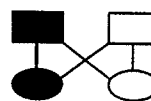# Corporate Social Capital and the Cost of Financial Capital: An Embeddedness Approach

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ABSTRACT

Using a structural embeddedness approach, we present argument and evidence on the ways social capital affects the operation of financial capital markets in the context of the small business loan market. We posit that the quality of a relationship between a bank and a corporate borrower, as well as the network structure of ties between the borrower and its bank(s) influences the cost of capital firm's pay on their loans. Specifically we examine two dimensions of structural embeddedness at the dyad level and two at the network level. At the dyad level of analysis, we find that the duration of the relationship and relationship multiplexity are associated with a lower cost of capital (i.e., paying lower interest rates). At the network level, we find that firms that have ego-networks composed of a mix of embedded and arm's-length ties obtain a lower cost of capital then firms with either a ego network composed of arm's-length ties or an ego-network composed of only embedded ties. We find no effect for simple ego-network size on the cost of capital. The implications of our embeddedness perspective on corporate social capital are discussed.

INTRODUCTION

Economic sociology is concerned with questions of how organizations acquire resources and the mechanisms by which social structure influences the allocation of resources in a market. In a capitalist economy, the key resource is financial capital, and consequently, the connection between a firm and its lender(s) is equivalent to an organizational umbilical cord. The purpose of this chapter is to apply a sociological

approach to the study of financial market intermediation with special attention to how social structure affects an organization's cost of borrowed capital.

Currently, financial economic theory has developed a widely used model to explain how the market for capital operates and how the cost of capital is determined for organizations. The theory predicts that, in a frictionless capital market, individuals or firms with a positive net present value of investment opportunities will always have access to funds and that the riskiness of the borrower determines the cost of capital (Mintz and Schwartz 1985; Mizruchi and Stearns 1994; Petersen and Rajan 1994). This approach focuses on the use of objective financial criteria in evaluating the creditworthiness of a borrower and on how financial market characteristics affect lending practices. The theory posits that firm level financial statistics adequately measure the organization's ability to service debt through future revenues, liquidity of assets, or both. Thus, high performing firms or firms with high liquidity are prime candidates for receiving loans at competitive prices. In addition, the age and size of the organization are also viewed as important measures of the firm's ability to bear credit. Old and large firms are expected to receive better financing terms because they have positive reputations and a more diversified portfolio of assets.

The financial economic approach also focuses on how financial market characteristics influence lenders' bargaining power and historical practices. A significant characteristic of the market is the level of bank concentration in a given region: higher bank concentration is thought to increase the cost of capital to borrowers because the decrease in competition among banks can permit each to bargain aggressively for a premium (Petersen and Rajan 1994). Also regional characteristics are important. Certain regions may have structurally embedded financing and production cultures that increase access to resources relative to other geographic regions (Romo and Schwartz 1995). A California software firm may find it easier to acquire capital than a Mississippi software firm. Industries vary in their growth rate, which can provide organizations in these industries with an advantage in acquiring capital. A biotechnology firm may have more favorable cost of capital than a firm in a declining heavy manufacturing industry (Powell et al. 1996).

While evidence in support of this theory has been accumulating, particularly at the level of large banks and large corporations (Uzzi and Gillespie 1998), a recent critique argues that it fails to account for how social structure (e.g., lending relationships, discrimination, and bias) affects the cost of that capital (Mintz and Schwartz 1985; Podolny 1993; Petersen and Rajan 1994; Abolafia 1996). For example, financial economics generally regards relationships as peripheral to the operation of capital markets or as adding inefficiencies to the system (Blackwell and Santomero 1982; Baker 1990; Podolny 1993; Mizruchi and Stearns 1994). Yet, research has long recognized that relationships are an integral part of the banking system and highly valued by entrepreneurs and bankers (Baker 1990; Hoshi, Kashyap, & Scharfstein 1990; MacKie-Mason 1990; Diamond 1984). For example, consistent with the argument that relationships matter, Hoshi, Kashyap, and Scharfstein (1991) found that long-term ties between Japanese firms and banks was associated with fewer liquidity constraints on a firm's investments and a greater capacity to make investments when financially distressed. Petersen and Rajan

(1994) found that the number of banks from which a firm borrows and the number of services the firm uses at the bank are associated with a lower cost of borrowing. They concluded that ties between banks and borrowers can increase information flow and the bank's control over the firm's actions, thereby addressing problems of adverse selection (e.g., high interest rates attracting riskier borrowers) and moral hazard (e.g., applicants choosing higher risk investments).

This chapter uses an embeddedness approach to extend the above work and examine how social structure affects an organization's cost of capital, where cost of capital is reflected in the interest rate on long-term financing. The interest rate on long term financing is an appropriate measure of the cost of capital because 1) it is clearly measurable and 2) it is the cost index most widely used in financial reporting. Specifically, we examine the relationship between social structure and lending practices, with particular emphasis on the quality and structure of ties between small and medium sized organizations and their banks. Small and medium sized organizations have annual sales up to 500 million, with the medium size in terms of annual sales being ten million.

The embeddedness approach gives social structure a central role in explaining lending practices and outcomes (Granovetter 1985; Portes and Sensenbrenner 1993; Uzzi 1996a, 1997a, 1997b). It explicates how the substance of ties, as well as the ego-network of ties in which an organization is situated, affects exchange between organizations. The decisive factor is that particular types of social ties can mitigate opportunism, increase resource pooling, and motivate actors to seek Pareto superior outcomes rather than selfish gains. This theoretical approach extends previous work in economics and sociology by developing more fully the social mechanisms by which relationships benefit the firm and by furnishing more exacting measures of embeddedness than the current literature.

Integrally related to our embeddedness arguments is the role of social capital in the creation of financial capital (Gabbay 1997). 'Unlike other forms of capital, social capital inheres in the structure of relations between actors and among actors. It is not lodged either in the actors themselves or in the physical implements of production (Coleman 1988: 98).' Social capital consists of the social relationships between actors, and it importantly affects the operation of financial capital markets. Banks are obviously repositories of financial capital. In addition, much like venture capital firms, they are sources of experience, information, and personal contacts for young firms (Freeman, this volume; Podolny and Castelluci, this volume). Banks gain social capital by bridging structural holes and disconnects in the social structure of the financial market, principally serving to connect savers with borrowers. As this chapter shows, loan interest rates are partly a function of the strength of the relationship (i.e., the degree of existing social capital) between a bank and a potential borrower and the architecture of the firm's network of bank ties.

STRUCTURAL EMBEDDEDNESS: THEORETICAL ARGUMENTS

The structural embeddedness approach extends the work of classical sociological theory on the economy and combines it with organization and social network theory (White 1981; Granovetter 1985; Powell 1990; Portes and Sensenbrenner 1993; Romo and Schwartz 1995; Uzzi 1996a). The basic argument is that the nature of

relationships between and among firms, as well as the overall structure of the ego-network within which the firm is embedded, influences individual firm behavior and the behavior of the network in its entirety. The type of network in which an organization is situated defines its potential store of strategic opportunities, while the quality of its relationships with other actors demarcates its capacity to access and implement those opportunities.

The embeddedness approach assumes that actors' interest and motives are variable and follow predictably from social structural parameters (Granovetter 1985). These differences in the microbehavioral foundations of embeddedness and the macro structural conditions of exchange are what distinguish the logic of embeddedness from other approaches (see Uzzi 1997a: 61). A key feature is that actors operate under what has been referred to as the 'logic of embeddedness' because ongoing social ties shape actors' expectation, motives, and decision-making processes in ways that differ from the logic of market behavior (Portes and Sensenbrenner 1993). According to this logic, actors use heuristic decision rules rather than intensive calculation to make decisions, and they aim to cultivate cooperative ties rather than narrowly pursue self-interest.

Structural embeddedness refers to the concrete social ties between and among actors and focuses on material exchanges of resources and information as the basis of the exchange. The argument posits that different structural conditions set in motion either self-interested or cooperative interests and motives among banks and borrowers, which in turn affect the cost and availability of capital. In addition, our arguments recognize that social structure can either facilitate (social capital) or derail (social liability) economic action. Therefore, 'social capital should be treated as a context-dependent concept calling for the definition of the conditions in which it has productive outcomes' (Gabbay 1997: 13-14). In an extreme case of overembeddedness, social structure can be more constraining than beneficial and constitute 'social liability' (Leenders and Gabbay, this volume).

We begin by discussing four dimensions of structural embeddedness: relationship density, relationship multiplexity, ego-network size, and network coupling. These four dimensions all affect whether a given configuration of ties turns into social capital or into social liability for to corporate borrower. Working at the levels of dyads and ego-networks, we then examine how these four dimensions of structural embeddedness affect the pricing of loans to small business entrepreneurs. Important dimensions at the dyadic level are relationship duration and relationship multiplexity (Coleman 1988; Baker 1990; Podolny 1994; Uzzi 1996a). Important dimensions at the network level include ego-network size and ego-network coupling (Baker 1990; Burt 1992b; Uzzi 1996a), with the unit of analysis being the set of ties between a firm and one or more banks.

Relationship duration

Relationship duration refers to the elapsed time in a relationship from the point of its inception. According to financial theory, a firm's age could provide prospective lenders with a gauge of the its ability to service debt by providing a record of the firm's creditworthiness with past employees, suppliers, and lenders (Blackwell and Santomero 1982). In contrast, recent arguments hold that the information learned about a borrower through a long-term relationship may include information about a

borrower's creditworthiness that is not contained in past dealings with others. Of particular importance is that the information may not be readily transferred to new banks that have different lending policies, practices, or experiences with borrowers. Thus, the longer a relationship between a borrower and a bank, the more likely it is that the bank will view the borrower as creditworthy relative to other borrowers (Petersen and Rajan 1994). Similarly, if a borrower has had only short-term relationships with many different lenders, banks could interpret that as a signal of credit unworthiness.

The embeddedness approach concurs with the insights of financial economics but argues that *a relationship is not only the source of specific information about an exchange partner, but is the source of unique resources that would not be generated in the absence of the relationship.* 'Social capital inheres in the structure of relations between actors and among actors. It is not lodged either in the actors themselves or in physical implements of production' (Coleman 1988: 98). For example, several studies of various types of exchange relationships have shown that ongoing interaction fosters trust between exchange partners as they learn one another's expectations and values (Coleman 1988). As trust accrues, the resources that were dedicated to monitoring an exchange partner can be redeployed, increasing the value of the tie. In a study of interfirm relationships, Macauley (1963) found that, the longer two firms transacted with one another, the less detailed were their contracts and the greater the organizations' ability to work out problems of transacting. Baker (1990) reported that long-term relationships between investment bankers, and investment bankers and their corporate clients, permits both parties to put faith in the contractual pledges of other parties. Repeated interaction has also been found to increase liking and the formation of 'business friendships' which can lower the likelihood of opportunistic behavior and increase the search for mutually beneficial outcomes (Homans 1950; Batson 1990). Baker (1990) showed that investment bankers are more inclined to look for Pareto improved outcomes when business friendships have developed, even when immediate or long-term payoffs are not apparent or guaranteed. The important outcome of these processes is that ongoing ties can lower costs, as well as the threat of opportunistic behavior by either exchange partner, because both parties are motivated to preserve the tie and to first look for Pareto-improved rather than self-interested outcomes.

In the case of banks and borrowers, this may mean that the bank can lower its monitoring costs and contract writing costs for long-term borrowers, and firms with ties can acquire cost of capital advantages relative to those lacking enduring social ties. Indeed, in our conversations with bankers, the motivational benefits of relationships are viewed as more important than the informational benefits because, in many cases, more than enough information on the credit history of the firm and the entrepreneur can be readily accessed through credit raters such as TRW (Uzzi and Gillespie 1998).

Multiplexity

Another aspect of dyadic relationships that is important for understanding exchange dynamics is the degree of multiplexity. Multiplex ties are relationships in which persons are linked by more than one type of role (e.g., buyer and seller, business partner, friend, etc.). Coleman (1988) argued that multiplexity increases the overall

level of resources available to actors because resources from one dimension of the relationship can be appropriated for use in others. Multiplex ties develop when transacting partners can enact a set of relationships in addition to the immediate relationship of buyer and seller. In the context of banking-borrower relationships, multiplex ties are likely to form when the borrower relies on the bank for multiple services that span the roles of borrower and lender. Typically, these broader relationships include financial planning, personal credit card issuing, retirement planning, pension or payroll account services, lock boxes, letters of credit, etc. The presence of multiplex ties of this form constitute a type of social capital that should lower the cost of financial capital because resources from one dimension of a banking relationship can support other dimensions either through direct resource allocations or by expanding the possibility for finding compromise solutions to gaining credit. For example, in return for a lower interest rate or access to more credit –the primary resource desired by the firm-- a business may use a bank's new service division or expand its use of services already offered by the bank.

Consistent with this argument, there is evidence that when a new relationship is added to a multiplex tie, the new ties rely on self-enforcement rather than external constraints to manage interdependence (Gimeno and Woo 1996; Nooteboom this volume). This process has the effect of building interpersonal trust in multiple contexts and roles (e.g., norms of reciprocity as benefactor and as beneficiary). For example, research on automaker-supplier relationships suggests that, as US parts suppliers and Big 3 automakers moved towards more cooperative relationships, the level of contractual oversight over new relationships (e.g., supplier as co-designer or investor) decreased (Helper 1990; Dyer 1997). Building on Coleman's (1988) initial insight, Uzzi (1997a) argued that multiplex ties build redundancies that reinforce relationships and reduce the risks associated with exchanges. In risky situations, multiplex ties enable resource pooling and adaptation to random events by creating or increasing the level of slack resources in the relationship. This increases the likelihood of risk taking and investment on the part of both exchange partners.

These arguments suggest two hypotheses.

H1: *The duration of the relationships between the borrowing organization and banks is inversely associated with the organization's cost of capital.*

H2: *The degree of multiplexity in the relationships between the borrowing organization and banks is inversely associated with the organization's cost of capital.*

Structural embeddedness also operates at the network level of analysis. Two key measures are network size and network coupling. The logic behind these effects is that an organization's overall ego-network of ties affects the value of each dyadic relationship possessed by the firm.

Network size

Network size measures the quantity of ties possessed by an actor. Several perspectives argue that a large network of contacts is beneficial to an organization because it increases the organization's bargaining power and access to alternatives. Transaction cost economics predicts that firms increase credit availability and lower the cost of capital by maintaining many ties to many financial institutions. From the perspective of transaction costs theory, the more trading partners a firm possesses, the greater its probability of finding a prospective lender and the greater its

bargaining power vis-à-vis each bank (Milgrom and Roberts 1996). From the perspective of resource dependence theory, a large ego-network of trading partners should lower the power asymmetry between financial institutions and corporate borrowers (Mintz and Schwartz 1985).

While we agree that a large ego-network of contacts may provide more opportunities to acquire capital for the reasons outlined above, we predict that it will have a negative rather than a positive effect on the cost of capital, particularly under the credit rationing conditions that small businesses typically face. Our argument is that large ego-networks work against the building of close relationships between a borrower and a lender for several reasons, and thus lower the bank's incentive to offer attractive rates. First, large ego-networks limit interaction because time and resources are spread across a large set of partners. This reduces opportunities for repeated interactions that can cause arm's length relationships to blossom into business friendships (Granovetter 1993). Similarly, small ego-networks signal to network members that the organization has enacted a strategy of cooperative exchange and problem solving by consciously restricting its bargaining alternatives (Kollock 1993; Jackson and Wolinsky 1996). If the number of banks that a firm uses is small, then it is likely to attempt to maintain a close tie with its bank in order to support the continuity of the relationship (Baker 1990). As Leenders (1995b) has noted, this dependence cuts both ways because there is a mutual interdependence between individual actors and network structure: Firms depend on banks as a key source of financial capital but banks depend on firms to provide a market for the purchase of their capital. We expect this effect to be strong in a well developed banking market like the US because lenders can use their knowledge of the going rate of capital to bargain aggressively with borrowers who are shopping around since they know that other lenders will also bargain aggressively to maintain their spreads.

Consistent with this argument, several studies have shown that firms with large ego-networks were more likely to play their partners against one another (i.e., whipsawing) in an opportunistic manner (Helper 1990; Dyer 1997). Second, a large network reduces the economies of time advantages typically found in the close relationships that follow from small networks (Freeman this volume). Smitka (1991) showed that the development time of new models, as well as speed to market was higher for Japanese automakers than for US automakers partly because the smaller contractor networks of the Japanese firms enabled tacit knowledge to develop, which was crucial for faster decision making. In the context of our study, we anticipate that small businesses with larger ego-networks of banks will pay higher interest rates on their loans.

Network coupling

Our last argument relating ego-network structure to the cost of capital concerns the effects of the portfolio structure of an organization's network of ties. An ego-network's portfolio structure differs from ego-network size in that networks of like size can have a dissimilar portfolio structure. An ego-network can have a dispersed, consolidated, or mixed-mode structure (Baker 1990; Uzzi 1996a). A dispersed portfolio structure occurs when an organization spreads its banking business out among many banks in small parcels. For example, the organization may use six

banks, each of which gets about fifteen percent of the organization's business. This would represent a disbursed structure. Conversely, an organization with the same overall size of banking business could use one bank for a sole-source relationship, or it could give one bank 95 percent of its business and another bank the remaining five percent. This structure would represent a consolidated structure. In between the dispersed and consolidated structures is a mixed or dual mode structure, wherein the organization sends the lion share of its business to one or two banks and then distributes the remaining share to two or three banks.

An organization with a consolidated portfolio gains the benefits of close ties, yet runs the risk of becoming insulated from new and novel information that is circulating outside its network (Uzzi 1997a). For example, firms that use only one bank may be unaware of innovations in banking or financial services or of new competitive loan rates or instruments that other banks in the industry are adopting or are first-movers in adopting. Over time, the accumulated effects of the social liability of this weak network position can put the firm at a strategic disadvantage for gaining timely market information about capital availability and cost, even if their primary bank is motivated to find Pareto-improved outcomes, because there is a lack of knowledge of alternatives.

Conversely, an organization with a dispersed portfolio can optimize a firm's access to new and novel information (Granovetter 1973; Burt 1992b) but lacks the benefits of collaboration and resource pooling that are associated with embedded ties (Powell, Koput and Smith-Doerr 1996). Under these conditions, firms are likely to be put at a disadvantage in garnering favorably priced loans because they lack the embedded ties to a bank that promote integrative bargaining and the search for Pareto-improved outcomes. The trade-off between consolidated and disbursed networks suggests that a middling level of network coupling provides the benefits of markets ties and embedded ties, while minimizing their disadvantages (Uzzi 1997a). When a borrower's ego-network contains an integrated mix of arm's length and embedded ties, the borrower is in a position to scan the market widely for innovations in banking and financial services, while remaining in close collaboration with a principal lender or two. For example, a borrower may learn of a new financial service (e.g., processing of credit card receipts, revolving credit arrangements, or employee retirement accounts) through its weak ties and then work with lenders it has close relationships with to develop these services for the firm at competitive rates. Consistent with these arguments, firms that maintain an ego-network with a dual mode structure have been found to gain efficient access to market information and to equalize power differences in the investment banking industry (Baker 1990) and to minimize the probability of failure in supplier-manufacturer networks (Uzzi 1996a). In the context of the capital lending market, we expect mixed ego-network coupling to have a similarly beneficial effect on the cost of capital.

These arguments suggest two additional hypotheses.

H3. *The ego-network size of the borrowing organization is positively associated with the organization's cost of capital.*

H4. *Organizations with a dual mode ego-network will obtain financing at a lower cost than organizations with either a dispersed or a consolidated ego-network.*

DATA AND METHODS

We use data from the 1987 National Survey of Small Business Finances, which was administered by the Board of Governors of the Federal Reserve and the Small Business Administration on a one-time basis in 1988-1989. The purpose of the study was to investigate the sources of borrowing of small businesses and how characteristics of the market, the firm, and the lending relationship affect the cost, availability and conditions of credit. The face-to-face administered questionnaire surveyed a random sample of 3,404 non-financial, non-agricultural small businesses operating in the US in 1989. Sample range covered firms with 50 to 500 employees and $1,000 to $154,000,000 in asset value; 1,875 firms were corporations and 1,529 were partnerships or sole-proprietorships. Nearly 90 percent of the firms were owner managed. The response rate was between 70 to 80 percent, depending on the item. This reduced the sample size to approximately 2400 cases. Respondents answered questions about the characteristics of their firms, including the quality, number, size, and duration of their lending relationships, sources of financing, and the conditions of their loans. In addition, the survey administrators collected some financial data on each firm for the previous year where applicable.

Variables

Our dependent variable is the cost of capital, which we operationalize as the interest rate on the most recent loan received by the organization. Approximately 1300 firms reported having secured long-term financing from one of their banks in the form of a loan over the period from mid 1987 to 1989, the observation period of the survey. Length of bank-firm relationship is measured as the number of years the business has had done business with the bank. Multiplexity of bank-firm relationship is operationalized as the count of the number of services the business engages in with the lender. These include: Brokerage services, capital leases, cash management services, checking accounts, equipment loans, letters of credit, lines of credit, mortgages, motor vehicle loans, night depository, pension fund, processing of credit card receipts, retirement accounts, revolving credit arrangements, savings accounts, supplying money/coins for operations, trusts, and wire transfers.

Ego-network size is a count of the number financial institutions a firm uses for any of the above financial services. Some firms reported non-banks as possible sources of financial capital but did not report having a loan from them. Because the potential for receiving capital was possible from these non-banks, we included these reported non-bank sources in the ego-network size variable because some theories view these potential sources of capital as an important dimension of price competition in the banking market for small businesses (Pfeffer and Salancik 1978).

Ego-network coupling measures the level of consolidation in a firm's ego-network of ties to banks they do business with. Consistent with previous studies, we operationalize this measure using a modified Gibbs-Martin index of heterogeneity (Baker 1990; Uzzi 1996a). It is calculated by summing three sources of business a firm dedicates to its banks: the amount of cash in checking, the amount of cash in savings, and the size of the line of credit. For each firm, we summed these three sources and then added the sums across all banks. This permitted us to calculate the percentage of each firm's business that is dedicated to each of its banks. For

example, a firm may have a total of $100,000 of 'banking business' to distribute across the three banks it interacts with. Suppose it makes the following allocation: The first bank gets $50,000 of its business (i.e., 50% because $50,000/$100,00) and the second gets $30,000 (i.e., 30%) of its business, and the third gets the remaining $20,000 of its business (i.e., 20%). Our consolidation index is calculated by taking the sum of the squared percentages. For our hypothetical example, the index would be .38 (i.e., $5^2+.3^2+.2^2$). This Gibbs-Martin index ranges from just above zero to one. A value close to zero indicates a dispersed network; a value of one indicates a perfectly consolidated network; and values between .4 and .6 indicate a dual mode network (Uzzi 1996a). Our prediction is that a middling level of coupling will result in the best cost of capital for firms. In our model, we represent this by adding network coupling and network coupling squared into the equation. A negative and statistically significant value on the linear term and a statistically significant and positive value on the squared term would suggest support for the hypothesis.

Following financial theories, we control for important firm, loan, and market characteristics that affect loan interest rates (Petersen and Rajan 1994). Financial ratios are widely used to determine the credit worthiness of a business. Creditors are primarily interested in the firm's short-term liquidity (i.e., the ability to quickly convert assets and other resources into cash) and its long-term ability to service debt. We use two standard financial ratios to operationalize a firm's credit worthiness, the acid (quick) test ratio and the debt ratio (Gitman 1979). The acid test is computed as the firm's current assets minus inventory, divided by current liabilities, and the debt ratio is computed as firm's total liabilities divided by total assets (i.e., the proportion of total assets provided by the firm's creditors). Other firm-level factors controlled for are organization age (log transformation) and organization size (log transformation of number of employees). For the subsample of firms analyzed, the mean age was 14 years (with a range from 6 months to 105 years), and the average number of employees was 25 (with a range from 1 to 475). We include two controls for the characteristics of the loan. Collateral measures whether a firm pledged physical assets as security in the loan agreement. In case of default, the bank can seize the collateral, sell it, and apply the proceeds towards satisfaction of the firm's obligation. Term spread controls for differences in interest rates attributable to different loan maturities. It is calculated by subtracting the Treasury bill yield from the yield on a government bond of the same maturity (Peterson and Rajan 1994). Finally, we include four controls for financial market characteristics. The first is the prime rate. The prime rate is the interest rate banks charge to their best customers and serves as the pegging rate that banks use in pricing commercial and consumer loans. The second control is the level of bank concentration in the local area: Areas with high concentration contain one or very few financial institutions; areas with low concentration contain many financial institutions. The Federal Reserve provided this variable in an ordinal form (3=high, 2=medium, 1=low concentration). The higher the level of concentration of banks in a region, the less competition there is among banks and the more power they have to set rates (Peterson and Rajan 1995). Finally, we include indicator variables to control for the census region where the small business is located (Northeast, North Central, South, and West) and the

industry in which it operates (using two-digit Standard Industrial Classification codes), since both of there variable are thought to affect interest rates.

We employ a Tobit regression model to analyze the effect of lending relationships on the cost of capital because the interest rate variable cannot take on values below zero percent or above the value set for usury in our sample. Tobit analysis is appropriate for estimating models on this type of limited dependent variable because it will not estimate values out of the range of truncated values as would OLS, and because it produces unbiased and efficient estimates (Maddala 1983; Baba 1990; Roncek 1992).

RESULTS

Table 1 presents the results of our Tobit regression analysis. The overall model was statistically significant at the 0.001 level. As expected, we find that many of the firm and market level control variables are predictive of a firm's cost of capital. Older firms received loans at lower interest rates. This finding suggests that banks value older, more established firms and that being big is not necessarily better in the competition for low cost capital. Age of the firm appears to carry important information in a market context that is not fully substituted by the duration of the tie between the organization and its bank.

Not surprisingly, the prime rate was a good predictor of the loan interest rate. The lower (or higher) the prime rate, the lower (or higher) the interest rate on the loan. Firms that pledged collateral with their loan received lower interest rates on those loans. Firms located in areas with a high bank concentration (i.e., areas with less competition among financial institutions) had higher capital costs. Two of the four regional indicator variables were statistically significant; none of the seven SIC indicator variables were statistically significant.

The results from the exogenous variables are broadly consistent with our expectations. Consistent with hypothesis 1, relationship duration is inversely related to the cost of capital. The longer a small business and a financial institution have been interacting, the lower the interest rate tends to be on the firm's loan. (The average duration of relationships was 13 years, with a range of 1 to 95 years). Consistent with hypothesis 2, the greater the degree of multiplexity in the relationship between the bank and the firm, the lower the the cost of capital. Thus, businesses maintaining multiple connections with their financial institution performed well in the competition to secure capital at favorable interest rates. (The average number of multiplex ties was 2.6, with a range of 0 to 14 ties).

Hypothesis 3 was not confirmed: Ego-network size did not have a statistically significantly effect on the cost of capital. (Average ego-network size was 2.2 banks, with a range of 0 to 12 banks). One possible reason for this may be that an average size of just over two banks does not give firms much bargaining power or the ability to shop the market widely enough. It may also be that the effect of network size has no net effect once the quality of the relationship and the distribution of ties with the network has been controlled for (Uzzi 1996a).

Consistent with hypothesis 4, a dual mode network of embedded and arm's-length ties is positively related to a lower cost of capital. Small businesses maintaining either only arm's-length ties or only embedded ties put themselves at a

disadvantage in the competition to secure capital at favorable interest rates. These results suggest that the distribution of exchange within a network plays an important role in determining which actors garner the potential benefits of a network of relationships. In comparison to dual mode networks, networks that are overly dispersed or overly consolidated are relatively less effective in shaping market exchanges with trading partners than are dual mode networks.

Table1. Tobit Analysis Predicting Interest Rate on Most Recent Loan, National Survey of Small Business Finances, 1989

EXOGENOUS VARIABLES	Coef.	Std. Err
Structural Embeddedness		
Length of bank-firm relationship	-.012*	.006
Multiplexity of bank-firm relationship	-.043*	.017
Ego-network size	.003	.122
Ego-Network coupling of lending ties	-3.264**	.985
(Ego-Network coupling of lending ties)^2	2.828**	.874
Firm Characteristics		
Acid ratio	-.012	.011
Debt ratio	-.120	.117
Log of age	-.154*	.069
Log of employment	.001	.005
Market Characteristics		
Collateral	-.343*	.170
Term spread	.095	.060
Prime rate	.286**	.031
Bank concentration in MSA	.246*	.100
Reg1	-.332	.189
Reg2	-.362*	.185
Reg3	-.379*	.184
Sic1	-.882	.631
Sic2	.133	.211
Sic3	-.310	.212
Sic4	.252	.360
Sic5	-.269	.161
Sic6	-.445	.284
Cons	9.700**	.539

$*p < .05$, $**p < .01$ (all tests two sided) n = 1308
Prob > chi^2 = 0.000
Log-likelihood   = -2890.08

DISCUSSION

This chapter asked the question: What logic governs economic exchange between financial institutions and small businesses? Seeking to broaden our understanding of capital market dynamics, we proposed an integrated social capital and network embeddedness approach, arguing that the quality of the relationship between a bank

and an organization and the architecture of organization's network of lending relationships shapes the cost of financial capital. In this view, the cost of capital is not based solely on general market conditions, firm-specific financial ratios, or net present values of investment opportunities (although these remain important). Rather, the quality and mix of arm's-length and embedded ties between a bank and a business create new value in the relationship and increase the flow of information.

Specifically, we advanced four hypotheses to test our arguments. We found that small businesses garner loans at lower interest rates by increasing the duration and multiplexity of their relationships with a financial institution. We also found that businesses can most successfully lower their cost of capital by constructing an ego-network portfolio that includes the proper mix and intensity of ties to financial institutions. Finally, we found that a simple measure of network size had no effect on the firm's cost of capital. These results offer evidence in favor of the embeddedness thesis and suggest that economic exchange is not only embedded in ongoing social ties but that such ties produce outcomes that add to the benefits of market transacting.

The implications for corporate social capital theory are evident. Ties with financial institutions need not yield favorable interest rates. In this chapter we have shown that the mix of duration, multiplexity, and volume of these ties and a medium amount of network coupling derive social capital from these ties (lower interest rates). But we have also shown that, for example, a high level of network coupling can create social liability. This type of research can shed light on the question of under what conditions social structure produces social capital or social liability.

Our results also have implications for the economic sociology of financial markets. Consistent with Podolny (1994), we found that relationships offer an alternative way for firms to manage uncertainty and improve upon pure market outcomes. In comparison to simple market ties, embedded relationships appear to transfer useful information about the firm's ability to service credit. The idea that a mix of consolidated and disbursed network connections may be highly functional is expressed in Baker's (1990) research. He found that 'hybrid interfaces' are most effective at exploiting power advantages and reducing resource dependence because they combine the advantages of 'relationship interfaces' and 'transaction interfaces,' without many of their disadvantages. Our work differs slightly from Baker's on the issue of whether parties are motivated more by the tradeoff between power and efficiency or by the informational and bargaining relationship benefits of dual mode ego-network structures. Baker stresses power considerations, as opposed to the value of relationship building. Consequently, we would reverse Baker's order of priority: Dual mode network coupling offers a way to maintain high-quality relationships, while retaining the important benefits of atomistic markets. In our study, this theoretical reversal is logical given the improbability that small firms can ever gain true power advantages over the large banks. Another difference is the strategic intentionality and agency implicit in Baker's idea. Our approach argues that network coupling is an *emergent* property of actors' attempts to balance social and market imperatives. And that the consequences of attempts to balance ties is always imperfect because actors are in a web of ties, some of which are beyond the actor's direct control. Nonetheless, creating a network with the proper degree of network

coupling requires sufficient knowledge of the market. Yet, mixed coupling is only feasible when lenders trust the borrower enough so that the borrower can maintain a non-consolidated network and when the borrower trusts the lenders enough to not have to rely on disbursed ego-networks (Uzzi 1996b; see Uzzi and Gillespie 1998 on the formation of bank-firm relationships).

This chapter also fits into recent efforts to develop a broader understanding of the social processes surrounding entrepreneurship. The success of small businesses and start-up firms is dependent on more than the personal traits of the entrepreneurs or the financial characteristics of their business (Becker 1964). Success crucially depends on gathering resources and information via networks extending beyond the boundaries of a particular firm or individual entrepreneur (Gabbay 1997). Similarly, network ties provide informational cues that outsiders make inferences upon. When a struggling small business gets capital at a competitive rate, this can serve as a signal of legitimation to other exchange partners who rely on banks to evaluate the financial wherewithal of firms. Our analysis shows how structural embeddedness plays an integral role in the process by which social capital (e.g., a strong bank-firm relationship) is used to acquire financial capital. We further speculate that the acquisition of this financial capital can contribute to building social capital (e.g., increasing the firm's legitimacy and reputation). Thus, there is a cumulative, reciprocal relationship between financial capital and social capital.

Future research might examine the processes of building and deconstructing lending ties and how these processes are shaped by market characteristics. One might expect that borrowers start with a large ego-network (trying to maximize the probability of securing a loan) and then, as time passes and loans are acquired, they gradually decrease the size of their network. A firm's ego-network size may decrease over time because trust can only be gained through enduring and repeated relationships. To address these propositions, there is a need to track the evolution of specific firm ego-networks over time. Too frequently, social network analysis consists of static snap-shots where network structure is assumed to be unchanging (Leenders 1995b). Our chapter suffers from this weakness, so future research should examine how bank-firm networks change over time. In addition, because we examined lending relationships from the perspective of small businesses, as opposed to financial institutions, future research could profit from a more in-depth analysis of the supplier side of the loan market.

In the past twenty years, the pace of change in the financial services industry has been without parallel - typical forms of market exchange and bank control have diminished in importance or been supplanted by other exchange logics (Davis and Mizruchi 1997). Although more research is needed on the economic sociological dimensions of capital markets, this chapter has attempted to specify the mechanisms and forms of embeddedness that shape lending relationships.