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African SMES, Networks, and Manufacturing Performance

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Introduction

Considerable empirical research has shown that the economic success of SMES in many countries has derived from the degree to which they have been able to overcome institutional failure by being embedded in private institutional support systems (Piore and Sabel 1984; Becattini 1990; Brusco 1992; McMillan and Woodruff 2000). Three distinct types are in evidence. In some cases, long-term relationships among firms substitute for weak market institutions. In others, private institutional support systems are provided by large firms to smaller ones, by way of various linkages, particularly through sub-contracting networks. In still others, cooperative relations among groups of firms, organized in business networks and associations or local community clusters, perform these functions.[1] In some countries, these private institutional arrangements receive support from governments and NGOs.

Prominent examples of private substitutes for market-supporting institutions can be found in the inter-firm relationships and informal credit arrangements in many Asian countries and transition countries in Eastern Europe, as well as in the satellite networks of Japan, the industry clusters of Taiwan, and the industrial districts of Italy and the United States. The unique set of relationships in these networks provides firms with distinctive capabilities that helped to create competitive advantages in international markets. Research on these support systems emphasizes the social capital that plays a role in enforcing contracts, disseminating technical and market information, and reducing transaction costs, thereby enhancing the potential for division of labor among firms and promoting collective action.

The evidence that populations of SMES can overcome institutional failure and make significant contributions to productivity, exports, and growth by way of long-term business relationships and membership in networks, has spurred interest in applying lessons from these examples to poor countries. In Sub-Saharan Africa (SSA), for example, in the wake of policy reforms to stimulate private sector development and level the playing field for smaller enterprises, programs have been introduced to help develop private support institutions through "linkage programs" to bring large firms and small subcontractors together and "cluster development" initiatives. In the financial area, assistance programs have initiated efforts to expand enterprise networks into SME lending and savings mobilization mechanisms.

The question is what makes sense for Africa at its present stage of development? Given the weaknesses in Africa's formal institutions and the limited ability to engage in

[1] Cluster has been used to define two different types of networks. Porter (1990) notes that a nation's competitive industries are not spread evenly through the economy but are connected in what he terms clusters consisting of industries related by links of various kinds. Marshall (1890) speaks of firms in the same industry choosing the same locality. Firms will tend to stay together in this locality because of the advantages which people following the same skilled trade get from near neighborhood to one another. "The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously. Good work is rightly appreciated, and inventions and improvements in machinery, and processes and the general organization of the business have their merits promptly discussed."

impersonal exchange, what types of policies might help in developing private support institutions to assist SMES? Efforts to assist in developing private mechanisms to date have been initiated with limited knowledge of the forms of private institutions that exist and how they operate in practice. Experienced African development specialists often point out that decentralized markets in the region are not reaching efficient outcomes because of the form that private institutional mechanisms take, that market fragmentation is frequent, and that entry in certain industries is restricted because of the activities of business networks. Such incongruities can have substantial implications for what development programs do in this area. A better understanding of the institutions that support market exchange in Africa is essential if development agencies are going to intervene to build up private support mechanisms.

To address this issue, we use data and research results from the Regional Program for Enterprise Development (RPED), program of manufacturing enterprise surveys across the SSA region, to examine the forms of existing private support institutions found in Africa and to get some insights into how they shape patterns of market exchange.[2] The first section of the paper lays some groundwork with a brief review of the theory underpinning firm's efforts to construct architectures of relational contracts and networks to create profitable advantages. We then look at the conditions driving the formation of private support institutions in Africa, as well as the social capital that is embodied in the relationships and business networks that emerge. We also examine how this social capital affects the performance of firms. In the last section, the paper considers the natural limits private support institutions face in fostering enterprise structural transformation and the role for policy and programs.

We find in the paper that African SMES rely a great deal on the market and on personal exchange (relational contracts) in their business transactions. Missing formal institutions and underdeveloped financial markets create substantial impediments to business activity. SMES overcome the lack of formal market-supporting institutions and credit by creating private substitutes in the form of long-term relationships that rely on the incentives of repeated interactions and in the form of business networks. In many countries, unstable economic and political conditions undermine and weaken incentives for cooperative relationships and tight business networks grow in importance with some attendant negative effects for market participation. Thus, unstable economic conditions, institutional weakness and high transactions costs are shaping the development of private institutional support mechanisms in Africa in such a way that patterns of market exchange exclude particular groups of SMES from informal credit and from normal commercial practices. Policies to address these issues are discussed in light of these conditions.

[2] For a description of the RPED research program and the data go the World Bank website www.worldbank.org/rped.

The Firm Its Architecture and Private Institutional Support mechanisms

It is helpful to begin with the concept of a firm as a collection of contracts and relationships between its various stakeholders and with other firms involved in related activities (Coase 1937, 1988; Alchian and Demsetz 1972; Williamson 1985). It is the totality of these contracts and relationships that define the firm and its private institutional support system and create its distinctive capabilities. In turn, these distinctive capabilities determine the firm's competitive potential (Kay 1993).

The structure of contracts and relationships a firm puts together is the architecture of the firm – an intangible asset that can improve competitive advantage and performance. Internal architecture is defined by contractual relationships with and among employees. External architecture is defined by contractual relationships with suppliers and customers and with other firms and groups of firms. These contracts and relationships between the firm and others are rich and complex, but often implicit.

For each contract and relationship there is a corresponding financial flow – sales revenues from customers, payments to suppliers, wage bill, payments to investors – or a corresponding flow of returns to social capital (or flow of network externalities) in the case of networks. The objective of the firm is to put together a set of contracts and relationships (i.e. construct an architecture) that maximizes value added. The value of architecture rests in the capacity of firms that establish it to enhance learning, to increase flexibly to respond to changing circumstances, to achieve easy and open exchanges of information. In poor countries, where market institutions are weak, architecture takes on added significance, as relationships are often structured to improve private capacity to enforce property rights and contracts and to secure mutual insurance where financial and insurance markets are imperfect. Each of these values of architecture is capable of creating an asset for the firm. It is the quality and distinctiveness of contractual relationships and the assets they create that foster growth in value added.

Contractual relationships can take several forms. Simple spot contracts where money exchanges for goods in a simple agreement for immediate exchange. Classical contracts that are long term, specific legal agreements, containing detailed provisions as to how dealings between the parties will evolve as events unfold, which are enforceable in court. Informal, or implicit, or long-term relational contracts in which provisions are only partly specified and enforcement occurs not by legal process but by the need the parties have to continue doing business with each other, or by reputation-based mechanisms (Hart 1988; Zucker 1986 thompson et al. 1991). Sometimes contractual relationships combine elements of classical and relational contracts. The most important objectives of commercial contracts and relationships are generally cooperation (joint activity towards a shared goal), coordination (the need for mutually consistent responses), and differentiation (the avoidance of mutually incompatible activities).

Firms use simple spot contracts when commercial transactions are sufficiently common and sufficiently frequent to be made on standard terms. No expensive negotiation is required. But when (a) information is asymmetric and verification costly –

as in the case when quality of an input (e.g. labor, component) is vital to a firm but it is difficult or impossible to monitor quality by inspection, or when (b) there is a need for cooperation – as in the case when two firms with different standard specifications need to agree on the basis of supply, or when (c) there is a coordination problem – as in the case when a market opportunity is available to several firms but it is profitable for only one firm to sell its product at a time, rather than rush into the market all together, then more complex classical and relational contracts are developed in response to these problems. In addition, as we will discuss later in this paper, in environments where courts, credit markets and other market institutions are absent or weak, firms use relational contracts to create substitutes for these formal institutions.

With this background we now turn to look at the current economic and institutional environment in Africa and how these variables shape firm architectures and private institutional support systems.

Markets and Private Support Institutions in Sub-Saharan Africa

Economic Environment, Institutions and Transaction Cost

Firms in SSA are mainly small with few assets and limited access to finance. At the upper end of the size distribution of firms is a small group of large companies, with more access to finance (and often significant debt), which do business in thin markets. Technical and management skills are low on average, and absenteeism, pilfering, and other sources of moral hazard are numerous. Product standardization is lacking. Businesses operate under conditions of considerable uncertainty. Financial and insurance markets are severely underdeveloped, limiting access to credit. And market exchange is underpinned by weak public institutions of property rights and contract, poor governance, and poor infrastructure services. These market features combine to increase the uncertainty of business relationships and raise transaction costs of exchange.

The fact that many businesses are very small and have few assets means that legal actions against opportunism are problematic. There are few assets to seize in the case of default and transactions are too small to justify court actions in most cases, as courts require time and money. Many business deals simply avoid problems of opportunism by using spot contracts that are self-enforcing. These kinds of cash-on-delivery relationships are fine in most cases, but being constrained to operate just on the basis of spot transactions can be costly in terms of foregone profitable opportunities that require cooperative or coordinated behavior (such as in the case of sub-contracting of specialized components where dedicated investment to a particular transaction is required), requiring more complex contracting arrangements.

Transactions of bigger firms that involve multifaceted products and larger quantities usually require inter-temporal arrangements, such as ordering in advance, invoicing, and supplier credit, face even greater difficulties in SSA. There are few officially-enforced quality standards. Standardization in production is uncharacteristic, as most manufacturers are “job-shop” producers, making one-off products, rather than

"assembly-line" producers of standard products. Skill levels vary greatly across firms. These factors result in a great deal of quality variation that requires firms to perform costly inspections of orders. The small number of upstream suppliers in the market for many products also means that buyers cannot be confident that competition will have ensured the quality of various suppliers. Searching out and trying different suppliers is difficult and costly in the SSA environment where information is limited, communication is difficult, and infrastructure is poor. Limited information about other businesses and consumers, limited communications, and the fact that many small firms do not have fixed business sites, makes it relatively easy for delinquent clients to renege on their accounts. Screening clients for supplier credit is difficult and offering credit is risky. Consequently, supplier credit and invoicing are generally reserved for transactions with larger, well-known clients.

Labor and management relations are subject to exceptionally high transaction costs in SSA. Firms have to deal with major problems of employee absenteeism and theft. More supervisors are needed to reduce shirking. Managers find it difficult to delegate authority for fear of moral hazard problems, which puts constraints on business expansion. Employees also have to deal with such problems as non-payment of wages and benefits, embezzlement of pension funds, and managers using company resources for their own businesses and personal affairs.

Legal and judicial systems in SSA are plagued by antiquated laws and procedures, insufficient human and material resources, poor management, and corruption. These problems have resulted in extensive case backlogs and long delays, high costs, and a public perception of the legal and judicial system as too costly, unworkable, and corrupt for resolution of most commercial disputes. Of course, the sophistication and quality of legal institutions varies somewhat across countries and there are cases in the RPED surveys where businesses have taken legal disputes to court. Firms also report using the threat of court action to persuade clients to pay. These cases, however, are mostly concentrated in the largest firm size categories of the sample. For all intents and purposes formal contract enforcement mechanisms are not used by the great majority of firms.

Finally, the economies of SSA countries are prone to shocks – periodic weather-related distress in agriculture, civil strife, terms-of-trade shocks, frequent policy changes and poor policy management, corruption, infrastructure breakdowns and so on. These jolts to the economic system cause unanticipated changes in prices and transaction costs, shortages in critical inputs, production setbacks, delays in payment by customers and transportation problems, resulting in unexpected changes in enterprise cash flows. Given the acute financial positions of most firms in these poor economies, and underdeveloped financial and insurance markets, fluctuations in income often render firms unable to pay on time or to deliver promised products to customers. This financial stress transmits further shocks through the market as other producers and suppliers adjust. In such shock-prone, financially constrained circumstances, firms find it difficult to plan and to predict the behavior of trading partners.

The Formation of Informal, Private Support Institutions

Firms respond to these volatile conditions and market imperfections by putting together architectures that substitute for failed institutions and economize on search and screening costs. They enter into long-term trading relationships, relying on incentives to cooperate that arise from playing a repeated game, and they share information in networks, fashioning collectivist systems of enforcement based on multilateral reputation mechanisms.

Thus, as the formal legal system is unreliable for settling commercial disputes and costs of search and verification are high, firms trust their long-term customers and suppliers to pay their bills and deliver quality products on the prospect of future business. Trust is built on a history of successful, repeat transactions. In the RPED surveys, for example, firms generally deal with a single supplier of a particular input on a regular basis (even when they have a choice among sources of supply) and the average length of relationship exceeds seven years (Bigsten et al. 2000a). As cooperation is more easily sustained in such a repeated game if sanctions for opportunistic behavior come not just from the business partner who has been cheated but also from other firms in the business community, networks are formed.[3] Networks reinforce repeated-game incentives by sharing information on non-delivery, late payment, and default via a multilateral reputation mechanism, supported by frameworks of credible commitment, enforcement, and coordination.

At early stages of industrialization incentives based on a repeat interactions work well. The fact that it is difficult to locate alternative business partners in the SSA environment, because there are few firms, because market information is inadequate, and because transportation costs are high, persuades firms to make efforts to maintain their existing relationships. They recognize that they are locked in to some extent with existing business partners because of high search and screening costs. This provides incentives to behave cooperatively – i.e. reduces incentives for opportunism (Kranton 1996; Ramey and Watson 2001). As a consequence, such self-enforcing relational contracts are shown in the RPED surveys to be one of the standard ways for manufacturers, suppliers and clients to do business in SSA. A large majority of African manufactures describe their relationships with suppliers and clients as simple long-term business acquaintances. (Bigsten et al. 2000a).

But the African business environment also has features that work to undermine and weaken these incentives for cooperative behavior. Informally enforced transactions depend on expectations about the future (McMillan and Woodruff 2003). There are generally short-term gains to be made from breaking relational contracts. This follows from the very nature of relational contracts. Contractor's freedom of action is not restricted by any legal requirement, but by concern for subsequent loss of business,

[3] One could, of course, consider the transactions of a repeated game and the relational contracting thereof a network. Here we define a network to include a broader set of economic functions where members of a business group or "club" share information and informally enforce contracts.

reputation, or trust. For future benefits to be large enough to induce cooperative behavior, the discounted value of expected future profits must be larger than the gains that could be made from reneging on the deal. Two conditions in SSA negatively influence the value and predictability of future gains from relationships and make it harder to establish and sustain cooperation.

First, risks are part of all business relationships and they are generally known and can be planned for or ways can be found to hedge them. But the shock-prone SSA environment adds a large dose of uncertainty to the equation. Uncertainty makes it more difficult to predict business partner's gains and undermines the effectiveness of incentives based on a repeated game. When conditions are stable, contracts have a predictable value. Firms offering supplier credit know the loan value – it is predictable to the supplier and to the customer. The value of continuing the relationship (the value of the relational contract) is also predictable. The amount of credit offered can be fixed so that when it is repaid it is beneficial to the supplier. Unforeseen shocks change all of this. The value to the customer of not making the required payment to the supplier fluctuates because of the shocks. If the shock makes the gains from reneging large enough, then the customer will default. Relational contracts are much harder to make and sustain in such an environment because it is harder to predict the behavior of the business partner and to value the relationship. In addition, the costs of establishing and maintaining relational contracts (i.e. costs of building trust) are higher in shock-prone environments. Shocks induce unforeseen turnover and changes in enterprise control, often destroying relationships in their wake. This forces firms to bear the costs of rebuilding architectures more frequently.

Second, underdeveloped financial markets and lack of access to credit mean that the opportunity cost of capital is high. Firms have an incentive to take profits today rather than wait for profits tomorrow when discount rates are high. Poverty and culture (e.g. family-based risk-pooling) reinforce this inducement to take current profits, as they tend to push up the discount rate on the future in SSA.

Weakened incentives for cooperation and extraordinarily high costs of searching, screening, and deterring opportunism in Africa, increase the importance of business networks for market exchange. In these circumstances, there is an added need for the collectivist system of enforcement that a network can provide to help sustain relational contracts. This is especially true for labor, credit, and other factor market transactions, which are even more susceptible to opportunistic behavior than product market exchange. Furthermore, given the importance of private institutions for business transactions in Africa, any factors that make it harder to establish and sustain relationships create barriers to efficiency and growth. In helping to improve the possibilities for relational contracting, business networks play a supporting role in market development and enhance firm performance.

The RPED surveys allow us examine the importance of networks in more detail. In the next section, we look at the effects of networks on firm performance in Africa and

consider the consequences of the forms that networks take in Africa for market efficiency, equity, and competition.

The Power of the African Network and Firm Performance

The power of the African business network (i.e. its network externalities or social capital) rests partly in group enforcement and the exchange of information through it, and partly on the ready ability of the group to support transactions that benefit from relational contracting, such as financing, sales and distribution to customers outside the immediate neighborhood, and joint ventures. Evidence of such network externalities in SSA is provided by Barr (2000), Fafchamps (2000), Biggs, Raturi and Srivastava (2003).

A good example of the power of the network is in dealing with the problem of contract flexibility. Economic instability and enterprise financial constraints lead to a great deal of contract indiscipline in Africa, as we have noted. Late delivery unreliable quality and late payment are ever-present and ripple through the business community. In such an unstable environment, firms need to be flexible when dealing with business partners, creditors and debtors to maintain long-term business relationships. But being flexible requires entrepreneurs to distinguish between unavoidable poor contract performance and opportunism. This problem of asymmetric information results in high transaction costs.

A few African countries have begun to develop formal market institutions to manage uncertainty, improve contract discipline, and reduce information asymmetries. But these institutions are relatively undeveloped and do not yet operate in the environment within which most firms conduct business. Firms, as a consequence, rely on their business networks to reduce information asymmetries by facilitating flows of information about past contractual performance and current circumstances of business partners. When an entrepreneur is not connected with a tight business network he can only rely on his ongoing relationships with business partners and his own efforts to uncover the facts. Firms in networks that can rely on a multilateral reputation mechanism thus have a distinct advantage.

Inter-linkage of credit and insurance is where contract flexibility plays its most important role and where the significance of the business network is most evident. Credit and insurance are crucial in environments characterized by instability, but formal markets for these financial services are severely affected by opportunism and information asymmetries. It is in these markets where one observes major differences in the institutional environments within which African enterprises operate. Formal lines of credit and insurance are available only to firms with sufficient collateral that operate with audited accounts and reasonably well-defined property rights. A small group of large companies fall into this category. SMES for the most part lack adequate access to formal credit and insurance. Facing credit limitations, SMES substitute supplier credit, retained earnings, and informal equity investments from friends and relatives for formal finance. Contractual flexibility in supplier credit arrangements provides a major buffer in their attempts to insure against unanticipated shocks to liquidity. In the RPED surveys, the

most commonly cited strategy to smooth cash flows is to delay supplier credit payments (Biggs and Srivastava 1996).

Private credit and insurance arrangements such as these are just as vulnerable to problems of asymmetric information and opportunism as formal financial transactions. Consequently, offering supplier credit and granting contractual flexibility in the absence of public institutions to enforce contracts are complex and risky activities. Suppliers rely on repeated game incentives to govern these credit transactions in most cases. Business relationships generally begin with cash transactions, and the partners build trust and gain contractual assurance as they repeatedly interact with each other over time. Credit is offered when the supplier feels he knows and can trust the client. This process is lengthy and has to be repeated with each supplier. The RPED surveys show that, while repeated-game incentives facilitate a significant number of credit transactions, important categories of SMES find it difficult to get supplier credit on this basis, particularly new entrants.

Firms in business networks, however, have a distinct advantage in getting access to supplier credit. The RPED surveys show that they qualify for supplier credit right away, either because of their reputations in the network or because of the web of personal references they can call on within the network to help them get credit from suppliers outside the group. And, as African business networks are based on both social connections and business connections, even new start-ups that are members of the network generally get credit. The threat of exclusion from social interaction in the community facilitates informal contract enforcement. Networks also often provide mutual insurance assistance to smooth cash flows in the shock-prone SSA environment and they circulate market and technological information (Barr 2000).

Community affiliation plays a crucial role in the membership of African business networks. Ethnicity is a strong predictor of business network activity in most SSA countries. In East Africa, Asian and Middle Eastern business networks are important in light manufacturing and import/export trade and African ethnic groups, such as the Luo, control parts of the fishing business. In Southern Africa, European business networks are active in manufacturing and mining. And in West Africa, Lebanese business networks control parts of the wood industry. Fafchamps (2004) argues that the distinct patterns of ethnic concentration in business observed across SSA can be explained to a great degree by a restricted entry process in business networks and by network externalities. Since network externalities bestow comparative advantages in business on network members, important ethnic communities earn rents and become dominant in particular segments of the economy. Networks reinforce themselves through a referral process and statistical discrimination.

The RPED survey data allows us to examine further how network externalities confer advantages on members of ethnic business groups and to investigate the significance of these advantages for entry and performance of firms. For the analysis, a subset of the RPED sample is used that includes only firms that are entrepreneur owned, as these firms constitute the SMES in our sample. We focus on four countries, Kenya,

Tanzania, Zambia and Zimbabwe, where the surveys gathered data on ethnic business networks.

Estimates of the Effect of Network Externalities on Entry and Performance

The first three tables present descriptive statistics that will be used in the analysis. Table 1 describes the ethnic distribution of firms in the RPED sample. It shows that the majority of manufacturing firms in each country are indigenous-African owned. Asians comprise the second largest group in three out the four countries. Europeans comprise the largest entrepreneurial group in Zimbabwe. Although ethnic firms are in the minority in most cases, their business networks control a large share of the upstream supplier industries in each of these countries.

Table 1: Ethnic Distribution of SMES

	Kenya	Tanzania	Zambia	Zimbabwe
African	47%	73%	61%	40%
Asian	52%	25%	26%	16%
European	0.5%	0.0%	11%	41%
Other	0.5%	2%	2%	3%
No. of firms	184	158	159	132

Source: Author's estimates from RPED survey data.

Table 2 presents the financial characteristics of SMES in our sample. We see that a very large percentage of SMES receive trade credit in Zimbabwe, 67 percent; compared with only 12 percent in Tanzania and 20 percent in Zambia. The depth of the manufacturing sector and its financial base in Zimbabwe is also evidenced in the other variables. The figures show that 44 percent of firms in Zimbabwe have title to their business property. Kenyan firms have the most access to formal finance – almost 26 percent of firms in Kenya received at least some credit to start their firms, compared with about 10 percent elsewhere.

Table 2: Finance Characteristics of SMES: Percentage responding yes

	Kenya	Tanzania	Zambia	Zimbabwe
Receive Supplier Credit	28.2%	12.0%	19.5%	67.4%
Avg. years of supplier relation	8.0	7.3	7.8	11.8
Have title to property	35.8%	36.7%	48.4%	43.9%
External loans at startup	25.5%	8.9%	11.9%	10.6%

Source: Author's estimates from RPED survey data.

Finally, table 3 shows the educational status of the entrepreneurs managing SMES in these four African countries. Significant differences are evident between ethnic

minority entrepreneurs and indigenous-African entrepreneurs, especially in the level of higher education attained. Many more minority entrepreneurs have university degrees and secondary school educations.

Table 3: Educational Characteristics of Entrepreneurs

	Primary	Secondary	Technical Ed.	Univ
African	36%	28%	24%	12%
Asian	12%	38%	15%	35%
European	2%	32%	33%	33%
Kenya	28%	36%	14%	22%
Zambia	13%	31%	33%	23%
Zimbabwe	16%	26%	32%	26%
Tanzania	39%	32%	12%	17%

Determinants of Entry

Table 4 presents a regression analysis that examines the power of ethnic business networks in determining firm size at start up. Size at entry is important because it is a predictor of future prospects, such as survival and ability to grow in the African environment (Biggs and Shah 2002). Thus, if members of a business network are able to start larger firms because the network provides access to supplier credit, information on technologies and markets, or helps to facilitate access to equity investments, then the probability of future success is higher.

In the regressions, size at start is defined by log of the number of employees the firm had at start. The explanatory variables are defined as follows:
Lagest: is log of the entrepreneurs age when he/she started the firm
Secdary: dummy, =1 if entrepreneur has secondary school education
Univ: dummy, =1 if entrepreneur has university degree
Teched: dummy, =1 if entrepreneur has vocational/technical degree
Inf. Loan: dummy, =1 if entrepreneur obtained loans from friends and family, or by trade credit, for startup
Bank Loan: =1 if firm obtained formal loan for startup
Title: =1 if entrepreneur has ownership rights on business property
Asian Network: dummy variable, =1 if entrepreneur is Asian
European Network: dummy variable, =1 if entrepreneur is European
The models also include dummy variables controlling for sector and country differences.

In model I, we examine the power of the minority ethnic network without controlling form other possible determinants of size at startup. Do firms connected to minority ethnic business networks start in a different size class compared with indigenous-African firms? We know from the RPED surveys that indigenous-African

SMES in the manufacturing sectors of these countries lack the type of business networks enjoyed by minority entrepreneurs: that is, they lack a multilateral reputation mechanism, which shares information on payment histories and enforces contracts through group sanctions (Fafchamps 2004).

The results confirm that the coefficients for both Asian network and European network are highly significant and positive, indicating that firms belonging to these networks start with more than double the employees compared with indigenous-African firms.

Model II controls for human capital variables to examine whether members of minority ethnic networks start larger firms simply because they are better educated and can manage bigger firms? If this hypothesis true, we would expect the ethnic network coefficient to become insignificant when human capital variables are included.

The results demonstrate that getting a university degree or technical degree does provide an entrepreneur with the capability to start a bigger firm. The coefficient for university education, for example, suggests that entrepreneurs with university degrees start firms that are 50 percent larger that those started by entrepreneurs with only primary education. But, the ethnic network coefficient is still positive and highly significant, indicating that the power of the network is still evident even after controlling for the effects of human capital.

Model III controls for startup finance characteristics, along with human capital. If finance constrains size at start up, then entrepreneurs with larger assets and access to finance would be expected to start larger firms. Thus, members of minority ethnic networks may start larger firms simply because they have better financial positions.

This regression shows that firms with collateralizable assets, such as title to their property, start bigger firms, as do firms that can obtain bank loans. Informal loans are insignificant in determining startup size. However, even after inclusion of these financial control variables, the power of the minority ethnic network is still evident. Though the coefficient is smaller than before, it is still large and significant. It is clear that the social capital embodied in these minority ethnic networks is important in determining how firms enter the market.

Table 4: Determinants of Startup Size: regression results

	Model 1	Model II	Model III
Intercept	0.25	0.06	0.24
	(0.66)	(0.66)	(0.63)
Log(agest)	0.31*	0.32*	0.23
	(0.18)	(0.18)	(0.17)
Secondary		0.05	0.06
		(0.12)	(0.12)
University		0.56***	0.43***
		(0.15)	(0.15)

Tech.Ed.		0.26**	0.25**
		(0.13)	(0.13)
Informal Loan			-0.11
			(0.18)
Bank Loan			0.56***
			(0.14)
Title			0.54***
			(0.11)
Asian network	1.33***	1.25***	0.99***
	(0.12)	(0.12)	(0.13)
European network	1.03***	0.99***	0.89***
	(0.19)	(0.18)	(0.18)
Food	0.15	0.10	0.001
	(0.16)	(0.15)	(0.15)
Wood	-0.01	-0.01	0.006
	(0.14)	(0.14)	(0.13)
Metal	-0.11	-0.15	-0.15
	(0.15)	(0.15)	(0.14)
Kenya	-0.22	-0.17	-0.23
	(0.17)	(0.17)	(0.17)
Zambia	0.24	0.22	0.15
	(0.17)	(0.16)	(0.16)
Tanzania	0.23	0.31*	0.30*
	(0.17)	(0.17)	(0.16)
Adj. Rsq	0.22	0.25	0.31

Determinants of Efficiency

As noted in the first section of this paper, the set of business relationships that make up the architecture of the firm shapes the firm's distinctive capabilities and its competitive potential. For each relational contract there is a corresponding financial flow or a corresponding flow of network externalities. The objective of the firm is to put together an architecture (a set of relational contracts) that maximizes value added.

In table 5 we examine the power of the minority ethnic business network in determining productivity. The analysis uses an augmented Cobb-Douglas production function, where human capital, financial capital and networking variables are included as additional explanatory variables. The left hand side measures log of value added. The explanatory variables include capital, log(cap), measured by replacement cost of capital, log of total workers, education, sector and country dummies, as defined above, a dummy variable for access to trade credit, and mean years of relationship with the supplier of the main input.

Model I presents the basic specification, augmenting the production function with only the networking variables. The results show that SMES in minority ethic networks in

both the Asian and European business communities have significantly higher productivity. Asian firms have 37 percent higher productivity than indigenous-African firms, while firms in the European network have 51percent higher productivity.

Table 5: Determinants of Productivity: regression results

	Model 1	Model II	Model III
Intercept	6.12*	6.03*	5.88*
	(0.30)	(0.31)	(0.39)
Log(cap)	0.20*	0.19*	0.18*
	(0.03)	(0.03)	(0.03)
Log(labor)	0.77*	0.76*	0.73*
	(0.06)	(0.06)	(0.06)
Capacity Utilization	0.006*	0.005*	0.005*
	(0.002)	(0.002)	(0.002)
Secondary		0.20***	0.21***
		(0.12)	(0.12)
University		0.22	0.19
		(0.15)	(0.16)
Tech.Ed.		0.07	0.05
		(0.13)	(0.13)
Trade Credit			0.42*
			(0.13)
Years of relation with supplier			0.01**
			(0.006)
Asian network	0.37*	0.35*	0.28**
	(0.14)	(0.14)	(0.14)
European network	0.51*	0.51*	0.38**
	(0.19)	(0.19)	(0.19)
Food	0.28***	0.28***	0.35*
	(0.15)	(0.15)	(0.15)
Wood	-0.31*	-0.30*	-0.26**
	(0.13)	(0.13)	(0.13)
Metal	0.08	0.09	0.13
	(0.08)	(0.15)	(0.14)
Kenya	-0.35*	-0,31***	-0.15
	(0.16)	(0.18)	(0.17)
Zambia	-0.20	-0.20	0.01
	(0.16)	(0.16)	(0.16)
Tanzania	-0.60*	-0.55*	-0.34**
	(0.17)	(0.17)	(0.18)
Adj. Rsq	0.73	0.74	0.74

Model II controls for human capital variables to look at the power of the network in determining efficiency holding the education of the entrepreneur constant. The hypothesis is that higher educated entrepreneurs can manage the complexities of running

a firm more efficiently and perhaps find, decode, and use new technologies more effectively than less educated entrepreneurs.

Human capital, although very important in determining size at which an enterprise enters the market, is found not to be significant in determining productivity differentials across firms. Entrepreneurs with secondary education or more have higher productivity than those with only primary education, or no education, but the returns to human capital do not increase significantly with additional qualifications, such as a technical college degree or university education. The coefficients on the power of minority ethnic networks remain the same when human capital is included in the equation.

Finally, Model III is augmented with variables reflecting access to working capital through supplier credit, and years of relationship with the primary supplier. Including finance in the equation is controversial, as it is difficult to determine the direction of causation – is it access to finance that causes higher productivity or higher productivity that causes access to finance? Our hypothesis is that finance – specifically working capital finance in the form of supplier credit – influences the firm's day-to-day production capabilities in credit-constrained conditions such as those found in SSA. There is empirical evidence to warrant such a hypothesis. Fisman (2001) has shown that African firms lacking credit are more likely to face inventory shortages, leading to lower rates of capacity utilization and lower productivity. Similarly, we also include length of relationship with supplier to control for the fact that firms with long-term relationships with suppliers get better access to supplier credit and access to critical raw materials in time of shortage.

Also, access to supplier credit is hypothesized to be facilitated by the multilateral reputation mechanism of minority ethnic networks. It is a component of the power of the network. Other firms have to get supplier credit by means of repeated interactions or not get it at all. To the degree that access to supplier credit is and important network externality one would expect the ethnic network variables to become insignificant when supplier credit is included.

Results in table 5 confirm that access to trade credit and length of supplier relationship are both positive and significant in determining value added. The coefficients for ethnic business networks continue to be positive and significant, however, though their magnitudes fall. It would appear that there are other important advantages in belonging to a network besides access to supplier credit.

Determinants of Growth

Lastly, we examine the impact of belonging to an ethnic network on firm growth. Firm growth is defined as the logarithmic growth in employment between start and present. Again, we examine three models of firm growth presented in table 6.

We look first at the impact of ethnic networks on growth, including only explanatory variables on initial firm size and firm age. As in the other stepwise regressions above, country and sector dummies are same as those defined above.

We expect *size* and *age* to be negatively related to growth, confirming Gibrat's Law and the results of Jovanovic's learning model (Jovanovic 1982). According to Gibrat's Law and Jovanovic's model, efficient firms prosper and inefficient firms fail. Entrepreneurs learn about their efficiency over time. This implies that smaller, younger firms should have higher and more variable growth rates than larger, older firms. It also implies that firm growth and variance are independent of size for firms of the same age. Many researches have tested Gibrat's Law and Jovanovic's learning model and found that growth and size are indeed negatively related (Hall 1987).

The results of our model show that firm age and size are negatively related to growth as expected and that SMES that are members of Asian and European business networks have higher growth rates than indigenous-African firms. Asian SMES grow 9 percent faster than indigenous-African firms, while European SMES grow 13 percent faster.

In the second model, we augment the first specification by including human capital variables. All the human capital variables are expected to have positive signs, as more educated and experienced entrepreneurs are expected to be better managers and innovators and, as a consequence, more growth-oriented. Model II in table 6 shows that education is significant in determining firm growth; entrepreneurs with secondary and university education run firms that grow 6 percent faster than those without such education. However, the power of the minority ethnic business network still remains positive and significant, with negligible change in the value of the coefficient. Hence, differences in firm growth between SMES belonging to minority ethnic networks and indigenous-African firms can not be explained by better education of the entrepreneurs managing them.

Model III augments the second with financial characteristics at start up. We include the sources of startup finance – bank loan or informal loan – and whether or not the firm had collateralizable assets, such as title to its business property, to proxy for the firm's access to finance.

The results indicate that access to finance matters: firms that had access to formal finance and had collateralizable assets were able to grow faster than others. However, the importance of finance for growth does not change the level of significance or the magnitude of the coefficient of the ethnic network variables, indicating that the network externalities or social capital embodied in these minority ethnic networks makes an important contribution to firm growth even after controlling for entrepreneurial quality and access to finance.

Table 6: Determinants of Firm Growth: regression results

	Model 1	Model II	Model III
Intercept	0.48*	0.42*	0.44*
	(0.04)	(0.04)	(0.04)
Log(empt at start)	-0.096*	-0.05*	-0.07*
	(0.009)	(0.009)	(0.01)
Log(firm age)	-.011*	-0.11*	-0.12*
	(0.01)	(0.01)	(0.01)
Secondary		0.06*	0.05**
		(0.03)	(0.03)
University		0.06**	0.05***
		(0.03)	(0.03)
Tech.Ed.		0.04	0.03
		(0.03)	(0.03)
Informal Loan			-0.05
			(0.04)
Bank Loan			0.06***
			(0.03)
Title			0.05**
			(0.02)
Asian network	0.09*	0.08*	0.07*
	(0.03)	(0.03)	(0.03)
European network	0.13*	0.12*	0.12*
	(0.04)	(0.04)	(0.04)
Food	-0.04	-0.05	-0.05***
	(0.03)	(0.03)	(0.03)
Wood	-0.02	-0.01	-0.02
	(0.03)	(0.03)	(0.02)
Metal	-0.02	-0.02	-0.02
	(0.03)	(0.03)	(0.03)
Kenya	-0.05	-0.02	-0.03
	(0.03)	(0.03)	(0.03)
Zambia	-0.03	-0.02	-0.03
	(0.03)	(0.03)	(0.03)
Tanzania	-0.03	0.01	0.01
	(0.04)	(0.04)	(0.04)
Adj. Rsq	0.23	0.24	0.25

Negative Network Effects

Business networks ease entry and improve productivity and growth prospects for member firms, but they can have some undesirable effects on equity, allocative efficiency and market competition (Fafchamps 2004). While members of the network gain

advantages from network externalities, non-members of the network can be deprived – as in the case of access to supplier credit we will discuss at the end of this section.

There are accumulated costs in building trust among network members and, because of these sunk costs, members find it easier to deal with each other than to incur the added costs of screening new business partners. "Strangers" are therefore excluded from many business transactions. Taken together, these features of African networks – network externalities, restricted entry, and sunk transaction costs – produce a kind of lock-in: rather stable business networks and rather static patterns of business exchange. Lock-in is reinforced by economic conditions in some SSA countries. In slow growing, poor economies, where business activity is mainly based on primary products and simple manufacturing, there is little innovative activity to shake things up and opportunities for gains from trade are relatively stable over time.

In this atmosphere, new firm formation and investment are challenging for entrepreneurs that are not members of existing networks. Connections matter for access to financial resources, quality inputs, skilled labor, and information on technology and markets. Well-connected network members have better access to these productive resources and therefore have larger size at entry, higher productivity and faster growth rates, as we have shown. Connections also matter for entering certain business activities. New entrants have to deal with established market participants and create new exchange relationships. Some way has to be found to establish trust-based relationships and to enforce contracts. Prospective investors with contacts in these business activities, because of referrals from other network members or relatives for example, have a distinct advantage. As a consequence, African entrepreneurs are prone to enter businesses where they are known and connected.[4] The fact that the Asian business network dominates the garments business in Kenya or the Ashanti business network dominates the metalworking business in Ghana makes it more likely that Asians staring businesses will go into garments and Ashantis into metalworking.

Ultimately, patterns of network specialization are established in specific activities, and information sharing, referrals, and existing relationships cause these patterns to persist over time. Distinct patterns of ethnic concentration in particular businesses are quite evident in the RPED enterprise data (Bigsten et al 2000). This segmentation of economic activity by business networks has serious distributional consequences. Networks controlling highly profitable activities do better, and the resulting income differences that arise with other groups can persist. Non-members of the network are in effect locked out of these opportunities. Lock-out and the persistence of income

[4] This is has some similarities with what studies find in more developed countries. Entrepreneurs tend to start up businesses in industries where they have "experience" (Audretsch 1995; Casson 1990). Experience includes connections, as they are similarly useful for learning and getting access to resources, but in developed countries, where there are strong market institutions and more generalized trust, experience relates more to industry-specific technical knowledge. Technical experience and training are important in Africa too, as indicated in our regressions on determinants of size at start up and firm performance. But the argument here is that, in the presence of weak or missing market institutions and high transaction costs, connections are vital. Without them entry and survival are very problematical.

differences can lead to conflict and political problems and ultimately to depressed investment and capital flight.

Network segmentation also influences the allocative efficiency of financial and human capital. Where business activities are controlled by different networks, investment capital is not free to seek the highest returns, as network members are compelled by virtue of their contacts to invest only in particular businesses and others are locked-out. This can result in excess investment in some businesses and shortage in others. Human capital formation is effected too because segmentation raises the expected returns from human capital investments in economic activities where one has contacts and lowers them in activities where one lacks connections. Absent public institutions to ensure more generalized trust, young talent will tend to make career choices and human capital investments based on where they expect to earn the highest returns. In the same way, this prevailing reward structure in the economy can distort the allocation of the scarce supply of entrepreneurial resources, reducing innovation and the formation of completely new business. Hence, the aggregate efficiency cost of network segmentation can be high.

Finally, competition is affected by network segmentation as well. Control of certain business activities by entrenched networks restricts free entry and drives up profits for the network. Potential competitors face barriers to entry because of high costs of building the trust-based relationships necessary to do business in these activities and the lack of connections that could reduce these costs. Therefore excess profits cannot be competed away and the rents to network externalities or social capital persist. This can be true of whole industries, as well as profitable segments along the value chain of particular industries.

An Example of Negative Network Effects

Differential access to supplier credit provides a good example of network effects. The willingness of suppliers to extend credit to their customers, according to RPED survey respondents, depends upon the risk of nonpayment – that is, the ability to enforce the contract (Biggs and Srivastava 1996). Hence, in the absence of courts, a firm has to establish a trust-based relationship with a supplier either by way of long-term repeated interactions or by way of connections. Information about credit histories of firms, which could alleviate some of the concerns about enforcement problems, is unavailable in most African countries, and financial institutions and other firms are generally unwilling to share this type of information because it is a source of rents. So firms must establish a relationship with each potential source of supplier credit, as we discussed earlier.

Networks overcome many of these problems by sharing information about credit histories within the group and enforcing contracts within the group. But the consequences of these network effects are that non-members are left to the long process of getting credit via repeated interactions or not getting supplier credit at all.

As upstream industries in many African countries are controlled by minority-based networks, it is the downstream small and medium indigenous-African producers that are excluded by network effects in most cases. They have few connections to these minority communities, no equivalent reputation mechanism that shares credit histories, and minority-based suppliers find it hard to differentiate between them, as their payment records do not travel across ethnic boundaries. Indigenous-African SMES are therefore subjected to statistical discrimination: they are all placed in the same high risk category by upstream suppliers. In addition, minority suppliers are apprehensive about enforcing contracts in the indigenous-African community, and they know when the time comes to make decisions about contract flexibility, it will be difficult to get enough information on indigenous-African firms to sort out late payers with legitimate business problems from those being opportunistic.

Table 7 below examines the probability of receiving supplier credit. We use a stepwise approach as we did above to look at differential access to supplier credit comparing SMES in and ethnic network and indigenous-African firms. We then look at the two groups separately.

Model I examines the role of ethnic networks in facilitating access to credit, after controlling for firm size. We see that SMES that are members of Asian and European business networks are much more likely to receive trade credit, compared with indigenous-African SMES. In the second regression we control for the length of relationship with the supplier, as well as firm size and membership in an ethnic network. We see that the number of years a firm has known its supplier is significant in determining trade credit availability as we would expect. The coefficients on the importance of being a member of an ethnic network change only marginally, even though we have controlled for the effect of repeated interactions with suppliers. SMES in minority ethnic business networks are much more likely to receive trade credit compared with indigenous-African firms.

In Model III and IV, we examine the availability of supplier credit for the two groups separately. We see that for SMES in minority ethnic networks, the only variable affecting access to supplier credit is firm size, and the magnitude of its importance is much smaller than for Indigenous-African firms. This suggests that SMES that are members of the minority ethnic networks that control most of the upstream supplier industries in these countries do not have to rely much on establishing long-term relationships with suppliers to get credit; even some smaller members of the network get access. For indigenous-African SMES, firm size is very important in determining supplier credit access, as is the length of relationship with the supplier. Hence, smaller Indigenous-African firms are left to trying to establish long-term relationships with each supplier to get access to credit.

Table 7: Determinants of Supplier Credit
Probit regression results

	Model I	Model II	Model III (Minorities)	Model IV (Africans)
Constant	-2.1*	-2.32*	-1.10*	-2.84*
	(0.23)	(0.26)	(0.40)	(0.39)
Log(empt)	0.38*	0.37*	0.25*	0.49*
	(0.06)	(0.06)	(0.07)	(0.11)
Log(yrssrel)		0.15**	0.05	0.23**
		(0.07)	(0.09)	(0.12)
Asian	0.53*	0.49*		
	(0.18)	(0.19)		
European	0.69*	0.65*		
	(0.24)	(0.24)		
Food	-0.60*	-0.61*	-0.79*	-0.36
	(0.21)	(0.21)	(0.26)	(0.38)
Wood	-0.24	-0.22	-0.38	-0.11
	(0.19)	(0.19)	(0.26)	(0.31)
Metal	-0.04	-0.006	-0.24	0.12
	(0.21)	(0.21)	(0.30)	(0.32)
Kenya	0.26	0.24	0.19	0.49***
	(0.17)	(0.18)	(0.22)	(0.28)
Zimbabwe	1.28*	1.23*	1.86*	0.88*
	(0.19)	(0.19)	(0.29)	(0.29)

Policy for Private Institutional Support Systems in SSA

Now that we have a better understanding of the forms that private market-supporting institutions take in Africa and how they affect market outcomes, what can be said about the role of government policy and programs to assist the development of private market-supporting institutions?

African firms lacking access to formal institutions and facing high transaction costs have been able to engage in a range of productive activities and gain access to credit by creating firm architectures that substitute for institutional failures. But firm's self-help creation of private substitutes for marketing-supporting institutions in Africa can go only so far without the assistance of government. Government policy is needed to foster more market exchange in three areas: (a) enhancing the environment for inter-firm cooperation and relational contracting (b) addressing undesirable network effects and (c) strengthening formal institutions to foster the transition from personal to more anonymous exchange.

Creating a better environment for private mechanisms: Private mechanisms for exchange are weaker in Africa because of economic conditions. Unstable economic conditions in SSA undermine repeated game incentives thereby hindering firm's ability

to establish and sustain ongoing relationships. In the most unstable African business climates, establishing informal trading relationships is much harder and market exchange is forced to be highly personalized and localized. In countries where the business climate is becoming more stable and repeated game incentives work better, ongoing relationships are easier to sustain, and SMES begin to engage in more inter-temporal and inter-spatial transactions. Given the importance of private mechanisms for market exchange in Africa, establishing a stable platform for inter-firm cooperation and relational contracting is essential. Thus, one of the first priorities for government must be to reduce instability through better economic management. Unstable macroeconomic conditions, due to poor policy management, frequent policy changes, and corruption, are a leading cause of instability in the African business climate.

Having even a semblance of a workable court system can also foster development of private mechanisms. The RPED surveys for Ghana, Kenya and Zimbabwe provide evidence for this conclusion. Even though all three countries have inadequate court systems, the courts in Kenya and Zimbabwe work better and firms in the surveys in these countries report using courts more often to resolve disputes and especially to threaten delinquent trading partners with legal action. Having some confidence in the courts in these countries, even though they are highly imperfect, appears to influence firm behavior. Firms who say they use the courts to resolve disputes or to threaten delinquent payers offer more supplier credit (similar results are reported for transition countries in Johnson, Mcmillan and Woodruff 2002a). Also, more firms in these countries at all size levels get supplier credit than firms in Ghana.

Addressing network effects: Network effects and statistical discrimination exclude many SMES from credit and from normal commercial practices. Policies to address this problem can aim at two areas (a) expanding the boundaries of tight networks to allow more transactions with non-members and (b) reducing the undesirable consequences of network effects on disadvantaged firms.

Supplier credit provides a convenient entry point to discuss these two approaches. An initial step that can be taken to reduce the negative consequences of network effects is to create a better environment for ongoing relations. Making it easier for firms to establish and sustain repeated interaction relationships will help to increase the flow of supplier credit, as the Zimbabwe example above shows. In addition, two facts gleaned from the RPED surveys point the way toward another possible policy intervention. First, survey respondents in several countries report being willing to extend supplier credit if they could get a bank credit report on customers (Cuevas et al 1993; Biggs et al 1995; Biggs et al 1996). Second, in the only RPED country that had a working credit reference bureau at the time of the surveys, Zimbabwe, network effects appear much weaker (Fafchamps 2004).

This suggests that establishing credit rating systems in other African countries could help to expand the boundaries of networks and improve access to supplier credit for SMES with decent credit histories. Circulating information about credit repayment histories could assist suppliers in screening unreliable business partners and increase the

chances of reliable firms in getting credit. Once a credit bureau is in widely used, trustworthy firms would probably find it in their interest to signal their reliability by establishing an excellent track record. Firms with a good record would therefore be good credit risks not only because they have demonstrated their ability to comply with the provisions of loan agreements but also because they want to preserve their reputations (Fafchamps 2004). A credit bureau might also help firms that have insufficient collateral qualify for credit from financial institutions offering bills discounting and short-term working capital loans.

Fisman (2002) raises another important policy issue regarding network effects and supplier credit in Africa. In a study of RPED supplier credit data across six countries, he finds that preferential credit assess of ethic firms does *not* just come from within-network information and enforcement externalities. A significant portion of preferential access can be attributed to differences in observable firm and owner quality – a skills component. Hence, bringing about improvements in firm quality that would allow indigenous-African businesses to compete more generally would also be an effective means of improving supplier credit access. Education and training directed at indigenous-African firms might substitute for the skills component that appears to be responsible for some of the greater credit access among ethnic businesses.

Strengthening formal institutions to promote the transition from personal to anonymous exchange: Reliance on informal, private mechanisms to govern contracting and market exchange has limits even in the best of cases (Mcmillan and Woodruff 2003). Formal institutions are needed at early stages of development to complement and strengthen private mechanisms and in later stages of development to facilitate the transformation to more sophisticated types of enterprise architecture and production.

First, as markets widen in the process of growth and more suppliers and business partners are available, search costs fall, weakening threats to cut off exchange if a business partner reneges on a deal. As the costs of breaking off relationships decline, firms become less willing to cooperate and the need for formal legal institutions to enforce contracts increases.

Second, repeated game incentives are very limited in their ability to facilitate arms-length, inter-spatial market exchange. To work best they require personalized inter-firm relationships. To grow beyond a certain size SMES need to manage more of such impersonal inter-spatial trades beyond their local neighborhoods. Impersonal transactions require more formal contract enforcement.

Third, as products become more complex and vertical production relationships, such as subcontracting, become more important, contract design (e.g., incentive structures and risk-sharing) becomes much more complex. Ordering in advance, commitments to buy and relationship-specific investments (machinery, acquisition of knowledge and training of workers) become essential. Long-term relationships are important in dealing with such problems of cooperation, but they have limits. Without courts, suppliers may be unwilling to switch to making more complex products and

subcontractors may be unwilling to make relationship-specific investments. This may be a key reason why African business networks lack the well-developed inter-firm divisions of labor that are found in networks in other regions of the world.

Fourth, once firms get to a certain stage, they must make large, discrete investments to take advantage of economies of scale. These types of investment have long gestation periods. Investments with long payback periods are not likely to be made on the basis of a simple ongoing business relationship. Again, while relational contracts can be helpful in such cases, they need to be backed up by some formal legal assurance.

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