

Capital Structure in Transition: The Transformation of Financial Strategies in China's Emerging Economy

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During economic transition, firms must dramatically reduce their financial dependence on the state and begin to borrow from nonstate capital sources. This paper draws on institutional and resource dependence theories to examine this fundamental transformation of firm capital structure during China's transition. I propose that managers borrowed from external sources even when internal funds were available because retained earnings were considered state assets. Firms used retained earnings to signal financial health but borrowed externally to reduce dependence on the state. Uncertainty during transformation produced interfirm imitation of borrowing strategies, particularly imitation of local and high status others. I argue that the dynamics of market development shaped firm borrowing strategies and that these strategies are best viewed as trajectories over time. Analysis of survey data on the 1980–1989 capital structure of formerly state-owned firms provides support for these arguments and highlights the importance of institutional context in understanding corporate borrowing and strategic decision making.

Key words: Chinese transition; financial market; banking; capital structure

A fundamental transformation of firm borrowing strategies is a central component of economic transition from state socialism. During transition, firms drastically reduce their reliance on state capital and begin borrowing from alternative external sources. This transformation of the state's relationship with firms is necessary to reduce state monopolies in most industries and to end the system of bargaining between the state and firms that can undermine reform by softening budget constraints (Kornai 1986, Naughton 1995). Restructuring the financial relationship between the state and firms also facilitates financial market development by increasing firm autonomy and creating incentives for firms to seek external funding (Walder 1995). In turn, a developed financial market encourages innovation and entrepreneurship (Dalzell 1987, Lamoreaux 1994), permits the efficient allocation of resources, facilitates privatization, and prevents capital flight (Demirgüç-Kunt and Levine 1996, Mizruchi and Stearns 1994, Ratcliff 1980).

Firm borrowing from nonstate sources began at the start of China's reform in 1978 and increased steadily through the mid-1990s (Xu 1998, Yi 1994). During that time, managers made decisions about financing and capital structure that shaped the performance and survival of their firms as well as the direction of the nation's transition. Yet we know little about these crucial strategic decisions. In fact, questions about how to finance a firm are among the most critical decisions managers make; however, research on how borrowing decisions are made has been somewhat limited in Western organizational theory. Research in finance has identified how firms

should behave, and organization theorists have identified some important influences on corporate debt financing (Mizruchi and Stearns 1994, Myers 1984, Stearns and Mizruchi 1993). However, this research has been restricted almost entirely to studies of firms in the United States with little attention to how variations in institutional context affect borrowing.

In this paper institutional and resource dependence ideas are used to investigate the transformation of firm capital structure during China's economic transition. I propose that certain basic principles of firm behavior that are taken for granted in the West are evident in the behavior of Chinese firms as well (e.g., retained earnings affect borrowing); however, the nature of these relationships and the implications for strategic decision making are very different during transition. By exploring financial decision making, this research investigates a crucial component of transition and addresses a tension in organizational theory between ahistorical, universal processes and those that are context specific. This research addresses economic transition and China's reform as well as the more general effect of context on borrowing. I use diffusion and sequence analyses to test my arguments on the borrowing of 769 formerly state-owned Chinese firms between 1980 and 1989.

Background: Firm Capital in China

Prior to reform, Chinese firms were state-owned and received all financing from government bureaus. The State Council issued currency and authorized, approved, and administered loans to enterprises. There was no

financial market, although banks did exist as state agencies responsible for enacting and enforcing government monetary policy (Lardy 1998). State-owned enterprises and banks operated on a transfer system of credit controlled by the government bureaus. Households and other enterprises used a currency system that had little connection with the credit system of the state-owned enterprises. While the funds transferred among banks and state-owned enterprises were not convertible to cash, the credit and currency systems did influence each other. Yet there was no central bank, and banks were not required to maintain reserves (Holz 1992). Moreover, while the state began to experiment with monetary policy prior to reform, these policies were subordinate to the procedures that guided the determination and enforcement of output targets (Xu 1998, Yi 1994).

Before reform, interdependence between the state and enterprises created soft budget constraints for firms. Constraints on firm spending were not wholly binding because the state could readily reallocate funds to cover additional expenditures. The state used its network of administrative bureaus to control resource flows throughout the economy and to redistribute funds from profitable firms to those that were not performing well. This virtually guaranteed firm survival, but it also created resource shortages and intense pressure for firms to increase production (Kornai 1986). While firms depended on the state for all inputs, the state also depended on firms to provide scarce resources to other enterprises and to provide employees with jobs, housing, medical care, and other social services. State bureaus closely monitored many of the firm's activities; however, the need to monitor a large number of firms created informational asymmetries, and managers responded by hoarding resources and bargaining for favorable treatment (Walder 1992). Bargaining for scarce capital was common, and financing was highly uncertain because funding varied with state political whims and the personal allegiances of high-ranking officials.

In 1978, Chinese state reformers began to implement extensive economic and industrial reforms, including reform of firm finance and the banking system. The People's Bank of China (PBOC) was separated from the Ministry of Finance and became the central bank in 1984. The PBOC gradually assumed control of the money supply and began to set monetary policy and regulate exchange rates. Under the central bank, four specialized banks emerged as financial intermediaries. The Industrial and Commercial Bank, the Agricultural Bank, the People's Bank, and the Construction Bank remained government agencies, but they gradually began to accept deposits and to lend capital independent of government intervention. Although their names identified the specialized banks with particular segments of the economy, the banks were free to lend to firms in all industries. Firms applied for funds, and their requests were increasingly

evaluated on the merit of the firm and the application, with decreasing regard for government policy. However, these banks remained government agencies, and their lending at times reflected state policy more than the financial objectives of the bank (Goldie-Scott 1995, Yi 1994).

Firms began to seek nonstate sources of funding both because the state reduced direct financial support and because autonomy was attractive. As early as 1980, reformers warned that direct transfers of state funds would be reduced and eventually eliminated (Goldie-Scott 1995). Early reductions in state funds and a handful of visible bankruptcies underscored this message. Even in the largest firms, the state began to transform its role to that of a shareholder with limited responsibility and liability (Jefferson and Xu 1991). The state did not end direct transfers entirely, but managers began to realize that finance was their responsibility. At the same time, because financial autonomy was attractive, many managers voluntarily sought nonstate sources of capital. Supply shortages, uncertainty about levels of state funding, the need to bargain for favorable treatment, and the disincentives associated with the redistribution of profits to nonprofitable firms increased the appeal of external funding, particularly for firms that were performing well financially.

Borrowing in Transition

What factors shaped firm financial decisions in the first decade of reform? Ideas from resource dependence and institutional organizational theory provide a useful starting point for answering this question. Research conducted in developed market economies suggests that strategic decision making and institutional processes interact to produce these decisions. Some argue that strategic decision making involves drawing on unique knowledge and capabilities internal to the firm (Dutton and Duncan 1987, Tichy 1983) while avoiding dependence on outside entities and resources (Mizruchi and Stearns 1994). In this view, managers act deliberately in the best interest of the firm, and they avoid behaviors and situations that are likely to harm the firm. *Resource dependence* ideas suggest that managers avoid relying on critical resources that are controlled externally to preserve autonomy (Mintz and Schwartz 1985, Pfeffer and Salancik 1978). According to resource dependence theory, managers are risk averse, minimize uncertainty, and increase autonomy. In contrast, institutional theorists claim that external organizations and pressures shape managerial decision making (DiMaggio and Powell 1983, Meyer and Rowan 1977). That is, uncertainty, normative pressure, the need for legitimacy, and exposure to other firms affect managers' decisions (DiMaggio and Powell 1983, Zucker 1977). Particularly relevant in China, institutional theory identifies

the conditions under which ideas diffuse among firms (Haunschild and Miner 1997, Tolbert and Zucker 1983). Firms facing uncertainty imitate others, and ideas spread through a population as managers borrow ideas from others with whom they have contact.

These ideas are particularly relevant to understanding the behavior of Chinese managers during transition for at least three reasons. First, one of the primary motivations underlying manager behavior during transition was a need for autonomy. In contrast to managers in the West who tend to seek autonomy from other firms and banks, however, the primary entity from which firms sought autonomy in China was the state. Second, Chinese managers were relatively inexperienced. A number of external institutional pressures have been shown to motivate institutional isomorphism among firms, but internal pressures such as inexperience can also create imitation and thus the diffusion of strategies. Third, uncertainty during market development was intense. Thus drawing on ideas that explain manager behavior under uncertainty is logical.

Naturally, these ideas do not apply to China without modification. In reality, firm behaviors are likely to be a function of multiple interacting influences including both organizational and institutional factors in any context, but particularly when the ideas are adapted to a much different context. Strategic decision making is likely to occur during economic transition in a country that is far removed from those in which strategic decision making has been studied most closely. Yet the meaning of a manager's available options may be different in the new context. For instance, the meaning of options in the Chinese context might just as easily reflect internal evaluations of potential benefits and costs as it does external pressures on options. There is evidence from China that environmental conditions shape the relationships that are considered constant in the west, even basic relationships such as the relationship between experience and firm performance (Luo and Peng 1999). Likewise, institutional pressures are real, but they become relevant through their effect on manager's decision making. The use of these ideas in China is discussed in more detail below.

Retained Earnings and External Capital

From early in reform, managers had many options for raising capital, and China's unique context shaped how they approached these options. The meaning of retained earnings, for example, affected how firms borrowed. Accounting and auditing standards were developing and becoming consistent with Western standards (Ji 2002), and retained earnings were calculated as net profits accumulated in a business, as they are in the West (Lin et al. 1998).¹ However, in China, retained earnings were equivalent to state funds because they were owned by the state and because they were used to determine tax rates

(or remitted profits) in the early stages of reform (Xu 1998, Yi 1994). Like appropriated earnings in the West, much of a firm's retained earnings in China were earmarked for other purposes and not available for reinvestment. For this reason, these funds were not disposable. In some cases, management received special permission to use retained earnings for reinvestment, but more often state officials determined the disposition of these assets.²

In contrast to retained earnings, externally raised, nonstate funds were disposable and did not affect remitted profits. Loans from domestic banks were increasingly available, and bank finance was less risky than wholly nonstate sources. Because banks continued to be owned largely by the state, bank loans involved relatively little risk. Forgiving loans entirely was uncommon in China, particularly compared to other transition economies (Lardy 1998), but state agencies were still more forgiving than other lenders in the early stages of reform (Goldie-Scott 1995, Yi 1994). Yet accepting bank loans was only slightly different than accepting direct transfers from the state, and only minimally reduced a firm's dependence on the state. Loans and investments from other domestic firms, public debt, and borrowing from foreign entities were all riskier than bank loans for both the lender and the borrower. Lenders had limited information available for evaluating potential borrowers because borrowing histories were short and financial data were unreliable. Yet the autonomy advantages for borrowers and the potential financial gains for lenders were sizable, and these forms of exchanging capital became increasingly common (Yi 1994).

Although managers did not control retained earnings, earnings signaled financial health to potential investors and lenders. Thus, retained earnings increased a firm's ability to attract external funds. For most firms, the only evidence of potential financial performance during transition was performance under socialism, a poor predictor given the dramatic changes that accompanied transition (Firth 1996). Moreover, the skills required to manage an enterprise in a redistributive economy were very different from those needed after transition. Political savvy was decreasing in importance, while an ability to negotiate markets was gaining importance. Because records of retained earnings tended to be accurate, widely available, and relatively closely related to performance, potential investors and lenders could deduce valuable information about both the firm and its managers (Ji 2002). Potential creditors, who had little information available to evaluate firms, learned to use retained earnings as a metric on which to evaluate creditworthiness.

A positive relationship between retained earnings and external credit suggests that managers used retained earnings to attract capital and contrasts sharply with findings from Western analyses. Western theorists largely agree that firms have a hierarchy of capital preferences: They prefer internal to external capital and

debt to equity. Resource dependence theorists argue that dependence on critical resources that are externally controlled decreases autonomy (Mintz and Schwartz 1985, Pfeffer and Salancik 1978). Because capital is a critical resource, firms use retained earnings before seeking external funds to reduce dependence (Mizruchi and Stearns 1994). Similarly, the notion of a modified pecking order of preferences in finance suggests that firms prefer to use retained earnings because external funds reduce independence (Myers 1984). Related models in economics propose that both debt and equity issues are problematic because they reduce autonomy; unless the cost of capital is less than the transaction costs involved in obtaining the credit, firms prefer internal credit (Williamson 1985). Variations on these models specify the degree to which external credit is desirable under specific conditions, but both normative literature and studies describing actual firm behavior agree that retained earnings are more desirable than external credit.

While the relationship between retained earnings and external borrowing in China is likely opposite Western empirical findings, the desire for autonomy may still explain behavior in both contexts. Historical processes and cultural differences that generate both the meanings associated with markets and the rules of the game can produce divergent trajectories from the same basic mechanism. Actors may have similar motives but different means of reaching their goals in different contexts (Hamilton and Biggart 1988, Perlow and Weeks in press). Retained earnings and borrowing in China and the West are different in the way managers evaluate potential autonomy associated with capital. In both cases, reducing dependence is an important motivator, as resource dependence theorists suggest (Mintz and Schwartz 1985, Pfeffer and Salancik 1978), but the ability of external actors to control the firm leads to very different manifestations of the underlying desire for independence. The result in the West is that managers use their retained earnings rather than sacrifice autonomy. Most likely in China the opposite was true. That is:

HYPOTHESIS 1. In the first decade of reform, the higher the retained earnings, the larger the sum of funds borrowed externally from all sources.

Institutional Influences

Changing sources of uncertainty also influenced borrowing during China's transition. Uncertainty resulting from supply shortages and bargaining declined during reform, but reform created at least three new forms of uncertainty (Wong 1986). First, markets developed slowly and unevenly. Firms began to rely on markets as the state stopped providing inputs and redistributing output, but uneven market development made it difficult to locate

creditors, suppliers, and customers. Financial market development was particularly uneven because the state limited the operations of private and foreign banks, regulated stock trading, and encouraged more rapid market development in coastal and southern cities (Goldie-Scott 1995, Gong 1995). Product and labor markets also developed slowly and initially remained local because of poor roads and infrastructure (Groves, et al. 1994, Naughton 1995, Yi 1994). This added to the general uncertainty firms faced in trying to determine capital needs and the availability of funds. Second, managers had little experience dealing with market-based exchange because central authorities dictated firm behavior in the past. While market-based exchange increased discretion and independence, managers had little experience with obtaining capital, locating suppliers, marketing, and related activities. Third, competition increased, and firms were forced to vie for resources with innovative state firms, nonstate firms, and foreign companies (Naughton 1995).

Western research suggests that uncertainty leads to isomorphic firm behavior. Firm *borrowing* in the West largely reflects expected returns, the availability of internal funds, strategic orientations of key personnel, and other economic factors rather than imitation (Mizruchi and Stearns 1994, Myers 1984, Stearns and Mizruchi 1993). However, there is also evidence that firms adopt *other behaviors* by observing outcomes and adjusting routines, particularly under uncertainty, and this leads to imitation and standardization of practices (Bromiley and Marcus 1987, McNamara and Bromily 1997). Unpredictable environments increase the complexity of decision making, while imitation reaffirms managers' decisions and potentially discourages the adoption of overly risky strategies (DiMaggio and Powell 1983, O'Neill et al. 1998). At the same time, imitation can increase credibility and external perceptions of competence where uncertainty is high. Uncertainty may compel otherwise disinterested stakeholders to become active, increasing pressure on managers to adopt widely used strategies (O'Neill et al. 1998). Stakeholders and potential stakeholders may expect managers to use certain strategies that have become the norm and may question decisions not to use practices that are becoming standard in the industry (Abrahamson and Rosenkopf 1993).

Uncertainty in borrowing in the West is relatively minimal, but because uncertainty was high during the first decade of China's transition, it is likely that firms imitated each other's financial strategies. Issuing public debt, for instance, was rare before reform as public ownership contradicted the socialist principle of collective ownership of the means of production. Yet during transition, public debt issues became common, at least partly because many firms adopted the practice used by their peers. Similarly, firms seldom borrowed directly from other firms prior to reform, and stocks were unheard of

in earlier years. Following reform, both of these strategies spread rapidly as well. There were a variety of options for funding the firm, and the combinations of sources firms tapped varied considerably (Keister 2001). To some extent, firms selected from a new and finite set of options, but it is also likely that imitation led to standardization of capital structures for many of the same reasons that isomorphic firm behavior has been found in the West. Uncertainty was more intense in some areas (Keister 1998), but it was high in all areas. Thus, there was imitation of other practices in all regions (Firth 1996). However, the local nature of markets made regional contacts more salient during China's transition, and firms were more likely to imitate the behavior of those located geographically close. Thus,

HYPOTHESIS 2A. In the first decade of reform, firm imitation of borrowing increased with geographic propinquity.

There is also evidence that imitation is most intense when the focal organization is exposed to use by successful or large others (DiMaggio and Powell 1983, Ibarra 1992). Early arguments suggested that organizations model themselves after others they perceive to be more legitimate or successful, using size and profitability as indicators (DiMaggio and Powell 1983). Such targeted mimetic behavior was likely prevalent in China as well, particularly the imitation of large or profitable firms. That is:

HYPOTHESIS 2B. In the first decade of reform, firms imitated the borrowing behavior of large, profitable firms.

While uncertainty deriving from slow and uneven market development affected firm financial strategy indirectly through its influence on imitation, market development also affected strategy more directly. Market development in China was gradual and uneven because reformers favored coastal and southern regions and because entrepreneurial firms in some areas took advantage of new freedoms relatively quickly (Jefferson and Rawski 1994, Naughton 1995). Firms in developed regions had access to more resources, and uncertainty was less acute in these areas. Rapid change during transition created informational asymmetries that made it difficult for firms to evaluate the needs, competencies, and reliability of potential trading partners (Keister 1998). Both buyers and sellers needed to determine whether particular ties were beneficial, but both were reluctant to reveal too much information about their own needs and competencies (Williamson 1985). The threat of opportunism that accompanied transition made firms reluctant to be too forthcoming with information, but the joint hesitation to reveal information made it difficult for either firm to assess reliability and often prevented trust from developing (Granovetter 1985).

It is likely that firms in less developed regions began to borrow from nonstate sources more gradually than their peers in more developed areas for two reasons. First, firms in less developed regions had more limited access to external funds. Because alternatives were not as readily available, firms in these areas borrowed from banks at a higher rate. Second, uncertainty decreased the willingness of firms in less-developed regions to accept the risk associated with alternatives to bank funds. Because bank loans were less risky, firms in these areas were more likely to seek bank loans, and to accept the continued government control associated with these loans, than their counterparts in more developed areas. That is:

HYPOTHESIS 3. In the first decade of reform, firms located in poorly developed areas were more likely to borrow from banks and less likely to borrow from other sources than firms in more developed areas.

Changing Decisions and Trajectories

Patterns in firm capital structure over time also reveal a great deal about how borrowing decisions are made. In a transition economy, capturing processes over time is particularly important, given the rate at which both firms and the context in which they operate are changing. The processes that motivate behavior are likely different at the early stages of the transformation than they are at later stages. Moreover, firm decisions early in the transition process can impact later behavior for the firm and can shape the transition in ways that are not evident from the observation of a single decision or even a set of decisions over time. Thus, while changes in influences over time are important, what is perhaps more instructive is the collection of these decisions that the firm makes over time, or the financial trajectory. A financial trajectory is the path through which the firm moves over a number of years in terms of external borrowing. It is the pattern in its capital structure over time (in this case, over the first decade of reform). In this way, a financial trajectory would be similar to an individual career or life course (Abbott 1995). Much like an individual's career, a firm's financial trajectory says a great deal about where the firm has been, where it is going, and why. While current organization theory does not typically incorporate notions of trajectories, there is evidence that studying movement through time in this way can be very informative, particularly in places such as China where rapid change is the norm (Keister 2001).

During transition, variation in the risk associated with alternative capital sources affected the trajectories that firms took. In particular, because firms tended to be unfamiliar with market-based forms of capital acquisition, such as issuing public debt, manager familiarity with a means of raising capital potentially affected the trajectory the firm followed. The need to acquire

external capital was an unusual notion to managers who were accustomed to the state providing funds. Moreover, the process by which a firm externally borrowed was often even more foreign. Continued government regulation of some financial instruments and regional variations in opportunities to use certain instruments also affected firm financial decisions. As a result of regional variation in market development, some firms had access to capital markets earlier than others. Bank loans were relatively low-risk, widely available, and still afforded firms some degree of autonomy in capital acquisition. Therefore, firms used bank loans temporarily as they learned to acquire capital from other sources. For these reasons, I hypothesize that:

HYPOTHESIS 4A. *In the first decade of reform, most firms relied almost exclusively on bank capital.*

However, not all firms followed this common trajectory. It is likely that some firms used bank borrowing initially but made a transition to other forms of borrowing as markets developed, options improved, and borrowing from nonstate entities became common. It is likely that among the firms that borrowed from nonstate sources, most used banks initially. That is:

HYPOTHESIS 4B. *In the first decade of reform, the majority of firms that did not rely exclusively on bank capital used bank capital initially and made a gradual transition to borrowing from nonstate, nonbank sources.*

Yet there were also firms that used nonstate, nonbank borrowing from early in transition. Two types of trajectories are possible. First, some firms most likely made an early, albeit risky, transition to nonstate, nonbank borrowing, bypassing banks entirely. Second, another group of firms most likely tried nonstate, nonbank forms of finance but continued to use bank borrowing as a more secure source of capital. In particular, it is expected that:

HYPOTHESIS 4C. *In the first decade of reform, a small minority of firms made an early transition to nonstate, nonbank borrowing, bypassing bank finance.*

HYPOTHESIS 4D. *In the first decade of reform, a small minority of firms relied on both bank and nonstate, nonbank borrowing.*

Research Methods

Data. To test these ideas, 1980–1989 panel data on 769 firms were used in four provinces (Sichuan, Jiangsu, Jilin, Shanxi). I focused on this period because it starts two years into reform, after firms began to borrow externally, and it ends after the majority of initial transition was complete. The Institute of Economics at the Chinese Academy of Social Science (CASS) collected the data in collaboration with American and British researchers. The Chinese Provincial System Reform

Commissions (the agencies responsible for implementing and evaluating reform measures) sent questionnaires to 800 enterprises, and 769 were returned. The response rate was high because the System Reform Commission is a government agency with which the enterprises have regular contact, although it does not directly oversee the firms. The questionnaire had two parts. The first part included 70 questions about firm structure, manager traits, relations with government offices, and strategy. The second part included 321 quantitative questions, answered by the firm's accountant, covering many aspects of enterprise operations between 1980 and 1989 such as capital structure, investments, profits, inputs, outputs, and employment levels (Groves et al. 1994).

All firms in the sample were state-owned, and the sample represents state-run firms well on all dimensions except for firm size. Output per worker in 1980 was 11,329 yuan, 3% below estimates of the national average for state-owned enterprises. By 1989, output per worker among firms included in the sample had increased to 18,891 yuan, 3% above national estimates for state-owned firms. Real output per worker increased 67% among enterprises in the sample, and national aggregate data estimate that output per worker increased only 52% among firms in the state-owned sector. The sample does appear to overrepresent large state-owned firms, enterprises for which progress in reform has been modest relative to small enterprises and those in the nonstate sector. Table 1 includes means, standard deviations, and correlations for all variables.

Dependent Variable. The outcome variable was an indicator of whether the firm received capital from any of five common sources of external borrowing: bank loans, interfirm loans, interfirm investment, public debt, and foreign funds. Bank loans included all loans from domestic banks but excluded direct state transfers. Interfirm loans were loans from other Chinese firms. Interfirm investment was the sale of partial ownership rights in the company to another Chinese firm. Public debt included corporate bonds but excluded equity issues because Chinese stock markets did not open until 1990. Foreign funds were loans and direct transfers of capital from foreign corporations and banks. The dependent variable was a single, multicategory variable for each year between 1980 and 1989, indicating whether the firm had capital from any of these five sources. The multicategory dependent variable reflected the reality that in any year, a firm may have received funds from more than one source. For example, if the firm had bank loans and issued debt, the variable was coded 10010, and if the firm received only interfirm loans and interfirm investments, the dependent variable was coded 01100.

Independent Variables. *Retained earnings* were measured as a firm's total retained earnings (logged), lagged one year. *Size* was measured as the number of workers

Table 1 Means, Standard Deviations, and Correlations for All Variables

| Variable | Mean | S.D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |
|------------------------------------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|------|------|-------|------|------|--|--|
| 1. Retained earnings (log) | 2.94 | 2.17 | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Bank Loans</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Spatial exposure | 4.34 | 5.32 | 0.14 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. Exposure x size | 1.68 | 3.23 | 0.02 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | |
| 4. Exposure x profits | 0.31 | 0.43 | 0.14 | 0.05 | 0.05 | | | | | | | | | | | | | | | | | | | | | | |
| <i>Interfirm Loans</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. Spatial exposure | 0.02 | 0.02 | -0.03 | 0.17 | 0.04 | | | | | | | | | | | | | | | | | | | | | | |
| 6. Exposure x size | 0.01 | 0.00 | 0.10 | 0.06 | 0.13 | 0.21 | | | | | | | | | | | | | | | | | | | | | |
| 7. Exposure x profits | 0.01 | 0.01 | 0.08 | 0.20 | 0.01 | 0.03 | 0.02 | 0.00 | | | | | | | | | | | | | | | | | | | |
| <i>Interfirm Investment</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8. Spatial exposure | 0.02 | 0.03 | 0.04 | 0.08 | 0.08 | 0.07 | 0.02 | 0.05 | 0.10 | | | | | | | | | | | | | | | | | | |
| 9. Exposure x size | 1.68 | 0.89 | 0.02 | 0.01 | 0.06 | 0.03 | 0.07 | 0.00 | 0.05 | 0.00 | | | | | | | | | | | | | | | | | |
| 10. Exposure x profits | 2.34 | 3.66 | 0.04 | 0.12 | 0.03 | 0.01 | -0.05 | 0.18 | 0.11 | 0.02 | 0.04 | | | | | | | | | | | | | | | | |
| <i>Public Debt</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. Spatial exposure | 3.91 | 1.90 | 0.06 | 0.47 | 0.09 | -0.09 | 0.02 | 0.18 | 0.09 | 0.19 | 0.11 | 0.14 | | | | | | | | | | | | | | | |
| 12. Exposure x size | 1.24 | 3.66 | 0.02 | 0.02 | 0.66 | 0.03 | 0.21 | 0.11 | 0.09 | 0.11 | 0.18 | 0.00 | 0.16 | | | | | | | | | | | | | | |
| 13. Exposure x profits | 3.28 | 1.23 | 0.02 | 0.06 | 0.10 | 0.11 | 0.12 | -0.26 | -0.18 | 0.05 | 0.08 | -0.16 | 0.11 | -0.15 | | | | | | | | | | | | | |
| <i>Foreign Funds</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14. Spatial exposure | 0.01 | 0.01 | 0.05 | -0.02 | 0.01 | 0.03 | 0.15 | 0.16 | 0.00 | 0.05 | 0.01 | 0.00 | 0.03 | 0.28 | 0.01 | | | | | | | | | | | | |
| 15. Exposure x size | 0.82 | 1.61 | 0.02 | 0.09 | 0.06 | 0.03 | 0.21 | 0.08 | 0.03 | 0.14 | 0.07 | 0.01 | 0.00 | 0.05 | 0.09 | 0.06 | | | | | | | | | | | |
| 16. Exposure x profits | 0.28 | 1.23 | 0.02 | 0.04 | 0.01 | 0.16 | 0.03 | 0.03 | 0.20 | 0.04 | 0.05 | 0.02 | -0.02 | 0.02 | 0.06 | 0.20 | 0.19 | | | | | | | | | | |
| 17. Poor market development | 0.71 | 0.46 | 0.05 | 0.04 | 0.01 | 0.02 | 0.04 | 0.07 | -0.00 | 0.05 | 0.02 | 0.09 | 0.04 | 0.13 | 0.14 | 0.17 | 0.07 | 0.10 | | | | | | | | | |
| 18. College graduate | 0.70 | 0.45 | 0.04 | -0.03 | 0.14 | 0.03 | -0.06 | -0.03 | -0.05 | -0.06 | -0.03 | 0.03 | -0.03 | 0.03 | 0.02 | 0.00 | 0.20 | 0.08 | 0.04 | | | | | | | | |
| 19. Party secretary | 0.21 | 0.41 | -0.02 | 0.01 | 0.04 | -0.02 | 0.01 | -0.00 | -0.02 | 0.01 | -0.00 | 0.07 | 0.00 | 0.00 | 0.11 | 0.17 | 0.03 | 0.00 | -0.03 | -0.13 | | | | | | | |
| 20. Number of workers | 1,807 | 5,038 | 0.00 | -0.03 | 0.15 | -0.03 | 0.14 | 0.20 | 0.00 | 0.07 | 0.20 | 0.00 | 0.01 | 0.28 | -0.00 | -0.05 | 0.08 | 0.08 | -0.06 | 0.08 | 0.06 | | | | | | |
| 21. Cumulative profits | 0.32 | 1.76 | -0.02 | -0.00 | 0.12 | 0.03 | 0.15 | 0.15 | 0.00 | 0.07 | 0.08 | 0.04 | 0.00 | 0.14 | 0.01 | 0.04 | 0.11 | 0.07 | 0.07 | 0.08 | 0.04 | 0.02 | | | | | |
| 22. Financial independence | 0.33 | 0.47 | 0.01 | -0.04 | 0.05 | 0.08 | 0.14 | 0.05 | 0.09 | 0.00 | 0.10 | 0.26 | 0.05 | 0.02 | 0.11 | -0.11 | 0.04 | 0.10 | 0.05 | 0.04 | 0.03 | 0.06 | -0.04 | | | | |
| 23. Age | 24.87 | 13.34 | 0.03 | 0.09 | 0.14 | 0.03 | 0.01 | 0.00 | 0.10 | 0.03 | 0.00 | 0.00 | 0.06 | 0.01 | 0.10 | 0.05 | 0.21 | 0.11 | -0.03 | 0.03 | 0.01 | 0.00 | 0.14 | 0.17 | | | |
| 24. Central Government funds (log) | 0.48 | 1.55 | 0.20 | -0.06 | 0.13 | 0.12 | 0.00 | 0.00 | 0.04 | 0.20 | 0.02 | 0.15 | 0.05 | 0.00 | 0.10 | 0.02 | 0.00 | 0.07 | 0.03 | 0.08 | 0.07 | 0.40 | 0.31 | 0.01 | 0.01 | | |

at year end and *profits* as total revenues less expenses (minus profits remitted to the state). *Market development* was a dichotomous variable indicating whether managers thought “poor market development” was an important problem.

The *spatial exposure variables* capture the effect of geographic proximity on influence between firms. Two standard diffusion equations were used to measure exposure (Tolnay et al. 1996). The predicted outcome of the first equation is the effect of strategy use by one firm on other:

$$E_i = \beta_0 + \sum \beta_k X_{ki} + \varepsilon_i, \quad (1)$$

where E_i = the receipt of capital from each external source by each organization (i), β_0 = the intercept, X_{ki} = the set of k independent variables that describe organization i and the region in which it was located, β_k = the estimated effect of k independent variables on receipt of capital, and ε_i = the disturbance term for (1).

Using Equation (1), predicted values (E_i^*) were obtained for each firm (the expected likelihood that the firm borrowed from each source given firm and regional traits). For each firm pair, the predicted value was then divided by the geographic distance between the two (using greater circular distance calculated by the author using firm latitude and longitude estimates). The potential for exposure for each organization i to practices used by all other organizations was:

$$\text{Exp}_i = \sum (E_j^*/D_{ij}), \quad (2)$$

where Exp_i = the exposure for organization i , E_j^* = the predicted likelihood of capital from each source for each organization j , (based on parameter estimates in Equation (1)), and D_{ij} = the geographic distance between organizations i and j .

Finally, Exp_i was used as a predictor variable (*exposure*) in the regression models, lagged one year. To test Hypothesis 2B, the exposure was weighed by actual profits or the number of workers. The exposure measures incorporate the potential effect of use of the practice by all other firms, account for the likelihood that the diffusion effect between any two organizations is weaker as the geographic distance increases, and distinguish between diffusion effects and effects due to heterogeneity (Tolnay et al. 1996, Anselin 1988). The exposure measures also distinguish spurious effects of region from diffusion. This is necessary because firms located in the same region share traits (e.g., firms from the same region might have experienced past difficult economic times that shaped investing).³

Manager experience and connections were controlled with indicators that the manager was a *college graduate* or *Communist party secretary*. *Cumulative profits* were average yearly profits since 1978 (measured yearly and lagged one year), included to control for improvements in financial performance. Managers' accounts were used

to create a variable indicating *financial independence*. Specifically, a question was applied that asked how much help the state would give the firm if they were to run into difficulty returning loans. If the manager replied either “not much” or “none,” the dichotomous independence variable was coded 1. *Age* was the number of years since the firm was founded. Because capital structure might vary with the degree of state involvement in the firm, I controlled for the log of *total funds received from the central government* (lagged one year).

Models. Because firms routinely obtain capital from multiple sources simultaneously, I model the dependent variable as a multcategory variable in which firms can be in more than one category concurrently. High-dimensional multivariate probit analysis (HDMPA) was used to estimate the equations. HDMPA is a form of probit analysis for multiple response variables based on an assumed common factor model for the latent tolerance (Bock and Gibbons 1996).⁴ The primary advantage of HDMPA is that it does not restrict the respondent to a single category of a multivariate dependent variable. The functional form of the HDMPA equation is:

$$L_h(\theta) = \prod_j^p [\Phi(z_{hj})]^{u_{hj}} [1 - \Phi(z_{hj})]^{1-u_{hj}}.$$

Capital Structure Trajectories. To explore longitudinal patterns in the composition of capital structure (Hypotheses 4A–D), optimal matching was used, a method designed to identify common patterns. Optimal matching groups trajectories, or sequences, by determining how difficult it is to transform one into the other (Abbott 1995). Thus firms with similar trajectories will be in the same group. Optimal matching has most commonly been used to identify patterns in individual careers, but the method is equally suited for studying sequences in firm behavior. I used optimal matching to identify patterns in the dependent variable (borrowing behavior) over time. For example, if a firm received only bank loans in Year 1, its capital structure would be represented as 10000. Then, if the firm borrowed from banks and foreign sources in the next year, its capital structure would be indicated as 10001. Optimal matching indicates that it would take one substitution, substituting a one for a zero in the final column, to make the sequences identical. The procedure facilitates grouping according to similarity of paths over time. Optimal matching relies on the assignment of substitution costs that indicate how difficult it is to change one pattern into another. If each change (insertion, deletion, or substitution) “costs” the same, a simple count of the number of changes would indicate the complexity of the transformation; however, some transformations are inherently more difficult than others. In the case of firm finance in China, it would be relatively difficult for a firm to make a change from receiving state-supported bank loans to raising capital

from foreign sources because interacting with foreign companies was uncommon prior to reform. Thus, the cost of this transformation would be set relatively high in the application of the optimal matching algorithm. The substitution costs used are based on the likelihood that the firms encountered the capital source in the past and the degree to which the strategy reflected principles of market organization as opposed to state planning. The Appendix includes details and substitution costs.

Results

Independence Through External Finance. The findings provide strong support for Hypothesis 1, which predicted that retained earnings increase the likelihood of borrowing from all sources in the first decade of reform. Contrary to the understanding of basic principles of firm borrowing behavior in the West, retained earnings in the context of China's transition were considered state funds; however, the firm controlled external borrowing. This finding is consistent with the argument that earnings signaled financial well being to potential creditors and increased a firm's ability to attract external funds. It is possible that a culturally specific desire for autonomy motivated managerial decision making: Managers may have used retained earnings to borrow from non-state sources that allowed them distance from the state. The effect of retained earnings on the receipt of foreign funds was relatively weak, but it was still in the predicted direction and very moderately significant. This weak effect reflects the relative rarity of foreign funding early in reform more than it does an interpretable pattern.

Imitation of Financial Strategy. Hypothesis 2A predicted that geographic propinquity increased similarity in borrowing. Hypothesis 2B proposed that firms imitated the borrowing behavior of large or profitable firms. The coefficient estimates in Table 2 provide support for both of these hypotheses. The variables indicating spatial exposure and the weighted exposure measures are all positive and significant. This indicates that the greater the geographic propinquity between firms, the more likely the firms obtained funds from the same source, net of other economic and social predictors that vary regionally. The exposure measure, which is specific to the type of capital in question, suggests that firms imitated the behavior of others located nearby as other regional traits have been taken into account in the calculation of the exposure measure. Because the exposure variable is also lagged one year, this finding provides support for the argument that firms imitated others' behavior rather than selecting from the same options. The effect of the exposure variable weighted by profits was not a significant predictor that a firm would issue public debt in the equation displayed, but the variable did become significant if later years were

isolated when public debt issues were more common. These results provide support for the notion that imitation was an important influence on firm financial strategy during transition. Yet not all firms exerted equal influence on each other. A firm was more influential if it had traits that the focal firms desired, such as profitability.

Understanding differences in the institutional context between the West and China is useful for understanding general patterns in firm borrowing. In both contexts, firms mimic others, particularly large or successful others. Western research on borrowing does not typically include imitation among its explanatory variables because firms in developed contexts rely largely on economic and financial indicators to develop strategies. There is some evidence that risk leads to standardization (Bromiley and Marcus 1987, McNamara and Bromily 1997), but Western research on financial decision making tends to focus on the influence of firm and manager traits. However in the context of Chinese transition, imitation emerges as an important influence. This is likely the case because of the relatively high levels of uncertainty to which firms were exposed. The analyses suggest that uncertainty matters, and it may not be apparent in other contexts because the uncertainty that firms face in the West and other developed areas is not intense enough to create widespread and noticeable mimicry. This reiterates the important notion that actors have similar motives in different contexts but reach their objectives differently.

Poor Market Development Decreased Diversification. Hypothesis 3 anticipated that where markets were poorly developed, firms relied more on bank funding and less on other sources, and the results provide strong support for this hypothesis. The coefficient for poor market development was a positive and significant predictor of use of bank loans, and it was a negative and significant predictor of use of all other capital sources. This finding suggests that where markets were poorly developed, firms continued to rely on bank financing rather than diversify their capital structures. The relationship between market development and firm capital structure reflects both opportunities encountered by borrowers and lenders' reluctance to extend credit where there were few indicators of trustworthiness. Where markets of all types were not well developed, understanding among potential investors of the advantages of lending to firms with growth potential was limited. Likewise, few investors with the needed insight would have had the capital to invest. Another problem that arises in poorly developed markets is uncertainty about the risk associated with lending. Lenders tend to be unwilling to release funds to those with no history of borrowing and about whom a credit history is unattainable.⁵

The effect of market development on borrowing in China is consistent with accounts from other contexts.

Table 2 High Dimensional Multivariate Probit Analysis of Capital Structure: 769 Firms, 1980–1989*

| | Capital Sources | | | | |
|--------------------------------|-------------------|-------------------|----------------------|-------------------|--------------------|
| | Bank Loans | Interfirm Loans | Interfirm Investment | Public Debt | Foreign Funds |
| Retained earnings (log) | 0.184*** (0.013) | 0.151*** (0.051) | 0.094* (0.045) | 0.228*** (0.048) | 0.099 (0.074) |
| Spatial exposure | 0.003*** (0.001) | 6.434*** (1.393) | 9.841*** (2.455) | 0.165*** (0.047) | 84.220*** (11.128) |
| Exposure × size | 0.002** (0.001) | 9.071*** (3.060) | 4.781*** (0.296) | 0.000* (0.000) | 0.000** (0.000) |
| Exposure × profits | 0.212*** (0.059) | 5.442*** (1.812) | 0.001* (0.000) | 0.000 (0.000) | 0.000* (0.000) |
| Poor market development | 0.151** (0.058) | −0.629*** (0.202) | −0.189*** (0.046) | −0.918*** (0.182) | −0.734* (0.358) |
| Manager—college graduate | 0.150** (0.058) | 0.473* (0.238) | 0.042 (0.195) | −0.193 (0.196) | 1.448* (0.582) |
| Manager—party secretary | 0.073 (0.063) | −0.173 (0.253) | 0.119 (0.207) | −0.973*** (0.299) | 0.768* (0.380) |
| Number of workers (000's) | 0.000 (0.000) | 0.000 (0.000) | 0.000 (0.000) | 0.000 (0.000) | 0.000 (0.000) |
| Cumulative profits | 0.015 (0.025) | −0.034 (0.125) | −0.146 (0.158) | −0.126 (0.112) | −0.092 (0.092) |
| Financial independence | −0.203*** (0.055) | 0.432* (0.201) | 0.521** (0.172) | 0.020 (0.194) | 0.650* (0.308) |
| Age | 0.011*** (0.002) | −0.009 (0.008) | 0.001 (0.006) | 0.003 (0.006) | 0.022 (0.012) |
| Central government funds (log) | −0.148*** (0.019) | 0.076 (0.056) | −0.072 (0.068) | −0.035 (0.060) | 0.250** (0.072) |
| Factor | 0.501 | 0.440 | 0.272 | 0.650 | 0.670 |

$N = 7,373$
 $\chi^2 = 9,424***$

Notes. *Standard errors are in parentheses.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

When a financial market was developing in the United States, uncertainty in lending led to the development of a banking system based on insider lending (Lamoreaux 1994) and the formation of groups of business associates who relied on each other for capital (Dalzell 1987). In 19th century New England, where capital was scarce and expensive, bank directors often channeled funds to themselves and their associates (Lamoreaux 1994). Such practices were widely recognized, and investors willingly bought stock in banks as it was seen as investing in the projects of the banks' directors. Over time, these informal lending arrangements stabilized and became the nation's commercial banking system. Researchers have described similar patterns during development in Germany, Scotland, Spain, and other countries throughout Europe and Asia (see, for example, Cameron et al. 1967, Cottrell 1980, Munn 1981, Tilly 1966). These similarities underscore the importance of context, including both geography and timing. In early U.S. banking, conditions were more similar to conditions in China during transition than they were to modern U.S. conditions. Thus, in both contexts, reliance on social processes played a more central role than it did in the

modern West where uncertainty surrounding financial market functioning is relatively predictable.

Financial Trajectories. Four distinct financial trajectories emerged from the sequence analysis, in support of Hypotheses 4A–D. Table 3 illustrates the percentage of firms that followed each of the four sequences. The table also includes a descriptive name, an example trajectory, and an example of a typical financial sequence for each trajectory. The majority of firms, 65% of those in the sample, were “permanent bank patrons.” Consistent with Hypothesis 4A, these firms made a transition from state funding to bank finance, but they never received nonbank funds. As Hypothesis 4B anticipated, the second most common trajectory included firms that made a transition to bank finance and then to one of the other nonstate capital sources. The frequency with which firms followed one of these two trajectories suggests that firms used bank finance as a transition to other forms of finance. However, as Hypothesis 4C proposed, some firms avoided borrowing from banks, perhaps because continued dependence on state funds was not in their long-term interest. A much less common trajectory was

Table 3 Financial Trajectories Identified Using Optimal Matching

| Characterization | Typical Trajectory | Example Sequences | % of Firms |
|---------------------------|---|-----------------------|------------|
| Permanent bank patrons | Transition to bank finance but not to nonstate, nonbank finance | 10000 | 65 |
| Bank-to-market financiers | Transition to bank finance, then to nonstate, nonbank finance | 10000 → 10101 → 00101 | 17 |
| Early market entrants | Early transition to nonstate, nonbank finance; by-passed bank finance | 00001 → 00101 → 00111 | 11 |
| Diversified financiers | Constant reliance on both bank and nonstate, nonbank finance | 10001 → 10101 → 11101 | 7 |

followed by a minority of firms who relied on both bank and nonstate capital throughout the first decade of reform, consistent with Hypothesis 4D. This was atypical in the early stages of reform, but it is likely that as opportunities for external borrowing improved, this path became more common.

Discussion

This study explored the transformation of firm borrowing during China's transition. 1980–1989 data was used on a large sample of formerly state-owned enterprises to analyze capital structure from 1980 to 1989. High-dimensional multivariate probit analyses and optimal matching was used to identify factors that shaped borrowing and to study the paths firms followed as they reduced dependence on the state. The results provide support for the argument that firms used retained earnings to signal financial well being to creditors to increase autonomy from the state. While firms in the West borrow less as their earnings increase (Myers 1984), Chinese firms borrowed more. The results also showed that imitation and market development shaped borrowing. Firms imitated the behavior of other geographically proximate firms, particularly if those firms were large or profitable. In addition, firms in less developed areas borrowed more from banks, a relatively low risk source of credit, and less from other sources. Finally, I identified four typical trajectories firms followed as they began to acquire funds from banks, other firms, public debt, and foreign sources. The most typical firm borrowed first from banks and then gradually made a transition to other forms of external credit. The least common path was the path directly to market forms of external finance.

Of course, this study has limitations. China's transition offers important advantages for studying firm borrowing behavior, but this is not a representative context. State monitoring of firms likely shaped the nature of borrowing in ways that are not generalizable. Chinese state-owned enterprises are also not representative firms. The data I used were collected systematically and included a large number of typical enterprises, yet the data may be limited in unobserved ways. For instance, it is possible that firms did not report information that would influence policymakers' opinions. There is little reason to suspect that the data are not reliable, but it is not possible to rule out all reporting bias. The results provide strong support for the ideas described in the paper, but the findings should be interpreted in light of the study's limitations.

Despite these caveats, the findings have important implications for organization theory, particularly for understanding the influence of context on firm behavior. It was argued that firms have similar motives but different means of reaching their goals in different contexts, and the results are consistent with this claim. Consistent

with the understanding of strategic decision making in the West, the firms studied appear to be motivated by desires to survive and to reduce dependence on external entities. They drew on their internal capabilities to attract capital, and they avoided relying too heavily on resources controlled by external entities (Mizruchi and Stearns 1994, Myers 1984). The results also suggest that these firms imitated the behavior of their peers, as institutional theory anticipates. This implies that firm motivations may be similar even in contexts that are extremely different. Moreover, this study suggests that decisions about financing the firm are a function of multiple interacting influences including both organizational and institutional factors.

However, in the Chinese context, the manifestation of these influences diverged from Western findings in instructive ways. Continued state control of firm resources altered the meaning of retained earnings, and the findings suggest that this encouraged firms to leverage earnings to borrow externally rather than rely on earnings to fund the firm. Radically changing environmental conditions encouraged imitation of borrowing strategies that would be taken for granted in more stable contexts (e.g., bond issues) but were not well known in the previously socialist economy. Radical change in China may also have made imitation more likely to occur than it is in the West. There is no direct evidence from this study that there was *greater* imitation than in other contexts, but that is a question that is worth pursuing in future research. Similarly, because I focused on early reform, firms were just starting to make a transition to nonstate capital and appeared to be rather cautious in borrowing from sources that would be considered lower risk in the West (e.g., bond and equity issues). China's reform is also unique among transition contexts. Unlike in former Soviet and Eastern European states, the Chinese state maintained strong control of resources in China. This limited the options firms had for borrowing and shaped decisions to borrow from banks first, then move to other capital sources. Chinese reform has also progressed much more slowly than reform in other contexts, creating an environment in which firms were able to slowly learn to raise capital independently, probably shaped the speed at which managers pursued external funds.

The results also contain important insights for understanding China's economic transition. The findings support the notion that firms sought autonomy early in reform. Researchers question the ability of firms to survive the relaxation of state control (Naughton 1995) and express concern that unintended consequences of reform such as weakened firms laying off workers may undermine transition (Jefferson and Rawski 1994). I do not address these questions directly, but the findings suggest that firms took steps almost immediately to brace themselves for the inevitable contextual changes that

accompany reform. I find that firms sought external funding, and that they may have actively capitalized on internal strengths (e.g., retained earnings) to improve survival potential. The findings are also consistent with the notion that firms observed and imitated the strategies of their successful peers. This does not demonstrate that firms will survive, but it suggests that many sought to improve their competitiveness. These findings also include lessons for policy makers and reformers. Evidence that firms in poorly developed regions borrow differently suggests that these firms may adapt more slowly to reform. Slower adaptation, in turn, might result in long-term inequalities in firm well being and related inequalities in worker well being, a potentially negative consequence of China's plan to vary encouragement of development by region.

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Appendix

Assigning transformation costs is an important part of optimal matching. Consistent with previous applications of the approach (Abbott 1995), costs were derived from the complete transition matrix that reports patterns of financial transactions for all firms from 1980 to 1989. The transition matrix represents the likelihood of a transition and the cost for that move relative to others. I drew on questions regarding manager familiarity with each type of borrowing (e.g., Have you heard of/used each type?) to create a measure indicating relative familiarity with each method. I also drew on manager reports of risk associated with each borrowing method to indicate the difficulty associated with transforming from one to the other. The substitution costs used reflect these rankings. Thus, transitions from bank loans to foreign funds are more costly than transitions from bank loans to interfirm loans because managers reported that the risk and ease associated with moving to interfirm are relatively minimal.

The costs used are similar in magnitude to those used in other applications of optimal matching (Abbott 1995). I experimented with alternative costs, including changing the magnitude of the substitution costs (e.g., to as high as eight) and the range of costs (e.g., making foreign funds much different from public debt). Even significant changes in the cost matrix produced only minor changes in patterns that emerged. Substitution costs are the assigned costs that represent how difficult it is to change from one strategy to another. The following

substitution costs were used:

| | Bank Loans | Interfirm Loans | Interfirm Investment | Public Debt | Foreign Funds |
|----------------------|------------|-----------------|----------------------|-------------|---------------|
| Bank loans | — | 2 | 2 | 2.5 | 3 |
| Interfirm loans | | — | 2 | 2.5 | 3 |
| Interfirm investment | | | — | 2 | 3 |
| Public debt | | | | — | 3 |
| Foreign funds | | | | | — |

Endnotes

¹Chinese definitions of accounting terms are similar to Western definitions; the terms used are rough equivalents. In China, retained earnings determined remitted profits, the proportion of earnings that firms gave to the state to be redistributed. Prior to reform, state mandates determined internal costs, depreciation, and the sale of fixed assets and related costs. As Western accounting practices diffused, these calculations became market driven (Ji 2002).

²There was incentive for managers to hide retained earnings, but in the early stages of reform, administrative control was strict enough that most funds were accounted for (Keister 1998).

³Ideally, effects should be controlled for separately, but it is impossible to control for all regional traits that firms share. Inevitably, a simple geographic indicator would control for more than geographic distance and would be impossible to interpret (i.e., controlling for geographic proximity directly would be simpler but would not distinguish diffusion from heterogeneity).

⁴Practically, the coefficient estimates derived using the high-dimensional multivariate probit algorithm vary only slightly from independent probit or logistic estimates of the categories of the HDMP-dependent variables.

⁵To address *spuriousness* (i.e., there may be something that causes managers to use bank loans and to perceive that markets are poorly developed), it's necessary to control for multiple manager and contextual factors. To address *endogeneity* (i.e., bank loan use may create a perception that markets are poorly developed), the independent variables were lagged by one time period to approximate actual causal order. It is possible that these problems remain, however, and the results should be interpreted with this in mind.

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