbers of IPOs which exhibit a greater than average degree of underpricing (Ibbotson & Jaffe, 1975; Ritter, 1984). Ibbotson & Jaffe (1975) were the first to document that hot issue months and years exist. Ritter (1984) presented findings suggesting that hot issue markets can exist within particular industries in particular years. Ritter also found that riskier firms were associated with greater levels of underpricing and greater variance in post-IPO stock performance. Consistent with remuneration arguments, some have suggested that a greater degree of underpricing is required to compensate investors for the increased number of high-risk issues which are offered during hot market years (Ibbotson & Ritter, 1995).

Shiller (1990) suggests an alternative "impresario" hypothesis to explain hot markets. He argues that underpricing to produce quick initial returns creates the perception that the underwriter is providing investors with good advice. According to Shiller, "'hot' markets appear when some salesmen for IPOs discover that some segment of the public is ripe for a 'fad' for IPOs. Underwriters then let the high initial returns run for a while to generate publicity and good will" (Shiller, 1990: 62). Shiller found that 47% of individual investors and 28% of institutional investors would see a one day return of 15% on a recommended stock as either "strong evidence" or "positive evidence" of the advisor's ability.

3.1.3 Long-Run Performance

The third phenomenon to receive attention in the financial literature is the long-run market performance of IPO companies. Miller (1977) suggests that the greater the uncertainty that exists

about the future performance of a stock, the greater the variance in prices investors will be willing to pay for the stock. As more information becomes known, uncertainty about the stock's performance will be reduced and the prices investors are willing to pay will become more homogeneous. In the market for new issues, some investors will always be overly optimistic about a given company's future prospects and will suffer the "winner's curse" by paying too much for the stock. As more information about the company becomes known, the stock price will tend to drop. Miller argues that this is why new issues tend to underperform the market in the years after the IPO.

A number of empirical studies support Miller's hypothesis. Ritter (1991) found that IPO firms provided a 34.47% return on a buy and hold strategy over the three years following the IPO. A matched sample of seasoned firms returned 61.86% over the same period. These returns were calculated excluding the first day's underpricing. Ritter also found a negative relationship between the number of IPOs in a given year and the aftermarket performance of the IPOs. Greater levels of underperformance were associated with heavier volume years, suggesting that more firms of dubious quality decide to go public when the market is overly optimistic about the prospects of IPOs. Hanley (1994) found that firms whose final offering price at IPO exceeded the originally expected offering range underperformed less than firms whose offering price fell either within or below the offering range. Loughran (1993) found that IPO companies underperformed seasoned companies for approximately six years. Loughran and Ritter (1995) found underperformance continued for approximately five years after the IPO. Jain and Kini (1994) examined the accounting performance of companies post-IPO. They found that return on assets and total assets declined after the IPO, even though sales and capital expenditures continued to

grow. They also found that companies demonstrated superior pre- and post-IPO performance relative to other issuing firms when their founders retained larger ownership stakes.

Finally, an extreme form of post-IPO underperformance is organizational failure. Ritter (1991) found that 272 of 1506 IPO firms (18.06% of the firms in his sample) delisted within three years of going public. Delisting a stock generally indicates that a company has either merged, been acquired by another firm, or failed. Platt (1995) matched 76 IPO firms with 32 firms that went bankrupt within 3 years of their IPO. He correctly predicted 31% of the bankrupt firms and 90% of the survivors using four liquidity ratios.

Table 3

Social Explanations of Market Phenomena in the Finance Literature	
Social Phenomena	**Outcome Explained**
Institutional Sanctions	Underpricing
Social Network Participation	Underpricing Stock Ownership Concentration
Organizational Reputation	Underpricing Post-IPO Trading Activity Underwriting Activity Cost of Underwriting Services
Relationship Development w/ Clients	Underpricing Cost of Underwriting Services

This review of the financial literature suggests that a great deal of effort has been expended examining the post-IPO performance of newly public firms. Efficiency and rational actor based arguments, however, have met with little empirical support. Instead social phenomena, summarized in Table 3, have tended to provide greater explanatory power. These social explanations have little theoretical grounding in the existing finance literature. Indeed, they

are *ad hoc* explanations of seemingly anomalous, yet persistent, outcomes and are a good example of Schumpeter's "primitive sociology." As we will see in the next section, a few organizational researchers have begun to apply social theory to IPO phenomena. In doing so, they have begun to build a more substantial theoretical base from which to understand this market.

3.2 Organizational Research on IPOs

Andrews (1995) studied the signaling effects of the size and composition of a company's board of directors at IPO. She found that increased numbers of outsiders, but not the presence of prestigious outsiders, led to larger premiums over the issuing company's book value. She did not find significant effects for either of these factors on the subsequent performance of the company, or on the company's survival chances five years after IPO. Welbourne and Andrews (1996) found that the existence of group-based compensation plans, such as stock options for employees, reduced premiums over book value at IPO, but that the presence of these reward systems, as well as a strong human resource orientation, enhanced the survival chances of the firm five years after IPO.

One factor which is especially significant about both the Andrews (1995) and the Welbourne and Andrews (1996) studies is the way in which they deal with IPO pricing. Rather than examining the difference between the initial offering price and the price at the close of the first day's trading, as in the finance literature, these authors, following the suggestion of Rasheed, Datta, and Chinta (1997), chose to look at the premium paid for the company over the liquidation value of its tangible assets, or book value. Finance researchers have examined the "money left on the table" by assuming that the first day of trading in an efficient (or at least semi-efficient) market identifies the true value of a company. However, these same researchers also freely recognize that there are informational asymmetries which may take months or years to resolve and that

market fads and underwriter market making activities can dramatically influence short-term stock price fluctuations. The measure used by Andrews (1995) and Andrews & Welbourne (1996) captures the influences on an underwriter's valuation of a company *before* the company goes public. Focusing on the factors that influence how underwriters value IPOs is an important contribution because underwriters, along with auditors and venture capitalists, have the best access to information about a firm prior to its IPO. This measure allows organizational researchers to actually examine valuation processes about which finance researchers only speculate.

Other organizational research has examined factors which influence a firm's ability to raise capital through an IPO. Two studies by Deeds and his colleagues (Deeds, DeCarolis & Coombs, 1996; Deeds, Mang & Frandsen, 1997) have examined the factors which influence the amount of capital raised by biotechnology firms through their IPOs. Deeds et al. (1996) found a relationship between the net proceeds from an IPO, the time at which the company went public, and the scientific accomplishments of the firm. Greater scientific accomplishments by the firm were associated with larger amounts of cash raised through the IPO. Deeds et al. (1997) extended these findings and used a legitimacy argument in examining the effects of firm and industry factors on the net proceeds from biotechnology IPOs. They found that both a firm's relationships with prestigious universities and drug companies and the extent of a firm's press coverage were positively associated with net proceeds. Total cash received was also influenced by industry legitimacy, as measured by biotechnology press coverage and the number of biotechnology centers in existence at the time of the IPO.

Finally, Beatty and Zajac (1994) used a sample of IPOs to examine how organizations seek to ensure appropriate managerial behavior through balancing trade-offs between incentive,

monitoring, and risk bearing arrangements. They found that an inverse relationship existed between the riskiness of a firm and management's willingness to accept incentive compensation. They also found that an inverse relationship existed between the level of monitoring (inclusion of outsiders on the board) and the use of incentive compensation. They thus argued that the implications of incentive compensation arrangements and managerial ownership for the potential agency problem which a firm faces cannot be assessed without taking the uncertainty of firm performance and the composition of the board of directors into account.

The organizational literature on IPOs is slim. Researchers in this area have focused primarily on the riskiness of the offering firm and the ways companies attempt to reduce investor uncertainty. Legitimating signals and associations and the use of incentive compensation have been the primary methods reviewed. To date, organizational researchers studying IPOs have not examined the social context of the market itself. They have also ignored the role played by investment banks in IPO transactions. The investors who ultimately purchase the stock have been the sole players considered in the price setting process. Underwriter reputation has also received scant attention.

3.3 Summary

In this chapter I have reviewed both the finance and organizational literatures on IPOs. Extending over the last twenty years, financial research has documented three interesting phenomena associated with the initial offering of stock to the public: underpricing, the existence of periodic "hot" markets for IPO stocks, and the long-term underperformance of IPO stocks. Financial researchers have struggled to explain these phenomena using efficient market models. As a result, they have begun to explore social and organizational variables to account for market anomolies that have resisted efficiency logics. References to rationing tradeoffs when valuing and

distributing stock (Benveniste & Spindt, 1989; Rock, 1986), the pressures to avoid litigation (Tinic, 1988), the importance of reputation (Beatty, 1989; Carter & Manaster, 1990; Megginson & Weiss, 1991; Michaely & Shaw, 1994; Shiller, 1990), and the formation and maintenance of ongoing social relationships (Beatty & Ritter, 1986; Eccles & Crane, 1988) suggests a rich set of social forces at work in shaping the valution of IPO stocks. A focus on the average market performance of IPOs after they have gone public, however, has made it difficult to explore the social processes underlying pricing and allocation decisions. Organizational researchers have taken the important step of shifting the focus away from what happens in the market after a company goes public and towards what happens prior to the actual IPO. However, there has been no systematic inquiry into the social context of the IPO market and the effects of this context on IPO pricing and firm survival. It is to this context that I will now turn.

CHAPTER 4: THEORY AND RESEARCH HYPOTHESES

In his book *Making Markets*, Abolafia (1996) discusses the market making activities of

bond traders at major investment banks, pit traders on the floors of futures exchanges, and the

specialists of the New York Stock Exchange. Abolafia argues that in creating and maintaining

their respective markets, each group of actors must contend with and make trade-offs between

opportunism and restraint.

> "Put simply, traders want to make as much money as they can, but they don't want to
> chase away all of the customers... Traders know that restrained markets, free of the
> worst forms of fraud and manipulation, are in their long-term self interest. This
> tension between short-term self-interest and long-term restraint suggests that neither
> the market nor its systems of restraint can be studied in isolation. They exist in
> relation to each other, each institution exerting pressure on the other. The market
> maker stands at the center of these pressures" (pp. 3-4).

Investment banks are the market makers in the primary market for IPOs. Like other market

makers, banks must balance the pressures which exist between short-term profitability and long-

term market integrity.

Figure 3 illustrates the dual process model of market mediation which I suggest that investment

banks use to manage the competing pressures which they face in the IPO market. The solid lines

in the model represent the relationships which are tested in this study. The dotted lines represent

those portions of the model which are not tested at this time. Investment banks may use two

social resources, their reputations as underwriters and the embedded networks of relationships

which they have developed with both institutional investors and venture capitalists, to manage the

competing pressures which they face as transaction intermediaries. I argue that, in the short-term

(i.e., in the context of individual transactions), banks use their reputations as underwriters to

generate greater profits from the transaction by increasing the profits and decreasing the costs

Figure 3

Dual-Process Model of Market Mediation

Relationships Tested ——————— Relationships not tested — — — — — — — —
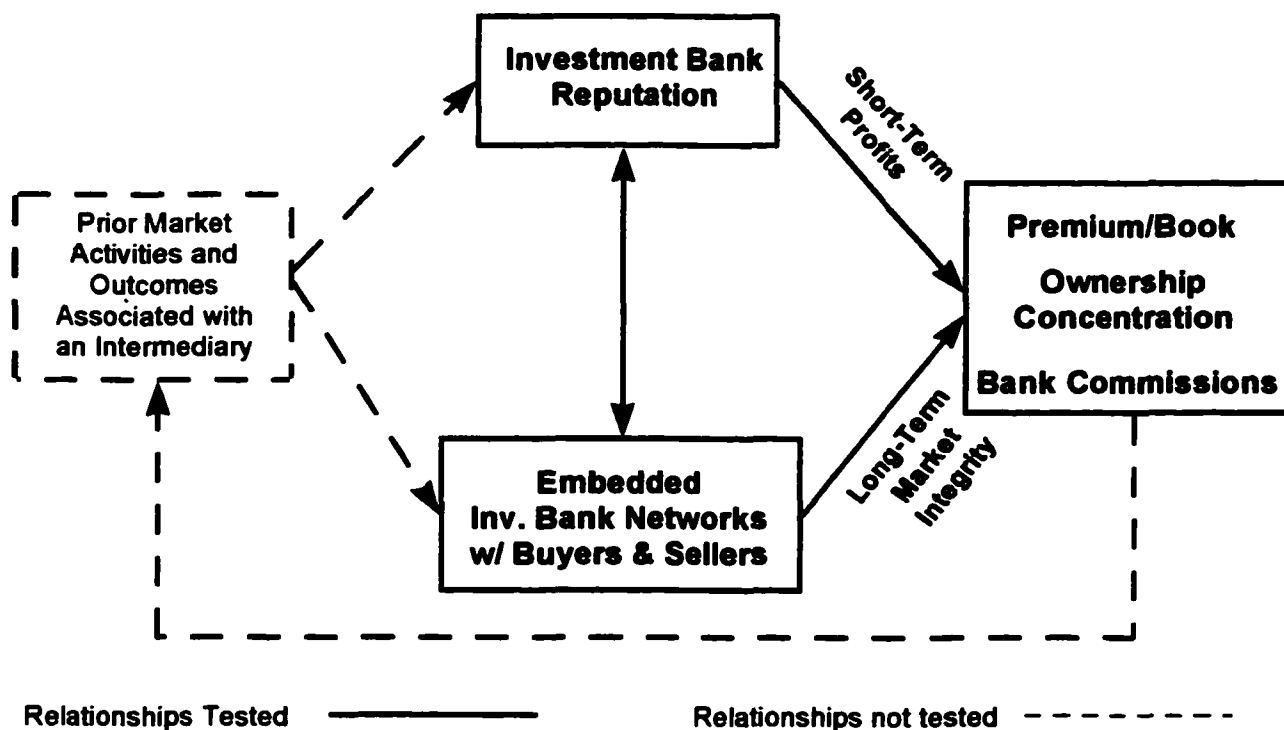
associated with conducting the transaction. In the long-term banks use their networks of

relationships with institutional investors (buyers) and venture capitalists (sellers) to moderate the

power and opportunism of the other participants in the transaction.

Investment banks are somewhat unique as IPO market makers in that they do not balance

their own interests alone. They also balance the interests of the buyers and sellers. Banks must

make sure that both the buyers and sellers in the IPO market feel that they have earned an

acceptable level of profit from the transaction and that both parties continue to view the IPO

market as a viable and cost effective venue for capital exchange. In order for this to occur,

neither party must profit too greatly at the expense of the other. Both buyers and sellers will

withdraw their participation from the IPO market if they perceive that some systematic inequity

exists, and the market will disappear. It therefore falls to the investment banks to create a stable and equitable market, where neither the buyers nor the sellers have an overwhelming advantage. Banks accomplish this longer-term objective by using their position as transaction intermediaries to moderate the power differentials which exist within individual transactions. If power asymmetries among buyers and sellers become too great, the market may become unstable. The bank acts as a "capacitor," absorbing and smoothing out power asymmetries so that neither the buyer nor the seller wields too much influence.

Consistent with previous work examining interorganizational linkages at the organization-market interface (Baker, 1990), in this chapter I will use resource dependence theory (Pfeffer & Salancik, 1978) to examine the interdependencies that exist among institutional investors, selling companies, and investment banks, and how these interdependencies may be used to influence short-run market outcomes so as to favor the "controlling" party. Network embeddedness (Granovetter, 1985; Uzzi, 1996) will be used to examine the ways in which banks use their relationships with buyers and sellers to achieve their long-run interest in maintaining the integrity of the IPO market. I will argue that embedded ties with both buyers and sellers provide the banks with the ability to modulate power differentials in the transaction. Embedded ties allow for the development of trust (Larson, 1992; Uzzi, 1996, 1997) and the kind of information transfer and joint problem solving that change the focus of the exchange from one immediate transaction to repeated transactions in which the banks, sellers, and buyers engage over time (Baker, 1990; Uzzi, 1996).

This chapter is divided into three sections. The first section presents a brief summary of resource dependence theory (Pfeffer & Salancik, 1978). The second section uses resource dependence theory to develop a conceptual model of the interdependent bases of power and

control which exist among the three principal actors in the IPO market, and develops the hypotheses suggested by the model. The final section discusses the role of embeddedness in moderating these power relationships and presents a second set of hypotheses which will be used to test the market making capabilities of embedded ties.

4.1 Resource Dependence Theory: A Summary

A central tenet of resource dependence theory (Pfeffer & Salancik, 1978) is that organizations are not atomistic and self-sufficient actors. Organizations must engage in exchanges with their environments in order to obtain some or all of the resources necessary for survival. This need to obtain resources creates dependencies between organizations and their constituents. These dependencies act to constrain and direct organizational activities. Organizations will survive to the extent that they are effective in taking actions and creating outcomes which are judged as acceptable by the actors with whom the organization is interdependent.

The reliance of organizations upon their resource environments makes them interdependent with the other organizations that constitute their environment. Pfeffer and Salancik suggest that these interdependencies can be competitive (i.e., more for A means less for B), symbiotic (i.e., output of one is the input for another), or a combination of both. Interdependencies may also be asymmetric (i.e., A requires the resources of B more than B requires the resources of A). If asymmetries do not exist in the power relationship, neither party possesses a particular advantage, and the likelihood of one party dominating the relationship is reduced. Interdependencies are thus the basis of social influence and control. Pfeffer and Salancik suggest that organizational dependence is a function of the importance of a resource to

the organization's continued survival, the extent to which the organization has control over the resource's allocation and use, and the extent to which alternatives to the resource exist.

Pfeffer and Salancik argue that there are two dimensions to resource importance, the magnitude of the exchange and the criticality of the resource. The greater the total proportion of the inputs or outputs represented by the exchange, the more important the resource becomes. Criticality reflects the importance of the resource to the continued functioning of the organization. Therefore, one determinant of dependence is the inability of an organization to function if it is unable to obtain sufficient amounts of a given resource, or loses access to the resource altogether.

Pfeffer and Salancik discuss four bases of control over a resource's allocation and use. Resource control may arise from direct possession of the resource, control over access to the resource, control over the actual use of the resource, and the ability to make and enforce rules regulating the possession, allocation, and use of the resource. In addition to ownership, position in information or distribution networks, contractual relationships, and regulatory authority may be used to create dependencies.

The final factor to consider in determining organizational dependence is concentration of control, or the availability of alternative sources of the resource. To the extent that access to a necessary resource is controlled by relatively few actors, a dependency may be created. The importance of a resource, and the alternatives available to an organization for obtaining the resource, thus combine to determine the degree of dependence which exists in a relationship.

4.2 Resource Dependence and the Short-Run Interests of the Actors

4.2.1 A Conceptual Model of Interdependence in the Market for IPOs

Because it is a theory based upon the relationships which exist among organizations, resource dependence theory is a particularly useful lens with which to view the IPO market.

Resource dependence theory provides the theoretical framework necessary for examining market

behaviors at the organizational level of analysis and for understanding the interrelationships and

social forces shaping market behaviors. With respect to the IPO market, Figure 4 summarizes the

interdependencies among investment banks, offering firms, and institutional investors. The arrows

represent the resource dependencies for each actor dyad. Investment banks depend upon sellers

to supply them with business and upon investors to purchase the offerings they underwrite. At

the same time, selling companies are dependent upon investment banks to distribute their shares

so that they may access investors' capital which they need to fuel their continued growth. Finally,

institutional investors are dependent upon offering firms with high investment potential to achieve

target ROIs, and upon investment banks to allocate shares of these profitable offerings to them. I

will analyze each of these interdependencies in terms of the resources each actor controls and the

criteria the actors use to evaluate each other's actions. Table 4 summarizes these considerations.

Table 4

Social Bases of IPO Market Activity		
Participant	**Resource Controlled**	**Effectiveness Criteria**
Investment Banker	Access to Buyers Access to Sellers Reputation	High Stock Prices High Commission Rates Future Business Stable Aftermarket Regular Participation
Selling Company	Investment Potential Source of Business	High Offering Value Low Commissions Stable Aftermarket
Institutional Investor	Investment Capital Access to Investment Bankers	Low Stock Prices High Returns on Investment Large Portions of Hot Deals Weak Offering Avoidance

Figure 4

Interdependencies in the IPO Market
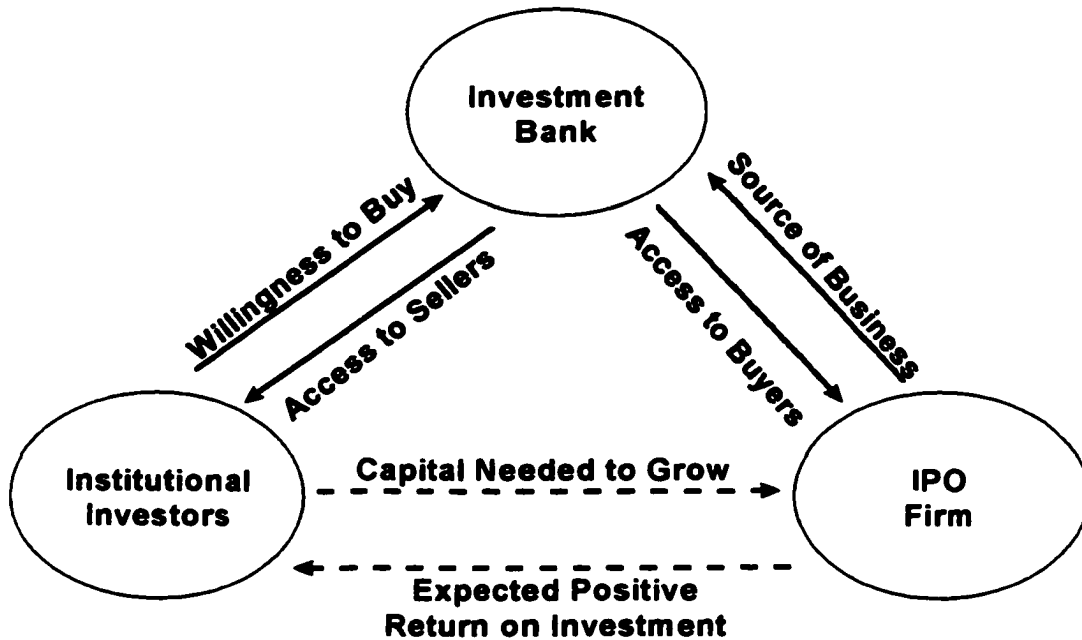
Investment Banks. Investment banks possess three bases of power -- their access to

sellers, their access to buyers, and their reputation. Banks bring buyers and sellers together,

determine the offering prices of stocks, and play a major role in determining the post-IPO

ownership concentration of offerings. As a conduit to both capital and sources of investments,

banks are structurally situated in a powerful position (Baker, 1990; Burt, 1992). They exert

influence over institutional investors through their ability to grant and withhold the shares of

offerings which these investors desire. To the extent that demand for the shares of a particular

offering exceeds supply, alternative sources of capital are readily available, thus reducing the

underwriter's dependence on any one institutional investor when selling an IPO stock. Banks are

also in a strong structural position relative to sellers, who cannot access institutional investors without a bank's help.

Another resource controlled by banks is their reputations. High reputation banks have the resources necessary to handle larger and more complex offerings, the ability to access and underwrite the most desirable offerings, and are more likely to place stock with institutional investors who will retain the shares for longer periods of time. Since high reputation banks are believed to underwrite only the most desirable deals, investment bank reputation can also result in higher stock prices for selling companies.

One criterion that banks use to evaluate investor behavior is an investor's willingness to pay high prices for IPO stocks. Higher prices result in higher bank commissions and increase the likelihood that the bank will be hired by the selling firm to handle future transactions. Another criterion is active participation in all deals underwritten by the bank. Active participation by institutional investors decreases the risk to the underwriter associated with undersubscription of weaker offerings. A final criterion for investor effectiveness is long-term ownership of stocks. Long-term ownership helps stabilize the market for the company's stock and reduces the cost to banks of supporting stock prices in the secondary market.

Selling companies demonstrate effective behaviors when they are willing to pay higher commission rates and grant investment banks the right of first refusal for all of their future underwriting needs.

Selling Companies. Selling companies possess two sources of power -- their potential as an investment and their ability to generate commissions. Investment banks are dependent upon selling companies to hire them to underwrite their offerings. Firms in strong financial positions, with experienced, high quality management teams, and firms which compete in hot industries are

likely to have multiple investment banks competing for their business (Chishty, Hasan & Smith, 1996; Gutterman, 1991). In such cases multiple routes of access to investors exist, negating one basis of investment banks' power. Selling companies also issue the shares which investors need to buy. Uninvested capital can be a problem for institutional investors, since their primary function is to provide a return on the capital with which they are entrusted. Institutional investors are therefore always searching for deals with strong investment potential and are willing to pay more for the reduced risk attributed to high quality offerings.

Selling companies are likely to use high stock prices, low commissions, and underwriting the offering on a firm commitment basis as the primary criteria for determining effective investment bank behavior. High stock prices and stable aftermarkets are the effectiveness criteria sellers are likely to use in evaluating the activities of institutional investors.

Institutional Investors. Institutional investors possess two bases of power -- their relationships with underwriters and the investment capital which they control. The relationships among investment banks and institutional investors can create bank dependencies as well as bank power. A large part of a bank's reputation is derived from its ability to distribute the stock it underwrites (Hayes, 1970). An offering may go undersubscribed if an institutional investor with whom an underwriter does a substantial amount of business decides not to participate in an offering and the bank lacks access to alternative investors. Not only would the bank's reputation be damaged, it will also suffer financially because the bank must absorb the unsubscribed portion of the offering. Institutional investors possess the capital that selling companies need to expand and grow. They also provide an active market in which the executives and early financiers of selling companies can liquidate their ownership, if they desire.

Underpricing offerings so as to provide quick initial returns, allocating larger portions of desirable offerings to the investor, and not forcing participation in weak offerings are the effectiveness criteria most likely to be used by institutional investors in evaluating bank performance. Actions taken by the selling company which result in stock price appreciation will also be considered effective behaviors.

4.2.2 Power & Interdependence Hypotheses

In order to understand the roles that underwriter reputation and embeddedness play in shaping IPO market outcomes, it is important to establish a set of baseline hypotheses regarding the expected outcomes associated with the power of the other participants in the transaction. Accordingly, the hypotheses presented in this section will be organized around three primary bases of power identified in the previous section: a) the quality of the selling firm as an investment, b) the investment capital controlled by the institutional investor, and c) investment bank reputation. Each of these bases of power will be discussed with regard to three outcomes: the stock price premium paid over the book value of the company, the post-IPO ownership concentration of the stock, and the percentage level of underwriting commissions.

Investment Quality and Offering Company Power. Economic theory and resource dependence theory make similar predictions when considering the influence of the investment quality of the company upon market outcomes. Finance theory suggests that the greater the firm's potential for generating future cash flows, the higher the company's stock price (Brealey & Meyers, 1988). Resource dependence theory argues that high firm quality is a resource which the company controls. To the extent that few firms of high quality go public at any one time, and investors desire high quality firms for their investment potential, high quality firms should be able to demand higher prices for shares of their stock. The following hypothesis is proposed:

Hypothesis 1a: All else equal, higher firm investment potential will be associated with a larger stock premium over the book value of the company

Given that the offerings of high quality companies are in demand, requests for shares by institutional investors will exceed the number of shares available for distribution. In such cases, the bank must ration shares among institutional investors by allocating a fractional portion of the shares requested. No one investor will be able to acquire a large block of stock, and post-IPO stock ownership will be more dispersed. The following hypothesis is proposed:

Hypothesis 1b: All else equal, higher firm investment potential will be associated with less concentrated ownership of the company's stock

An alternative hypothesis to hypothesis 1b may also be proposed. Baker (1984) demonstrated that, contrary to efficient market logic, price volatility is increased and communication is reduced when there are more participants in a trading network. If a selling company wishes to have a more stable aftermarket for its stock, it should expect to observe greater ownership concentration of its stock. Owners of large blocks of shares are less likely to resell, or "flip" (Carter & Dark, 1993), the company's stock in the first hours or days the stock begins trading on the secondary market. The following hypothesis is proposed:

Hypothesis 1c: All else equal, higher firm investment potential will be associated with more concentrated post-IPO ownership of the company's stock

Finally, if a firm is a "hot prospect" as an investment, several investment banks will likely be aggressively pursuing the underwriting business (Chishty, Hasan & Smith, 1996). Access to the market thus becomes less of an issue, and one of the primary sources of investment bank power is negated. The cash that a bank can generate for the firm, the stability of the aftermarket that a bank is able to orchestrate, and the fees a bank charges all become more salient issues in selecting an underwriter. Banks competing for the selling company's business will therefore be

more likely to negotiate on their commission rates, lest they be cut out of the offering altogether

The following hypothesis is proposed:

Hypothesis 1d: All else equal, higher firm investment potential will be associated with a lower percentage commission rate for underwriting services

Capital Controlled and Institutional Investor Power.   Each year billions of dollars flow into IRAs, 401(k)s and pension plans with the expectation that the money will be invested prudently and generate returns commensurate with the risks being taken by the fund managers. The capital base which institutional investors control gives these actors a tremendous amount of power in the financial markets. It allows institutional investors to purchase huge blocks of offerings. Indeed, recent research has suggested that institutional investors purchase on average 70% of all IPOs (Hanley & Wilhelm, 1995), with the remaining shares going to the favored retail clients of the brokerages handling the offering. The ability of institutional investors to buy and hold large portions of a stock offering gives them the power to influence the price at which offerings are set and the post-IPO ownership concentration of the stock. In exchange for purchasing a large portion of an offering, institutional investors will demand a lower stock price, thus ensuring a quick return on their investment and compensating them for the risk that taking a large position in an offering entails. Their ability and willingness to hold the shares of IPOs for long periods of time helps stabilize the market for the company's stock and reduces its stock price volatility. A stable aftermarket for an IPO stock makes it easier for a company to go back to the market to raise additional capital as it continues to grow. Stable aftermarkets also create a positive perception of the company among investors. The following hypotheses are proposed:

Hypothesis 2a: All else equal, large institutional investor capitalization will be associated with lower stock premiums over book value

Hypothesis 2b: All else equal, large institutional investor capitalization will be associated with
              more concentrated post-IPO ownership of a company's stock

Reputation and Investment Bank Power.   The review of the financial literature in Chapter

3 illustrated the relationship between underwriter reputations and IPO market behaviors.   In

general, stocks underwritten by prestigious investment banks were underpriced less and resulted

in the payment of higher underwriting commissions and less post-IPO flipping of the stock.

Underwriter reputation has been treated in the financial literature as merely a crude signaling

device.   Finance researchers use investment bank reputation as a proxy for a variety of more

qualitative factors to which banks are assumed to be privy, due to their intimate association with

the offering firm.   Finance researchers have not attempted to control for these other factors and

have not examined whether advisor reputation adds value in addition to what it purportedly

signals about the offering firm.   Organizational researchers (e.g., Fombrun, 1996; Hall, 1992;

Roberts & Dowling, 1997) have argued that organizational reputation is a valuable intangible

asset and that its value is loosely coupled with the activities or resources from which the

reputation was originally constructed.   Investment bank reputation may therefore be considered a

resource which offering firms can "rent" when they hire a reputable bank to underwrite their IPO.

If these authors are correct, controlling for the other factors which underwriter reputation is

supposed to represent, underwriter reputation should have an independent main effect upon the

valuation of the IPO.   The following hypothesis is proposed:

Hypothesis 3a: All else equal, high investment bank reputation will be associated with greater
              stock premiums over book value

     Carter & Dark (1993) conducted a study examining the relationship between underwriter

reputation and the type of investors (short- or long-term time horizon) to whom the underwriter

sold stock.   They found that as underwriter reputation increased, the volume of trading in the

week and month after the IPO also increased, up to an inflection point. Beyond this inflection point, continued increases in reputation were associated with a decreasing volume of trading activity. They argued that the least reputable banks were selling primarily to retail investors who were buying for the long-term and that the most reputable banks were selling to institutional investors with long-term time horizons. Banks in the middle reputational tiers were more likely to sell to institutional investors with short time horizons, or "flippers." This explanation is consistent with Hayes' (1970) description of middle tier investment banks as primarily sales and distribution oriented entities ("wirehouses") with small underwriting operations.

Several organizational studies (Eccles & Crane, 1988; Podolny, 1993, 1994) have verified the importance of reputation to underwriters. It therefore stands to reason that reputational concerns may influence the ownership structure of a company's stock. High reputation underwriters have the greatest access to institutional investors with both the desired time horizon and the capital necessary to purchase large blocks of shares (Ferris et al., 1992). Investment banks with reputations to protect will be looking to stabilize the market for the stocks they are underwriting and should therefore be more likely to place larger blocks of stocks with these investors. The following hypothesis is proposed:

Hypothesis 3b: All else equal, high investment bank's reputation will be associated with more concentrated post-IPO ownership of the company's stock.

Given that high reputation banks are expected to underwrite firms with greater investment potential, however, an alternative to hypothesis 3b is that, all else equal, offerings underwritten by prestigious banks should experience greater investor demand. The underwriter will have to ration shares of the offering among investors and will have to satisfy the demands of a greater number of investors. This suggests that high underwriter reputation should be associated with more

dispersed, rather than more concentrated levels of stock ownership. The following alternative hypothesis is thus proposed:

Hypothesis 3c: All else equal, high investment bank's reputation will be associated with less concentrated post-IPO ownership of the company's stock

Finally, Fombrun (1996) has suggested that high reputation actors can demand premiums for the products and services that they offer. A strong reputation helps reduce uncertainty regarding the quality of the asset. Prior IPO research also indicates that high reputation underwriters obtain more revenue for offering firms from the market (Ritter, 1991). Given that reputation is a source of power for the underwriter, prestigious underwriters should, all else equal, be able to demand a premium for their involvement in an offering. The following hypothesis is proposed:

Hypothesis 3d: All else equal, high investment bank reputation will be associated with higher underwriting commissions

4.3 Social Embeddedness and its Role in Maintaining Market Integrity

4.3.1 Embeddedness and Market Activity

The structure of transactional relationships in the IPO market is a source of both resources and constraints. How a firm is connected to its network, and the level of benefits apportioned in the network, influence a firm's effectiveness and economic well-being. Granovetter (1985) has argued that repeated social interactions allow transacting parties to develop more detailed knowledge about each other and thus promote trusting relationships. This "embeddedness," as Granovetter terms it, influences market dynamics over and above strictly economic motivations.

Baker (1990) and Uzzi (1996) used the concentration of exchange with a transaction partner to evaluate the level of embeddedness in the financial and textile markets respectively. Small and frequent interactions are useful in developing familiarity and trust, but unless the

volume of exchanged resources increases, the relationship can become expensive to maintain. Baker (1990) found that when managing their relationships with investment banks, firms that engaged in larger and more frequent transactions possessed power advantages in the relationship. He also found that powerful firms balanced the number of their transactions with their relationship banks against the number of transactions using other banks as the lead bank. However, spreading business too thinly made a firm an unprofitable account, and banks stopped vying for its business.

Uzzi (1996) found that embedded ties facilitate access to resources in a clothing production network. Arm's length ties allow garment contractors to test a greater variety of potential trading partners. Such ties are also characterized by greater access to general market information. On the other hand, arm's length ties lack the trust, fine grained information transfer, and joint problem solving arrangements that characterize the embedded and frequent transactions garment houses use for the bulk of their subcontracting work. Uzzi's findings suggested that the optimal transactional structure for enhancing a contractor's survival consists of embedded ties with garment houses that possess a mixture of embedded and arm's length ties with other contractors in the market (an integrated network form). Uzzi argued that integrated networks are likely to contain the most benefits and have the greatest adaptive capacity because they preserve the benefits of embeddedness while preventing a firm from becoming insulated from important market information.

Higher concentrations of exchange create greater interdependencies among the exchange partners (Pfeffer & Salancik, 1978). Given a finite level of resources to trade, the exchange of a greater proportion of these resources with a given partner means that these resources are unavailable for exchange with other potential partners. The focal organization is therefore unable to develop similar types of relationships with others and over time becomes reliant upon its

embedded exchange partners. To the extent that the resources exchanged represent a greater proportion of trading activity for one partner than the other, an asymmetry exists in the relationship which can be used to constrain and direct the behaviors of the other partner.

4.3.2 Embeddedness Hypotheses

Investment banks may use embedded relationships which they develop with buyers and sellers to moderate power asymmetries which may exist in a transaction. If the power bases of both the buyers and the sellers are relatively equal, an investment bank may not have to manage the interdependencies as actively and can let "nature take its course" in the price setting and share allocation process. If, however, a significant power asymmetry exists, banks may use the trust and goodwill they have built up with embedded transaction partners to intercede on the weaker party's behalf.

Bank/Investor Embeddedness. To the extent that an investment bank places a large percentage of its offerings with a few institutional investors, it becomes more embedded with these investors. If embedded relationships exist, banks and investors should be more willing to engage in activities that benefit the other party. For example, investment banks would like institutional investors to purchase large portions of all their offerings, strong and weak, and hold them for long periods of time. Doing so reduces the costs to the investment bank of underwriting an offering (Carter & Dark, 1993). Institutional investors would like underwriters to set lower stock prices so that their opportunities for earning a high return on their investment is increased.

Given that embedded transaction partners participate in multiple offerings together, investors and banks should be willing to do each other "favors" on a given transaction, with the understanding that the favor will be returned on a future transaction. For example, banks may be able to prevail upon investors to pay slightly higher prices and purchase larger shares of their

weaker offerings with the understanding that they will provide investors with the opportunity to

"recoup" potential losses by giving them more favorable pricing and larger allocations of more

desirable offerings in the future. The trust which has built up between the bank and the investor

during previous transactions provides the basis for expecting that such agreements will be kept

(Shapiro, 1987; Uzzi, 1996; Zucker, 1986). The following hypotheses are proposed:

Hypothesis 4a: All else equal, higher levels of underwriter embeddedness with institutional investors will be associated with higher stock premiums over book value for lower investment quality firms and lower stock premiums over book value for higher investment quality firms

Hypothesis 4b: All else equal, higher levels of underwriter embeddedness with institutional investors will be associated with greater post-IPO ownership concentration of the company's stock for lower investment quality firms and lower post-IPO ownership concentration of the company's stock for higher investment quality firms

Bank/Venture Capitalist Embeddedness. Since the IPO is typically the first time that the

selling company has made use of the services of an investment bank, a bank will not have

developed a relationship with the company itself. Banks may have had opportunities, however, to

develop relationships with company insiders. The executives of the company may have

participated in IPOs in the past, or may have been on the management teams of public companies

who used the services of investment banks. Venture capitalists (VCs), who make money by

taking the companies they fund public, also have substantial experience in dealing with banks. As

a key advisor to the management team (Bygrave & Timmons, 1992), the venture capitalist is in a

unique position to influence which underwriter is selected to handle the IPO. Just as underwriters

may develop embedded relationships with institutional investors with whom they repeatedly

transact, so to may banks develop similar types of relationships with venture capitalists who

repeatedly recommend them to handle the IPOs of companies in which they invest. Since hiring

an investment bank is an all-or-nothing proposition for a VC, the total number of VC funded IPOs

which a bank handles represents the degree of concentration in their exchange relationship. VCs

will recommend certain investment banks repeatedly if the banks meet their performance

expectations.

Like bank/investor relationships, VCs and banks should be more willing to do favors for

one another. Not all institutional investors are multi-billion dollar monoliths. Some funds have

fewer assets to invest, so taking a significant position in any one offering is riskier for them than it

would be for larger institutional investors. In order to make sure that these smaller funds continue

to participate in the IPO market, investment banks may use their embedded relationships with

VC's to get them to agree to a lower stock price. Conversely, banks may actively pursue higher

prices from institutional investors for less attractive firms backed by a VC with whom the bank

has embedded relationships. Banks may also prevail upon investors to purchase larger blocks of

these less attractive offerings than would otherwise be the case. Thus, as with investor

embeddedness, embedded relationships with VCs will tend to moderate the effects of buyer

power. The following hypotheses are proposed:

Hypothesis 5a: All else equal, higher underwriter embeddedness with a company's venture
                capitalist will be associated with higher stock premiums over book value for
                smaller institutional investors and lower stock premiums over book value for
                larger institutional investors

Hypothesis 5b: All else equal, higher underwriter embeddedness with a company's venture
                capitalist will be associated with more concentrated post-IPO ownership of the
                company's stock for smaller institutional investors and less concentrated post-IPO
                ownership of the company's stock for larger institutional investors

Finally, banks who have embedded relationships with VCs can expect VCs to use them to

underwrite multiple offerings in the future. Over a number of transactions this should result in a

greater volume of commissions for the bank, as well as lower costs associated with acquiring new

business. In return, banks should be willing to give the VCs more favorable terms on

underwriting commissions for each offering they conduct on their behalf. The following

hypothesis is proposed:

Hypothesis 5c: All else equal, higher underwriter embeddedness with a company's venture
capitalist will be associated with lower underwriting commissions

CHAPTER 5: DATA AND RESEARCH METHODS

In this chapter I will describe the data sources used in this study, the dependent and independent variables used to test the research hypotheses, and how they are constructed, and the analytical techniques used in the analysis.

5.1 Data

The S-1s filed for all IPOs in 1992 are the primary source of data for this study. The year 1992 was chosen because it offered a sufficiently large number of IPOs, and it allowed for a sufficient number of IPOs in the prior year to calculate the underwriter reputation and embeddedness measures. Closed end mutual funds, real estate investment trusts (REITS), unit offerings, spin-offs, demutualizations of savings banks and insurance companies, and reverse LBOs have been excluded from the analysis. Unit offerings were excluded because of the problems associated with valuing the stock portion of the unit. Reverse LBOs and spin-offs were excluded because as formerly public, and parts of formerly public, companies, the market has a great deal more information about these firms and may therefore perceive them differently. The final sample contains 246 IPOs, 147 of which received venture financing prior to going public. Missing institutional investor data reduced the sample to 176 firms for the premium over book value and ownership concentration analyses.

Institutional investor ownership data was drawn from Disclosure's *Compact D SEC* database collection for 1991 and 1992. This data was used to calculate bank/investor embeddedness and ownership concentration. Data on underwriting syndicates used to calculate underwriter reputation were drawn from *Compact D*, another database product from Disclosure. Institutional investor size information was drawn from *Institutional Investor* magazine's annual

listing of the 300 largest investment managers, as well as the *CDA/Wiesenberger Investment*

Companies Yearbook.

5.2 Dependent Variables

Three dependent variables were used in this study: (1) the stock price premium paid over

the book value per share of stock, (2) the ownership concentration of the stock, and (3) the

percentage level of underwriting commissions.

Premium Over Book Value. The premium over book value (POBV) represents the

estimated value of a company beyond the liquidation value of its tangible assets. The book value

per share of a firm is calculated using the formula BV = (total assets - total liabilities)/total

outstanding shares. The total assets of a company include the net proceeds to the company from

the IPO. Total outstanding shares includes both the shares offered at IPO and those retained by

insiders. The premium per share equals share price minus book value/share. The premium per

share is then divided by the share price to determine POBV. Dividing by the share price

standardizes the premiums across all share values (Welbourne & Andrews, 1996). Because the

values for this measure ranged from 11.44% to 492.57% (mean = 70.79%), POBV was logged to

reduce the effect of extreme values upon the analysis.

Ownership Concentration. Ownership concentration (OC) was calculated using

institutional ownership data obtained from Disclosure. All institutional investors are required to

file a listing of their holdings with the SEC at the end of each quarter. Disclosure's Compact D

SEC database provides a listing, by company, of all institutional shareholders and the amount of

stock they own at the end of the quarter in which the company went public. Although

shareholdings data based upon the initial placement of stock would have been preferable, this data

is not publicly available. Consistent with previous research using concentration ratios (e.g.,

Baker, 1990; Uzzi, 1996), ownership concentration was calculated using a Herfindahl index. The index is calculated using the formula $OC_j = \sum O_{ij}^2$ where O_{ij} represents the ownership percentage of each institutional investor i of company j. Larger values of OC indicate more concentrated stock ownership.

Underwriting Commissions. Underwriting commissions equal the gross commissions paid to underwriters divided by the total value of the offering.

5.3 Investment Quality Variables

Gutterman (1991) lists seven factors which he suggests the investment community uses in assessing a new issue: past financial performance, management quality, terms of the offering, risk factors, industry, underwriter reputation, and past investment history. Variables representing the first four categories will be presented in this section. Industry will be discussed under control variables. Underwriter reputation will be discussed in its own section. Information on previous private financing, VC quality, etc. is beyond the scope of this study. An index measure of the overall investment potential of the firm was created by converting each investment quality variable into its z-score equivalent and summing the z-scores of all the investment quality variables. Creating an index measure of firm quality captured the multidimensional nature of this construct and allowed me to interact firm quality with other variables.

5.3.1 Financial Performance

Sales and Net Income. Two indicators were used to operationalize financial performance; sales in 1991 and net income before interest and taxes in 1991. The ability of a firm to show a revenue stream and the ability to generate profits at the time of the IPO suggest that the firm has greater potential to survive (Gutterman, 1991; Lipman, 1997). Given the great variability in sales ($0 to $674 million, mean = $59.1 million), this measure was logged to reduce the effects of

extreme values upon the analysis. A 1 was added to all sales values prior to logging to avoid taking the log of 0 for those companies with no sales. Because a large number of companies have negative earnings, net income was not logged.

5.3.2 Management Quality Variables

An important factor in gaining the trust of the financial markets is adopting the legitimating organizational structures and practices which investors identify with successful public firms (Dowling & Pfeffer, 1975; Suchman, 1995). Evidence that a firm understands what it takes to survive as a public company decreases one source of risk, i.e., management's ability to successfully adapt and survive in its new environment. The three indicators of management quality used in this study were the number of outsiders on the board, average management team tenure, and the percentage of the offering represented by insider selling of stock.

Number of Outsiders on the Board. Jensen & Meckling (1976) have suggested that larger numbers of outside directors on a company's board can provide greater oversight and protection of the interests of outside stockholders. Strategically selecting outside directors can also enhance resource acquisition by linking a company with important constituencies in its environment (Pfeffer & Salancik, 1978; Stearns & Mizruchi, 1993a,1993b). Andrews (1995) found that the number of outside directors on a board was positively associated with a company's POBV. The number of outsiders on the board equaled the number of non-executive, non-financier (e.g., VCs and angels) board members listed in the S-1.

Average Management Team Tenure. Evidence that management team members have worked together for several years is an important indicator that a company's top managers can function together effectively as a team (Smith, 1994). Average management team tenure was

calculated by adding up the tenure with the company of each management team member listed in the S-1 and then dividing by the total number of management team members.

Insider Selling. The sale of stock by insiders as part of the IPO provides important signals to investors about their views regarding the firm's long-term potential (Gompers, 1996; Lin, 1993). Since many IPOs include lock-up provisions which prevent insiders from selling stock for at least 180 days after the IPO (Gompers, 1996; Teoh, Welch & Wong, 1997), some inside selling may not be unusual. However, the larger the proportion of the offering which is made up of secondary, or insider, stock, the more likely it is that firms are capitalizing on momentary market or corporate financial conditions to cash out at the investors' expense. If investors think that insiders are taking advantage of conditions which cannot be sustained in order to cash out, they will be less likely to pay a high price for the company's stock (Ritter, 1991). The degree of insider selling was calculated by dividing the number of secondary shares included in the offering by the total number of shares being offered.

5.3.3 Characteristics of the Deal

Offering Size. Offering Size was operationalized as the gross revenues generated by the offering. Offering size signals important information to investors. Large offerings are riskier for both the issuer and the investment bank to undertake. If the price of a stock is set too high, and/or more shares are offered to the public than can be sold, an offering is likely to fail. Failed offerings damage the reputation of the investment bank, can become expensive if the underwriter is stuck with a large block of unsold stock, and can make it more difficult for the issuing firm to go back to the equity market for capital in the future. Therefore, all else equal, larger offerings indicate a greater level of confidence on the part of the issuer and the underwriter in the underlying value of the company. They also suggest that there will be a sufficiently liquid

aftermarket in which to trade the stock. Given the tremendous range in the size of the offerings, this variable was logged to reduce the effect of extreme values.

5.3.4 Risk Factors

Previous research on IPOs has used the number of risk factors listed by a company in its S-1 as a proxy for risk (Andrews, 1995; Beatty & Zajac, 1994, Nelson, 1998; Welbourne & Andrews, 1996). The more risk factors listed, the riskier the offering is perceived to be. I also used the number of risk factors as a proxy for firm risk. The total number of risk factors, not including "boiler plate" factors, were counted. Boiler plate risk factors are included for legal reasons, but provide no substantive information and are of no conceptual significance. These include such risk factors as no prior public market for the company's stock, dilution of shareholdings due to the offering, potential for delisting from NASDAQ, and no expectation of payment of dividends. Prior IPO research (e.g., Nelson, 1998; Welbourne & Andrews, 1996) has also excluded these boiler-plate risk factors.

5.4 Institutional Investor Capitalization

Institutional investor capitalization was measured as the total assets under management at the end of 1991 by the institutional investor which owned the largest proportion of the company's stock. This variable was logged to prevent extreme values from driving the analysis.

5.5 Investment Bank Reputation

Over the past six years, an investment bank's position in tombstone announcements has become the most frequently used basis for approximating investment bank reputation (Carter & Manaster, 1990; Podolny, 1993). On every tombstone, below the managing underwriters appears a list of underwriters participating in the offering syndicate. As discussed in great detail by Hayes (1970) and Eccles and Crane (1988), several status classes exist within the investment banking

industry. These class orderings are reflected in the syndication listings. Underwriters are listed alphabetically within each class. Class membership is based largely upon the repute of a bank's partners, its capital strength, its distribution power, and its ability to attract "major business" (Hayes, 1970).

Carter and Manaster created a rank ordering system based upon whether or not a given bank appeared above or below other banks in tombstone announcements. Podolny (1993) criticized this method on the grounds that the number of brackets varies from tombstone to tombstone and some banks may be occasionally listed out of their usual order when they receive an unusually large or small portion of the offering. In his studies (Podolny, 1993, 1994), Podolny used a complex Bonacich centrality measure which he argued represented status when based upon asymmetric ties. I agree that the Carter and Manaster measure has some flaws, however I chose not to use Podolny's status measure because reputation, as conceptualized in this paper, is different than the status orderings used by Podolny. Whereas in Podolny's conceptualization the status of Bank A depends in part on its standing relative to Bank B, in this study the reputations of Bank A and Bank B are independent of each other. I therefore developed an alternative method of calculating reputation which overcomes the weaknesses of the Carter & Manaster measure, but which is consistent with my conceptualization of reputation, and which is easier to calculate than Podolny's measure. For each syndicate used, underwriters were assigned a value equal to the inverse of their status levels divided by the total number of status levels. For example, if there were three status levels in a syndicate, those firms in the highest class are assigned a 1, those in the middle class were assigned a .67, and those in the lowest class were assigned a .33. These reputational scores R_{ij} (the rank of investment bank i in offering j) are then summed across all offerings and divided by the total number of offerings in which the firm

participates as a syndicate member ($IR_i = (\sum R_{ij})/n_j$). The resulting score IR_i reflects the average reputational ranking for an investment bank i across all offerings in which it participated. This method adjusts for variance in the number of classes, and minimizes the effects of occasional "out of order" rankings.

A reputation measure has been calculated for all investment banks who participated in any of the sample of 89 underwriting syndicates drawn from IPOs conducted in 1991. These syndicates included 3365 participants, representing 261 different investment banks. A partial listing of these reputational ranks are included in Appendix A[2]. Syndicates from 1991 were used because they were available, they reflected the current status orderings in the market, and they were temporally distinct from the sample companies used in this study.

5.6 Embeddedness Variables

The best institutional ownership information available is the amount of stock owned by each institutional investor at the end of the quarter in which the company went public. Three factors conspire to make it impossible to identify precisely how much stock was sold by a given bank to a given institutional investor at the time of an IPO. First, approximately 70% of all IPOs are managed by more than one investment bank. Second, approximately 75% of all IPOs are syndicated. In syndicated offerings, a large number of additional banks are allocated smaller pieces of the offering to distribute. Third, institutional investors who participate in an offering have the power to designate which investment banks get credit for their purchase. For a given offering, an institutional investor may be contacted by representatives of ten to twenty different banks participating in the offering. Of these banks, the institutional investor will designate those

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[2] Appendix A also contains the embeddedness scores for those banks on which data was available.

banks it feels were the most responsible for influencing its decision to purchase the shares and what percentage of the purchase should be allocated to each bank (Hurwitz, 1997).

Given these limitations, the most effective way to calculate underwriter embeddedness with institutional investors was to focus on the co-occurrence of participation in offerings by investment banks and institutional investors. This approach adds noise to the embeddedness measures, since invariably banks will be associated with institutional investors to whom they didn't actually sell stock. However, the increase in error variance, as long it is unsystematic, serves to make the measures a conservative test of the embeddedness hypotheses, since actual levels of embeddedness are likely to be somewhat higher than predicted.

5.6.1 Bank/Investor Embeddedness

The level of investment bank embeddedness with institutional investors (IIE) was calculated using the formula $IIE_i = D_i * \sum (I_{ij}/ D_i)^2$, where D_i equals the number of deals which investment bank i participated in as a lead or co-manager, and I_{ij} represents the total number of offerings in which investment bank i participated as a lead or co-manager of the offering, and which were owned by each institutional investor j. This measure captures elements of both the frequency and concentration of participation (Baker, 1990; Uzzi, 1996). It also overcomes a computational problem associated with using the concentration ratio alone in cases where an investment bank participated in only one offering. In these cases the concentration ratio would be 100%, and firms which participate in the market infrequently would be mistakenly identified as its most embedded participants.

5.6.2 Bank/Venture Capitalist Embeddedness

Investment bank embeddedness with venture capitalists (VCE) was calculated using information on 132 venture backed IPOs conducted during 1991. VCE was calculated for each

investment bank using the same procedure described for bank/investor embeddedness. The formula $VCE_i = D_i * \Sigma (V_{ij}/ D_i)^2$ where D_i equals the number of deals which investment bank i participated in as a lead or co-manager, and V_{ij} represents the total number of all offerings in which investment bank i participated as a lead or co-manager of the offering, and in which venture capitalist j owned stock.

5.7 Control Variables

5.7.1 Industry Dummies

Systematic differences can exist between companies in different industries for both the independent and dependent variables. Different industries can also be considered "hot" in any one year (Ritter, 1984), which could result in systematic differences in how IPOs for companies in these industries were priced and allocated. To control for these potential effects, I included six industry dummy variables in the analysis. The industry classifications used were Biotechnology, Software, Electrical Manufacturing, Financial, Retail, and Services[3]. The excluded category included other manufacturing, building construction, transportation, warehousing, and oil and gas extraction. These categories capture the variety of industries represented in the IPO market in 1992, but are concise enough that they do not use up too many degrees of freedom. They also take into account those industries which are represented more heavily in the IPO market than they may be in the market in general.

5.7.2 Quarter Dummies

Since particular industries, and the IPO market in general, can go in and out of favor in less than a year (Ritter, 1984), I included quarter dummies to control for within-year variances in the IPO market.

5.7.3 Age of Firm at IPO

Firm age at IPO was calculated as the years since incorporation. Younger firms are subject to a greater likelihood of failure for a variety of reasons (Hannan & Freeman, 1989; Stinchcombe, 1965). Since older firms typically have greater levels of slack resources, they should have a greater probability of surviving the change from private to public status. Older firms should also have stronger financials and will be perceived as less risky by investors. Given that firm age ranged from 0 to 115 years, this variable was logged to reduce the effects of extreme values on the analysis.

5.7.4 VC Backing

VC Backing is a dummy variable coded "1" if a company received venture financing while a privately held firm and coded "0" otherwise. This variable was especially important in the regressions testing the hypotheses regarding underwriter embeddedness with VCs. Since embeddedness with venture capitalists was unlikely to be a relevant consideration in cases where a company received no venture financing, this variable was interacted with the embeddedness with VCs and the embeddedness with VCs x investor size interaction when testing hypotheses 5a-5c. In addition, it was possible that there were differences between VC backed and non-VC backed offerings which were not captured by the other measures used in the analysis. For example, Megginson & Weiss (1991) found evidence that VC backed firms pay lower underwriting premiums, experience less underpricing in the secondary market, and that institutional investors purchase a larger proportion of VC backed offerings than of non-VC backed offerings. VC backing was therefore included as a control in all of the regression models.

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[3] See Appendix C for details regarding the industries included within each of these categories.

5.8 Method of Analysis

OLS regressions using *Stata 5.0* were used to predict premium over book value,

ownership concentration, and underwriting commissions. OLS regressions are appropriate given

the cross sectional design, the exploratory nature of this study, and the nature of the hypotheses.

CHAPTER 6: RESULTS

In this chapter I present descriptive statistics for all the variables used in the analysis,

additional descriptive statistics for characteristics of the IPO firms themselves, and correlations

among the variables. I also present the substantive findings of the analysis and discuss whether or

not they support the research hypotheses. A more detailed interpretation of the findings and their

implications will be presented in Chapter 7.

6.1 Descriptive Statistics

6.1.1 Variables Used in the Analysis

Table 5

Descriptive Statistics Entire Sample (246 Companies)					
Variable	N	Mean	Standard Deviation	Minimum	Maximum
Ln Premium/Book Value	246	4.19	0.37	2.44	6.20
Premium/Book Value	246	70.79	33.72	11.44	492.57
Ownership Concentration	246	0.04	0.04	0.00	0.22
Underwriting Commissions	246	0.07	0.01	0.01	0.10
Finance Dummy	246	0.07	0.26	0.00	1.00
Biotech Dummy	246	0.09	0.29	0.00	1.00
Electronic Manufac Dummy	246	0.22	0.41	0.00	1.00
Retail Dummy	246	0.18	0.38	0.00	1.00
Service Dummy	246	0.20	0.40	0.00	1.00
Software Dummy	246	0.11	0.32	0.00	1.00
Quarter 1	246	0.33	0.47	0.00	1.00
Quarter 2	246	0.28	0.45	0.00	1.00
Quarter 3	246	0.16	0.37	0.00	1.00
Ln Age	246	2.12	0.91	0.00	4.74
Age	246	13.19	16.54	0.00	115
VC Backing	246	0.59	0.49	0.00	1
Ln Investor Size 1991	176	9.82	2.11	0.00	12.01
Investor Size 1991 (millions)	176	50,478.28	54,419.75	0	164,900
Firm Quality Index	246	0.00	3.25	-8.03	12.35
Underwriter Reputation	246	0.83	0.24	0.00	1.00
Inv Bank Embeddedness w/Investors	246	67.82	51.58	0.00	157.25
Inv Bank Embeddedness w/VCs	146	4.20	2.55	0.00	16.00

Table 6

Descriptive Statistics Complete Data (176 Companies)					
Variable	N	Mean	Standard Deviation	Minimum	Maximum
Ln Premium/Book Value	176	4.19	0.36	2.44	6.20
Premium/Book Value	176	70.45	37.09	11.44	492.57
Ownership Concentration	176	0.05	0.04	0.00	0.22
Underwriting Commissions	176	0.07	0.01	0.01	0.10
Finance Dummy	176	0.08	0.27	0	1.00
Biotech Dummy	176	0.11	0.31	0	1.00
Electronic Manufac Dummy	176	0.19	0.40	0	1.00
Retail Dummy	176	0.16	0.37	0	1.00
Service Dummy	176	0.20	0.40	0	1.00
Software Dummy	176	0.13	0.34	0	1.00
Quarter 1	176	0.34	0.48	0	1.00
Quarter 2	176	0.31	0.46	0	1.00
Quarter 3	176	0.13	0.34	0	1.00
Ln Age	176	2.06	0.89	0	4.74
Age	176	12.10	15.35	0	115
VC Backing	176	0.59	0.49	0	1
Ln Investor Size 1991	176	9.82	2.11	0	12.01
Investor Size 1991 (millions)	176	50,478	54,420	0	164,900
Firm Quality Index	176	0.00	3.21	-8.03	10.99
Underwriter Reputation	176	0.84	0.24	0	1.00
Inv Bank Embeddedness w/Investors	176	68.86	50.73	0	157.25
Inv Bank Embeddedness w/VCs	103	4.24	2.64	0	16.00

Table 5 presents the number of observations, means, standard deviations, minimums, and maximums for each of the variables used in the analysis, as well as the unlogged values for POBV, Age, and Investor Size. Although the full sample includes 246 companies, missing institutional investor data reduced the number of observations available for the POBV and ownership concentration analyses to 176. Table 6 presents descriptive statistics for the reduced set of observations actually used in these analyses. In order to assure comparability between the full data set and the reduced data set, t-tests were conducted for each variable, comparing the 176 observations used in the analysis to the 70 omitted observations. These tests revealed no

significant differences in the samples except with regard to the Biotech dummy, the Quarter 2, and Quarter 3 dummies, and ln Age. All differences were at the $p < .10$ level. There were no significant differences at the $p < .05$ level. In the cases of the Biotech and Quarter 2 dummies, the differences were due primarily to the fact that most of the IPOs which fell into these categories are already included in the set of 176 observations.

The first half of 1992, with 61% of the offerings, saw a more active IPO market than the second half of the year. Overall, 7% of the IPOs in the sample are in finance, 9% are in biotech, 22% are in electrical manufacturing, 18% are in retail or wholesale, 20% are service companies, and 11% are in software. The remaining 13% of the companies are in other manufacturing, transportation, warehousing, construction, and oil and gas extraction. VCs provided pre-IPO financing for 59% of the companies in the sample. The average POBV is nearly 71% and ranges from 11.5% percent to nearly 500%. Average Ownership Concentration is .04 and ranges from 0 to .22. The average gross underwriting commissions paid are 7% and range from 1% to 10%[4]. Although the standard deviation for this variable is small, a Kolmogorov-Smirnov test indicated that this measure is normally distributed. The mean age of companies in the sample is just over 13 years. The median age, however, is 7 years. The presence of several older companies in the sample is most likely responsible for the difference between the mean and median age. It is difficult to interpret the Firm Quality Index by itself, since it represents the sum of z-scores for seven different variables. The broad range of values (-8.03 to 12.35), however, suggests good variance in this measure. The average size of the institutional investor which owned the largest proportion of the company's stock is nearly $50.5 billion, and ranges from no institutional

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[4] One company in the sample self-underwrote its offering and thus used the services of a broker only in those states where it was required by law. This is why its underwriting commissions were only 1.24%. The next lowest level of underwriting commissions paid was 5.15%. Dropping this company did not change the results of the analysis.

investor ownership to $165 billion. The mean reputation score of the lead investment bank for each IPO is .83. As with IPO firm quality, the investment bank embeddedness measures are difficult to interpret directly. Both variables, however, appear to have good variance.

Given the high mean reputation score for the underwriters, the distribution of underwriting activity among investment banks bears some further examination. Appendix B presents additional information regarding underwriter activity in the IPO market during 1992. Although no one investment bank acts as lead manager for more than eight percent of the 246 IPOs in the sample[5], the ten most active banks function as lead managers for 46.75% of the sample. Nine of the ten banks have reputation scores of 1.00. William Blair (9 IPOs as lead manager, reputation score = .70) is the most active bank not in the top reputational tier. Seventy one different investment banks led at least one IPO during 1992, and 91 different banks participated in at least one IPO as either a lead or co-manager. In all, 23 underwriters with reputation scores of 1.00 are lead managers for 59% of the offerings during 1992. Although a small group of high reputation investment banks are clearly the most active participants in the IPO market, and one third of the lead underwriters have the highest possible reputational score, it appears that the 1992 IPO market still drew active participation from a wide variety of investment banks.

6.1.2 IPO Company Variables

Table 7 presents some additional descriptive statistics on the IPOs in the sample. The average share price for IPOs conducted during 1992 is $11.28, and share prices range between $4.50 to $24 a share. The average number of shares offered is 2.8 million, and the average gross proceeds generated is $35.1 million, although the total value of the offerings range from

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[5] Montgomery Securities acted as lead manager on 19 IPOs, or 7.72% of the sample

Table 7

| | | | Standard | | |
Variable	N	Mean	Deviation	Minimum	Maximum
Descriptive Statistics for Companies Going Public					
Share Price	246	11.28	3.94	4.50	24.00
Number of Shares Offered	246	2,767,760	2,223,795	600,000	23,500,000
Total Value of Offering	246	35,190,539	40,227,156	2,700,000	399,500,000
Sales in 1991 (millions)	246	59,059	102,359	0	674,031
NBIT 1991 (millions)	246	4,439	11,869	-28,889	96,925
Avg Management Team Tenure	246	5.38	4.19	0.00	25.00
Outsiders on the Board	246	1.85	1.51	0.00	7.00
Percentage of Insider Selling	246	13.10	18.71	0.00	94.25
Number of Risk Factors	246	9.94	3.02	3.00	18.00

$2.7 million to nearly $400 million. On average 13.1% of the offering is comprised of shares being sold by insiders, although 57% of the offerings include no insider sales of stock, and 76% of the offerings include 25% or less insider shares. Thus, although the majority of offerings do not include insider sales, nearly a quarter of the offerings include substantial proportions of insider shares.

The average level of sales in 1991 is $59 million. However, just under four percent of the companies have no sales in the year prior to their IPOs, and 20% of the companies have sales of less than $5 million. Average Net Income Before Interest and Taxes is $4.4 million and ranges between -$28.9 million and $96.9 million. Median net income, however, is only $2.4 million. Almost 29% of the companies in the sample have negative earnings in 1991, and 73% of the companies have net incomes of less than $5 million. Clearly substantial revenues and profits are not a prerequisite for going public.

The mean level of average management team tenure is 5.38 years and ranges from 0 to 25 years. The median level is 4 years. Sixteen percent of the of the management teams have an

average tenure of two years or less at the time their companies go public. The mean level of non-VC outsiders on the board of directors is just under two, which is also the median number of directors. Almost 24% of the companies have no outsiders on their boards, and 72% of the companies in the sample have two or less outside directors. Finally, the average company listed approximately ten substantive risk factors associated with the offering in its prospectus, although the number ranges from three to eighteen.

6.1.3 Correlations

Table 8 presents the bivariate correlations among each of the variables used in the analysis. An examination of these correlations shows that of the theoretical variables, only underwriter embeddedness with institutional investors is significantly related to POBV. All of the theoretical variables are significantly correlated with ownership concentration. Similarly, all of the theoretical variables are negatively correlated with underwriting commissions. The negative correlation between underwriter reputation and commissions is opposite the relationship predicted in hypothesis 3d.

Because a number of the independent variables are moderately to highly correlated, Variance Inflation Factor (VIF) scores were calculated for the independent variables in each regression model presented in Tables 9 through 11. Kennedy (1993) suggests that VIF scores greater than 10 indicate potential collinearity problems. Only the models that included the underwriter embeddedness with VCs interactions exhibit variables with VIF scores that exceed this level. Except for these models, the average VIF score for the models never exceed 3, and VIF scores for individual variables never exceed 8. Collinearity is therefore not expected to be a

Table 8

Variable	Var Num	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
									Correlations											
Ln Premium/Book Value	1	246																		
Ownership Concentration	2	246	0 18																	
Underwriting Commissions	3	246	-0 06	-0 18																
Finance Dummy	4	246	-0 40	0 03	-0 11															
Biotech Dummy	5	246	0 00	-0 03	0.17	-0 10														
Electronic Manufac Dummy	6	246	0 06	0 00	0 03	-0 14	-0 17													
Retail Dummy	7	246	0 04	-0.13	-0 07	-0 13	-0 15	-0 21												
Service Dummy	8	246	0 12	-0 05	0 03	-0 15	-0 18	-0 25	-0 22											
Software Dummy	9	246	0 07	0 09	0 03	-0 11	-0 13	-0 18	-0 16	-0 19										
Quarter 1	10	246	-0.01	0 06	-0 01	-0 08	0 17	0 16	-0 25	0 04	-0 04									
Quarter 2	11	246	-0 03	0 10	-0 01	-0 11	-0 08	0 07	0 11	-0 11	-0 02	-0 48								
Quarter 3	12	246	0 10	-0.11	0 02	0 01	-0 03	-0 15	0 15	0 05	0 01	-0 28	-0 26							
Ln Age	13	246	-0 06	0 06	-0 08	-0 03	-0 18	-0 02	0 26	-0 19	0 05	-0 20	0 03	-0 12						
VC Backing	14	246	0 07	0 10	-0 08	-0 14	0 14	0 21	-0 26	-0 02	0 10	0 19	0 05	-0 05	-0 17					
Ln Investor Size 1991	15	176	-0 08	0 20	-0.24	0.11	-0.09	0 02	0 00	-0 07	0 00	-0 15	0 19	0 01	0 13	0 00				
Firm Quality Index	16	246	0 06	0 18	-0.40	0 25	-0.35	0 04	0 08	-0 22	0 05	-0 12	-0 02	-0 06	0 46	-0 21	0 15			
Underwriter Reputation	17	246	0 09	0.32	-0 37	0.10	-0 08	0 06	-0 01	-0 21	0 12	0 05	0 04	-0 02	0 08	0 22	0 22	0 45		
Inv Bank Embeddedness w/Investors	18	146	0 25	0 31	-0 38	0 00	-0 12	0 05	-0 04	-0 09	0 14	0 06	0 02	-0 11	0 07	0 22	0 07	0 50	0 77	
Inv Bank Embeddedness w/VCs	19	146	0 18	0.27	-0 27	-0.08	-0.01	0.08	0.01	-0 01	0.06	0 01	0 03	-0 09	0 00	0 13	0 09	0 22	0 57	0 56

p < 10 for r > 10
p < 05 for r > 13
p < 01 for r > 16

70

significant problem in the analyses except in the case of the VC embeddedness interaction models. Given the need for including both the main and interaction effects in the analysis, there is little that can be done to solve this potential problem for these regressions.

6.2 Regression Analyses

In this section I present the results of the regression analyses testing the research hypotheses. Each subsection is organized around the three dependent variables used in the study. Within a subsection, results will be presented for the control variables and for each theoretical variable.

6.2.1 Premium Over Book Value

Control Variables. Tables 9A and 9B present the regression results for the models predicting the natural log of Premium Over Book Value. Model 1 presents the effects of the control variables on POBV. Financial companies have significantly lower premiums over book value than companies in other industries. This effect remains constant across all model specifications. Software companies appear to have higher POBVs than companies in other industries. However this effect disappears once the other variables are added to the model. No other industry dummy demonstrates a significant relationship with POBV. Somewhat surprisingly, firm age also has a negative significant relationship with POBV. This relationship remains consistent across most of the model specifications. VC backing had no significant relationship with POBV in any of the models tested.

IPO Firm Quality. Model 2 adds the three actor power variables to the control variables. IPO firm quality is positively and significantly related to POBV, thus providing some support for hypothesis 1a. When underwriter embeddedness with investors is added to the model, however,

Table 9A

Premium/Book Value Regressions					
Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Control Variables					
Finance Dummy	-.3544 ***	-.5892 ***	-.5541 ***	-.5381 ***	-.5388 ***
	(.1064)	(.1166)	(.1156)	(.1162)	(.1162)
Biotech Dummy	.0674	.0907	.0799	.0830	.0961
	(.1022)	(.1127)	(.1109)	(.1108)	(.1116)
Elec Manufacturing Dummy	.1175	.0751	.0776	.0767	.0781
	(.0817)	(.0913)	(.0898)	(.0897)	(.0897)
Retail Dummy	.1171	.0560	.0440	.0471	.0412
	(.0828)	(.0967)	(.0951)	(.0950)	(.0952)
Service Dummy	.1227	.1243	.1099	.0986	.0963
	(.0819)	(.0930)	(.0915)	(.0919)	(.0920)
Software Dummy	.1718 *	.0643	.0463	.0482	.0423
	(.0946)	(.1015)	(.1000)	(.0999)	(.1001)
Quarter 1 Dummy	-.0339	-.0933	-.0887	-.0768	-.0787
	(.0654)	(.0765)	(.0748)	(.0754)	(.0754)
Quarter 2 Dummy	-.0412	-.0791	-.0728	-.0634	-.0605
	(.0662)	(.0762)	(.0748)	(.0751)	(.0752)
Quarter 3 Dummy	.0974	.0393	.0666	.0847	.0930
	(.0760)	(.0926)	(.0915)	(.0927)	(.0931)
Ln Age	-.0320	-.0738 **	-.0575 *	-.0571 *	-.0612 *
	(.0272)	(.0352)	(.0352)	(.0351)	(.0354)
VC Backing	-.0340	.0226	-.0130	-.0056	-.0118
	(.0508)	(.0589)	(.0586)	(.0588)	(.0592)
Actor Power Variables					
Ln Investor Size 1991		-.0082	-.0073	-.0038	-.0065
		(.0126)	(.0121)	(.0125)	(.0128)
IPO Firm Quality Index		.0302 ***	.0168	.0178	.0349 *
		(.0115)	(.0122)	(.0122)	(.0214)
Underwriter Reputation		.1049		-.2095	-.2840
		(.1328)		(.1776)	(.1934)
Embeddedness Variables					
Und. Embeddedness w/ Inv			.0016 **	.0023 ***	.0024 ***
			(.0006)	(.0009)	(.0009)
Interactions					
Emb w/Inv x Firm Quality					-.0002
					(.0002)
Constant	4.217 ***	4.348 ***	4.304 ***	4.383 ***	4.483 ***
	(.1094)	(.1856)	(.1703)	(.1828)	(.2099)
N	246	176	176	176	176
F-Value	3.35 ***	3.80 ***	4.32 ***	4.13 ***	3.93 ***
R-Squared	.14	0.25	0.27	0.28	0.28
Adj R-Squared	.10	0.18	0.21	0.21	0.21

$* = p < .10$ $** = p < .05$ $*** = p < .01$

Table 9B

Premium/Book Value Regressions					
Variables	Model 6	Model 7	Model 8	Model 9	Model 10
Control Variables					
Finance Dummy	-.5664 ***	-.5722 ***	-.5197 ***	-.5336 ***	-.5344 ***
	(.1182)	(.1196)	(.1178)	(.1153)	(.1155)
Biotech Dummy	.0938	.0692	.0951	.0827	.0920
	(.1150)	(.1176)	(.1132)	(.1099)	(.1109)
Elec Manufacturing Dummy	.0739	.0802	.0837	.0702	.0716
	(.0932)	(.0938)	(.0918)	(.0890)	(.0892)
Retail Dummy	.0461	.0345	.0435	.0296	.0264
	(.0975)	(.1007)	(.0959)	(.0947)	(.0950)
Service Dummy	.1229	.1245	.1075	.1014	.0996
	(.0957)	(.0973)	(.0943)	(.0912)	(.0914)
Software Dummy	.0663	.0605	.0560	.0524	.0479
	(.1026)	(.1028)	(.1010)	(.0992)	(.0995)
Quarter 1 Dummy	-.0864	-.0897	-.0760	-.0948	-.0951
	(.0774)	(.0789)	(.0762)	(.0754)	(.0755)
Quarter 2 Dummy	-.0681	-.0633	-.0562	-.0595	-.0577
	(.0769)	(.0776)	(.0757)	(.0745)	(.0747)
Quarter 3 Dummy	.0515	.0774	.0881	.0921	.0975
	(.0941)	(.0972)	(.0937)	(.0920)	(.0925)
Ln Age	-.0693 *	-.0654 *	-.0544	-.0623 *	-.0649 *
	(.0354)	(.0355)	(.0353)	(.0350)	(.0352)
VC Backing	.0850	.0977	.0624	-.0230	-.0264
	(.0893)	(.0928)	(.0883)	(.0591)	(.0594)
Actor Power Variables					
Ln Investor Size 1991	-.0103	-.0267	-.0063	-.0099	-.0114
	(.0128)	(.0181)	(.0127)	(.0128)	(.0130)
IPO Firm Quality Index	.0295 **	.0304 ***	.0175	.0171	.0293
	(.0115)	(.0117)	(.0123)	(.0121)	(.0215)
Underwriter Reputation	.0286	.0850	-.2379	-.1034	-.1627
	(.1576)	(.1595)	(.1879)	(.1848)	(.2041)
Embeddedness Variables					
Und. Embeddedness w/ Inv			.0022 **	.0146 **	.0140 **
			(.0009)	(.0066)	(.0066)
Und. Embeddedness w/VCs	.0175	-.0008	.0127		
	(.0140)	(.0892)	(.0139)		
Interactions					
Emb w/Inv x Firm Quality					-.0001
					(.0002)
VC Backing x Emb w/VCs	-.0164	-.0635	-.0180		
	(.0180)	(.0894)	(.0177)		
Emb w/VCs x Inv Size		.0019			
		(.0088)			
VC Back x Emb w/VC x Inv Size		.0046			
		(.0088)			
Emb w/Inv x Reputation				-.0122 *	-.0115 *
				(.0064)	(.0065)
Constant	4.3505 ***	4.4700 ***	4.3729 ***	4.3473 ***	4.4208 ***
	(.1877)	(.2100)	(.1848)	(.1823)	(.2115)
N	176	176	176	176	176
F-Value	3.42 ***	3.16 ***	3.70 ***	4.16 ***	3.93 ***
R-Squared	0.26	0.27	0.28	0.30	0.30
Adj R-Squared	0.18	0.18	0.21	0.22	0.22

* = p < .10   ** = p < .05   *** = p < .01

IPO firm quality is no longer significant. Although the VIF test suggests that overall collinearity does not appear to be a problem in this model, Table 8 reveals that these two variables are correlated at .50. When an interaction between these two variables is added to the model, firm quality becomes marginally significant. Although the interaction term is not significant, the negative sign on the coefficient suggests that this interaction is having at least some effect on the variance explained by the IPO firm quality variable alone.

Institutional Investor Size. Although the sign on the institutional investor size regression coefficient is in the predicted direction, none of the models identify a significant relationship between investor size and POBV. Hypothesis 2b is not supported.

Underwriter Reputation. Underwriter reputation is not significantly related to POBV in any of the regression models tested. Hypothesis 3a therefore is not supported. Although the relationship is not significant, the sign on the reputation coefficient in Model 2 is in the predicted direction. When underwriter embeddedness with investors is added to the model, however, the sign on the coefficient switches. This suggests that there may be a relationship between underwriter reputation and embeddedness with investors that is not be captured by the analysis. I will return to this issue after the findings regarding underwriter embeddedness have been discussed.

Embeddedness with Institutional Investors. Models three through five present the relationship between underwriter embeddedness with investors and POBV. Although it was not predicted, underwriter embeddedness with investors has a strong positive relationship with POBV. This suggests that embedded relationships may act to reduce the uncertainty in the transaction to some degree and that investors are willing to pay more for IPOs when they have an ongoing relationship with the bank handling the offering. This interpretation would be consistent

with Uzzi's (1996, 1997) discussion of the differences between embedded and arm's length transactions.

Hypothesis 4a argues that when embeddedness with investors is interacted with IPO firm quality, the effects of the interaction on POBV will be positive for lower quality IPOs and negative for higher quality IPOs. Although the sign on the interaction term coefficient is negative, which suggests that some potential for this interpretation exists, the effect of the interaction term is not significant. Hypothesis 4a is not supported.

Embeddedness with Venture Capitalists. Models 6-8 test the relationship between underwriter embeddedness with venture capitalists and POBV. In all three models, the VC backing variable is interacted with the underwriter embeddedness with VCs variable. This interaction effectively differentiates between those firms which received venture financing and had an investment bank which was embedded with VCs and those companies which may have had an embedded investment bank but which did not receive venture financing. Although not hypothesized, model 6 tests for any direct effects of embeddedness with VCs on POBV. Neither the main effects of the interaction nor the interaction term are significant. IPO firm quality is the only theoretical variable which shows a significant relationship with POBV. Model 7 tests hypothesis 5a which suggests that when embeddedness with VCs is interacted with investor size, the effect of the interaction will be positive for small institutional investors and negative for large institutional investors. In order to test the hypothesis, a three-way interaction between VC backing, embeddedness with VCs, and investor size was constructed. Although the IPO firm quality index is once again significant, none of the variables in the interaction have a significant relationship with POBV. Hypothesis 5a therefore is not supported. It is possible that collinearity is a problem in this regression model. The VIF analysis reveals collinearity between the

embeddedness main and interaction effects at a level which would be considered problematic (Kennedy, 1993). Given that both measures are required to test the hypothesis, there is little which can be done to resolve the problem at this time. Model 8 replicates the interaction presented in model 7 but includes embeddedness with investors as well. Once again, none of the interaction effects are significant[6].

Post Hoc Analysis. Although the predicted effects of reputation on POBV are not supported, the switching of signs when embeddedness with investors is added to the model suggests that some further investigation of the relationship between reputation and embeddedness with investors is warranted. Although the two measures are highly correlated, in a *post hoc* analysis I interacted underwriter reputation and embeddedness with investors in order to test whether or not a relationship exists between these two variables which is impacting the analysis. Models 9 and 10 present the results of the interaction. Although the main effect of reputation remains not significant, the interaction term has a significant negative relationship with POBV. An analysis of the coefficients (Schoonhoven, 1981) reveals that the relationship is consistent across the entire range of values for underwriter reputation. This effect remains even when the embeddedness with investors x IPO firm quality interaction is included in the model.

These findings suggest that underwriter reputation may moderate the relationship between embeddedness with investors and POBV, reducing the effects of embeddedness if the underwriter also has a high reputation. This is consistent with other research (e.g., Eccles & Crane, 1988; Tinic, 1988; Wolfe, Cooperman, and Ferris, 1994) which suggests that banks with high reputations will act to protect their reputations. All else equal, setting a lower POBV increases

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[6] These models were also run including only those IPOs which received financing. Once again no significant relationships were identified. This process was also repeated for the regressions predicting ownership concentration and underwriting commissions, with the same result.

the probability of a greater run-up in the company's stock price when it begins trading in the secondary market. Given that a substantial percentage of investors would perceive a large run-up in a company's stock price as evidence of the ability of the adviser who recommended the stock to them (Shiller, 1990), it is reasonable to conclude that banks with reputations to protect may sacrifice some short-term profits in order to preserve one of the assets which will allow them to more than recoup the loss through the generation of additional business over the long-term.

6.2.2 Ownership Concentration

Control Variables. Tables 10A and 10B present the results of the analysis predicting ownership concentration. Model 1 shows that of all the control variables, only the retail dummy has a significant, and in this case negative, relationship with ownership concentration. This effect is consistent across all of the model specifications.

IPO Firm Quality. Model 2 adds the actor power variables to the regressions. IPO firm quality is not significantly related to ownership concentration. This finding remains consistent for all of the models tested. Neither Hypotheses 1b or 1c, which suggest negative and positive relationships between IPO firm quality and ownership concentration, respectively, is therefore supported.

Institutional Investor Size. Although institutional investor size is not significant in model 2, a significant relationship is found between institutional investor size and ownership concentration in all but one of the other models. This suggests general support for hypothesis 2b, that investor size is positively associated with ownership concentration.

Underwriter Reputation. Hypotheses 3b and 3c present competing expectations regarding the relationship between underwriter reputation and ownership concentration. Model 2 shows a

Table 10A

Ownership Concentration Regressions					
Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Control Variables					
Finance Dummy	-.0070	-.0076	-.0030	-.0047	-.0046
	(.0111)	(.0128)	(.0128)	(.0129)	(.0129)
Biotech Dummy	-.0097	-.0068	-.0069	-.0072	-.0082
	(.0107)	(.0123)	(.0123)	(.0123)	(.0124)
Elec Manufacturing Dummy	-.0124	-.0117	-.0117	-.0116	-.0118
	(.0086)	(.0100)	(.0100)	(.0100)	(.0100)
Retail Dummy	-.0168 *	-.0184 *	-.0186 *	-.0189 *	-.0185 *
	(.0087)	(.0106)	(.0106)	(.0106)	(.0106)
Service Dummy	-.0136	-.0049	-.0075	-.0063	-.0062
	(.0086)	(.0102)	(.0102)	(.0102)	(.0102)
Software Dummy	.0112	-.0015	-.0022	-.0024	-.0019
	(.0099)	(.0111)	(.0111)	(.0111)	(.0111)
Quarter 1 Dummy	.0048	.0094	.0115	.0103	.0104
	(.0069)	(.0084)	(.0083)	(.0084)	(.0084)
Quarter 2 Dummy	.0067	.0108	.0126	.0117	.0114
	(.0069)	(.0083)	(.0083)	(.0083)	(.0084)
Quarter 3 Dummy	-.0103	-.0020	.0024	.0005	-.0001
	(.0080)	(.0101)	(.0102)	(.0103)	(.0104)
Ln Age	.0012	.0018	.0027	.0027	.0030
	(.0029)	(.0038)	(.0039)	(.0039)	(.0039)
VC Backing	.0087 *	.0008	2.23E-05	-.0007	-.0003
	(.0053)	(.0064)	(.0065)	(.0065)	(.0066)
Actor Power Variables					
Ln Investor Size 1991		.0022	.0028 **	.0024 *	.0026 *
		(.0014)	(.0013)	(.0014)	(.0014)
IPO Firm Quality Index		.0006	1.96E-05	-.0001	-.0014
		(.0013)	(.0014)	(.0014)	(.0024)
Underwriter Reputation		.0395 ***		.0218	.0275
		(.0145)		(.0197)	(.0215)
Embeddedness Variables					
Und. Embeddedness w/ Inv			.0002 ***	.0001	.0001
			(.0001)	(.0001)	(.0001)
Interactions					
Emb w/Inv x Firm Quality					1.32E-05
					(1.97E-05)
Constant	.0425 ***	-.0115	-.0013	-.0095	-.0172
	(.0115)	(.0203)	(.0189)	(.0203)	(.0234)
N	246	176	176	176	176
F-Value	2.24 ***	2.24 ***	2.29 ***	2.22 ***	2.10 ***
R-Squared	0.10	0.16	0.17	0.17	0.17
Adj R-Squared	0.05	0.09	0.09	0.09	0.09

* = p < .10   ** = p < .05   *** = p < .01

Table 10B

Ownership Concentration Regressions				
Variables	Model 6	Model 7	Model 8	Model 9
Control Variables				
Finance Dummy	-.0029 (.0129)	-.0071 (.0128)	-.0076 (.0131)	-.0051 (.0130)
Biotech Dummy	-.0071 (.0124)	-.0110 (.0125)	-.0113 (.0129)	-.0110 (.0125)
Elec Manufacturing Dummy	-.0118 (.0100)	-.0155 (.0101)	-.0159 (.0102)	-.0151 (.0101)
Retail Dummy	-.0185 * (.0106)	-.0208 * (.0106)	-.0214 ** (.0110)	-.0209 ** (.0106)
Service Dummy	-.0075 (.0102)	-.0094 (.0104)	-.0100 (.0106)	-.0101 (.0104)
Software Dummy	-.0021 (.0112)	-.0042 (.0111)	-.0043 (.0112)	-.0046 (.0112)
Quarter 1 Dummy	.0116 (.0084)	.0117 (.0084)	.0122 (.0086)	.0121 (.0084)
Quarter 2 Dummy	.0127 (.0083)	.0119 (.0083)	.0121 (.0085)	.0124 (.0084)
Quarter 3 Dummy	.0024 (.0102)	.0011 (.0102)	.0013 (.0106)	.0026 (.0103)
Ln Age	.0028 (.0039)	.0022 (.0038)	.0022 (.0039)	.0028 (.0039)
VC Backing	.0002 (.0066)	-.0049 (.0097)	-.0059 (.0101)	-.0059 (.0098)
Actor Power Variables				
Ln Investor Size 1991	.0029 ** (.0014)	.0024 * (.0014)	.0028 (.0020)	.0026 * (.0014)
IPO Firm Quality Index	-.0003 (.0022)	.0006 (.0012)	.0005 (.0013)	.0001 (.0014)
Underwriter Reputation		.0234 (.0171)	.0230 (.0174)	.0122 (.0207)
Embeddedness Variables				
Und. Embeddedness w/ Inv	.0002 *** (.0001)			.0001 (.0001)
Und. Embeddedness w/VCs		.0013 * (.0015)	.0043 (.0098)	.0011 (.0015)
Interactions				
Emb w/Inv x Firm Quality	3.29E-06 (1.81E-05)			
VC Backing x Emb w/VCs		.0016 (.0019)	-.0003 (.0098)	.0015 (.0020)
Emb w/VCs x Inv Size			-.0003 (.0010)	
VC Back x Emb/VC x Inv Size			.0002 (.0010)	
Constant	-.0027 (.0204)	-.0061 (.0204)	-.0092 (.0230)	-.0051 (.0204)
N	176	176	176	176
F-Value	2.13 ***	2.23 ***	1.96 **	2.15 ***
R-Squared	0.17	0.18	0.18	0.19
Adj R-Squared	0.09	0.10	0.09	0.10

$* = p < .10$ $** = p < .05$ $*** = p < .01$

significant positive relationship between underwriter reputation and ownership concentration, lending some support to hypothesis 3b. When embeddedness with investors is added to the model, however, the effect of reputation is no longer significant. Although the VIF analysis for this model suggests that collinearity is not a significant problem in the model, it is still possible that the high correlation between underwriter reputation and embeddedness with investors is masking significant relationships when both variables are included in the same model. The relatively strong correlations between these two variables and ownership concentration presented in Table 8 lend some support to this conjecture.

Embeddedness with Institutional Investors. Although it was not hypothesized, model 3 shows that a significant positive relationship exists between underwriter embeddedness and ownership concentration. Hypothesis 4b suggests that embeddedness with investors will moderate the relationship between IPO firm quality and ownership concentration, more specifically that the effect of the interaction will be positive for lower quality IPOs and negative for higher quality IPOs. Model 5 shows that the main effects and interaction effects for the variables testing hypothesis 4b are not significant. Model 6 reveals that, even when reputation is dropped from the model, the interaction is still not significant. Embeddedness with investors, however, has a significant main effect. Hypothesis 4b is not supported.

Embeddedness with Venture Capitalists. Hypothesis 5b argues that underwriter embeddedness with venture capitalists will moderate the relationship between institutional investor size and ownership concentration, i.e., that the overall effect of the interaction will be positive for small institutional investors and negative for large institutional investors. Models 7-9 test hypothesis 5b. Although not hypothesized, model 7 suggests a significant direct relationship between embeddedness with VCs and ownership concentration. This effect disappears, however,

when the other interaction terms are added to the model. Model 8 tests hypothesis 5b. None of the effects of the independent variables or the interactions are significant. Hypothesis 5b therefore is not supported. The VIF analysis for model 8 once again suggests that collinearity may be a problem in this model. Thus, although no support is found for the hypothesis, a potential relation cannot be definitely ruled out. Model 9 finds similar results when embeddedness with investors is added to the model.

Post Hoc Analysis. Since interactions among the theoretical variables which were not hypothesized have shown to be significant when predicting the other dependent variables, the same *post hoc* analyses were conducted for ownership concentration. None of the interactions tested yielded significant findings. These models have, therefore, not been included in the presentation of results.

6.2.3 Underwriting Commissions

Control Variables. Tables 11A and 11B present the analyses testing the hypotheses regarding underwriting commissions. Model 1 presents the relationship between the control variables and underwriting commissions. The results in Model 1 suggest that firms in the biotech industry on average paid higher underwriting commissions than firms in other industries and that firms which went public in the first quarter of the year paid lower underwriting commissions. Both of these effects disappear, however, when the theoretical variables are added to the model. VC backing is also negatively related with underwriting commissions, but this effect disappears when embeddedness with investors is added to the model. The relationship between VC backing and other variables will be discussed in greater detail in the *post hoc* analysis.

Table 11A

Underwriting Commissions Regressions						
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control Variables						
Finance Dummy	-.0012	-.0001	-.0003	-.0003	-.0004	.0000
	(.0025)	(.0022)	(.0023)	(.0023)	(.0023)	(.0022)
Biotech Dummy	.0052 *	.0022	.0025	.0022	.0024	.0020
	(.0024)	(.0022)	(.0022)	(.0022)	(.0022)	(.0022)
Elec Manufacturing Dummy	.0022	.0011	.0014	.0011	.0014	.0013
	(.0019)	(.0017)	(.0017)	(.0017)	(.0017)	(.0017)
Retail Dummy	.0000	-.0007	-.0004	-.0007	-.0003	-.0003
	(.0019)	(.0017)	(.0018)	(.0017)	(.0018)	(.0017)
Service Dummy	.0021	.0003	.0006	.0003	.0006	.0007
	(.0019)	(.0017)	(.0018)	(.0017)	(.0018)	(.0017)
Software Dummy	.0024	.0027	.0029	.0028	.0030	.0031
	(.0022)	(.0020)	(.0020)	(.0020)	(.0020)	(.0020)
Quarter 1 Dummy	-.0022 *	-.0015	-.0016	-.0016	-.0016	-.0015
	(.0015)	(.0014)	(.0014)	(.0014)	(.0014)	(.0014)
Quarter 2 Dummy	-.0020	-.0013	-.0014	-.0014	-.0015	-.0014
	(.0015)	(.0014)	(.0014)	(.0014)	(.0014)	(.0014)
Quarter 3 Dummy	-.0019	-.0015	-.0017	-.0017	-.0018	-.0017
	(.0018)	(.0016)	(.0016)	(.0016)	(.0016)	(.0016)
Ln Age	-.0015	.0000	-.0001	.0000	-.0001	.0002
	(.0006)	(.0006)	(.0006)	(.0006)	(.0006)	(.0006)
VC Backing	-.0028 **	-.0023 **	-.0026	-.0021 *	-.0025	-.0018
	(.0012)	(.0011)	(.0017)	(.0012)	(.0017)	(.0011)
Actor Power Variables						
IPO Firm Quality Index		-.0008 ***	-.0008 ***	-.0007 ***	-.0007 ***	-.0015 ***
		(.0002)	(.0002)	(.0002)	(.0002)	(.0004)
Underwriter Reputation		-.0091 ***	-.0072 **	-.0078 **	-.0065 *	-.0046
		(.0024)	(.0029)	(.0033)	(.0035)	(.0035)
Embeddedness Variables						
Und. Embeddedness w/VCs			-.0003		-.0003	
			(.0003)		(.0003)	
Und. Embeddedness w/ Inv				-9.20E-06	-5.69E-06	-1.75E-05
				(1.56E-05)	(1.60E-05)	(1.57E-05)
Interactions						
VC Backing x Emb w/VCs			.0001		.0001	
			(.0003)		(.0004)	
Emb w/Inv x Firm Quality						7.85E-06 ***
						(3.09E-06)
Constant	.0762 ***	.0807 ***	.0803 ***	.0803 ***	.0801 ***	.0766 ***
	(.0025)	(.0030)	(.0031)	(.0031)	(.0032)	(.0034)
N	246	246	246	246	246	246
F-Value	1.82 *	6.16 ***	5.43 ***	5.73 ***	5.08 ***	5.90 ***
R-Squared	0.08	0.26	0.26	0.26	0.26	0.28
Adj R-Squared	0.04	0.21	0.21	0.21	0.21	0.23

* = p < .10   ** = p < .05   *** = p < .01

Table 11B

Variables	Underwriting Commissions Regressions				
	Model 7	Model 8	Model 9	Model 10	Model 11
Control Variables					
Finance Dummy	-.0002 (.0022)	-.0004 (.0022)	-.0004 (.0023)	-.0003 (.0023)	1.90E-05 (.0022)
Biotech Dummy	.0019 (.0022)	.0016 (.0021)	.0023 (.0022)	.0022 (.0022)	.0033 (.0022)
Elec Manufacturing Dummy	.0011 (.0017)	.0009 (.0017)	.0011 (.0017)	.0012 (.0017)	.0013 (.0017)
Retail Dummy	-.0007 (.0017)	-.0004 (.0017)	-.0007 (.0017)	-.0006 (.0017)	-.0005 (.0017)
Service Dummy	.0000 (.0017)	-.0002 (.0017)	.0003 (.0017)	.0003 (.0017)	.0006 (.0017)
Software Dummy	.0024 (.0020)	.0024 (.0019)	.0025 (.0020)	.0028 (.0020)	.0023 (.0020)
Quarter 1 Dummy	-.0010 (.0014)	-.0018 (.0013)	-.0016 (.0014)	-.0016 (.0014)	-.0018 (.0014)
Quarter 2 Dummy	-.0012 (.0014)	-.0013 (.0014)	-.0013 (.0014)	-.0014 (.0014)	-.0014 (.0014)
Quarter 3 Dummy	-.0015 (.0016)	-.0016 (.0016)	-.0016 (.0016)	-.0017 (.0016)	-.0015 (.0016)
Ln Age	.0003 (.0006)	.0003 (.0006)	-.0001 (.0006)	-.0001 (.0006)	.0001 (.0006)
VC Backing	-.0016 (.0011)	-.0014 (.0011)	-.0031 * (.0016)	-.0014 (.0036)	-.0021 * (.0011)
Actor Power Variables					
IPO Firm Quality Index	-.0008 *** (.0002)	-.0035 *** (.0007)	-.0007 *** (.0002)	-.0008 *** (.0002)	-.0011 *** (.0002)
Underwriter Reputation	-.0107 *** (.0033)	.0001 (.0038)	-.0076 ** (.0033)	-.0073 * (.0040)	-.0070 ** (.0033)
Embeddedness Variables					
Und. Embeddedness w/ Inv	-.0004 *** (.0001)	-2.53E-05 ** (1.57E-05)	-2.20E-05 (2.16E-05)	-8.85E-06 (1.57E-05)	-9.61E-06 (1.53E-05)
Interactions					
Emb w/Inv x Reputation	.0004 *** (.0001)				
Reputation x Firm Quality		.0030 *** (.0008)			
Emb w/Inv x VC Backing			1.78E-05 (2.08E-05)		
Reputation x VC Backing				-.0009 (.0044)	
Firm Quality x VC Backing					.0009 *** (.0003)
Constant	.0827 *** (.0031)	.0729 *** (.0036)	.0808 (.0031)	.0800 *** (.0035)	.0796 *** (.0030)
N	246	246	246	246	246
F-Value	6.27 ***	6.64 ***	5.39 ***	5.33 ***	6.06 ***
R-Squared	0.29	0.30	0.26	0.26	0.28
Adj R-Squared	0.24	0.26	0.21	0.21	0.24

* = p < .10   ** = p < .05   *** = p < .01

IPO Firm Quality. Model 2 shows that IPO firm quality is negatively related to underwriting commissions. This relationship is consistently identified in all of the model specifications tested. Hypothesis 1d is therefore strongly supported.

Underwriter Reputation. Contrary to hypothesis 3d, both models 2 through 5 show a significant negative relationship between underwriter reputation and the level of underwriting commissions. Hypothesis 3d is therefore not supported. This finding is interesting in that it contradicts prior research on reputation which suggests that high reputation firms receive premiums for their products or services (Fombrun, 1996; Srivastiva et al., 1997). In the finance literature, James (1992) also found a negative relationship between investment bank reputation and underwriting spreads. James, however, was treating bank reputation as a control variable and never discussed the implications of this finding. These initial findings suggest that high reputation investment banks do not take advantage of their reputations to charge premium prices for their services. Rather it is low reputation banks, which participate less frequently in the market as managing underwriters and which have less to lose by behaving opportunistically when the chance to underwrite an IPO comes along, who charge more for their services. As we shall see in the *post hoc* analysis, however, the relationship between underwriter reputation, the other independent variables, and underwriting commissions is much more complex than it initially appears.

Embeddedness with Venture Capitalists. Model 3 tests hypothesis 5c, that underwriter embeddedness with VCs is negatively related to underwriting commissions. Neither embeddedness with VCs nor the interaction between the embeddedness and VC backing is significant. Model 5 includes embeddedness with investors in the model, with the same result. Hypothesis 5c is not supported.

Post Hoc Analysis. In Chapter 4, I did not develop any hypotheses regarding the relationship between underwriter embeddedness with investors and the level of underwriting commissions paid by the offering firm. Upon initial consideration it seems that the one should have little to do with the other. However, although high reputation underwriters dominate the market for IPOs, not all high reputation underwriters participate in the market to the same degree. Those banks with embedded relationships have the ability to place stocks more effectively and to get higher POBVs for the offerings they underwrite. It is therefore possible that, although high reputation banks appear to charge less for their services and high quality IPO firms pay less for underwriting services, these findings may differ for offerings led by underwriters with varying degrees of embeddedness.

Model 4 shows that when embeddedness with investors alone is added to the model, it has no significant effect on underwriting commissions. When embeddedness is interacted with IPO firm quality in model 6, the interaction term is positive and significant, although the main effect for embeddedness with investors is still not significant. This suggests that embeddedness moderates the effects of IPO firm quality. The effect of firm quality is reduced if the lead underwriter is highly embedded with institutional investors.

Model 7 shows that when embeddedness with investors is interacted with underwriter reputation, both the main effects are significant and negative, and the interaction term is significant and positive. An analysis of the coefficients for the variables in the interaction shows that even for the maximum levels of reputation and embeddedness, the overall effect of the interaction on underwriting commissions is negative, although the main effects are greatly weakened. Since the effect of embeddedness with investors is significant only when the interaction is included in the model (but the main effect of reputation is significant in all cases) the

findings of model 7 suggest that underwriter reputation mediates the effects of embeddedness with investors on the level of underwriting commissions.

Model 8 examines the effects of an interaction between underwriter reputation and firm quality. This model shows that although firm quality remains negatively and significantly related to underwriting commissions, the effect of underwriter reputation is no longer significant, and the effect of the interaction term is positive and significant. Once again, an analysis of the coefficients shows that although the overall effect of these three variables upon underwriting commissions is negative, the presence of a high reputation underwriter weakens the impact of high firm quality on the level of underwriting commissions. This provides some evidence that reputation is an important resource which underwriters can use to mitigate the power of the IPO firm. As we have seen, high reputation investment banks are generally active participants in the IPO market and have access to a number of deals. Their ability to gain access to multiple deals makes them less dependent on any one IPO firm for business.

The effects of VC backing which are identified in models 1, 2, and 4 disappear when embeddedness with investors is added to the model. This suggests that VC backing may have an interactive relationship with one or more of the other independent variables. Models 9-11 examine these interaction effects. The results in model 9 suggest that, although the interaction term itself is not significant, a relationship between embeddedness with investors and VC backing exists. When the embeddedness x VC backing interaction term is included in the model, the effect of VC backing once again becomes significant and negative. Model 10 reveals no apparent interactive relationship between underwriter reputation and VC backing. Model 11 shows that when VC backing is interacted with IPO firm quality, the effect of VC backing once again becomes significant and negative, and the interaction effect is positive and significant. This result

initially seems somewhat puzzling. However, since the inflection point for the set of terms is many times greater than the maximum value for IPO firm quality identified in table 5, this result may simply be suggesting that there is an asymptotic lower bound on the underwriting commissions charged as firm quality becomes very high, even if the firm has VC backing.

Overall, this analysis suggests that a complex set of relationships exists between VC backing, IPO firm quality, underwriter reputation, and underwriter embeddedness with investors. As was originally predicted in hypothesis 1d, the higher the quality of the firm, the lower the commissions it will pay for underwriting services. Underwriter competition for its business, the probability that the firm will be able to generate future business through subsequent offerings, and the ease of placing a high quality offering are all likely explanations for this finding. Although it was not hypothesized, embeddedness with investors had a significant negative effect on underwriting commissions when some of the interaction effects were controlled for. One possible explanation for this finding is that firms with more embedded networks of relationships incur lower costs in placing an offering, and thus are able to charge lower fees for their services. Although the positive relationship between underwriter reputation and underwriting commissions predicted in hypothesis 3d was not initially supported, the *post hoc* analysis of the interaction effects lends some support to the contention that high reputation banks received higher commissions for their services. The significant, positive interaction effects involving underwriter reputation suggest that reputation mediates the main effects of IPO firm quality and embeddedness with investors, reducing the negative effects of these variables upon underwriting commissions. Finally, firms with venture backing also appear to pay lower underwriting commissions. The effects of VC backing appear to be limited, however, by high bank embeddedness with investors and high IPO firm quality. Given the relatively narrow range of

underwriting commissions paid (5%-10%, mean = 7%) these findings may simply be indicating that an asymptotic lower bound on underwriting commissions exists which even IPO firms with high quality, an embedded underwriter, and VC backing must face.

6.3 Venture vs. Non-Venture Backed IPOs

Although a dummy variable has been included in the analyses controlling for whether or not a company received venture financing prior to going public, it is still possible that there are differences between VC and non-VC backed IPO firms which could lead them to have different experiences in the IPO market. T-tests comparing the means of VC and non-VC backed offerings on the variables used in the analysis show that a higher proportion of non-VC backed IPOs were finance and retail companies, while a higher proportion of VC backed IPOs were biotech, software and electrical manufacturing companies. Although there was no significant difference in POBV, VC backed IPOs tended to experience greater ownership concentration, even though there was, on average, no difference in the size of the offerings. Non-VC backed IPOs firms were older, had higher firm quality scores, and used higher reputation and more embedded banks as their lead underwriters than VC backed firms.

Appendix D presents the basic model regressions for VC and non-VC backed IPOs. The most significant difference for non-VC backed IPOs is that the investor size is negatively and significantly related to POBV[7]. Although neither reputation nor embeddedness have significant relationships in this model, embeddedness with investors works when reputation is not included in the model. The VC backed regressions show generally weaker results overall. Embeddedness with investors is still positively associated with POBV and ownership concentration, and reputation still has a significant effect on ownership concentration and underwriting commissions.

These results need to be interpreted with extreme caution, however, because they involve reduced

sample sizes and IPOs which are clearly different from each other across a number of key

variables.

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[7] In analyses not reported here an investor size x VC backing interaction was included in the model with the full sample to try and replicate this finding. The effects of investor size and the interaction term were non-significant.

CHAPTER 7: DISCUSSION

Through an examination of the resources controlled by the principal participants in the IPO market and the transactional relationships which exist among them, in this dissertation I have attempted to answer the question: *How do investment banks, as transaction intermediaries, use their reputation and embeddedness with buyers and sellers to influence the economic outcomes of all parties to the mediated exchange?* In addressing this question I have tried to show how social resources and the structure of interorganizational relationships can influence the most basic of market outcomes, i.e., the value placed upon assets and how they are distributed in the market. Through examination of a mediated market I have also tried to demonstrate that embedded networks play an important role in shaping market outcomes, even when buyers and sellers do not have the opportunity to interact directly and repeatedly with each other. Finally, I have attempted to demonstrate that long-term considerations, as well as short-term profit motives, can influence pricing and allocation decisions. Although all of my hypotheses were not supported, the results of this study are generally supportive of my primary objectives. In the remainder of this chapter, I will discuss the implications of the findings presented in Chapter 6, the limitations of this study, and future research directions.

7.1 Implications of the Findings

7.1.1 Actor Power

Table 12 summarizes the hypothesized relationships tested in this study and the empirical findings of the analysis. The predicted effects of IPO firm quality and investor size were generally supported, suggesting that powerful buyers and sellers can influence the pricing and allocation

Table 12

Summary of Hypotheses		
Hypothesis	Predicted Relationship	Empirical Finding
1A: Firm Quality and Prem/Book	Positive	Positive
1B & 1C: Firm Quality and Ownership Concentration	Positive/Negative	Non-Sig
1D: Firm Quality and Underwriting Commissions	Negative	Negative
2A: Investor Size and Prem/Book	Negative	Non-Sig
2B: Investor Size Reputation and Ownership Concentration	Positive	Positive
3A: Underwriter Reputation and Prem/Book	Positive	Negative*
3B & 3C: Underwriter Reputation and Ownership Concentration	Positive/Negative	Positive**
3D: Underwriter Reputation and Underwriting Commissions	Positive	Mixed***
4A: Embed w/Investors and Prem/Book	Moderator (+/-)	Positive
4B: Embed w/Investors and Ownership Concentration	Moderator (+/-)	Positive
5A: Embed w/VCs and Prem/Book	Moderator (+/-)	Non-Sig
5B: Embed w/VCs and Ownership Concentration	Moderator (+/-)	Positive
5C: Embed w/VCs and Underwriting Commissions	Negative	Non-Sig
Unpredicted: VC Backing & Underwriting Commissions		Negative

* Moderating effect when interacted with Embed w/Investors

** Only when Embed w/Investors is not included in the model

*** Negative main effect, positive moderating effect and no main effect
when interacted with Firm Quality, negative main effect and
positive mediating effect when interacted with Embed w/Investors

decisions of the transaction intermediary. Seller power also appears to influence what the

intermediary charges for its market making services.

The findings of the hypotheses examining the role that investment bank reputation plays in

shaping pricing and allocation decisions are perhaps the most intriguing. Only one of the

underwriter reputation hypotheses was directly supported, although significant relationships were

identified between reputation and all three dependent variables. Consistent with the

organizational literature on reputation (Fombrun, 1996; Hall, 1992,1993; Srivastiva, et al., 1997;

Weigelt & Camerer, 1988), I argued that a high reputation was an asset which an investment bank

would use to extract greater revenues from the market. High reputation investment banks were expected to set a higher POBV for an IPO, thus increasing the total value of the offering. The results of this study suggest that high reputation banks set lower premiums over book value. This finding is consistent with the work of organizational (Eccles & Crane, 1988; Podolny, 1993) and financial (Tinic, 1988; Wolfe, Cooperman & Ferris, 1994) researchers, who have argued that banks will engage in self-protective behavior. Investment bank reputation has long been recognized as an asset which is crucial to a bank's success as an underwriter (Chernow, 1997; Hayes, 1970). The organizational literature on investment banks has suggested that banks will withdraw from underwriting syndicates if they believe their positioning on the offering tombstone will damage their reputation (Eccles & Crane, 1988; Podolny, 1993). Eccles and Crane (1988) have suggested that reputational status can be used to identify strategic groups within the investment banking industry and that reputation is a key mobility barrier protecting the boundaries of these groups. They also argue that reputation is an important differentiating factor for banks, even within strategic groups, since it is difficult for banks to differentiate themselves on "product" attributes (i.e., the structure of the transaction) alone. This is especially true when the characteristics of the client also play a significant role in shaping the characteristics of the deal. In the finance literature, Tinic (1988) has suggested that banks will systematically underprice an offering in order to "indemnify" investors and decrease the probability of lawsuits. Lawsuits over the pricing and performance of an offering, besides being costly, can damage a bank's reputation. Wolfe, et. al (1994) provide evidence to suggest that high reputation banks screen potential clients and avoid underwriting smaller, riskier companies whose subsequent market performance could be damaging to the bank's reputation.

Assuming that investment banks have some sense of the "true" value which an efficient market will place upon an IPO, setting a POBV which is lower than the expected premium that the market is willing pay should lead to greater underpricing in the secondary market. Although this assumption is not tested empirically in this study, if it holds then the findings presented here are consistent with a self-protective explanation of the effects of reputation. The positive relationship between bank reputation and ownership concentration can also be interpreted as self-protective behavior on the part of investment banks. Placing larger blocks of stock with fewer investors who will hold the shares longer can be expected to reduce stock price volatility in the secondary market (Carter & Dark, 1993), thereby decreasing the threat to the bank associated with poor aftermarket performance by the IPO. Future research should attempt to confirm the relationship between pricing and allocation activities in the primary market and price movements in the secondary market.

Consistent with the organizational literature on reputation (Fombrun, 1996; Srivastiva, et al., 1997), high reputation banks were also expected to charge higher commission rates for their underwriting services. The initial findings of this study contradict that hypothesis. The positive effects of the interactions among reputation, firm quality, and embeddedness with investors on underwriting commissions, however, suggests an interesting set of relationships. Underwriter reputation appears to moderate the effects of both embeddedness with investors and IPO firm quality. High investment bank reputation appears to reduce the negative effects of firm quality and embeddedness with investors on the level of commissions, in effect increasing the commissions they receive for their services. This finding suggests that a high reputation may function in the way originally hypothesized, but that the way in which bank reputation influences underwriting commissions is more subtle and indirect than originally anticipated. The negative

main effect of reputation may be attributed to the fact that high reputation banks possess other traits which lead to reductions in underwriting commissions. High reputation banks tend to be larger and have more people and resources at their disposal. The descriptive data on reputation and market activity for this study also reveal that high reputation banks tend to be the most active participants in the IPO markets, and according to Wolfe et al. (1994) they also tend to underwrite higher quality firms. Frequent participation in the market may allow a bank to develop the internal systems and external relationships necessary for handling the underwriting process more efficiently. Underwriting higher quality offerings simplifies the due diligence process. Both of these factors can reduce the costs to the bank of managing and offering, and allow them to charge lower rates for their services. It is only when these effects are partialed out through interactions that the true effects of reputation are revealed.

These findings have significant implications for both financial and organizational research on reputation. Finance researchers have tended to use underwriter reputation as a "catch-all" indicator of a variety of factors which are difficult and time consuming to measure. In doing so they open their research up to significant risks associated with the mis-specification of their models due to the omission of important variables. Organizational researchers who use global measures of organizational reputation, such as the annual *Fortune* magazine survey of most admired companies, run similar risks. Global measures of reputation can be correlated with other factors which have different effects on the outcome under consideration. In this study, for example, the correlations between reputation, firm quality, and embeddedness with investors are .45 and .77, respectively. As we have seen, the effects of these other factors may overwhelm the more subtle effects of reputation if the nature of the relationships among the independent variables is not taken into consideration.

The findings of this study provide some support for the contention that reputation is an important intangible asset which creates value for the organization (Fombrun, 1996; Hall, 1992, 1993; Roberts & Dowling, 1997). Current theorizing tends to focus on the direct, immediate role of reputation in shaping market behaviors and corporate performance. The results of this study suggest not only that the effects of reputation may be subtle and indirect, they also imply that organizational reputation can have a long-term impact on a firm's capacity to compete, and that the short-term effects of reputation should be considered within the context of this long-term perspective. This issue may be especially acute for service firms, such as investment banks, which rely on their reputations to differentiate them within the market (Eccles & Crane, 1988). A high reputation creates the enabling conditions in the market for service as a transaction intermediary; without it, the intermediary is relegated to peripheral status and only occasional participation in the market. Although, in general, reputations are not quickly made or destroyed, concern with maintaining this key competitive asset may frequently overshadow the desire to indulge in opportunities which may be lucrative in the short-term, but which can do long-term damage to an organization's reputation. Future research and theoretical development in this area should endeavor to take the long-term implications of organizational reputation into account, and to examine the dynamic, long-term relationship between reputation and performance.

7.1.2 Underwriter Embeddedness

None of the hypothesized moderating effects of underwriter embeddedness with institutional investors and venture capitalists presented in Chapter 4 were supported. However bank embeddedness with investors did have significant direct effects on all three dependent variables. The positive main effect of embeddedness with investors on premium over book value suggests that investors may be more willing to believe claims made by an embedded transaction

partner regarding the expected performance of the IPO, and will not demand as great a discount in return for its participation. Likewise, given that more embedded banks deal repeatedly with certain institutional investors, it is reasonable to expect that they will transact a greater proportion of their business with these investors. The nature of their relationship reduces the bank's uncertainty regarding whether or not the institutional investor is likely to flip the stock, and reduces the investor's uncertainty regarding whether or not the bank is "dumping" a weak stock on them when it offers the investor a significant proportion of the offering.

Baker (1990) notes that power and efficiency motives can drive a firm to take the same actions. Given that developing a large number of embedded relationships is difficult and costly, the willingness of two actors to develop such relationships creates mutual dependencies which reduce the likelihood of opportunistic behavior on the part of either actor. Embedded relationships thus reduce the need for more expensive bonding or incentive schemes which may be required to induce one to engage in risk taking in an otherwise uncertain environment (Kollock, 1994). By developing and maintaining embedded relationships, transaction intermediaries can reduce the costs associated with their market making activities. Embedded transaction partners are more likely to actively participate in an intermediary's offerings, even at higher prices. High levels of participation on the part of several buyers may send a positive signal to other buyers who do not share an embedded relationship with the intermediary, but who may become more willing to participate in the transaction as a result of the embedded buyers' participation (Welch, 1992). Intermediaries can thus increase their profit from the transaction by reducing the discounts they would otherwise have to incorporate into the price of the asset and increase the efficiency with which they complete the transaction. From the perspective of the buyer, an embedded relationship reduces uncertainty regarding the value of an asset and increases access to resources

which the intermediary controls. Embedded relationships thus play an important and direct role in reducing asset specific behavioral uncertainties and increasing allocative efficiencies in mediated markets. Higher POBVs and reduced distribution costs mean that IPO firms obtain more capital from the transaction as well. It appears that sellers can benefit from embedded relationships in mediated markets, even if they do not participate in the relationship themselves.

The direct negative relationship between embeddedness with investors and underwriting commissions was perhaps the least expected finding. It is possible that a bank derives distributional efficiencies and reduces the costs associated with market making activities when it has an embedded network of relationships with institutional investors. The bank may therefore be able to charge lower prices for its services in competitive situations and still make an acceptable profit from the transactions. This effect appears to be mitigated somewhat, though, if the bank has a high reputation. Although cost is still clearly an important consideration, high reputation banks may not have to compete as heavily on price as banks with lower reputations.

Investment bank embeddedness with venture capitalists had almost no impact on any of the market outcomes. The only significant finding was an unpredicted positive main effect on ownership concentration. The lack of significant findings for this variable was somewhat surprising. At this point, however, I do not think that it suggests conclusively that embeddedness with VCs does not impact IPO market outcomes. It is possible that a different method of calculating the concentration ratio component of the embeddedness measure would lead to different results. This issue will be discussed further in the limitations section of this chapter.

The empirical findings of this study suggest that although embedded relationships play an important role in shaping pricing and allocation decisions in mediated markets, their role is somewhat different than presented in the original specification of the dual process model of

market mediation. Rather than functioning as moderators of buyer and seller power, embedded relationships appear to be used by investment banks to increase the value of the offerings they underwrite and reduce the costs and uncertainty associated with conducting the offering.
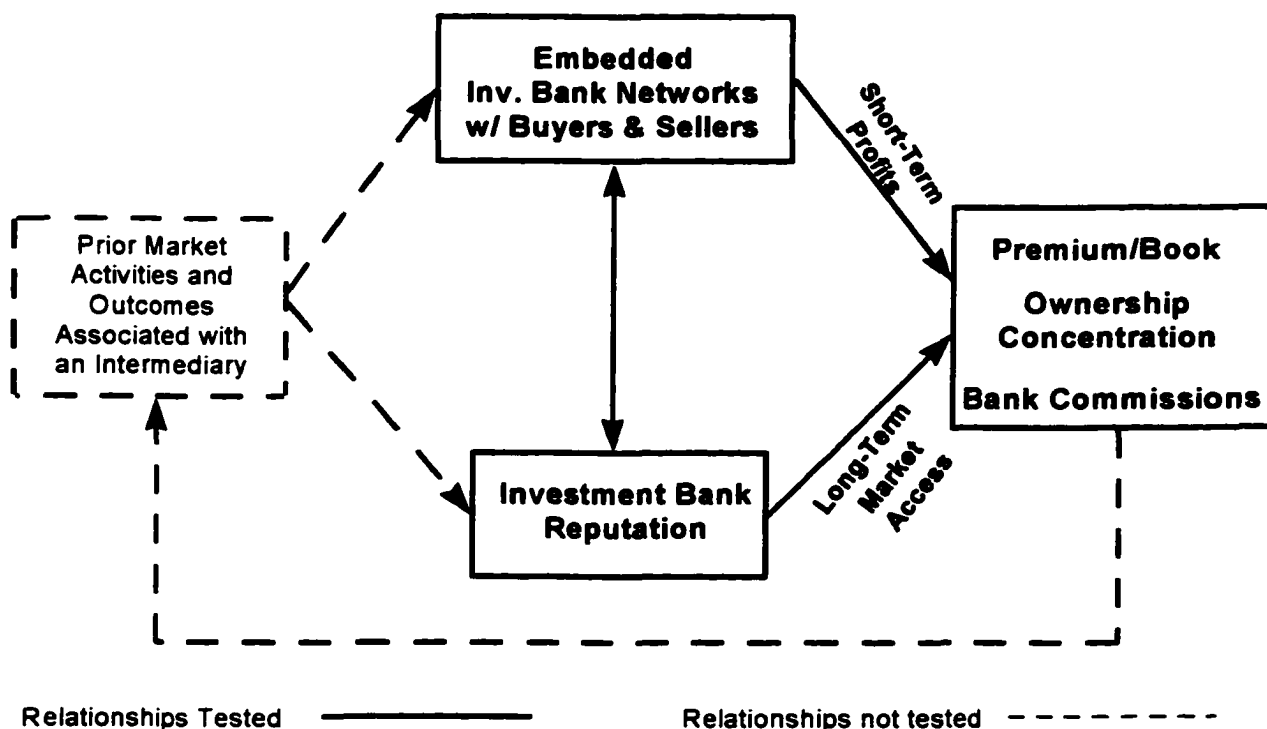
7.1.3 Revised Dual Process Model of Market Mediation

The dual process model of market mediation presented in Chapter 4 suggested that underwriter reputation would have direct effects on market outcomes consistent with a short-term profit orientation, and that investment bank embeddedness with investors and venture capitalists would have a moderating effect on the power of buyers and sellers. In Chapter 4 I suggested that long-term concerns associated with maintaining the integrity of the market underly the moderating role of embeddedness in shaping market outcomes. The results of this study suggest that, although both short- and long-term concerns indeed appear to be motivating the market making activities of investment banks, the social resources associated with these motivations should be reversed. Furthermore, the long-term considerations of investment banks may have less to do with maintaining the long-term integrity of the market than they do with maintaining the underwriter's reputation, its strategic position in the underwriting market, and its continued access to deals.

Figure 5 presents a revised version of the dual process model of market mediation. Embedded relationships are now associated with short-term profit motives, and reputation is now associated with long-term interests in maintaining access to buyers and sellers. Underwriter reputation is expected to play both a direct and a moderating role in the market making process, while the effect of embedded relationships are expected to have more direct effects on market outcomes. Embedded relationships, because they are built and maintained directly by the

Figure 5

Revised Dual-Process Model of Market Mediation

Embedded
Inv. Bank Networks
w/ Buyers & Sellers

Short-Term Profit

Prior Market
Activities and
Outcomes
Associated with
an Intermediary

Premium/Book

Ownership
Concentration

Bank Commissions

Investment Bank
Reputation

Long-Term Market Access

Relationships Tested ——————————— Relationships not tested – – – – – – – –

company and involve the actual buyers and sellers of specific transactions, can have a more direct

and immediate impact on the outcome of a particular IPO. Banks can draw upon the social

capital which has developed within these relationships (Coleman, 1988) to influence pricing and

allocation activities, and to reduce the costs incurred during the underwriting process.

Maintaining a strong reputation, and thus continued access to buyers and sellers, is a less

direct process. A bank's reputation is a set of perceptions which embodies the general estimation

in which the bank is held by others (Fombrun, 1996). The opinions of those who have direct

dealings with the bank, as well as those who have never interacted with the organization, help

shape these perceptions of the bank's reputation. Unlike networks of relationships, reputation

cannot be directly shaped and controlled by the bank (Fombrun, 1996). Because of the difficulties

inherent in attempting to affect direct influence on its reputation and the benefits which accrue to those banks which have high reputations, reputational concerns may become an overarching "meta-consideration" which interacts with, and subtly influences, all of the bank's decisions which can have consequences for its reputation. Banks with reputations to protect may therefore engage in more self-protective behaviors when making pricing and allocation decisions than banks with little reputational capital at risk. Because of the indirect and continuing nature of the concerns, reputational considerations are considered to be a long-term motivating factor.

As in the prior version of the model, the market outcomes of current transactions influence the subsequent nature of the bank's reputation and network of relationships with buyers and sellers. If the outcomes are perceived as positive, the bank's reputation and networks will be reinforced. If the outcomes are perceived as negative, the bank's reputation and outcomes may begin to be weakened. One failed IPO is unlikely to do serious damage; however, repeated problems may make investors more wary. They may begin to decline offerings unless the deal seems obviously underpriced, take smaller positions than in previous deals, and be more likely to quickly sell the stock at the first sign of a drop in share price. IPO firms may also become less likely to engage the services of the bank , especially in competitive situations when other options are available.

Future research should attempt to investigate the nature of the relationship between current market outcomes and their subsequent effects on a bank's transactional networks and reputation. The relationship between embeddedness and reputation should also be considered in greater detail.

7.2 Limitations

Like all studies, this dissertation is not without its limitations. Although I have used the logic, language, and assumed motivations of social embeddedness theorists in constructing my arguments, it is possible that different underlying motivations are driving the observed results. For example, evolutionary game theorists (e.g., Axelrod, 1984; Jackson & Wolinsky, 1996; Wilson, 1985), who assume rational self-interest as the motivating force underlying transactional behaviors, might argue that these findings are consistent with what would be observed in a repeated game with an indefinite time horizon. Although the terminology used is somewhat different, both embeddedness researchers and game theorists describe mechanisms with similar functions. Given the nature of the data in this study, it is not possible to determine what the underlying motives of the actors are when they participate in the IPO market. However, given that in this study I am examining the relationships among the transaction intermediary and many buyers/sellers, rather than a dyadic relationship between one buyer and one seller, social theories which take the entire social structure of the market into account seem appropriate.

A second potential limitation of this study is the cross-sectional nature of the analysis and the time period chosen. Although IPOs are cross-sectional events, the influence of the independent variables could change over time as the nature of the market evolves. The year chosen for study was near the beginning of the current boom in the IPO market. It is possible that in subsequent years, as the market continued to explode and hundreds of additional IPOs were conducted, the role of embedded networks and the reputation of investment banks, as well as the bargaining power of firms going public, may have weakened or changed. In more recent years substantial performance histories of prior IPOs handled by the banks were available, and the large number of IPOs gave institutional investors more investment choices. Future research examining

multiple years will be required to determine whether or not the relationships identified in this study are stable over time.

A third potential limitation of this study is the data which is available to calculate measures of embeddedness with institutional investors. Because actual sales data regarding which investment banks sold how much stock to each institutional investor are not available, actual levels of trading activity concentration cannot be calculated. The best that can be done is to consider co-occurrence of bank and investor participation in the same offerings. In addition, associating all institutional investors who own stock in an IPO firm with all investment bankers who were members of the management team adds additional noise to the embeddedness measure, since it is unlikely that all members of the management team all sold stock to all of the institutional investors, and that none of the syndicate members were solely responsible for the participation of one or more of the institutional investors.

The use of investor holdings at the end of the quarter in which a company went public may not accurately reflect the participation of institutional investors, nor their actual level of holdings at the time of the IPO. It is possible that some investors sold part or all of their holdings prior to the end of the quarter, and thus would not show up in the listing. It is also possible that investors purchased additional shares of stock on the secondary market. Thus, the initial ownership concentration of the stock would be overstated. This limitation would affect ownership concentration as well as embeddedness with investors. However, all of these limitations only serve to weaken the possible effects of the embeddedness measure. The use of these measures can thus be considered a conservative test of the embeddedness arguments.

As mentioned earlier, a possible limitation regarding the measure of bank embeddedness with VCs is the way in which it was calculated. It is possible that using all the VCs who owned

shares of a company prior to the IPO was inappropriate. Perhaps only the lead venture capitalists, i.e., those who owned the largest number of shares in the company, should have been used to calculate the measure. Future research can look at different specifications of this measure, as well as try to capture a larger sample for use in the analysis.

The reputation measure used in this dissertation also has some limitations. The reputation measure used here is a unidimensional construct which was calculated using bank position on a tombstone as a proxy for the overall reputation of the bank. It is certainly possible that this construct is too crude to accurately capture the finer delineations in investment bank reputation which may exist in the market. It is also possible that certain elements of a bank's reputation are more important than others and that using this single construct fails to adequately account for these differences. Future research should attempt to create a multidimensional measure of investment bank reputation which can capture more subtle and identify what the differential effects of these facets are on market outcomes.

Finally, it is likely that the measure of IPO firm quality used in this study does not fully capture important factors which may impact the pricing of the IPO, such as management team performance, the soundness of the company's strategic plan, or information regarding the products and services it offers. The qualitative nature of these factors make it difficult to place values upon them and include them in a quantitative analysis. Future research should attempt to identify those factors which have the greatest influence on investment banks and institutional investors as they attempt to determine the value of a firm and to develop metrics which can allow for their inclusion in a systematic, quantitative analysis.

7.3 Future Research Directions

Future research on the role of transaction intermediaries should consider their role in other types of mediated markets to determine whether the mechanisms identified in this study are specific to the IPO market, or if they generalize to other market contexts as well. Future research on the IPO market can also examine whether or not the networks of actors with which an IPO firm associates itself at the time of the IPO influence its potential for long-term survival. By the end of 1996, 22% of the companies in my sample had been delisted by their stock exchanges. Approximately 7% of the companies were acquired by other firms, 9% of the companies merged with another company to create a new firm, and 6% of the companies were delisted for failing to maintain minimum exchange requirements for listing. Do initial conditions at the time a company goes public influence the likelihood that the company will make one of these transitions? Do more stable investor networks limit stock price and trading volatility in the secondary market, and does this help create a more positive impression of a company and its potential for future performance? Can underwriter reputation provide an IPO firm with more resource slack, so that, for example, lackluster performance following the IPO will not be judged as harshly by the market?

Future research can also attempt to study the growth strategies and perceptions of the industry which a company's management team holds at the time of the IPO, and how these strategies and perceptions are subsequently influenced by company performance and changes in the company's competitive environment. Finally, future research could consider the entire network of relationships among investment banks, investors, venture capitalists, and attorneys simultaneously, in order to determine the degree to which clusters of organizations emerge within the IPO market, and how these clusters shape the dynamics of the market.

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Appendix A

UNDERWRITER	Reputation	Deals with Inst Inv	Embed w/ Inst Inv	Inv Embed Rank	Deals w/VCs	Embed w/VCs	VC Embed Rank
A G EDWARDS & SONS INC	0.77	3	16.67	47	1.00	1.00	53
ADAMS HARKNESS & HILL INC	0.36	2	21.00	38	1.00	6.00	8
ALEX BROWN & SONS INC	1.00	23	143.91	2	23.00	5.09	10
ALLEN & COMPANY INC	0.85	2	15.00	48	1.00	2.00	43
BEAR STEARNS & CO INC	1.00	11	117.55	5	1.00	16.00	1
BT SECURITIES CORP	1.00	1	16.00	48	4.00	1.25	52
CAZENOVE INC	0.50	1	10.00	57	0	0	54
CHICAGO CORP	0.47	2	23.50	33	1.00	7.00	5
COMMONWEALTH ASSOCIATES	0.00	1	1.00	76	0	0	54
COUNTY NATWEST LTD	0.58	2	12.00	56	1.00	2.00	43
COWEN & CO	0.50	3	33.00	28	4.00	7.25	4
DAIN BOSWORTH INC	0.71	5	25.20	32	1.00	1.00	53
DEAN WITTER REYNOLDS INC	1.00	11	33.45	27	6.00	2.50	40
DILLON READ & CO INC	1.00	2	19.00	41	1.00	1.00	53
DONALDSON LUFKIN & JENRETTE	1.00	19	87.11	11	15.00	4.27	20
EQUITABLE SECURITIES CORP	0.00	1	8.00	66	1.00	1.00	53
EQUITY SECURITIES TRADING CO	0.00	1	2.00	74	0	0	54
F N WOLF & CO INC	0.00	1	9.00	63	0	0	54
FIRST BOSTON CORP	1.00	21	143.71	3	10.00	3.00	28
FIRST OF MICHIGAN CORP	0.49	2	10.00	57	0	0	54
FURMAN SELZ INC	0.46	3	41.67	18	2.00	6.50	7
GEORGE K. BAUM	0.00	0	0.00	77	1.00	3.00	28
GOLDMAN SACHS & CO	1.00	12	157.25	1	7.00	5.29	9
GRUNTAL & CO INC	0.52	1	10.00	57	0	0	54
H J MEYERS & CO INC	0.44	2	6.00	70	2.00	4.00	22
HAMBRECHT & QUIST INC	1.00	19	92.05	10	18.00	8.83	2
INVEMED ASSOCIATES INC	0.67	1	10.00	57	2.00	4.50	15
J C BRADFORD & CO	0.64	6	41.67	18	4.00	3.50	26
J P MORGAN SECURITIES INC	0.00	3	49.00	16	4.00	2.75	38
JANNEY MONTGOMERY SCOTT INC	0.47	2	12.50	55	0	0	54
JESUP JOSEPHTHAL & CO	0.45	1	5.00	73	0	0	54
JOHNSON RICE & CO	0.36	1	35.00	25	0	0	54
JOSEPHTHAL LYON & ROSS INC	0.44	1	9.00	63	1.00	1.00	53
KEEFE, BRUYETTE & WOODS	0.00	0	0.00	77	1.00	7.00	6
KEMPER SECURITIES GROUP INC	0.83	3	23.33	34	1.00	2.00	43
KIDDER PEABODY & CO INC	1.00	13	56.46	14	9.00	3.56	25
LADENBURG THALMANN & CO INC	0.50	4	9.75	61	1.00	3.00	28
LAZARD FRERES & CO	1.00	3	40.33	22	0	0	54
LEGG MASON WOOD WALKER INC	0.53	1	6.00	70	0	0	54
MERRILL LYNCH CAPITAL MARKETS	1.00	15	115.40	6	5.00	3.00	28
MESIROW FINANCIAL INC	0.00	2	9.50	62	2.00	4.50	15
MONTGOMERY SECURITIES	1.00	24	86.29	12	18.00	7.39	3
MORGAN KEEGAN & CO INC	0.47	5	35.00	25	1.00	1.00	53
MORGAN SCHIFF & CO INC	0.00	1	19.00	41	0	0	54
MORGAN STANLEY & CO INC	1.00	11	93.18	9	7.00	4.57	14
NEEDHAM & CO INC	0.54	3	23.00	35	3.00	4.33	17
OHIO CO	0.45	1	13.00	53	0	0	54
OPPENHEIMER & CO INC	0.72	6	22.00	37	3.00	4.33	17
PAINEWEBBER INC	1.00	18	45.33	17	8.00	2.88	37
PARKER HUNTER	0.00	0	0.00	77	1.00	2.00	43

Underwriter Embeddedness and Reputation Variables for 1991						
UNDERWRITER	Reputation	Deals with Inst Inv	Embed w/ Inst Inv	Inv Embed Rank	Deals w/VCs	Embed w/VCs	VC Embed Rank
PIPER JAFFRAY & HOPWOOD INC	0.71	7	31.43	29	5.00	3.40	27
PRUDENTIAL BACHE CAPITAL FUNDING	1.00	10	36.70	23	8.00	2.75	38
R G DICKINSON & CO	0.33	1	7.00	69	0	0	54
RAUSCHER PIERCE REFSNES INC	0.50	1	9.00	63	0	0	54
RAYMOND JAMES & ASSOCIATES INC	0.45	4	18.25	43	1.00	3.00	28
REICH & CO	0.00	0	0.00	77	1.00	4.00	22
ROBERT W BAIRD & CO INC	0.50	5	41.40	20	1.00	2.00	43
ROBERTSON STEPHENS & CO	1.00	18	140.56	4	16.00	5.06	11
ROBINSON HUMPHREY CO INC	0.67	5	30.60	30	1.00	2.00	43
S G WARBURG SECURITIES	1.00	1	21.00	39	1.00	2.00	43
SALOMON BROTHERS INC	1.00	10	57.30	13	6.00	2.50	40
SEIDLER AMDEC SECURITIES INC	0.38	1	8.00	66	1.00	3.00	28
SHEARSON LEHMAN BROTHERS INC	1.00	16	94.19	8	13.00	4.23	21
SMETEK VAN HORN	0.00	0	0.00	77	1.00	1.00	53
SMITH BARNEY HARRIS UPHAM & CO	1.00	21	98.29	7	19.00	5.00	12
SOUTHCOAST CAPITAL CORP	0.44	1	14.00	52	1.00	2.00	43
SOUTHWEST SECURITIES INC	0.36	1	8.00	66	0	0	54
STEPHENS INC	0.46	1	15.00	48	1.00	1.00	53
STERNE AGEE & LEACH INC	0.33	1	18.00	44	0	0	54
SUTRO & CO INC	0.54	2	15.00	48	1.00	3.00	28
TUCKER ANTHONY INC	0.53	2	17.00	46	3.00	2.33	42
UNTERBERG HARRIS	0.39	1	41.00	21	1.00	3.00	28
VANTAGE SECURITIES INC	0.33	1	2.00	75	0	0	54
VECTOR SECURITIES INTERNATIONAL INC	0.33	1	13.00	53	3.00	3.67	24
VOLPE WELTY & CO	0.41	7	52.29	15	7.00	5.00	12
WERTHEIM SCHRODER & CO INC	1.00	4	19.75	40	2.00	2.00	43
WESSELS ARNOLD & HENDERSON	0.46	3	35.33	24	3.00	4.33	17
WHEAT FIRST SECURITIES INC	0.71	1	23.00	35	0	0	54
WILLIAM BLAIR & CO	0.69	7	28.71	31	5.00	3.00	28
WILLIAM K WOODRUFF & CO INC	0.38	1	18.00	44	0	0	54

Appendix B

Underwriter	Reputation	Deals as Lead Mgr	Mkt Share as Lead Mgr	Deals as Co-Mgr	Mkt Share as Co-Mgr	Total Deals	Mkt Share Total Deals
A G EDWARDS & SONS INC	.77	2	0.81%	2	0.81%	4	1.63%
ADAMS HARKNESS & HILL INC	.36	0	0.00%	2	0.81%	2	0.81%
ADVEST INC	.63	1	0.41%	2	0.81%	3	1.22%
ALEX BROWN & SONS INC	1.00	14	5.69%	14	5.69%	28	11.38%
ALLEN & COMPANY INC	.85	1	0.41%	0	0.00%	1	0.41%
BEAR STEARNS & CO INC	1.00	4	1.63%	4	1.63%	8	3.25%
BT SECURITIES CORP	1.00	0	0.00%	1	0.41%	1	0.41%
CHICAGO CORP	.47	0	0.00%	1	0.41%	1	0.41%
COMMONWEALTH ASSOCIATES	.00	2	0.81%	0	0.00%	2	0.81%
COUNTY NATWEST SECURITIES LTD	.58	2	0.81%	1	0.41%	3	1.22%
COWEN & CO	.50	2	0.81%	6	2.44%	8	3.25%
CRUTTENDEN & CO INC	.50	1	0.41%	0	0.00%	1	0.41%
DAIN BOSWORTH INC	.71	1	0.41%	1	0.41%	2	0.81%
DEAN WITTER REYNOLDS INC	1.00	1	0.41%	3	1.22%	4	1.63%
DICKINSON & CO	1.00	1	0.41%	0	0.00%	1	0.41%
DONALDSON LUFKIN & JENRETTE	1.00	6	2.44%	13	5.28%	19	7.72%
EDWARD D JONES & CO	.48	0	0.00%	1	0.41%	1	0.41%
EMANUEL & CO	.44	1	0.41%	0	0.00%	1	0.41%
EQUITABLE SECURITIES CORP	.38	0	0.00%	2	0.81%	2	0.81%
FIRST ALBANY CORP	.49	1	0.41%	1	0.41%	2	0.81%
FIRST BOSTON CORP	1.00	12	4.88%	2	0.81%	14	5.69%
FIRST OF MICHIGAN CORP	.49	1	0.41%	0	0.00%	1	0.41%
FURMAN SELZ INC	.46	1	0.41%	3	1.22%	4	1.63%
GERARD KLAUER MATTISON & CO	.36	0	0.00%	1	0.41%	1	0.41%
GLASER CAPITAL CORP	.00	1	0.41%	0	0.00%	1	0.41%
GOLDMAN SACHS & CO	1.00	9	3.66%	1	0.41%	10	4.07%
GRUNTAL & CO INC	.52	2	0.81%	0	0.00%	2	0.81%
H J MEYERS & CO INC	.44	1	0.41%	0	0.00%	1	0.41%
HAMBRECHT & QUIST INC	1.00	11	4.47%	10	4.07%	21	8.54%
HAMILTON INVESTMENTS INC	.34	1	0.41%	1	0.41%	2	0.81%
HAMPSHIRE SECURITIES CORP	.33	1	0.41%	0	0.00%	1	0.41%
HANIFEN IMHOFF INC	.44	1	0.41%	3	1.22%	4	1.63%
HOWARD WEIL LABOUISSE FRIEDRICHS	.58	0	0.00%	1	0.41%	1	0.41%
J C BRADFORD & CO	.64	4	1.63%	3	1.22%	7	2.85%
JANNEY MONTGOMERY SCOTT INC	.47	0	0.00%	1	0.41%	1	0.41%
JJB HILLIARD W L LYONS INC	.51	0	0.00%	1	0.41%	1	0.41%
JOHN G KINNARD & CO INC	.38	2	0.81%	0	0.00%	2	0.81%
JOSEPHTHAL LYON & ROSS INC	.44	3	1.22%	1	0.41%	4	1.63%
KEMPER SECURITIES GROUP INC	.83	4	1.63%	4	1.63%	8	3.25%
KIDDER PEABODY & CO INC	1.00	6	2.44%	3	1.22%	9	3.66%
LADENBURG THALMANN & CO INC	.50	3	1.22%	2	0.81%	5	2.03%
LAIDLAW EQUITIES INC	.45	2	0.81%	0	0.00%	2	0.81%
LAZARD FRERES & CO	1.00	0	0.00%	1	0.41%	1	0.41%
LEGG MASON WOOD WALKER INC	.66	2	0.81%	0	0.00%	2	0.81%
LOEB PARTNERS CORP	.00	0	0.00%	2	0.81%	2	0.81%
MABON SECURITIES CORP	.44	0	0.00%	1	0.41%	1	0.41%
MCDONALD & COMPANY SECURITIES INC	.63	0	0.00%	4	1.63%	4	1.63%
MERRILL LYNCH CAPITAL MARKETS	1.00	9	3.66%	2	0.81%	11	4.47%
MONTGOMERY SECURITIES	1.00	19	7.72%	10	4.07%	29	11.79%
MORGAN KEEGAN & CO INC	.58	1	0.41%	3	1.22%	4	1.63%
MORGAN SCHIFF & CO INC	.00	0	0.00%	1	0.41%	1	0.41%
MORGAN STANLEY & CO INC	1.00	12	4.88%	0	0.00%	12	4.88%
NEEDHAM & CO INC	.66	0	0.00%	4	1.63%	4	1.63%

Underwriter Participation in Deals During 1992 as Lead Manager or Co-Manager (246 Deals)

Underwriter Participation in Deals During 1992 as Lead Manager or Co-Manager (246 Deals)							
Underwriter	Reputation	Deals as Lead Mgr	Mkt Share as Lead Mgr	Deals as Co-Mgr	Mkt Share as Co-Mgr	Total Deals	Mkt Share Total Deals
NOMURA SECURITIES INTERNATIONAL INC	1.00	0	0.00%	1	0.41%	1	0.41%
OPPENHEIMER & CO INC	.91	5	2.03%	8	3.25%	13	5.28%
PAINEWEBBER INC	1.00	7	2.85%	6	2.44%	13	5.28%
PARAGON CAPITAL CORP	.50	1	0.41%	0	0.00%	1	0.41%
PARKER HUNTER INC	.34	1	0.41%	0	0.00%	1	0.41%
PAULI & CO INC	.46	1	0.41%	0	0.00%	1	0.41%
PENNSYLVANIA MERCHANT GROUP	.45	2	0.81%	0	0.00%	2	0.81%
PETRIE PARKMAN & CO	.59	0	0.00%	2	0.81%	2	0.81%
PIPER JAFFRAY & HOPWOOD INC	.70	6	2.44%	5	2.03%	11	4.47%
PRINCIPAL EPPLER GUERIN & TURN	.56	4	1.63%	2	0.81%	6	2.44%
PRUDENTIAL BACHE CAPITAL FUNDI	1.00	4	1.63%	9	3.66%	13	5.28%
PUNK ZIEGEL & KNOELL	.38	0	0.00%	1	0.41%	1	0.41%
RAS SECURITIES CORP	.40	1	0.41%	0	0.00%	1	0.41%
RAUSCHER PIERCE REFSNES INC	.60	2	0.81%	2	0.81%	4	1.63%
RAYMOND-JAMES & ASSOCIATES INC	.59	3	1.22%	4	1.63%	7	2.85%
REINHEIMER & CO INC	.00	0	0.00%	1	0.41%	1	0.41%
ROBERT TODD FINANCIAL CORP	.00	1	0.41%	0	0.00%	1	0.41%
ROBERTSON STEPHENS & CO	1.00	11	4.47%	5	2.03%	16	6.50%
ROBINSON HUMPHREY CO INC	.68	5	2.03%	4	1.63%	9	3.66%
S G WARBURG SECURITIES	1.00	1	0.41%	1	0.41%	2	0.81%
SALOMON BROTHERS INC	1.00	1	0.41%	3	1.22%	4	1.63%
SELF UNDERWRITTEN	.00	1	0.41%	0	0.00%	1	0.41%
SHEARSON LEHMAN BROTHERS	1.00	9	3.66%	2	0.81%	11	4.47%
SMITH BARNEY HARRIS UPHAM & CO	1.00	8	3.25%	14	5.69%	22	8.94%
SOUTHCOAST CAPITAL CORP	.44	0	0.00%	1	0.41%	1	0.41%
SOUTHWEST SECURITIES INC	.51	0	0.00%	1	0.41%	1	0.41%
STEPHENS INC	.62	1	0.41%	2	0.81%	3	1.22%
STIFEL NICOLAUS & CO INC	.54	1	0.41%	0	0.00%	1	0.41%
SUMMIT INVESTMENT CORP	.27	1	0.41%	0	0.00%	1	0.41%
SUTRO & CO INC	.54	3	1.22%	1	0.41%	4	1.63%
TUCKER ANTHONY INC	.65	2	0.81%	2	0.81%	4	1.63%
UNTERBERG HARRIS	.39	1	0.41%	3	1.22%	4	1.63%
VANTAGE SECURITIES INC	.33	1	0.41%	0	0.00%	1	0.41%
VECTOR SECURITIES INTERNATIONAL INC	.54	0	0.00%	5	2.03%	5	2.03%
VOLPE WELTY & CO	.39	1	0.41%	6	2.44%	7	2.85%
WEDBUSH MORGAN SECURITIES	.52	1	0.41%	0	0.00%	1	0.41%
WERTHEIM SCHRODER & CO INC	1.00	1	0.41%	1	0.41%	2	0.81%
WESSELS ARNOLD & HENDERSON	.57	0	0.00%	9	3.66%	9	3.66%
WHALE SECURITIES CO LP	.39	1	0.41%	0	0.00%	1	0.41%
WHEAT FIRST SECURITIES INC	.69	1	0.41%	4	1.63%	5	2.03%
WILLIAM BLAIR & CO	.70	9	3.66%	2	0.81%	11	4.47%

Appendix C

Industry Categorization

Unless otherwise noted the sub-categories for each primary category are industry designations based on 2-digit SIC codes.

Financial
  Banks - Depository
  Banks - Non-Depository
  Holding and Other Investment Offices
  Insurance Carriers

Biotech
  Chemicals and Allied Products

Electrical Manufacturing
  Electronic and Other Electrical Equipment and Components
  Industrial and Commercial Equipment and Computer Equipment
  Measuring, Analyzing & Controlling Instruments

Retail
  Apparel And Accessory Stores
  Automotive Dealers And Gasoline Service Stations
  Building Materials, Hardware, Garden Supply, And Mobile Home
  Eating And Drinking Places
  Food Stores
  General Merchandise Stores
  Home Furniture, Furnishings, and Equipment Stores
  Miscellaneous Retail
  Wholesale Trade-Durable Goods
  Wholesale Trade-Non-Durable Goods

Services
  Amusement And Recreation Services
  Business Services
  Communications
  Electric, Gas, and Sanitary Services
  Engineering, Accounting, Research, Management, and Related Services
  Health Services
  Hotels, Rooming Houses, Camps, and Other Lodging Places
  Motion Pictures
  Personal Services
  Computer Rental and Leasing

Software (4 Digit SIC Codes within 2 Digit Business Services Classification)
  7371- Computer Programming Services
  7372 - Prepackaged Software
  7373 - Computer Integrated Systems Design
  7374 - Computer Processing and Data Preparation and Processing Services
  7375 - Information Retrieval Services

Other Manufacturing (Excluded)
  Apparel and Other Finished Products Made from Fabric
  Fabricated Metal Products, Except Machinery and Transportation
  Food and Kindred Products
  Misc. Manufacturing Industries
  Paper and Allied Products
  Primary Metals Industries
  Printing, Publishing and Allied Industries
  Textile Mill Products
  Transportation Equipment

Other Misc. Industries (Excluded)
  Building Construction General Contractors and Operative
  Local and Suburban Transit and Interurban Highway Passenger
  Motor Freight Transportation and Warehousing
  Oil and Gas Extraction
  Transportation Services

Appendix D

Variables	Prem/Book	Own Concen	Own Concen	Und Comm
Regessions for Non-VC Backed Companies				
Control Variables				
Finance Dummy	-.4477 *** (.1396)	-.0037 (.0153)	.0025 (.0152)	.0012 (.0039)
Biotech Dummy	.0389 (.2089)	.0516 ** (.0234)	.0515 ** (.0231)	.0160 *** (.0061)
Elec Manufacturing Dummy	.1951 (.1461)	-.0284 * (.0163)	-.0307 * (.0161)	.0031 (.0042)
Retail Dummy	.0240 (.1208)	-.0132 (.0135)	-.0133 (.0133)	-.0001 (.0032)
Service Dummy	.0676 (.1313)	-.0097 (.0145)	-.0152 (.0142)	.0004 (.0035)
Software Dummy	-.0043 (.1569)	-.0175 (.0174)	-.0125 (.0171)	.0039 (.0049)
Quarter 1 Dummy	-.1355 (.1087)	.0024 (.0122)	.0034 (.0120)	-.0037 (.0030)
Quarter 2 Dummy	-.0433 (.1003)	-.0030 (.0112)	-.0028 (.0111)	-.0045 (.0029)
Quarter 3 Dummy	.1396 (.1223)	-.0163 (.0137)	-.0162 (.0135)	-.0033 (.0034)
Ln Age	-.0749 * (.0448)	.0023 (.0050)	.0030 (.0049)	.0004 (.0012)
Actor Power Variables				
Ln Investor Size 1991	-.0331 * -.0196	.0053 ** (.0021)	.0066 *** (.0020)	
IPO Firm Quality Index	.0217 -.0162	-.0012 (.0016)	-.0026 (.0018)	-.0013 *** (.0004)
Underwriter Reputation	-.0209 -.2702	.0499 ** (.0214)		-.0014 (.0055)
Embeddedness Variables				
Und. Embeddedness w/ Inv	.0022 -.0014		.0003 *** (.0001)	
Constant	4.559 *** (.2441)	-0.044 (.0272)	-0.035 (.0255)	0.075 *** (.0060)
N	73	73	73	100
F-Value	3.01 ***	2.39 ***	2.57 ***	3.79 ***
R-Squared	0.42	0.35	0.36	0.34
Adj R-Squared	.28	0.20	0.22	0.25

* = p < .10   ** = p < .05   *** = p < .01

Regressions for VC Backed Companies				
Variables	Prem/Book	Own Concen	Own Concen	Und Comm
Control Variables				
Finance Dummy	-.7635 ***	-.0160	-.0107	-.0023
	(.2040)	(.0214)	(.0216)	(.0021)
Biotech Dummy	.0003	-.0146	-.0128	.0009
	(.1508)	(.0161)	(.0160)	(.0016)
Elec Manufacturing Dummy	.0281	-.0080	-.0071	.0008
	(.1225)	(.0130)	(.0130)	(.0012)
Retail Dummy	.0468	-.0227	-.0216	.0005
	(.1660)	(.0177)	(.0176)	(.0015)
Service Dummy	.1046	-.0001	-.0008	.0017
	(.1334)	(.0142)	(.0142)	(.0014)
Software Dummy	.0670	.0060	.0050	.0019
	(.1391)	(.0148)	(.0148)	(.0014)
Quarter 1 Dummy	-.0680	.0174	.0196	-.0004
	(.1150)	(.0122)	(.0122)	(.0010)
Quarter 2 Dummy	-.0873	.0175	.0198	.0004
	(.1186)	(.0125)	(.0126)	(.0011)
Quarter 3 Dummy	.0274	.0052	.0101	-.0013
	(.1562)	(.0162)	(.0165)	(.0012)
Ln Age	-.0322	-.0005	.0002	-.0005
	(.0579)	(.0061)	(.0062)	(.0005)
Actor Power Variables				
Ln Investor Size 1991	.0163	.0034	.0034	
	(.0212)	(.0023)	(.0023)	
IPO Firm Quality Index	.0077	.0026	.0023	-.0001
	(.0197)	(.0020)	(.0021)	(.0002)
Underwriter Reputation	-.2351	.0358 *		-.0123 ***
	(.2555)	(.0202)		(.0018)
Embeddedness Variables				
Und. Embeddedness w/ Inv	.0019 *		.0002 *	
	-.0012		(.0001)	
Constant	4.2183 ***	-.0212	-.0069	.0817 ***
	(.3462)	(.0369)	(.0329)	(.0025)
N	103	103	103	146
F-Value	2.30 ***	1.58 *	1.57 *	5.92 ***
R-Squared	0.27	0.19	0.19	0.35
Adj R-Squared	0.15	0.07	0.07	0.29

* = p < .10   ** = p < .05   *** = p < .01

VITA

TIMOTHY G. POLLOCK

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EDUCATION

Ph.D.   University of Illinois at Urbana-Champaign May, 1998
             Major Concentration: Organizational Theory
             Minor Concentration: Research Methods

MBA   University of Texas - Austin, Summa Cum Laude 1990
             Concentration: Management

B.S.   Northern Illinois University, Magna Cum Laude 1988
             Major: Finance   Minor: Communications

DISSERTATION

Risk, Reputation and Interdependence in the Market for Initial Public Offerings: Embedded Networks and the Construction of Organizational Value

Organizational theorists have become increasingly interested in the study of markets and have provided insights regarding how social processes affect market behaviors and outcomes. These theorists have not, however, examined the role of embeddedness in markets where buyers and sellers do not interact directly. One such market is the market for initial public offerings. Financial researchers have concluded that a variety of social factors induce the IPO market to depart from efficient market expectations. Most of these factors, however, are outside the scope of financial theorizing and thus have been treated in an *ad hoc* way by financial researchers. This dissertation examines how investment banks, as transaction intermediaries, use embeddedness and reputation to influence transaction outcomes among buyers and sellers in the IPO market.

Dissertation Committee: Joseph Porac (Chairman)   Howard Thomas
                            James Wade (Research Director)   Matthew Kraatz

ACADEMIC EMPLOYMENT

University of Illinois Research Assistant for Prof. Howard Thomas	8/97-5/98
University of Illinois Research Assistant for Prof. Joseph Porac	5/94 - 8/94, 1/95-8/97
University of Illinois Research Assistant for Prof. James Wade	1/94-5/94
University of Illinois Teaching Assistant - Introduction to Management	9/94-12/94
University of Illinois Teaching Assistant / Instructor - Developing Management Skills	9/93-12/93
University of Texas Teaching Assistant - Introduction to Finance	1/90 - 5/90
Northern Illinois University Speech Instructor	7/88, 7/93-97

NON-ACADEMIC EMPLOYMENT

The Longmont Group, Houston TX   7/91 - 6/93
Case Design Analyst - I designed non-qualified benefit plans (SERPS, compensation deferral plans) and long-term disability plans for senior executives of corporations and partners in law firms. I also analyzed estate planning needs of high net worth individuals and designed plans to minimize tax effects on their estates and preserve their wealth for their heirs.

Coopers & Lybrand, Houston TX   5/90 - 6/91
Associate Compensation Consultant - I designed salary administration and annual incentive bonus plans for small to mid-sized corporations and public institutions. I also conducted custom compensation surveys for corporate clients.

Elgin West Pharmacy, Elgin IL   1988-1997
Advisor - I have assisted in all phases of managing our family business during a period of increasing competition in the local market. This has included conducting cash flow analyses to determine the most profitable hours of operation, personnel decisions, managing cash flows, downsizing, and decisions regarding the physical relocation of the store.

ACADEMIC HONORS AND AWARDS

Winner, 1997 INFORMS/Organization Science Dissertation Proposal Competition
Selected Participant, OB/OD/OMT Doctoral Consortium, Academy of Management, 1997
Selected Participant, Entrepreneurship Doctoral Consortium, Academy of Management, 1996
The University of Texas Dean's Award for Academic Excellence
The University of Texas Sord Scholar Award
Northern Illinois University Department of Finance Financial Institutions in Risk Management Award
Phi Kappa Phi Honor Society
Mortar Board Senior Honor Society
Beta Gamma Sigma Business Honor Society
Alpha Lambda Delta Freshman Honor Society

FELLOWSHIPS & SCHOLARSHIPS

Harry Gray Fellowship - University of Illinois 1993-1994
Northern Illinois University Forensics Scholarship 1987-88
Drake University Presidential Freshman Scholarship 1984

PROFESSIONAL ASSOCIATIONS

Academy of Management
American Sociological Association
United States Association of Small Business & Entrepreneurship

PROFESSIONAL EXPERIENCE

Ad Hoc Reviewer for Administrative Science Quarterly
Reviewer for Academy of Management Annual Meetings, OMT Division, 1995-1997
Reviewer for Annual Interdisciplinary Students of Organizations Conference

PROFESSIONAL ACTIVITIES

Department of Business Administration Graduate Studies Committee 1996-1998
Department of Business Administration Graduate Student Advisory Council 1995-1996
University of Illinois Speech Team, Assistant Coach 1994-1995

TEACHING INTERESTS

Organizational Theory, Entrepreneurship, Organizational Behavior, Compensation and Benefits Systems, Research Methods

RESEARCH INTERESTS

I am interested in how social and political factors such as reputation, social networks, impression management, and power affect organizational outcomes that have often been considered economically rational in their determination. These include executive compensation, corporate governance structures, and the organizational consequences of market transactions. I am also interested in managerial sensemaking in market environments, and how managerial interpretations influence the actions and outcomes of organizations. Because of my work with the Kauffman Foundation, and an abiding interest in entrepreneurship, I am increasingly using high growth firms as a context for exploring these issues.

RESEARCH GRANTS

Joseph Porac & Timothy Pollock (Co-Principal Investigators) $25,000, *Entrepreneurial Dominant Logics and their Relationship to Organizational Growth* Ewing Marion Kauffman Foundation 1996-1997

We analyzed narratives included in the National Center for Entrepreneurship Research's database on high growth firms to identify management growth logics and the relationship between these logics and company financial condition. A paper from this study was presented at the 1997 Babson/Kauffman Entrepreneurship Research Conference as part of an introductory showcase of the NCER database.

DATABASES DEVELOPED

Database on CEO Compensation, Reputation, and Corporate Governance (1993-present)
This database includes five years of data on executive compensation, corporate governance, CEO reputation, proxy narratives, and corporate financial results for 292 companies in the S&P 500. The data were collected from a variety of sources including annual proxy statements, Compustat, *Financial World*, *Forbes*, and *Who's Who*. This database has been used as the basis for several studies which are currently in press or under review. Additional studies using this database are underway.

Kauffman Foundation's National Center for Entrepreneurship Research Database of High Growth Firms (1995-present)
Over the past two years, I organized and supervised the scanning and computer processing of over 1600 narratives submitted by regional and national finalists in the Ernst & Young Entrepreneur of the Year competition. These narratives were then combined with several years of financial data on the same companies to create a database which NCER hopes will be a primary source of data for entrepreneurship researchers into the twenty-first century. We have already completed one study using portions of this database, and additional studies are underway.

Initial Public Offerings Database (1996-present)
This database includes S-1 registration statements and prospectuses for all companies which conducted initial public offerings between 1990 and 1995. These documents provide several years of detailed data on financial performance and the characteristics of top management teams, boards of directors, and company advisors. The database also includes extensive narrative data describing the companies, their industries, their products, their strategies for future growth, and the risks they face. A portion of this database forms the foundation for my dissertation, and additional studies are planned.

DATA ANALYSIS SKILLS & SOFTWARE PROGRAMS

Computer Aided Text Analysis: VBPro, ZyIndex
Social Network Analysis: UCINET
Regression, Time Series and Event Count Statistical Analysis: SPSS, Stata, SAS, LIMDEP
Structural Equation Modeling: PLS-Graph
Database Management: Paradox, Watermark Document Management System, Excel

PUBLICATIONS

Wade, James, Joseph Porac, Timothy Pollock & James Meindl (1997) "Hitch Your Wagon to a CEO Star? Testing Two Views about the Pay, Reputation and Performance of Top Executives," <u>Corporate Reputation Review</u>, 1:1-2, 103-107.

Wade, James, Joseph Porac & Timothy Pollock (1997) "Worth, Words and the Justification of Executive Pay," <u>Journal of Organizational Behavior</u>, 18, 641-664.

Pollock, Timothy, Joseph Porac & Leann Mischel (1997) "Entrepreneurial Dominant Logics and Their Relationship to Organizational Growth," <u>Frontiers in Entrepreneurship Research</u>. Babson College, MA, 66-67.

PROVISIONAL ACCEPTENCES

Porac, Joseph, James Wade & Timothy Pollock "Industry Categorizations and the Politics of the Comparable Firm in CEO Compensation," <u>Administrative Science Quarterly</u>.

Thomas, Howard, Timothy Pollock & Phil Gorman "Strategic Groups, Core Competence, and Global Competition: Reflections on the Puzzle of Competitive Strategy," <u>Academy of Management Executive</u>.

MANUSCRIPTS UNDER REVIEW

O'Reilly, Charles, James Wade & Timothy Pollock "Overpaid CEOs and Underpaid Managers: Equity and Executive Compensation," Revise and Resubmit, <u>Academy of Management Journal</u>.

Pollock, Timothy, Robert Whitbred & Noshir Contractor "Social Information Processing and Job Characteristics: A Test and Integration of Two Theories with Implications for Job Satisfaction."

WORKING PAPERS

Wade, James, Joseph Porac, Timothy Pollock & James Meindl "Big Money and the Star CEO: A Look at the Pay, Reputation and Performance of America's Corporate Chieftains."

Pollock, Timothy, Joseph Porac & Leann Mischel "Entrepreneurial Growth Strategies and Their Relationship to Financial Resource Availability"

Pollock, Timothy "When It's Time to Change: Peer Group Selection as a Response to Changes in Corporate Performance."

PRESENTATIONS

Pollock, Timothy, Robert Whitbred & Noshir Contractor "Social Information Processing and Job Characteristics: A Test and Integration of Two Theories with Implications for Job Satisfaction." Presented at the Annual Speech Communication Association Meeting, Chicago, IL, November, 1997.

Pollock, Timothy "Risk, Reputation and Interdependence in the Market for Initial Public Offerings: Embedded Networks and the Construction of Organizational Value," Presented at the INFORMS Fall Meeting, Dallas, TX, October, 1997.

Wade, James, Joseph Porac & Timothy Pollock "Worth, Words and the Justification of Executive Pay," Presented at the Annual Meeting of the Academy of Management (OMT Division), Boston, MA, August, 1997.

Wade, James, Joseph Porac, Timothy Pollock & James Meindl "Big Money and the Star CEO: A Look at the Pay, Reputation and Performance of America's Corporate Chieftains," Presented at the Annual Meeting of the Academy of Management (OMT Division), Boston, MA, August, 1997.

Pollock, Timothy, Joseph Porac & Leann Mischel "Entrepreneurial Dominant Logics and Their Relationship to Organizational Growth," Presented at the Babson/Kauffman Conference on Entrepreneurship, Boston, MA, April, 1997.

Wade, James, Joseph Porac, Timothy Pollock & James Meindl "Big Money and the Star CEO: A Look at the Pay, Reputation and Performance of America's Corporate Chieftains," Presented at the NYU Conference on Corporate Reputation, Image and Competitiveness, New York, NY, January, 1997.

Pollock, Timothy "When It's Time to Change: Peer Group Selection as a Response to Changes in Corporate Performance," Presented at the Annual Meeting of the Academy of Management (BPS Division), Cincinnati, OH, August, 1996.

Wade, James, Timothy Pollock & Joseph Porac "CEO Compensation and the Problem of the Comparable Firm," Presented at the Annual Meeting of the Academy of Management (OMT Division), Cincinnati, OH, August, 1996.

Pollock, Timothy, Robert Whitbred & Noshir Contractor "Social Information Processing, Job Characteristics and Disposition: A Test and Integration of Competing Theories of Job Satisfaction," Presented at the 16th Annual International Sunbelt Social Network Conference, Charleston, SC, February, 1996.

Wade, James, Timothy Pollock & Charles O'Reilly, III "CEO Pay and Trickledown Economics: The Effect of CEO Pay Equity on Employees," Presented at the Annual Meeting of the Academy of Management (HR Division), Vancouver, BC, August, 1995.

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Pollock, Timothy "Closeness, Overlap and Duration: External Influence and Intraorganizational Decision Making," Presented at the Midwest Division of the Academy of Management 38th Annual Conference, St. Louis, MO, April, 1995.

Pollock, Timothy "Closeness, Overlap and Duration: External Influence and Intraorganizational Decision Making," Presented at the Seventh Annual Organizational Communication Mini-Conference, Lawrence, KS, October, 1994.

REFERENCES

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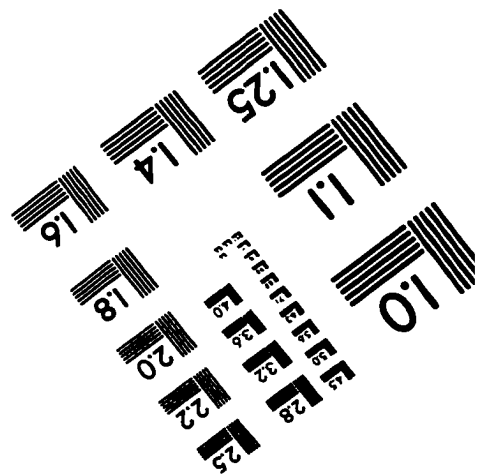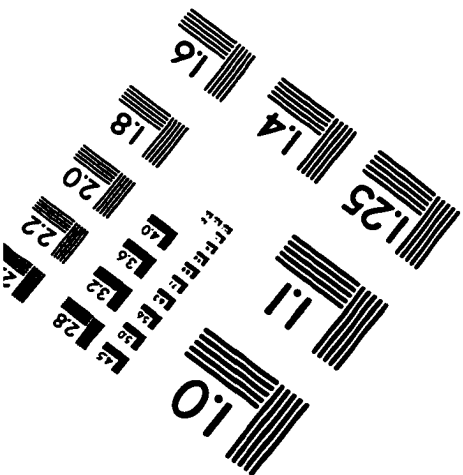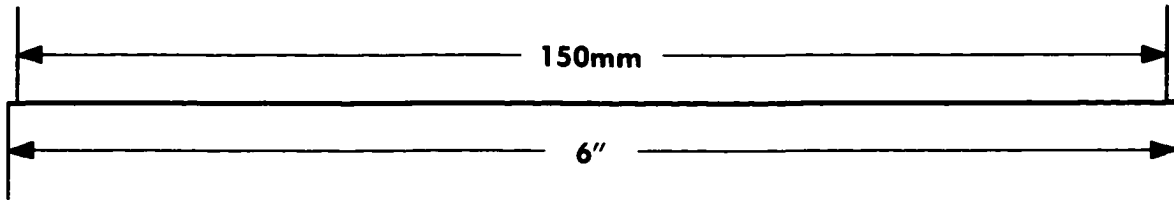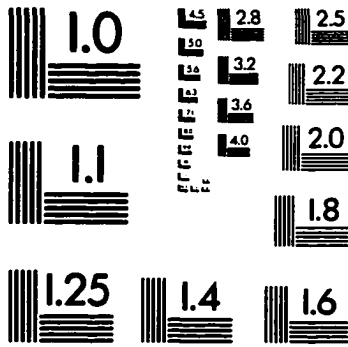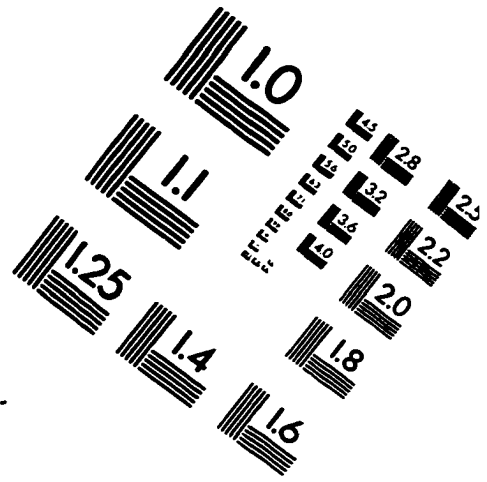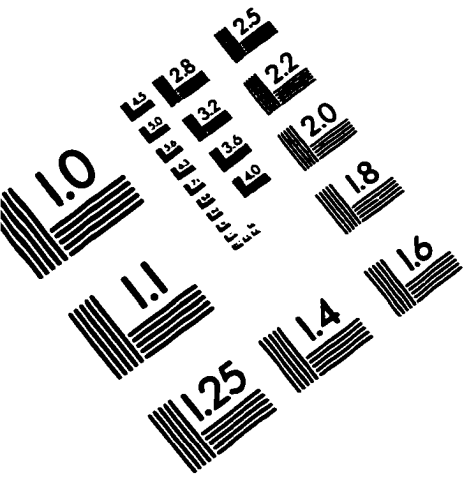
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