Where is Credit Due?
Legal Institutions, Relationships and the Impact of Bank Lending on Investment Growth in Vietnam[1]

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Abstract

Rapid development of the domestic private sector in communist China has been offered as evidence against a large literature that claims a solid legal infrastructure is required for the financial sector to contribute to economic development. The counter-argument holds that relationship-based lending has served as an effective substitute for legal institutions. In this paper, we address this counter-argument with empirical findings that show bank credit allocation that relies heavily on "connections" undermines the connection between finance and investment growth. Our data comes from Vietnam, where, like China, the private sector and economy are expanding dramatically, but rule of law has not kept pace. We find that the central importance of personal relationships and political connections in determining access to low interest loans diverts funds from the most profitable investors. Vietnam's flawed banking system allocates a disproportionate share of credit to "connected" enterprises in less competitive regions. Using a two-stage empirical approach, we find evidence that banks place greater value on "connections" than performance and that the firms with greater access to bank loans are less likely to invest in expansion of fixed assets.

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1. INTRODUCTION

The business goals of banking are simple and straightforward: banks collect savings and disperse loans, earning margins on both sides of financial intermediation. The bulk of economic literature supports the idea that, in pursuing individual profits, the banking sector as a whole facilitates economic growth and development (Patrick, 1966; McKinnon, 1973; King and Levine, 1993a; Arestis and Demetriades, 1997). Banks pool savings of dispersed individual and household savers, analyze and price risk among potential borrowers, and offer an array of lending options. In so doing, they diversify risk for savers and offer appropriate service and economies of scale to entrepreneurially minded borrowers. By mobilizing savings and ensuring it is put to productive use, financial intermediaries foster economic growth.

Nearly a century ago, Joseph Schumpeter (1912) declared identification of good borrowers by banks essential for innovation and development. More recent debate has focused on the exact preconditions for best identifying these good borrowers. While many scholars have stressed the importance of strong legal institutions in promoting financial development, others have argued that other mechanisms, such as relationships and reputation, may serve as effective substitutes for robust legal institutions.

A sizable body of literature we refer to as the Law-Finance-Growth Nexus (LFGN) shows that the weak legal institutions common to developing countries undermine the much-sought-after goal of effective financial intermediation (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997, 1998; Beck and Levine, 2003), This line of research stresses that an absence of institutions supporting the sanctity of private property rights and enforcing the contents of private contracts is bound to stymie the business of financial intermediation. The LFGN argument frames finance as a set of contracts and predicts that savers, and subsequently financial

intermediaries, will not agree to invest in enterprise growth without clear legal claim to firms' winnings.[2] Borrowers, too, desire rule of law: Johnson, McMillan, and Woodruff (2002) show that when operating without the benefit of solid legal infrastructure in transition states, firms will choose to limit themselves primarily to using reinvested earnings for fixed investment capital.

An overlapping group of authors points out that when faced with unreliable legal institutions, enterprises tend to fall back onto personal connections and other more informal mechanisms for contract enforcement (Beck and Levine, 2003.; Guiso, et al, 2000; Franks, et a, 2003l; and Johnson, McMillan, and Woodruff, 2002). McMillan and Woodruff (1999a) look specifically at how private firms in Vietnam rely on informal guarantees, such as length of direct relations, when extending trade credit to business partners. It follows that banks, being enterprises involved in financial intermediation, also seek out the security of informal protection of their transactions when they feel unable to count on protection from the legal system.

Harkening back to the early nineties debates over the role of finance in the East Asian Economic Miracle (Wade, Robert, 1998, 695; Haggard, 2000, 20), a group of scholars have begun to stress the importance of relationship-based lending as a substitute for sound legal infrastructure (Grief, 1989, 1993), citing the rapid growth of China's private sector as their primary example (Allen, Qian and Qian, 2005; Tsai, 2002). Allen, Qian, and Qian (2005) show that the finance-growth connection has been predictably undermined for firms in China's state and foreign-invested sectors, but venture that the particularly rapid growth of domestic private enterprise presents a challenge to the LFGN literature. In particular, they suggest that alternative financing methods used in China, which rely heavily on the informal mechanisms of reputations and relationships described by McMillan and Woodruff, provide a useful model for economic development in the absence of legal institutions.

The critical shortcoming of the relationship-based lending approach, however, has been the difficulty of demonstrating empirical proof of a relationship between expanded credit access and investment growth in the absence of legal infrastructure, indicating that there exists a possibility of spurious correlation. In other words, it is clear that credit expansion and private sector development can occur in parallel, but their trajectories may be unrelated to each other and, in fact, expanded credit through relationship lending may lead to less growth than financial systems bolstered by strong property rights and legal regimes. Research on lending based on ethnic relations in India, for example, has been shown to be ineffective in market terms (Banerjee and Munshi, 2002). Relationship-based lending may indeed offer a suitable coping mechanism in developing countries with under-developed legal institutions, but the LFGN still applies in that the poor legal infrastructure hampers long-term economic growth by impeding efficient allocation of capital.

This argument is the launching point for our paper, where we investigate the specific case of private companies in rapidly growing and nominally communist Vietnam. Like China, Vietnam is a transition economy with weak legal institutions, a large and growing state-dominated bank sector, and rapidly expanding entrepreneurship and economic growth. Vietnam's broad-ranging systematic and ideological similarities place it very close to China on the spectrum of legal development. Given the importance placed on legal origins in ground-breaking recent work, there is good reason to believe that the influence of French colonialism would lead Vietnam to be ranked lower than China (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998; Acemoglu and Johnson, 2001). Further evidence is the paucity of information on domestic private sector commercial dispute cases heard by Vietnam's Economic Court in recent years.

Vietnam appears at face value to be another potential anomaly to the law-finance-growth nexus. Using our large-scale firm-level survey data, we directly test formal financing of the private sector in Vietnam and find the relationship-based lending explanation misleading. Access to credit in Vietnam actually has a strong *negative* influence on firm-level investment decisions. We explain this finding as the result of flawed credit allocation, owing specifically to the dominant role played by "connections" and personal relationships.

Our paper is organized as follows: We begin with focus on recent developments in Vietnam's economy, analyzing both recent growth trends in the banking sector and among domestic private companies. Building on this background, we engage in a two-stage empirical test. First, we use data from the Asia Development Bank in the third section to better understand the determinants of banks' selection of borrowers. In line with Allen, Qian, and Qian (2005) we find that personal connections and a policy goal of increasing credit availability in rural provinces are of primary importance in accessing to bank credit. In the second empirical test, we use a hierarchical linear model (HLM) on data from a US-AID funded survey to test the impact of relationship-based lending on firm-level investment decisions, by probing the relationship between credit access and fixed investment growth in 2022 firms across 42 of Vietnam's 64 provinces (accounting for 90% of GDP). The HLM design allows us to control for the fact that firms are nested within provinces and may be influenced by both firm-level characteristics (i.e. industry type and size), as well as province-level characteristics (i.e. infrastructure, proximity to markets, and governance). This test reveals a negative relationship between the ability of individual firms to access credit and their likelihood of investing in expansion. The paper concludes with a discussion of the implications for governments in developing economies that wish to achieve policy goals through manipulation of the banking system.

2. FINANCE AND FIRM GROWTH IN VIETNAM

Two fundamental issues are readily apparent in the discussion of China and Vietnam as anomalies to LFGN. The first is the definition of financial development. Cull and Xu (2005:120) argue specifically that in terms of financial development, China is "well ahead" of the Eastern European countries covered by Johnson, McMillan, and Woodruff (2002), but they illustrate this point with three indicators of the volume of credit relative to GDP. Allen, Qian, and Qian, in turn, establish China as financially under-developed based primarily on numbers describing its equity and bond markets (Allen, Qian, Qian, 2005). Like China, Vietnam provides an intriguing case study on this point, because volume of available credit has grown at a very high rate, given the absence of meaningful legal institutions. Were financial development understood literally as rapid growth of available financing, Vietnam would also contradict the theory that financial development requires a well-developed legal system.

Financial development, however, is better defined as an overall *level* of sophistication on the part of the financial system, which Vietnam and China have not yet reached, rather than as a *process* of rapidly increasing availability of finance. With specific regard to the banking sector, allocation of credit based on profit-maximization must be considered a benchmark of development. While allocation of credit in Vietnam is the focus of our empirical tests, it is worth noting that other indicators of financial development in Vietnam remain extremely low, even when seen relative to other developing economies. Descriptive statistics on Vietnam's stock market in 2003 included market capitalization/GDP of 0.4 percent and market liquidity of 0.08 percent,[3] far below even the financially under-developed China, which recorded numbers of 48.1 percent and 33.6 percent, respectively (Allen, Qian, Qian, 2005; World Bank, 2005: 282)[4].

A second issue is the premise of the counter-arguments to LFGN: that expanded access to credit through relationship-lending has actually led to more robust private sector growth in China (Allen, Qian, and Qian, 2005: 90; Tsai, 2002: 59). Similar arguments have been made about credit and private investment growth in Vietnam (Hansen, Rand, and Tarp, 2004: 17). Nevertheless, a closer inspection indicates that there is very little connection between these two trends, which are likely correlated because they are both direct outputs of early nineties reform efforts and because they both began at such low levels. The rest of this section is devoted to analyzing the two developments in order to better understand their relationship and their divergent geographical distributions in Vietnam.

The IMF and others have actually expressed serious concern that credit expansion is occurring too rapidly and that interest rates are kept too low. Over the most recent four-year period for which statistics are accessible, credit available to the Vietnamese economy more than doubled, from VND 155.7 trillion in 2000 to VND 366 trillion in 2004. Observers of the Vietnamese economy have frequently focused on the dangers of increasing capital flows to the country's SOEs, because of slow progress on state sector reform and the related dangers of asset stripping and non-performing loans. Freed of earlier regulatory obstacles, however, banks are also increasingly allowing the domestic private sector a greater share of access to the lending largess: SOEs share of outstanding credit fell from 44 percent in 2000 to 35 percent in 2004 (IMF, 2004: 30). Figure 1 shows that, when viewed as a percentage of GDP, credit to SOEs has basically remained level, while credit to the private sector has jumped dramatically from 19.4 percent in 2000 to 31.6 percent in 2003. There is also reason to believe that formal companies, in particular, are getting an increasing share of the growing pie of credit available to the domestic private sector.[5]

<Figure 1 About Here>

Despite these numbers, most surveys of private company owners in Vietnam consistently cite difficulty of accessing credit as a leading obstacle to private sector development (Hemlin, Ramamurthy, and Ronnas, 1998; Tenev et al, 2003; Kokko and Sjoholm, 2004; and Carlier and Son, 2005). Indeed, Vietnam's banking system does appear biased against the fledgling private sector. At least three quarters of all bank credit is provided by four state-owned commercial banks (SOCBs), where incentives generally have less to do with the profitability than with industrial policy and concern over risk of non-payment by a borrower not backed by the state (i.e. a private borrower) (World Bank, 2004a: 73). State banks are almost by definition less focused on profit and tend to offer loans at relatively low interest rates (La Porta, Lopez-de-Silanes, and Schleifer 2000; Sherif, Borish, and Siegelbaum, 2003). Vietnam's SOCBs are encouraged to funnel credit to favored, state-dominated industries and are party to the government's effort to use the financial system to ameliorate geographic (urban-rural) inequalities (Dufhues, 2003). Despite its benign goals, this redistributive process has not shown any clear benefits with regard to increased economic growth or job creation, while substantially distorting credit markets. Internationally funded micro-finance programs complain they have trouble operating in Vietnam because rates that they consider to be commercially viable are higher than those offered by the state (World Bank, 20004c: 4). These attributes mean limited institutional incentives for banks to seek out new, more profitable borrowers.

At the level of the individual lending officer working for an SOCB, there are very strict punishments for non-performing loans to private companies, including the possibility of jail time. While ostensibly aimed at combating corruption, such measures primarily have the affect of further cementing risk-averse lending behavior. Even privately held banks in Vietnam seem

to favor borrowers with political connections, as a way of ameliorating risk and avoiding punishments (Nguyen Dinh Cung, Pham Anh Tuan, Bui Van, and David Dapice, 2004: 9). The net result is a relative over-abundance of credit flowing to "connected" enterprises in uncompetitive rural regions, and a constraining of credit markets thereby crowding-out entrepreneurs most in need of capital to expand business activities in Vietnam's most competitive regions.

Surveys of entrepreneurs themselves must, of course, be taken with a certain grain of salt. Entrepreneurs worldwide are never satisfied with the amount and terms of credit available to them. This is particularly true of small and medium-sized enterprises (SMEs), which, in Vietnam's case, account for 98.8 percent of domestic private companies.[6] Generally, only banking systems in industrialized countries with more sophisticated credit history information systems show much predilection for lending to smaller firms. Even in famously explosive periods of business growth, such as the late 19th century in Europe, banks have tended to remain focused on more familiar large firms (Cull et al, 2004). Empirical research, in fact, finds that targeted efforts to change this equation by apportioning larger shares of credit for smaller enterprises have been ineffective (Beck, Demirguc-Kunt, and Maksimovic 2004a; Beck, Demirguc-Kunt, and Levine, 2005; Beck, Demirguc-Kunt, and Maksimovic, 2004b). Adams, Graham, and von Pischke (1984) wrote that efforts to intervene in financial markets to target the poor for credit were ineffective or even damaging.

Furthermore, despite their complaints, Vietnam's private companies have in fact surpassed the surprising growth of the country's banking sector. Following introduction in 2000 of a new company law that significantly decreased the costs of start up, the number of domestic private companies has nearly tripled in number, as has the share of Vietnamese workers that it

employs. Moreover, capital utilization models indicate that official numbers may underestimate output from the domestic private sector by 50 percent or even higher (Tenev et al, 2003).

On all measures, however, growth of private companies has disproportionately been centered on urban commercial centers and in the southern third of the country. Eleven of Vietnam's sixty-four provinces account for over 60% of growth in the active private sector and over 70% of both private sector investment and revenue (VNCI, 2005). This growth is in sharp contrast to the increasing flow of bank lending, which by design has been much more balanced across the country as part of the earlier mentioned strategy for greater income equality (Dufhues, 2003). This spatial divergence between lending and private sector growth is a strong clue that further empirical testing at the firm-level is needed.

3. DETERMINANTS OF ACCESS TO CREDIT: A MULTIVARIATE SELECTION MODEL

To test whether relationships are important in receiving favored access to credit, we begin by using data obtained from the Asian Development Bank (ADB)'s study of private enterprise formalization (Taussig and Hang, 2004). While the original goal of this survey was to understand the underlying causes of private sector formalization, the study asked a number of pointed questions regarding access to capital among household businesses (*ho kinh doanh ca the*) and private companies (*doanh nghiep tu nhan*[7]) across a set of northern and southern provinces. The ADB chose to study twenty household firms and twenty companies in each of two rural provinces with relatively large formal sectors (Dong Thap and Ca Mau), two rural provinces with relatively large informal sectors (Thanh Hoa and Ha Tay), and the two major metropolises of Hanoi and Ho Chi Minh City. The sample selection was not stratified proportionately to the

population of provinces in the six locales; focusing instead on a matched comparison methodology between the formal and informal sector.

As a result, the survey is not the perfect design for our test. Sample distributions of firms in each province do not accurately reflect the distributions of the sample population, leading to possible sampling biases in the results. Caution should be taken in inferring too much from point estimates of the data, though overall trends can be considered highly reliable. Nevertheless, the detailed survey design and accurate translation of complex financial concepts gives far better insight into the specifics of credit access than has been done thus far in Vietnam. There is little post-hoc guessing necessary about what firms understood when they sat down to answer the survey, as there has been with other survey questions, such as "Rate the importance of obstacles to your business," where credit access is one of ten to fifteen options.

3.1. Dependent Variables:

The ADB data offers three useful measures of credit access to be used as dependent variables, each requiring a different statistical model for analysis.

- *Ease of credit access* – This question asks firms to assess their own access to credit on a four-point scale ranging from very difficult to very easy. Using this measure as our dependent variable required an ordinal probit model, where we assess the relative probability of firms answering easy or very easy.

- *Number of loans* – The survey also asked firms how many loans they had received from formal credit institutions. Answers ranged from 0 to 9 loans with a tenth option signifying more than nine loans. For ease of analysis, this variable is treated as a count variable with the tenth option assumed simply to be ten loans. Use of this variable requires a negative binomial functional form, because unlike the poisson model for count variables, loans to individual firms are not independent of one another (King, Gary, 2001)[8]. Successful repayment of loan raises the probability of further loans.

- *Length of loans* – Finally, recipients of at least loans were asked how long their average loan lasted. Answers ranged from less than one month to 96 months of the 112 firms who received loans. Analysis of this variable requires an Ordinary Least Squares

(OLS) model.

3.2. Independent Variables:

Testing our model of competition and connections involves several causal and control variables. These include:

- *Average proportion of bank loans to the SOE sector.* Access to loans will first be limited by the amount of loans available. A provincial-level bias that favors the state sector clearly also crowds out the volume of credit left over for entrepreneurs.

To measure whether both central and local SOEs were privileged with soft budget constraints at the provincial level, we use data from the Provincial Competitiveness Index, where the research team collected quarterly lending data from three state-owned commercial banks (Vietcombank, The Industrial and Commercial Bank (INCOMBANK), and The Bank for Investment and Development (BIDV) between 2003 and the fourth quarter of 2004.[9] As Standard and Poor's pointed out in a recent study of Vietnam's banking sector, the current bias toward SOEs in some provinces is highly risky and ineffective as SOEs are provided soft loans without any guarantee. As result, these loans can be considered an implicit subsidy to SOEs. Loans to firms in industrial zones within the province were considered along with the loans to firms outside the zones (Mai Anh. 2005). The average percentage across all banks over the time period considered was taken as the indicator. State sector lending has a very large variance across Vietnam provinces, ranging from the lowest in Ninh Thuan (6 percent) and Binh Duong (17 percent) to the highest in Quang Ninh (87 percent), Da Nang (84 percent) and Ha Tay (83 percent). Generally speaking, state bias appears substantially lower in the southern third of the country.

The absolute amount of lending to private companies may have been a better measure of overall access to capital, as Hanoi may have proportionately more SOE lending but in absolute terms gives far more capital to the private sector than Ninh Thuan. Such data, however, was considered proprietary by the four commercial banks that provided the data.

- *Number of private companies per 1000 citizens*. Access should also be limited by the demand for loans from other enterprises in the same bank jurisdiction. To measure this we use the number of active companies per 1000 citizens as measured by the General Statistical Office's Enterprise Census in 2003.

- *Interaction between Supply and Demand for Credit:* We interact these two variables in each model, to test how the two variables respond in combination.

These supply and demand conditions are displayed in Figure 2 below with lending to SOEs as a percentage of total State Commercial Bank loans on the horizontal axis and

the number of private companies per 1000 citizens on the vertical axis. Four quadrants are recognizable immediately that conform closely to geographical distinctions. Southern provinces are on the left of the figure, while Northern provinces are on the right. The two urban centers of Hanoi and HCMC are at the top of the figure, while rural provinces are clustered at the bottom. According to the conditions, the Southwest quadrant consisting of Dong Thap and Ca Mau should be the easiest environment structurally for loan access, due to the high percentage of loans to the private sector and relatively low number of private companies. The Northeast quadrant with Hanoi should be the most difficult place to receive a loan, due to a low percentage of loans dedicated to the private sector and very high competition. The Northwest and Southeast quadrants are both medium environments for loan access; which quadrant has a more problematic environment depends on the relative saliency of the two dimensions. Evidence from a separate study indicates that credit access in the Northwest quadrant is more difficult; finding that firms in Thanh Hoa and Ha Tay were successful in 80% of their loan applications, far higher than the 64% success rate in the five provinces with large registered private sectors, including HCMC (Malesky, 2004: 68).

<Figure 2 About Here>

- *Firm manager previously worked in government, army, or state owned sector.* This variable which is scored from 0 to 2, with two signifying two previous state sector jobs, is used to determine whether connections to local government officials played any role in access. Like Allen, Qian, and Qian, we believe that this "connectedness" plays a very important role in helping private companies access credit marks in both competitive and non-competitive environments.

- *Firm age in years* is used to control for the fact that older firms may have had more time to apply for loans and therefore more opportunities to receive a higher number absolute number of loans.

- *Size of firm (Number of full time employees)* is used to control for whether bigger firms are more likely to receive loans. Banks may be more likely to lend to large firms for a number of reasons. First, size may serve as a signal of a successful track record. Second, larger firms are easier to identify and keep tabs on in case of default. Third, state commercial banks may look to larger firms as provincial champions, intending to bolster provincial employment, and prestige, by providing credit to these enterprises.[10]

- *Possession of Land Use Rights Certificate (CLUR):* While technically all Vietnamese land belongs to the state, the rights to its use have been assigned to individuals and firms through land use rights certificates (CLUR) starting in 1993. These certificates legalize their owners' rights to the long term use of the allocated land (for as little as 20 years, but up to 70 years) and to transfer, exchange, lease, inherit, and mortgage the land use right. Particularly important is the ability to use a formal land use rights certificate as collateral in accessing bank loans, which was enshrined in the 1998 iteration of the Land Law. One problem, which varies considerably across provinces, is the percentage of private firms that possess secure land use rights. Many provinces have myriad firms with informal land rights inherited from previous generations or purchased through informal exchange. The more diligent a province is at allocating formal land use rights certificates to those who either bought or inherited the property, the more secure investors will feel about investment in their property and the more opportunities for growth they will have. Firms received a 1 if they have no CLUR, 2 if only portion of their land is covered by an official certificate, and 3 if they have full CLUR.

- *Is the firm registered as a private company at the Department of Planning and Investment (DPI) or has it remained part of the informal sector as a household business [Note: survey included both manufacturing and service firms]*. Household businesses register with district officials, while companies register with provincial-level DPI. As a result, provincial regulators have easier access to company lists than to household business lists. With regard to all-important taxes, only a small share of household businesses actually register for a tax code at all, even though, legally, the same tax laws apply to them as apply to companies.[11] In sum, the regulatory framework that covers the activities of household businesses is less comprehensive, less transparent, and less strictly implemented than the one that applies to companies (UNIDO, 2000). With this in mind, we hypothesize that it should be more difficult for household businesses to access formal credit markets; therefore registration should have a positive sign in multivariate analysis. Companies receive a 1 if they are registered at DPI and 0 otherwise.

- *Firm has never used informal sources of credit:* Many firms rely on family, friends, or informal moneylenders as a source of capital, rather than dealing with the apparent red-tape and bureaucracy that surrounds the formal banking system. Because these firms have a lower need for formal credit, they are less likely to have applied for loans. By contrast, firms without these informal sources should be more likely to rely on formal bank loans. The variable is coded as 0 if the firm has never used informal

credit of any kind, 0 otherwise.

- *Expected performance in the coming year:* Banks should be more likely to lend to firms with good business prospects. We use the firm's self-evaluation of its prospects for the coming year as our gauge of expected performance. Firms that expected profit to increase by over 10 percent received a score of 5; those that expected a 1to 10 percent increase receive a score of 4; those expecting no increase receive a 3; a score of 2 goes to those expecting a 1-10 percent decrease in profits, and finally a score of 1 is reserved for those expecting a 10 percent decline.

  These independent variables and their hypothesized impact on credit access are summarized below in Table 1.

<Table 1 About Here>

3.3. Results of Access to Capital Selection Model:

The initial results of tests on all three dependent variables are shown in Table 2 below. Models 1 and 2 reveal firms' self rating of their ease of access to capital. In only three cases, independent variables were significant and in the expected direction. Firm age, size, whether it has to informal credit, and surprisingly whether the firm has access to informal credit have no significant impact on firms' self-rating of their ease of access to credit. Possession of property rights in the form of CLURs has a large positive impact on ease of credit. Indeed, with all other variables set to their mean, firms with no land use rights certificate have a 12 percent probability of answering easy or very easy, firms with partial land use right certificate have 21 percent probability, while firms with full land use rights certificate have a staggering 32 percent probability of answering easy or very easy. These findings confirm the Johnson, McMillan, and Woodruff (2002) discovery that property rights are critical for credit access in transition countries because of the high reliance on collateral among banks in these states.

"Connectedness" (in the form of a former job in the state sector) also has a very large impact on self evaluation of loan access, as moving from no government service to the maximum

of two separate government jobs increases the probability of answering easy or very easy by 24 percent. This finding confirms our suspicions that Vietnam, like China, is highly characterized by relationship-based lending. Finally, expected profit growth in the coming year impacts firms' evaluations. A shift from the minimum to maximum score increases the probability of rating loan access as easy or very easy by 18 percent.

Only one measure of the competitiveness of loan access at the provincial-level was significant in Model 1, the number of companies per 1000 citizens. Moving from 0.5 companies, the level of our rural provinces to 2.75, slightly below HCMC, reduced the probability of easy access to loans by 6 percent. This demonstrates clearly that firms in very competitive environments are likely to believe their opportunities to receive a bank loan are limited.

<Table 2 About Here>

More interestingly, the interaction between the two competitiveness measures is significant as well. This interaction is explored more concretely in Figure 2 below. Here, we divide the sample at the mean value for loans to SOEs in Figure 1. Provinces above the mean are listed as "High Loans to SOE' and provinces below the mean are listed as "Low loans to SOE." Along the horizontal axis, we list the Number of Enterprises per 1000, ranging from Thanh Hoa at the lowest level to Hanoi at the high extreme, with all other provinces arrayed between those two endpoints. Along the vertical axis is the predicated probability of a firm answering that it has Easy or Very Easy Access to Loans. Figure 3 shows that in provinces with a high percentage of loans to the state owned sector, access to capital declines precipitously as more firms are competing for the limited number of loans. By contrast, in provinces with a low percentage of loans to the state owned sector, there is very little change in firm's assessment of their access to capital as more firms compete for the same pie.

<Figure 3 About Here>

Models 3 and 4 look at exactly the same factors, but instead of relying on firms' self-assessment, these models use the number of loans to firms as the dependent variable. The results differ slightly from the previous model. First, registered firms are far more likely to receive multiple loans, while the impact of Land Use Rights is more muted but still significant. Table 3 explores these results in more detail. Holding other factors constant at the their mean, registered firms with full CLURs receive about four loans, 1.2 more loans than registered firms without property rights, over three times as many as non-registered firms with CLUR and over five times as household enterprises without CLURs.[12]

<Table 3 About Here>

Firm age has a much larger effect than in models 1 and 2; a result that is due largely to the fact that older firms had more opportunities to access capital. Expected performance has no impact on multiple loans, but "connectedness" continues to have an important effect. Once again, our measure of competition for loans matters a great deal; the higher the number of firms in the province, the lower the number of loans each firms receive. Table 4 looks at the predicted number of loans per firm based on whether the owner is a former government official and the number of enterprises in the province, using CLARIFY to estimate results for firms at only the highest legal status (registered and with a full CLUR) and therefore most likely to receive a loan (Tomz, Wittenberg, and King, 2003). As is immediately obvious, the higher the number of firms in the province, the lower the number of loans, but this impact is mollified significantly by the connections that former government service afford. For instance, a connected firm in an uncompetitive environment can expect to receive as many as 6.08 loans, while an unconnected official will receive only 3.54. The gap continues at every range of competitiveness.

<Table 4 About Here>

As with ease of loan access, the interaction between number of loans and the percentage is once again significant and extremely robust to a number of alternative count variable (though not OLS) estimations and fixed levels of independent variables, but in the opposite direction, requiring further exploration. We look at the interaction again in Figure 4, finding that the predicted number of loans declines in both environments characterized by high and low loans to the SOE sector. Nevertheless, the slope or rate of decline is steeper in provinces with a high percentage of loans to SOEs, confirming our competition hypothesis. The finding that loans continue to decline in low SOE loan environments is fascinating, because of the high confidence these firms had that they could receive loans easily.

In Figure 5, we take the analysis one step further by determining how firms could ameliorate the impact of competition for loans by cultivating connections through their former government positions. While the slopes of the two lines remain the same, both are shifted upward by former government employment. For instance, firms in the most competitive environment of high loans to the state sector and in the 99th percentile of private firms per 1000 citizens could expect 2 loans if they have government connections, but only 1.2 loans without them. Firms in the least competitive environment would receive 2.7 loans without connections, but 4.2 loans with them. In short, relationships are the best mode of ensuring credit access.

<Figures 4 and 5 About Here>

The final model in the determinants of loan access is the length of the average firm loan. Three factors are important in determining loan quality from a firm's perspective: the amount of the loan, interest rate, and length of the loan. The ADB study avoided direct questions about loan size and interest rate due to the sensitivity of those issues; however, it did ask firms to

record the median length of their loans. With this third dependent variable, recorded in Models 5 and 6, only three variables proved significantly different from 0. For every ten employees, a firm gains about 4/5 of a month on the average median loan, while moving forward one-point on the land use rights certificate scale adds about 4.3 months to median loan, ranging from 22 months for firms with no CLUR to 31 months for firms possessing full rights. Finally, only one of the competitiveness measures plays a role in the predicted negative direction. The percentage of commercial bank loans to the state sector reduces loan length by just over a month for every 10 percentage point increase in commercial bank lending to the state sector. The interaction of competitiveness terms proves insignificant in this model, indicating that loan quality has more to do with firm-level characteristics than provincial-level competition.

4. The IMPACT OF CREDIT ACCESS ON FIRM PERFORMANCE

The above result that bank selection of borrowers depends heavily on "connectedness" raises an important question regarding how credit access impacts firm performance. While it makes sense that allocating capital based on personal relationships lowers the asymmetric information disadvantage that banks have with potential borrowers, as they can rely on their social network to enforce repayment, lending based on non-business principles always has the potential for abuse (Akerlof, 1970; McMillan, J. and C. Woodruff, 1999b). Moreover, there is an important national welfare principle at stake, when SOCB lending is not going to the firms with the best ideas and business prospects; Vietnam is certainly not receiving the biggest bang for its buck in lending, which may actually serve to undermine the very purpose of higher lending to rural enterprises. When banks make careful credit allocation decisions, good firms are able to expand their businesses creating new jobs for a workforce expanding by 1.4 million bodies each year and sorely needed tax revenue.

4.1. Necessity of a Hierarchical Design

To test the question – *How does access to capital impacts firm-level investment growth?* - we use a hierarchical linear model (HLM) on data generated by the Provincial Competitiveness Index Survey, the most current and geographically diverse survey to date of the environment for Vietnamese private sector investment (VNCI, 2005). The PCI survey covers 2022 firms in 42 different provinces allowing for us to clearly test our theory of competitiveness and connectedness. Moreover, the PCI database offers a range of other variables impacting firm investment decisions such as infrastructure and governance consideration, allowing us to isolate

the impact of access to capital from these other characteristics. Missing data in the PCI survey was imputed using a program known as NORM (Schafer, J.L. 1997).[13]

A HLM model is necessary, because the firms are nested within provinces and are undoubtedly influenced by unique characteristics of those provinces, but introducing provincial level characteristics to a normal statistical model when the unit of analysis is nested in higher-level clusters violates the standard assumptions of homoscedasticity and independence (Raudenbush, S.W. and Bryk, A.S. 2002; Singer, J., 1998; Kreft, I.G.G., 1996). Firms clustered together in provinces or countries are not independent from one another and variance is likely to be heteroscedastic across the higher-level units. In addition, standard errors for the regression coefficients may be underestimated, thus inflating inferential tests of coefficients via the t-tests. These are particularly insidious problems to have; when independence is violated, we are more likely to reject our null hypothesis when it may be true, and we are more likely to identify effects when such effects may not exist. The dilemma is magnified when researchers interact firm level characteristics (say firm ownership type) with province-level measures such as infrastructure. In a single-level regression these cross-level interactions are almost impossible to interpret (Preacher, Kristopher J., Patrick J. Curran, and Daniel J. Bauer, 2004). Hierarchical or multi-level modeling offers the best alternative for multivariate analysis in these cases, as the approach allows for the simultaneous inclusion of both firm and provincial level data in the same model (Raudenbush and Bryk, 2002).

4.2. Preliminary Test of Endogeneity in the Design

There is a possibility that this procedure may be susceptible to endogeneity, because firms with no investment plans and thus no need for capital might be ill informed about the

availability of credit. On the other hand, firms with expansion plans and in desperate need of credit might feel the credit pinch with particularly acuteness.[14] Such a finding would be detrimental to our analysis and deserves serious consideration. To sort out whether this speculation is true, we began by analyzing a specific question from the PCI about expansion plans. Firms were asked, "If land were easier to obtain, would you expand your business operations?" This is an important question, because regulatory problems in land allocation and zoning have created an external constraint on firms' growth potential. The question is very useful, because it provides a measure of the aspiration of individual entrepreneurs that is independent of financing. If our analysis were plagued by the above endogeneity, there should be a higher percentage of firms with no expansion plans rating credit access as easy, while those with plans for expansion would rate credit access as difficult, Figure 6, however, demonstrates that answers to the access to credit question do not vary according to expansion plans. Across every level, between 70 and 80 percent of firms would be willing to expand their business if the external constraint imposed by land were removed. A chi square test further revealed that the differences between expansion plans across levels of credit access are statistically insignificant. As a result, we can safely reject the speculation of endogeneity and proceed with the analysis. As a subsequent test of endogeneity, we also ran a restricted HLM model using predictors from our first stage selection model (detailed below).

<Figure 6 About Here>

4.3. Dependent and Independent Variables

Our HLM model shown mathematically in Appendix 1 takes the natural log of average annual fixed investment growth between each firm' establishment and the year of the survey (2004) as the dependent variable. One limitation is that the study must rely on firms' own

estimates of their investment at establishment rather than recorded from panel data. Because this is the initial year of the PCI, such approach was necessary in order to allow for a dynamic dependent variable. The key causal variable in the test is the firm's assessment of access to capital in their province on a five-point scale ranging from poor to very poor. We also use a similar firm rating of Development Assistance Fund (DAF) financing, a nationally backed fund that is administered by the provinces with the goal of rural development, to see whether this alternative source of capital has a causally distinct role (Nguyen Dinh Cung et al, 2004).

Control variables at the province-level include:

- *Southern Dummy:* We use the 1954 Geneva Accords as our determinants of Southern and Northern province. All provinces South of Quang Tri are considered Southern.
- *Percentage of State Commercial Lending to SOEs,* as defined in Section 3 above.
- *Human Capital and Development:* A composite measure of from the PCI which ranks provinces based on the education and literacy of laborers from the annual MOLISA survey and achievement test scores of 5th graders in math and reading (World Bank, 2004b). Better human capital is considered by the economic growth literature to be a major factor in attracting domestic investment (Helpman, 2004).
- *Average telephones per thousand people (1995-2002)* as proxy for infrastructure. We predict that better infrastructure will be more attractive to investors.
- *The average private sector long-term investment per capita (2000-2003)* replaces number of enterprises as our measure of competition for bank investment. This variable is preferable due to limited danger of outlier effects, which are present in the enterprise per capita variable. Average private investment per capita varied quite widely from a minimum of 102,000 VND in Ha Tinh to a maximum of 5.1 million VND in Binh Duong. Because of the large spread, the natural log of this variable was considered most appropriate for analysis.
- *Costs of shipping a 40 foot container from provincial capital to Tokyo* was used as proxy for proximity to markets due to geographical barriers (VNCI, 2005). High shipping costs will certainly limit high investment.

At the firm-level we also control for:

- *Relationships:* The PCI proxy for relationships is a question asking firms how important a relationship was in receiving important business information from the provincial government, coded from 1 (Not Very Important) to 4 Very Important).
- *Access to informal capital* with the PCI's question asking firm's to rank the importance of family and friends in providing investment capital ranging from 1 (Not Very Important) to 4 Very Important).

- *Land Use Rights Certificates* as measured above under the assumption that firms with property rights are more likely to invest in their property.
- *Governance (Legal Infrastructure):* The PCI provides a wealth of firm-level data which the LFGN literature has deemed to be instrumental in firm-level investment decisions Johnson, Woodruff, McMillan, 2002; Cull and Xu, 2005). After testing to make sure these variables do not correlate too closely with capital access, we used them as control variables in the fully-specified model. They are:
    - *i. What percentage of management's time is spent dealing with bureaucratic procedures and paperwork?* This question was given to firms in the form of a five-point likert scale, ranging from 0 percent of a firms time to over 25 percent.
    - *ii. The percentage of firms who felt that enterprises in their line of business were subject to bribes from provincial authorities.* (Note that this question was phrased so that firms were answering about firms in general as opposed to their own behavior with bribes – thereby increasing the response rate substantially.)
    - *iii. Provincial officials are creative and clever about working within national law to solve problems of private sector firms.* The measure records whether the provincial leadership is capable of seeking opportunities or loopholes in the present central law that may aid firm performance, measured on a five-point scale from strongly disagree to strongly agree.
    - *iv.* The firm has *confidence in the provincial legal system* for resolving disputes, also measured on five-point scale.
    - *v. Transparency*. The PCI research team took a unique approach to measuring access to information across the surveyed provinces. A list of the 12 provincial documents most vital to business operations was given to each firm, whereupon they were asked to rate their access that documents on a scale ranging from very easy to impossible. Two factors results from a subsequent factor analysis. *Access to Provincial Planning Documents* which included firm evaluations of their access to the Provincial Budget, 10-Year Master Plans, 5-Year Plans, and Annual Socio-Economic Plans, and infrastructure development plans. And *Access to Laws and Regulations (factor 2)* which included firm evaluations of their access to central decisions and resolutions, decisions of the Provincial People's Committee, plans for central investment, land use maps, applications for registration and land use, and changes in tax information.

4.4. Results of HLM Test

Four different models are displayed in Table 4. Model 1 is a restricted model, which uses key predictors from the first analysis to determine capital access in order to demonstrate the validity of our two-stage empirical approach. This is confirmed by the fact that the proxy for relationships is negative and significant, demonstrating quite clearly the negative selection model at play. Firms with relationships are the least likely candidates for business expansion.

We should therefore expect in subsequent models that capital access should be negatively related to investment.

Model 2 is a baseline model, omitting the governance controls; Model 3 is the fully-specified model, which includes governance characteristics; and Model 4 substitutes access to capital for development assistance from the province (DAF).

The most important finding from the test is the confirmation of our hypothesis that access to capital is significant and negative in every model, indicating that firms lucky enough to receive bank lending are not the firms most likely to make long-term investments in their businesses.[15] In the baseline Model 2, a one-point shift on the five-point capital access scale, actually reduced investment growth by almost 2/10 of a percent. A rating on provincial allocation of DAF was even worse for investment, reducing investment growth by half a point for every shift on the five-point scale, meaning that moving from the minimum to maximum score would reduce growth by almost 2 percent. This is very likely; DAF has been heavily criticized for biased lending to state owned enterprises, which certainly crowds out private sector investment. But firms are not turning to informal sources of credit, as heavy reliance on family and friends also has a negative impact on firm investment growth. It would appear that most firm investment growth is emanating from reinvested profits, personal savings, and self-generated funds (Tenev et al, 2002; Johnson, McMillan, Woodruff, 2002).

Structural conditions such as human capital, shipping costs, and proximity in the South, as well as governance factors seemed to be far more influential on investment decisions, all in the expected directions. It is particularly interesting that Southern firms are growing about 0.6 percent faster than their Northern counterparts. Governance was also far more important

for investment that access to capital. Firms with low burdens from bureaucratic procedures, proactive People's Committees, confidence in the legal system, and transparent access to provincial planning documents and legislation were significantly more likely to investment on their counterparts in less conducive environments. Indeed, moving from the lowest rating on confidence in the legal system to the highest would increase investment growth by 1.6 percent, almost half the median firm growth of 3.6 percent.

There is a high probability that the impact of connections in credit access is significantly limiting the impact of capital access on growth. Because connected firms rather than good businesses are the beneficiaries of bank capital, as was shown in our first test, this money is being used improperly. Simply put, firms receiving bank capital are not the engines of investment growth in Vietnam. We can speculate that if business prospects rather than connections were the determinant of investments, the successful firms would invest even more than they presently manage out of their retained earnings. National investment would be much higher.

Nevertheless, there is one notable and important exception. The multiplicative interaction terms which result from introducing the provincial-level variables into the firm-level equation illustrates an important trend. The interaction between capital access and competition for capital access (as measured by investment per capita) is significant. This indicates that while firms in non-competitive environments are not making much of their favored access to bank capital, firms in competitive environments are actually growing.

This result is studied in more depth in Figure 7, where six lines are displayed. The downward sloping thin lines are firms with very little competition from other firms for bank access, while the upward sloping thicker lines indicate firms facing competition. These lines

were created by dividing average investment per capita at the mean value of 12.9. Provinces above that number are considered to have highly competitive environments and those below it, low competition. Solid lines indicate that loans to SOEs as a percentage of the total are at the 25th percentile (about 33%), long dashes indicated the 50th percentile (about 45%), and short dashed indicate the 75th percentile (about 61%). As would be predicated, the more bias in loan allocation toward the state sector, the more likely foreign investment is to be crowded out. It is immediately obvious that firms in competitive environments with low or medium bias to toward SOEs, actually are likely to expand their business, if they are lucky enough to receive capital. The implication of this finding is that banks are making better lending decisions in highly competitive environments. In non-competitive environments, relationships continue to play too large a role in capital allocation, thereby significantly limiting private sector investment growth and the welfare benefits of labor and revenue creation it produces.

<Table 5 and Figure 7 About Here>

5. CONCLUDING DISCUSSION

While bank credit has expanded dramatically in Vietnam, we demonstrate that the weakness of legal institutions has had the effect of undermining the effectiveness and impact of credit allocation. This clear evidence of the negative impact of relationship-banking in Vietnam is consistent with the LFGN literature and raises serious questions regarding claims of the practice's value in neighboring China. Similarly broad implications lie in our findings that disproportionately large flows of credit (relative to demand) into the country's rural provinces has done little to stimulate those provinces' stagnant private sectors. Indeed, because "connections" play such a large role in the allocation of this credit, rapid growth in commercial

credit is not going to the firms most likely to invest in the growth needed to address expanding regional inequalities.

At the individual firm level, credit is apparently relatively easy for Vietnam's small number of rural companies to access, but proves far less effective than in the hands of firms in the more competitive and better governed urban environments. In other words, large credit flows overcome neither bad governance nor lack of competition. This finding contributes to a growing literature on the importance of provincial level government's approach to economic governance in determining local income levels and growth rates. The lesson for national governments may be that intervening into commercial credit markets is not the most efficient long-term strategy for redressing regional economic growth inequalities. An alternative such as progressive reallocation of tax revenues would not only be more transparent, but also substantially more effective.

On the issue of connections, wholesale reassessment of commercial bank lending practices is necessary in order to understand what incentives are driving decisions by banks in countries like Vietnam and China to lend to connected parties rather than the most deserving, efficient firms. Such lending is likely the result of an insecure legal framework that does not adequately protect lenders or debtors, thereby forcing bankers to rely on social contracting as the preferred method for enforcing loan repayment. Our consistent finding regarding the importance of property rights on access to credit can also be seen in this light. Bankers' focus on collateral rather than business prospects is a similar response to an insecure legal environment.

The next level of transition in such an environment is to develop a legal framework that encourages proper loan valuation and allows lenders recourse when borrowers fail to honor their promises of repayment. In the absence of such institutional developments, popular efforts aimed

at enhancing the capacity of bankers are likely to have minimal impact. Bankers in Vietnam's state and private banking sectors, for example, are now a sophisticated lot who know what they are doing [16] The key for these bankers is not better training; rather they need the proper incentives to use their existing skills appropriately. Even the impact of positive steps such as bank privatization and its strengthening of the bank-level profit motive is undermined when privatized banks then operate without the support of an effective legal infrastructure.

Appendix 1: Hierarchical Model of Fixed Investment Growth

LEVEL 1 MODEL

$$\begin{aligned} LOGKGROW_{ij} = {} & \beta_{0j} + \beta_{1j}(FIRM\_TYP_{ij}) + \beta_{2j}(MAN\_DUM_{ij}) + \\ & \beta_{3j}(LN\_REGK_{ij} - \overline{LN\_REGK}_{..}) + \beta_{4j}(FOR\_CUST_{ij}) + \beta_{5j}(CLUR_{ij}) \\ & + \beta_{6j}(K\_ACCESS_{ij}) + \beta_{7j}(FRIENDS_{ij}) + \beta_{8j}(TIME\_BUR_{ij}) + \\ & \beta_{9j}(EXTRA\_FE_{ij}) + \beta_{10j}(UBNC\_PUN_{ij}) + \\ & \beta_{11j}(TRANS\_PL_{ij} - \overline{TRANS\_PL}_{..}) + \\ & \beta_{12j}(TRANS\_LE_{ij} - \overline{TRANS\_LE}_{..}) + \\ & \beta_{13j}(AGE\_FIRM_{ij} - \overline{AGE\_FIRM}_{..}) + r_{ij} \end{aligned}$$

$$Var(r_{ij}) = \sigma_{ij}^2 \text{ and } \log(\sigma_{ij}^2) = \alpha_0 + \alpha_1(CLUR_{ij}) + \alpha_2(K\_ACCESS_{ij})$$

LEVEL 2 MODEL

$$\begin{aligned} \beta_{0j} = {} & \gamma_{00} + \gamma_{01}(SOUTH\_DU_j) + \gamma_{02}(HUMANK_j - \overline{HUMANK}_{.}) + \\ & \gamma_{03}(LNAVGINV_j - \overline{LNAVGINV}_{.}) + \gamma_{04}(TEL\_CAP_j - \overline{TEL\_CAP}_{.}) + \\ & \gamma_{05}(JAPAN_j - \overline{JAPAN}_{.}) + u_{0j} \end{aligned}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40} + \gamma_{41}(JAPAN_j)$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60} + \gamma_{61}(LOANS\_SO_j) + \gamma_{62}(LNAVGINV_j - \overline{LNAVGINV}_{.})$$

$$\beta_{7j} = \gamma_{70} + \gamma_{71}(LOANS\_SO_j - \overline{LOANS\_SO}_{.}) + \gamma_{72}(LNAVGINV_j - \overline{LNAVGINV}_{.})$$

$$\beta_{8j} = \gamma_{80}$$

$$\beta_{9j} = \gamma_{90}$$

$$\beta_{10j} = \gamma_{100}$$

$$\beta_{11j} = \gamma_{110}$$

$$\beta_{12j} = \gamma_{120}$$

$$\beta_{13j} = \gamma_{130}$$

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Figures

Figure 1: Bank Lending and Deposits as Share of GDP (2000-2003)
(IMF, 2004)

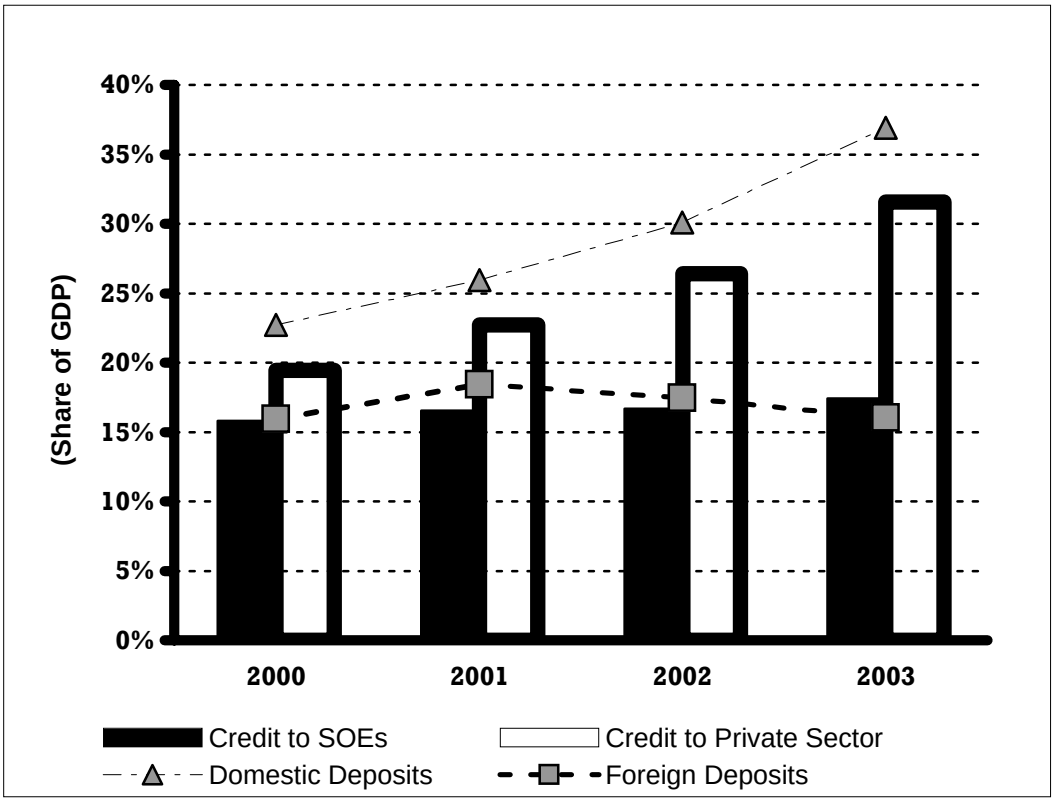


Figure 2: Competition for Capital Access by Provinces in ADB Study
(Scatter plot of Number of Enterprises and Percentage of Loans to SOE Sector)

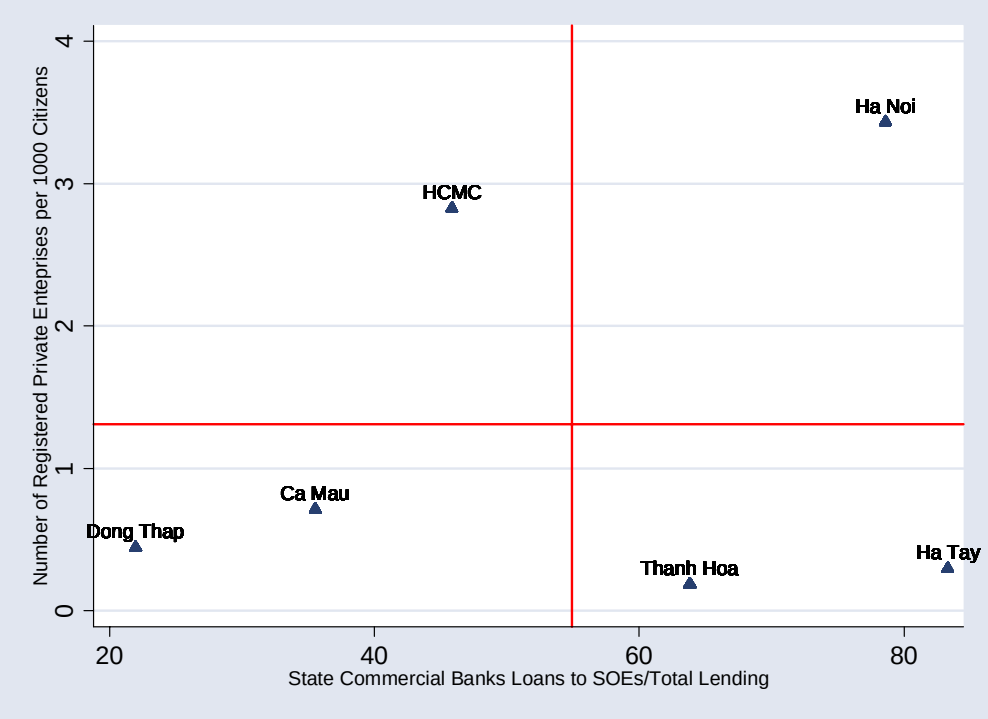


Figure 3: Predicted Probability of Firm Assessment of Ease of Access to Capital
(By Number of Enterprises and Percentage of Loans to SOEs from State Commercial Banks)

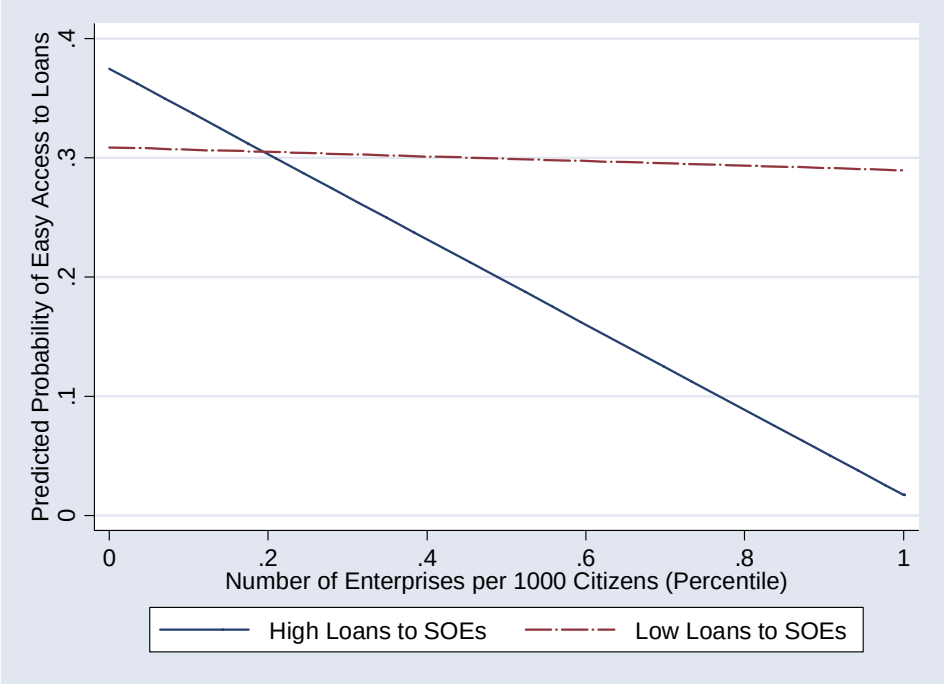


Figure 4: Predicted Number of Loans
(By Number of Enterprises and Percentage of Loans to SOEs from State Commercial Banks)

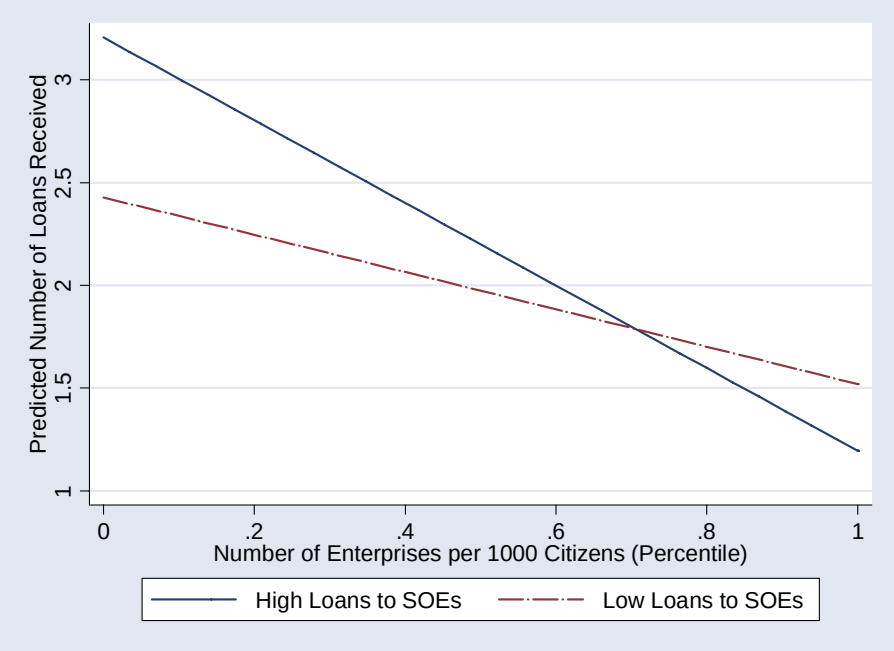


Figure 5:
Predicted Number of Loans with and without Former Government Service
(By Number of Enterprises and Percentage of Loans to SOEs from State Commercial Banks)

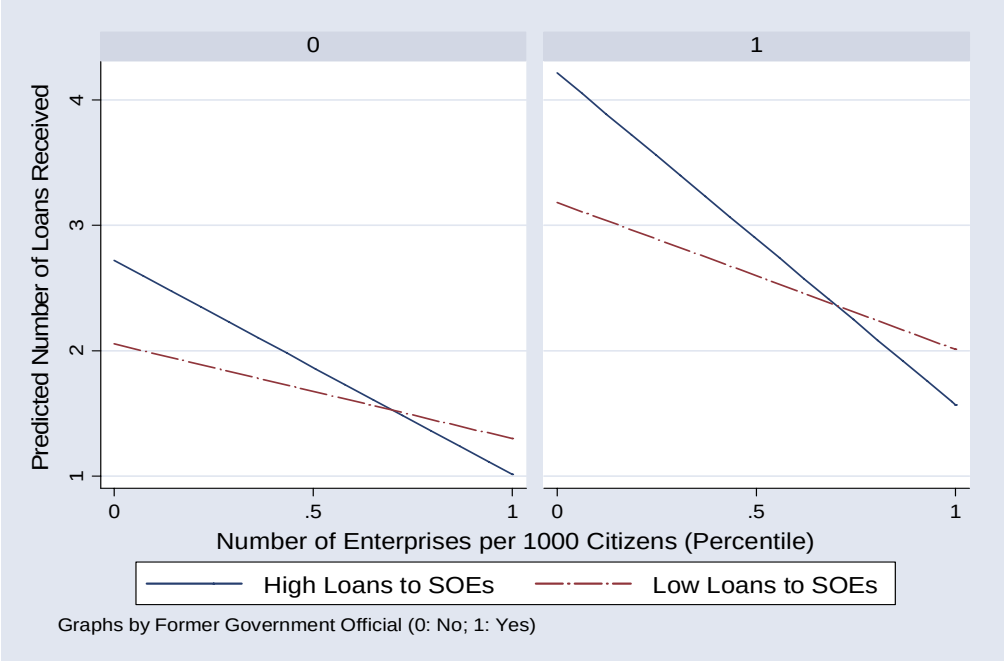


Figure 6: Relationship between Access to Credit and Expansion Plans

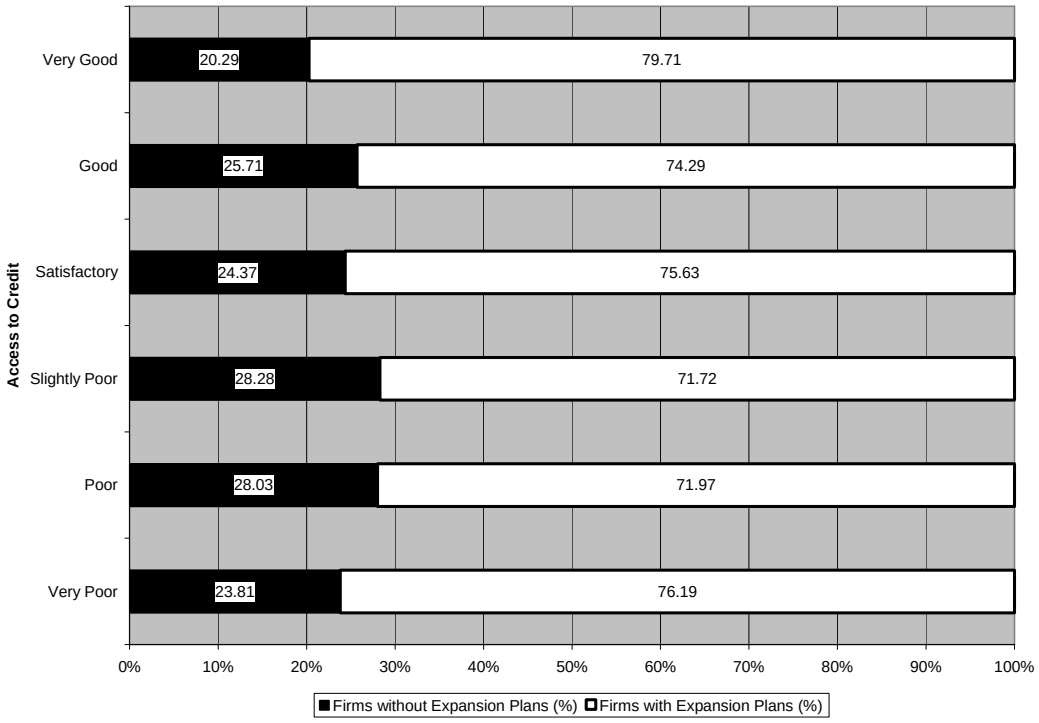
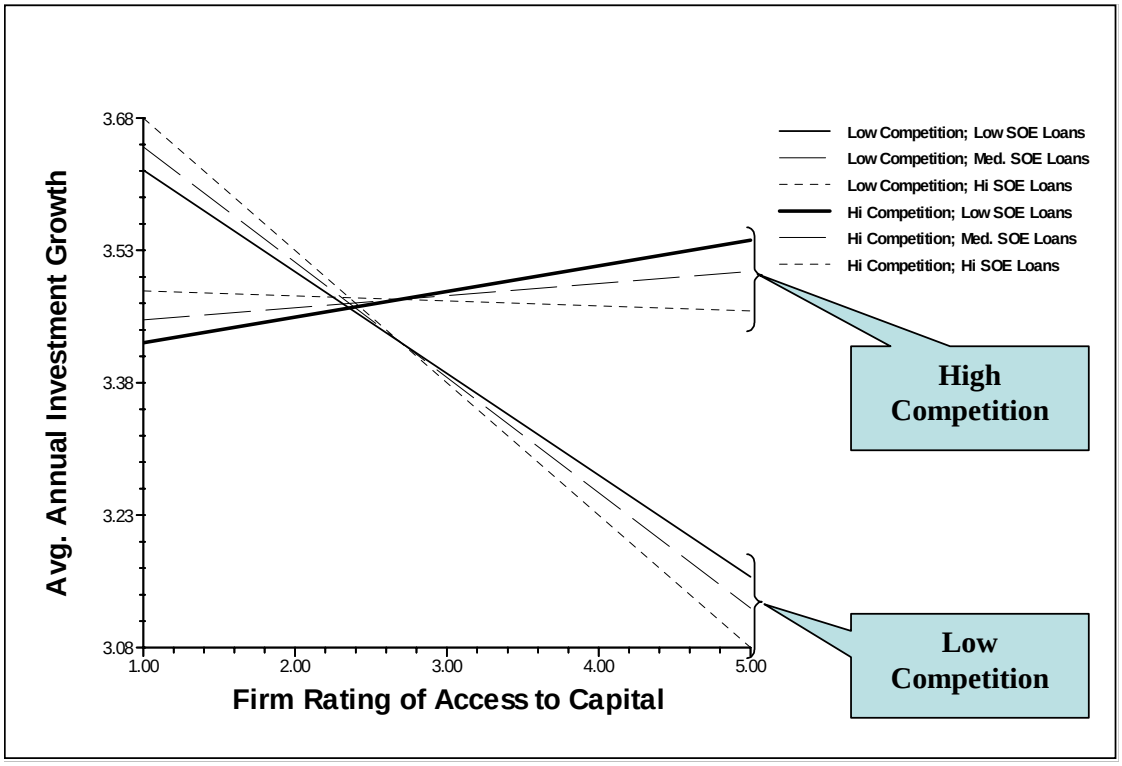


Figure 7: Interaction between Competition for Bank Lending and Access to Capital in the Hierarchical Model.



Tables

Table 1: Predicted Impact and Summaries of Independent Variables					
Dependent Variable	**Coded**	**Mean**	**Minimum**	**Maximum**	
Access to Credit	5-Point Likert Scale	**2.87**	**1**	**5**	
Number of Loans	Count	2.64	0	10	
Length of Loan	Count	18.64	0	96	
Independent Variable	**Coded**	**Mean**	**Minimum**	**Maximum**	**Predicted Impact on Dependent Variables**
Number of Active Enterprises per 1000 Citizens	Continuous	1.32	0.19	3.43	Negative
State Commercial Bank Loans to SOEs/Total Loans	Continuous	54.85	21.97	83.30	Negative
Interaction between Number of Enterprises and State Bank Loans	Continuous	78.53	9.77	269.96	Negative
Previous Employment as Government Official	0, 1, or 2 government jobs	0.38	0	2	Positive
Firm Age	Continuous	8.99	0	49	Positive
Firm Size (Number of Employees)	Continuous	19.38	1	550	Positive
Land Use Rights Certificate (CLUR)	1. None 2. Partial 3. Full	2.38	1	3	Positive
Registered Enterprise	Dummy	0.50	0	1	Positive
Never Used Informal Credit	Dummy	0.30	0	1	Positive
Expected performance in the coming year	1. Increase 10%+ 2. Increase 1-10% 3. No change 4. Decrease 1-10% 5. Decrease 10%+	2.96	1	5	Positive

Table 2: Multivariate Analysis of Access to Capital *(z-score/t-statistic in Parentheses)*						
Dependent Variable	***Rating of Ease of Access to Capital*** *(Ordinal Probit Model)*		***Number of Loans from the Formal Banking Sector*** *(Negative Binomial Model)*		***Median Length of Loan from Formal Banking Sector*** *(OLS Model)*	
Independent Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Firm Age	0.003 (0.23)	0.005 (0.41)	0.039 (2.43)**	0.036 (2.19)**	-0.14 (-0.62)	-0.14 (-0.61)
Firm Size (Number of Employees)	-0.001 (-0.39)	-0.001 (-0.54)	0.002 (1.01)	0.002 (1.16)	0.08 (3.37)***	0.08 (3.28)***
Land Use Rights Certificate (CLUR)	0.334 (2.9)***	0.359 (3.07)**	0.191 (1.42)	0.226 (1.66)*	4.30 (1.82)*	4.11 (1.68)*
Registered Enterprise	-0.018 (-0.1)	-0.041 (-0.22)	1.182 (4.95)***	1.141 (4.76)***	-0.81 (-0.2)	-0.76 (-0.19)
Never Used Informal Credit	-0.169 (-0.85)	-0.267 (-1.31)	-0.271 (-1.09)	-0.183 (-0.72)	-3.33 (-0.83)	-3.71 (-0.88)
Previous Employment as Government Official	0.283 (1.58)*	0.355 (1.94)**	0.534 (2.39)**	0.549 (2.46)**	-2.76 (-0.77)	-2.82 (-0.78)
Expected performance in the coming year	0.156 (2.49)*	0.145 (2.29)**	-0.007 (-0.1)	0.002 (0.03)	-0.38 (-0.32)	-0.42 (-0.35)
State Commercial Bank Loans to SOEs/Total Loans	-0.001 (-0.21)	0.013 (2.24)**	0.002 (0.922)	-0.006 (-0.78)	-0.14 (-1.6)*	-0.11 (-0.99_
Number of Active Enterprises per 1000 Citizens	-0.448 (-5.71)***	0.742 (2.29)**	-0.394 (-3.93)***	-1.028 (-2.77)***	-0.55 (-0.34)	1.99 (0.25)
Interaction between Number of Enterprises and State Bank Loans		-0.018 (-3.78)***		0.010 (1.97)**		-0.04 (-0.33)
Constant			-0.489 (0.97)	-0.94 (0.87)	18.15 (2.03)**	17.28 (1.84)*
N	*201*	*201*	*201*	*201*	*112*	*112*
R^2/*Pseudo* R^2	*.16*	*.17*	*.07*	*.07*	*.18*	*.18*

**** Significant at the .01 level; ** Significant at the .05 level; *** Significant at the .1 level; All models were duplicated with provincial dummies to determine provincial effects. Because the results are similar, these robustness tests are not presented here, but are available upon request.*

Table 3: Predicted Number of Loans by Legal Status			
	Land Use Rights Certificate		
Registered	*None*	*Partial*	*Full*
No	0.83	0.99	1.2
Yes	2.73	3.27	3.98

Table 4: Predicted Number of Loans due to Connections and Competition		
Registered and w/CLUR	**Former Government Official, Army, SOE**	
Enterprises per 1000	No	Yes
30th Percentile	3.54	6.08
60th Percentile	3.01	5.16
90th Percentile	1.09	1.85

Table 5: Determinants of Firm-Level Annual Fixed Investment Growth in 42 Provinces
(Hierarchical Linear Model Estimates)

Independent Variable	**Model 1 (Restricted)**	**Model 2 (Baseline)**	**Model 3 (Full Model)**	**Model 4 (DAF)**
Provincial-Level Variables				
Intercept	2.21 (3.48)***	3.34 (13.35)***	2.948 (9.12)***	4.89 (12.84)***
South Dummy		0.687 (4.94)***	0.648 (4.32)**	0.641 (4.94)***
% Loans to SOEs	.002 (1.29)	-0.009 (-0.85)	-0.011 (-0.982)	0.005 (0.44)
Human Capital		0.123 (3.26)***	0.106 (2.69)***	0.075 (1.87)*
Natural Log of Average Fixed Investment per capita in Province (2000-2003) (**Competition)**	.058 (1.19)	-0.497 (-1.87)*	-0.384 (-1.42)	-0.636 (-1.99)*
Telephone per capita		0.001 (0.60)	0.001 (0.75)	0.002 (1.38)
Cost of Shipping to Japan		-0.071 (3.78)***	-0.065 (3.15)***	-0.069 (3.66)***
Firm-Level Variables				
Relationships Importance	-.104 (-1.5)*			
Firm Rating of Access to Capital in Province		***-0.l71 (-1.96)****	***-0.121 (-295)****	
Firm Rating of Development Assistance Fund (DAF)				-0.51 (-9.78)***
Importance of Friends (Source of Capital)		-0.182 (-3.44)**	-0.147 (-2.78)*	-0.124 (-2.62)**
Importance of Friends (Bargaining with Banks)				
Firm Type		0.323 (4.05)***	0.331 (3.97)***	0.316 (3.94)***
Manufacturing Dummy		0.226 (2.50)***	0.244 (2.77)	0.289 (3.32)***
Fixed Investment at Establishment (Natural Log)		0.021 (1.79)*	0.015 (1.23)	0.019 (1.54)
Primary Foreign Customers Dummy		-0.33 (-4.16)***	-0.30 (-3.86)***	-0.343 -4.70)***
Land Use Rights Certificate (CLUR)	.16 (5.469)***	.180 (6.51)***	0.170 (6.07)***	0.157 (5.96)***
Time Spent on Bureaucratic Procedures			-0.103 (-1.97)**	-0.117 (-2.28)**
Informal Charges are Common in Province			0.083 (2.23)**	.107 (2.93)***
People's Committee willing to Risk Central Punishment			0.101 (1.61)*	0.185 (2.84)***
Confidence in Provincial Legal System			0.404 (4.36)***	0.314 (3.35)***
Transparency of Provincial Planning Documents			0.181 (2.47)***	0.235 (3.20)***
Transparency of Legal Documents			0.121 (2.45)**	0.163 (3.27)***
Cross-Level Multiplicative Terms				
Manufacturing Dummy*Cost of Shipping to Japan			-0.015 (-0.720)	-0.015 (-0.70)
Foreign Customers Dummy*Cost of Shipping to Japan			-0.022 (1.18)	-0.014 (0.357)
Access to Capital*% Loans to SOEs		0.00 (.901)	0.00 (-.345)	
Access to Capital*Competition		0.07 (2.31)**	0.056 (1.73)*	
Friends as Source of Capital*% Loans to SOEs		0.002 (0.77)	0.002 (0.937)	0.003 (1.5)
Friends as Source of Capita*Competition		0.086 (1.34)	0.062 (1.05)	0.05 (0.93)
DAF*% Loans to SOEs				-0.004 (1.90)*
DAF*Competition				0.098 (1.73)*
Friends – Bargaining*% Loans to SOEs				
Friends- Bargaining *Competition				
U_0	.019	.0056	.006*	.006*
Intercept (R)	4.73	4.60	4.52	4.35

Note: N=2,022, J=42. Entries are restricted maximum likelihood estimates with robust standard errors. T-values are in parentheses. Variance components for each firm-level variable available from authors upon request.
**** Significant at the .01 level; ** Significant at the .05 level; *** Significant at the .1 level*

Robustness Test 1: Multivariate Analysis of Access to Capital *(t-statistic in Parentheses)*						
Dependent Variable	***Rating of Ease of Access to Capital*** *(OLS)*		***Number of Loans from the Formal Banking Sector*** *(OLS)*		***Median Length of Loan from Formal Banking Sector*** *(OLS Model)*	
Independent Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Firm Age	-0.009 (-1.06)	-0.005 (-0.65)	0.053 (2.08)**	0.052 (2.02)**	-0.14 (-0.62)	-0.14 (-0.61)
Firm Size (Number of Employees)	0.000 (-0.30_	0.000 (-0.39)	0.013 (2.93)**	0.013 (2.95)**	0.08 (3.37)***	0.08 (3.28)***
Land Use Rights Certificate (CLUR)	0.315 (3.22)***	0.319 (3.38)***	0.453 (1.59)*	0.436 (1.52)	4.30 (1.82)*	4.11 (1.68)*
Registered Enterprise	-0.044 (-0.28)	-0.062 (-0.41)	1.802 (3.74)***	1.795 (3.72)***	-0.81 (-0.2)	-0.76 (-0.19)
Never Used Informal Credit	-0.153 (-0.87)	-0.218 (-1.28)	-0.805 (-1.53)	-0.740 (-1.39)	-3.33 (-0.83)	-3.71 (-0.88)
Previous Employment as Government Official	0.302 (1.80)*	0.312 (1.92)*	0.957 (1.82)*	0.905 (1.71)*	-2.76 (-0.77)	-2.82 (-0.78)
Expected performance in the coming year	0.137 (2.56)**	0.119 (2.30)**	-0.111 (-0.67)	-0.093 (-0.56)	-0.38 (-0.32)	-0.42 (-0.35)
State Commercial Bank Loans to SOEs/Total Loans	-0.001 (-0.23)	0.010 (2.05)**	-0.007 (-0.63)	-0.015 (-1.05)	-0.14 (-1.6)*	-0.11 (-0.99_
Number of Active Enterprises per 1000 Citizens	-0.402 (-6.20)***	0.546 (1.98)**	-0.420 (-2.14)**	-1.048 (-1.44)	-0.55 (-0.34)	1.99 (0.25)
Interaction between Number of Enterprises and State Bank Loans		-0.014 (-3.53)***		0.010 (0.9)		-0.04 (-0.33)
Constant	2.530 (4.97)***	1.731 (3.20)***	-0.727 (-0.51)	0.162 (-0.10)	18.15 (2.03)**	17.28 (1.84)*
N	*164*	*164*	*201*	*201*	*112*	*112*
R^2/*Pseudo* R^2	*0.33*	*0.38*	*.25*	*.26*	*.18*	*.18*
**** Significant at the .01 level; ** Significant at the .05 level; *** Significant at the .1 level; All models were duplicated with provincial dummies to determine provincial effects. Because the results are similar, these robustness tests are not presented here, but are available upon request.*						

Footnotes

[1] We would like to thank US-AID's Vietnam Competitiveness Initiative and the Asian Development Bank for supplying data necessary for our analysis and Chris Woodruff, Thorsten Beck, Gordon Hanson, Nick Freeman, Susan Adams, and Martin Gainsborough for helpful comments and advice. All mistakes are our own.

[2] In many ways the LFGN is analogous to the credible comments theory pioneered by Barry Weingast in the political science literature. See Weingast, Barry R. 1992, 1993, and 1998.

[3] Stock market data provided by PXP Vietnam Asset Management Ltd. It is worth noting that market liquidity in 2003 dipped from 0.18% in 2002 and subsequently rebounded to a still relatively insignificant 0.28% in 2004.

[4] The numbers from PXP, the largest active investment fund in Vietnam, are lower than those of the Asian Development Bank, as quoted in their Capital Markets Roadmap (ADB, 2004). This may be because ADB includes listed debt in its figures.

[5] This assertion is based on both the rapidly increasing number of private companies and various data sources on regional and bank-specific lending since the year 2000. See, for example, Taussig, 2003.

[6] We here use the commonly used cutoff of 300 employees for differentiating between SMEs and larger firms. The statistics used are from 2002 (General Statistics Office, 2004).

[7] The term *doanh nghiep tu nhan* is confused in Vietnam between its literally meaning of "private company" and its legal definition under the Enterprise Law, wherein it serves as the label for sole proprietorships, i.e. one specific type of private company. In this paper, whenever we refer to private companies we mean to refer to all types of private companies, including sole proprietorships, partnerships, limited liability companies, and joint-stock companies.

[8] For interested readers, OLS results for credit access and number of loans are also available in Robustness Test 1.

[9] This data remains somewhat incomplete for three reasons. First, a fourth commercial bank, the Bank for Agriculture and Rural Development did not provide provincial-level data. Secondly, not all quarters were available for every commercial bank. INCOMBANK provided the most complete sequence of data, but Vietcombank provided only 4 quarters and BIDV 2 quarters. Finally, INCOMBANK does not have operations in four of the PCI provinces (Ha Tinh, Ninh Thuan Quang Tri, and Soc Trang).

[10] Some readers have expressed concern that firm age and size may be highly correlated, but in fact the bivariate correlation of the two variables is -.02.

[11] The same paragraph of the CIEM report cited in the earlier footnote further notes: "In reality, household businesses may enjoy some tax advantages over enterprises" (CIEM, 2004).

[12] Predicted results were generated using the software CLARIFY (Tomz, Wittenberg, and King, 2003).

[13] This procedure imputes multiple expected scores for a firm, given its answers to all other questions including descriptive characteristics as well as other measures of governance. These expected scores were recorded in 6 separate datasets and run simultaneously in the HLM model. A free version of this software can be obtained at http://www.stat.psu.edu/~jls/misoftwa.html

[14] We would like to thank Chris Woodruff for pointing out this problem.

[15] This results was confirmed by a series of robustness checks, which demonstrated negative correlations between access to capital and other measures of firm success (profits, revenue growth, and labor growth) and evidence of entrepreneurial ability (export revenue and average employee wages). Results are available upon request.

[16] For evidence of the capacity of bankers, see the Mekong Private Sector Development Facility's work at its Bank Training Center.