

Founder social capital and MSE productivity: evidence from Zambian entrepreneurs

George Clarke
Texas A&M International University

Christopher J. Boudreaux
Florida Atlantic University

Anand Jha
Wayne State University

Abstract

We use a unique one-off survey of Zambian entrepreneurs to examine the following questions: (1) How do founders' social capital affect micro-and-small enterprise (MSE) productivity? And (2) What are the linkages that channel founders' social capital towards MSE productivity? To address these questions, we conduct a total factor productivity (TFP) analysis to examine the relationship between founders' social capital, measured by founders' membership in business or social networks, and TFP. Our findings indicate that founders' social capital is associated with a 34% increase in TFP. In addition to this direct effect, we uncover an indirect effect where founders' social capital improves access to credit from suppliers, friends, and family. Moreover, social capital encourages founders to provide more trade credit to customers and to expand their customer base. The results are robust when we use instrumental variable analysis, alternative specifications, and a large set of controls including the industry of the MSE, and the founder's ethnic ties. Overall, our results suggest that founders' social capital is an alternative way to increase MSE productivity.

Keywords: credit access; entrepreneurs; founders; informal economy; MSE; productivity; social capital; TFP; networks

JEL: D24, D71, G21, L26, M13

1. INTRODUCTION

Countries grow faster when micro and small enterprises (MSEs) are productive and become larger. Micro and small firms hold more capital, provide more jobs, and are more innovative than large firms (Acs and Audretsch 1988). MSEs often operate in the shadows in an informal economy that represents more than 50% of a country's gross domestic product (GDP) in emerging economies and about 10–15% GDP in industrialized countries (Schneider and Enste 2013). Given the important role MSEs serve in economic growth, academics and policymakers have become interested in understanding how to best channel the productivity of these MSEs. Despite the interest, however, we still have a limited understanding of what makes one MSE more productive than another.

One reason we still understand very little is because MSEs frequently operate in an informal economy. As such, they are often out of reach of banks. Moreover, most MSEs are owned by individuals with low literacy in countries with weak judicial systems. It is thus often optimal for them to avoid legal contracts and bureaucratic procedures. How can MSEs operate in a country under these conditions Karlsson and Dahlberg (2003) ? Research highlights how social capital—one's network and trust—becomes a substitute for legal contracts, banks, and government bureaucracy (Guiso et al. 2004b; Guiso et al. 2004c; Guiso et al. 2006). Consequently, the MSE founder's social capital can play a crucial role in improving the productivity—by making it easier for it to obtain credit and to expand its customer base.

The purpose of our study is to explore the following two questions: (1) How does founders' social capital affects MSE productivity, and (2) what are the linkages that channel founders' social capital towards MSE productivity? Using insights from Social Capital Theory (Adler and Kwon 2002; Coleman 1988; Lin et al. 2001; Putnam 2000; Woolcock and Narayan 2000), we hypothesize that founders' social capital improves access to credit from its suppliers, friends, and family. We also hypothesize that social capital encourages MSE founders to extend more credit to customers and expand their customer base.

We use a dataset particularly suited to address these questions. Our dataset comprises data from a survey of formal and informal MSEs in Zambia. Research shows that although social capital affects firms in both developed countries and emerging economies (Guiso et al. 2004a; Jha and Chen 2015; Lins et al.

2017), the effect is much stronger in countries with weak institutions (Stam et al. 2014). It is therefore useful to focus on a developing country such as Zambia.¹ Another advantage is that social capital might affect MSE productivity most when information asymmetries between lenders and borrowers, and between customers and the entrepreneur, are particularly high, something that is especially likely in developing countries with underdeveloped financial and regulatory systems (Cestone and White 2003; Galor and Zeira 1993). The dataset is based on a one-off survey and so is unique to Zambia.² It provides us with data on the number of customers and on whether a firm extends credit to its customers, features that make it unique and allow us to examine possibly unique channels by means of which social capital might improve an MSE's productivity. We know of no dataset that provides such detailed information.

We use a total factor productivity (TFP) model³, an approach used in a number of studies (e.g., Biggs and Shah 2006; Cassiman and Golovko 2011; Coelli et al. 2005; Coucke and Sleuwaegen 2008; Syverson 2011; Wei and Liu 2006), to investigate whether the entrepreneur's membership of an association—our measure of social capital—makes an MSE more productive. We find that it can. Being a member of an association is associated with a staggering 34–49% increase in productivity. We also find that these entrepreneurs have a 3.2% higher probability of obtaining credit from the family and friends of the founder, and a 2.4% higher probability of obtaining a loan from their suppliers. They also appear to extend more credit to their customers. An MSE founder who is a member of an association has a 6.9% higher probability of extending credit to his or her customers and has a considerably larger customer base. These results are largely similar if we distinguish between business associations and nonbusiness associations, though they are stronger for business associations.

They are also robust when we use an instrumental variable approach. The two instruments we use are the percentage of the district's business founders who speak the same main language as the founder and

¹ Most previous studies have focused on more developed countries. In a recent meta-study of 59 studies on social capital (Stam et al. 2014), only two examined the role of social capital on firm performance in Africa: Acquaah (2007) in Ghana and Bradley et al. (2012) in Kenya.

² One of the co-authors was part of the team that wrote the survey instrument.

³ An alternative approach would be to investigate the sales growth. Our data does not allow us to examine sales growth as our data is only cross-sectional. We have data for only one year.

the percentage of the district's business founders who belong to an association. These two instruments pass the tests of validity and are unlikely to affect a firm's productivity except through increasing the entrepreneur's likelihood of becoming an association member.

The results of our study add to the existing literature that investigates the challenges MSEs face. A long-standing theory in finance suggests a lack of external capital constrains the productivity of small firms. Butters and Lintner (1945), who offer one of the earliest insights into this issue, write: “[m]any small companies—even companies with promising growth opportunities—find it difficult or impossible to raise outside capital on reasonably favorable terms” (page 3). More recent research confirms this. In a study of 1,600 small firms, Carpenter and Petersen (2002) conclude that “a typical firm retains all of its income and raises relatively little external finance” (page 307). Ayyagari et al. (2008) use firm level data from 80 countries to examine how different aspects of the business environment, including access to finance, property rights, infrastructure, regulation and taxation, corruption, macroeconomic stability, and political stability, affect firm growth. They show that only a lack of external financing, crime, and political stability affect firm growth, with access to external financing having the most robust association with it. Small firms find it particularly difficult to obtain financing in developing countries with underdeveloped institutions and weak property rights (Beck et al. 2008b). To circumvent these institutional deficiencies, the World Bank lends more than U.S \$2 billion a year to finance small business startups, despite findings that suggest that these programs have not been successful (Beck et al. 2008b). Our study suggests that an MSE's productivity can be increased by providing the founder with opportunities to build social capital, such as encouraging membership of associations, particularly business associations. Participation in such networks may build trust (Fukuyama 1997; Putnam 2001), reduce the cost of information gathering, and ease the financial constraints that many of these firms face.

Our study also offers a new perspective on the success of MSEs. We document that high social capital increases the likelihood of an MSE founder providing goods and services to its customers on credit. The customers that these firms cater to might themselves be credit constrained. Our results show that an MSE founder who is a member of association, perhaps because he or she is more likely to trust others

(Fukuyama 1997) or perhaps because his or her customers also belong to the same association, is more likely to extend the credit, and therefore to have a larger customer base. To the best of our knowledge, there is no study that makes this argument and provides such micro level evidence.

Our study extends a number of recent studies. A study closely related to ours is that of Biggs and Shah (2006) who use a sample that mostly comprises large formal firms in sub-Saharan Africa. They find that enterprises owned by people of Asian or European origin are more productive. The authors argue these firms have better access to supplier credit, presumably from their networks, and start off as significantly larger enterprises. Our study extends their work by using similar data and a similar methodology to show that one does not need to be a member of a specific ethnic group to perform better: membership of a business or nonbusiness association also confers advantages to people from other ethnic groups. In our sample, only about 3 percent of firms are owned by people who belong to Asian and European ethnic groups, and our results are robust when we control for this and when we remove such firms from our sample.

A number of other related studies find that an entrepreneur's social network is associated with the identification of new opportunities (Arenius and De Clercq 2005; Elfring and Hulsink 2003; Ellis and Pecotich 2001) access to foreign markets (Ellis 2000; Zhou et al. 2007), firm entry (Bastié et al. 2013; Kim et al. 2006), the accumulation of knowledge and knowledge spillovers (Hayter 2013; Sapienza et al. 2005), and new venture performance (Brüderl and Preisendörfer 1998; Cooke and Wills 1999; Santarelli and Tran 2013; Westlund and Bolton 2003). Our study complements these studies by documenting that a social network increases the possibility of obtaining credit from suppliers and of extending trade credit to customers. More broadly, however, our study contributes to the literature on how social capital boosts business development and entrepreneurship (Adler and Kwon 2002; Bosma et al. 2004; Boudreaux and Nikolaev 2018; Dess and Shaw 2001; Lee 2017).

2. THEORETICAL DEVELOPMENT OF HYPOTHESES

Social capital is defined as the networks and norms that facilitate collective action (Coleman 1988; Fukuyama 2001; Putnam et al. 1993). Network building plays a vital function in the accumulation of social capital (Uzzi 1996) This is likely due to the structural dimension of social capital, which manifests as social

interaction ties (Tsai and Ghoshal 1998). Research suggests that strong network ties, the types of relationships that form between individuals with similar backgrounds, act to mitigate conflict (Nelson 1989). Conversely, loose ties, those relationships that form between individuals from dissimilar backgrounds, facilitate new product innovation (Granovetter 1977). Thus, social capital enhances a business network and, consequently, promotes business performance. In addition to strengthening personal and business networks, social capital should also improve trust and the norms that facilitate reciprocity and reputation. When founders have higher social capital, they enjoy greater trust from stakeholders such as auditors (Jha and Chen 2015), lenders (Hasan et al. 2017), and investors (Lins et al. 2017).

Individuals who have more social capital have been found to be more trustworthy and more trusting of others (Knack and Keefer 1997; Zak and Knack 2001). Research shows that when individuals have more trust in financial markets, that is, they participate more actively in them, increase their investments, rely more on checks, and have greater access to institutional credit (Guiso et al. 2004c). Regions where people have high social capital have been shown to have less crime, which indirectly suggests that individuals in these regions are more honest and law abiding (Buonanno et al. 2009). People in such regions are also more innovative, suggesting that when trust is high among people who belong to different groups, innovation is more likely (Akcomak and ter Weel 2009; Laursen et al. 2012). These advantages translate into greater productivity. For these reasons, we propose our first hypothesis:

H1: *Entrepreneurs with high social capital are likely to be more productive.*

INSERT FIGURE 1 ABOUT HERE

We also attempt to understand the channels by which social capital might increase a firm's productivity. Building on prior theories of social capital and organizational performance (Tsai and Ghoshal 1998), Figure 1 illustrates the relationship between social capital and business performance. In particular, we theorize that an MSE's productivity might be enhanced by social capital through three channels: (1) expanded clientele, (2) better access to credit, and (3) extension of trade credit.

2.1 Expanded Clientele

Because a founder with more social capital might have a better reputation, relationships with customers should improve. Social capital might increase the performance of MSEs by strengthening ties with customers since founders with more social capital and stronger networks are able to conduct more business with customers (Yli-Renko et al. 2001). This might occur because social capital increases the entrepreneur's reputation (Baron 2001). For example, if an entrepreneur has many contacts within the network, business might increase merely by word of mouth, especially if the founder has a good reputation. By increasing the size of the entrepreneur's network, social capital acts to expand the customer base. Thus, we propose our second hypothesis:

H2: *Entrepreneurs with more social capital have a larger customer base.*

2.2 Access to Credit from Suppliers, Friends, and Family

Founders with more social capital should have better access to credit. Social capital is often measured by the extent of one's network and researchers often use the membership in association as a proxy for social capital. For example, the decline in the number of bowling leagues and bowling alleys has been used to illustrate the decline in the U.S. stock of social capital (Putnam 1995; Putnam 2000). By engaging in a larger professional and social network, entrepreneurs might increase their business performance by having better access to credit. This is especially important for nascent small businesses as research has found that small businesses acquire financial resources from both formal and informal credit sources (Robb and Robinson 2014). Social capital might facilitate business performance by increasing access to credit by building relationships with traditional business partners.

Berger and Udell (2002) point out that a key aspect of lending to small businesses is the accumulation of soft information over time by the loan officer. Recent empirical evidence provides support for the importance of a bank's relationship to small businesses in terms of both credit availability and credit terms, such as loan interest rates and collateral requirements (e.g., Berger and Udell 1995; Chen et al. 2015; Elsas and Krahn 1998; Harhoff and Körting 1998; Petersen and Rajan 1994; Petersen and Rajan 1995).

Such information decreases the cost of loans for the small business. A manager with high social capital might be more forthcoming and might interact more often with the loan officer. Such actions can lead to a larger accumulation of soft information.

While institutional lenders are traditionally one significant source of credit, social capital that enhances a business founder's personal network should also increase access to credit from nonbank sources, that is, family and friends. This is particularly important in developing countries, because small firms in developing countries generally have poor access to external finance; this problem is much more severe where there is poor protection of property rights (Beck et al. 2008a; Beck et al. 2008b). This barrier to credit access is exacerbated by the finding that small firms do not use leasing and trade credit to a greater extent than do larger firms, therefore ruling out speculation that small firms might be substituting external finance with these alternative means. As social capital improves the relationships between a business founder, friends, and family, we expect that access to credit from these nontraditional sources should be increased. Thus, we arrive at our third hypothesis:

H3a: *Entrepreneurs with more social capital have easier access to credit from suppliers.*

H3b: *Entrepreneurs with more social capital have easier access to credit from friends and family.*

2.3 Extension of Credit to Customers

If a small business founder has more trust in others, the entrepreneur might be more willing to extend trade credit to customers. Indeed, trustworthy individuals are more likely to repay loans (Karlan 2005). This faith in the ability of others to make future payments should increase business performance. Of course, the profitability of trade credit will depend on the legal institutions that protect the business founder if the customer fails to pay for the product. In situations where property rights are weakly enforced, that is, in many developing countries, social capital acts to mediate this institutional deficiency by building trustworthy reputations. Thus, the Zambia Business Survey (ZBS) serves as a perfect opportunity to observe how alternative forms of social capital affect the availability of trade credit. Therefore, we present our fourth and final hypothesis:

H4: *Entrepreneurs with more social capital are more likely to extend trade credit to customers.*

3. DATA AND MODEL

The paper uses data from the ZBS, a nationally representative survey of MSEs conducted by Finmark and the World Bank in 2008. The ZBS used area sampling to survey MSEs throughout Zambia. As the survey did not use lists from government agencies to set the sample frame, it includes many tiny, informal enterprises that other surveys exclude. The appendix describes the survey and sampling in detail.

The analysis focuses on non-agricultural firms in the retail trade, manufacturing, and services. We exclude agriculture because it is difficult to measure the output of subsistence agriculture and because it is not clear that subsistence agriculture is a commercial operation. Most firms of concern here are small shops—about 75% of them are in the retail and wholesale trade sectors.⁴

The firms surveyed are mostly small; the median number of employees was 1 and the mean was 3. Most were informal—only 15% of founders said they had registered their firm with any government agency. Furthermore, most had only registered with their local government. Only 5% had done so with the national tax authority (Zambia Revenue Authority) and only 8% with the company registrar (Patents and Companies Registration Office).⁵

The ZBS is, therefore, different from other Zambian surveys such as the Regional Program for Enterprise Development (RPED) surveys and the World Bank's Enterprise Surveys (WBES), which have focused on larger formal firms. The 2013 WBES, for example, explicitly excluded informal enterprises (World Bank 2009).⁶ As a result, the firms surveyed there were far larger than those in the ZBS—the mean and median number of employees were 54 and 15, respectively. Only 10% of ZBS firms had more than five

⁴ The data in this section refers to the nonagricultural firms in the survey that the empirical work focuses on.

⁵ Moreover, because this information is self-reported, it probably overestimates the extent of registration.

⁶ Moreover, the sample was based on a sampling frame provided by the Zambia Central Statistical Office, which also implicitly excludes informal firms. The full report is available at https://www.enterprisesurveys.org/~media/FPDKM/EnterpriseSurveys/Documents/Methodology/Sampling_Note.pdf

employees—the minimum size for inclusion in the WBES. The earlier RPED survey also focused on larger enterprises; the mean and median number of employees were 85 and 23, respectively (Van Biesebroeck 2005).⁷ Although the RPED survey included a few informal enterprises, the survey did not sample them systematically.⁸

3.1 Measuring Social Capital

The variables that interest us the most measure MSE founders' social capital. The first dummy, *business association*, is set to 1 if the founder belongs to a business association and is 0 otherwise. The second dummy, *non-business association*, has a value of 1 if the founder belongs to a nonbusiness or social group and is 0 otherwise. Nonbusiness groups include churches, religious groups, political parties, women's or men's groups, social clubs, and sports clubs. Founders who belong to these might use them to meet people who can help them with technical issues related to production or to meet potential customers or employees. Founders who belong to these groups might also meet people who can help them obtain trade or bank credit. The final dummy, *any association*, is set at 1 if the founder belongs to either a business or nonbusiness group and is 0 otherwise. In addition to the three dummies, a discrete variable, *number of associations*, provides information on the number of business and nonbusiness groups to which the founder belongs.

3.2 Econometric Model of Social Capital and its Effect on Firm Performance

We first examine how social capital, as measured by membership of business and nonbusiness groups, affects firm productivity (H1). We estimate TFP using a standard extended production function approach.⁹ We assume that the firms have Cobb-Douglas production functions:

$$Y_i = A_i K_i^\gamma L_i^\beta \quad (1)$$

⁷ Biggs and Shah (2006), for example, use this data.

⁸ Van Biesebroeck (2005) reports that the “selection of informal firms was generally left to the interviewers” (p. 549).

⁹ See Caves and Barton (1991) or Biggs and Shah (2006) for examples of this approach.

In equation (1), Y_i is firm i 's output, K_i is its capital, and L_i is labor. Firm i 's productivity is represented by A_i , which depends on a randomly distributed error (ε_i), firm characteristics (FC_i) and the founder's social capital (SC_i):

$$A_i = e^{\alpha + \delta SC_i + \lambda FC_i + \varepsilon_i} \quad (2)$$

Taking natural logs of both sides, we get:

$$\log(Y_i) = \alpha + \delta SC_i + \gamma \log(K_i) + \beta \log(L_i) + \lambda FC_i + \varepsilon_i \quad (3)$$

We estimate the main model using ordinary least squares (OLS).¹⁰ We also estimate it in several other ways to assess the robustness of our findings. The first check is a standard frontier model. Rather than assuming a single two-sided error term, the frontier model allows for an error term that has two parts. The first is a two-sided error term that allows for shocks and measurement errors. The second is a one-sided term that allows for technical inefficiency.¹¹ The second robustness check uses a two-stage approach. We first regress output on capital and labor and use the residual to estimate TFP. We then regress TFP on social capital and the firm-level controls.¹² The final robustness check is a least absolute deviations (LAD) model. As LAD estimates are more robust to outliers, researchers often estimate TFP in this manner.¹³ The results are robust to these alternatives. As the data are cross-sectional, we cannot estimate panel data models that allow labor and capital to be endogenous (Levinsohn and Petrin 2003; Olley and Pakes 1992).¹⁴ Estimating the model is simple in theory. It is difficult, however, in practice; the small, informal firms in the survey often did not

¹⁰ In terms of certain assumptions, OLS is the BLUE (Best Linear Unbiased Estimator).

¹¹ See, for example, Kumbhakar and Lovell (2003) for a discussion of this technique. We assume that the two-sided error term is normal and that the one-sided term is half-normal.

¹² This approach is often used when estimating TFP. See, for example, Gatti and Love (2008), Dollar et al. (2005), or Harrison et al. (2014). The disadvantage of this approach is that when the omitted variables also affect capital and labor choices, this approach will lead to biased estimates of TFP (Escribano and Guasch 2005; Escribano et al. 2005).

¹³ See, for example, (Greene 2003).

¹⁴ It is possible to control for this with panel data using lagged values of intermediate inputs or investment as instruments.

keep the detailed accounts we need to calculate TFP.¹⁵ First, few founders answered the question on intermediate inputs. As a result of this, we use sales, rather than value added, to measure output. Had we not done so, we would have lost approximately 45% of the sample. As discussed with regard to the robustness checks, the results are similar to those of the smaller sample for which we can estimate value added.

Second, because most firms do not keep detailed accounts, the survey did not ask about the value of the firms' capital. Instead, it asked founders whether their firms owned or used 16 different types of machinery and equipment (see Appendix, Table 1). As a result, we cannot include the value of capital in the regression. We deal with this in two ways. The first is to include the 16 dummies indicating equipment ownership rather than the log of the value of the firm's capital in the model. The second is to estimate a model for labor productivity (sales per worker) rather than TFP. The labor productivity model is:

$$\log(LP_i) = \alpha + \delta SC_i + \gamma FC_i + \varepsilon_i \quad (4)$$

In keeping with the spirit of estimating labor productivity, the model omits the capital dummies. In practice, however, including them does not affect the size or significance of the coefficient of social capital.

Third, many firms have unpaid workers—most of whom are presumably family members or other relatives. Although we could treat unpaid workers the same as paid workers, this would not be fitting if they were less productive. We therefore include paid and unpaid workers separately.¹⁶ Combining paid and unpaid workers and including these as one measure rather than two separate measures does not, however, affect the size or significance of the coefficient on social capital (see the robustness checks).

The main question we want to answer is how the founders' social capital affects productivity. As mentioned above, our measure of social capital is a dummy indicating whether the founder belongs to either a business association or a social group. If founders meet potential customers or workers at these groups or

¹⁵ The limited data is not surprising—few of the sample firms kept detailed accounts. Only 26% of firms kept financial accounts and only 6% had their accounts audited.

¹⁶ The results suggest they are less productive—only paid workers appear to affect output in the main model. To avoid losing observations, the variables are 1+unpaid workers and 1+paid workers.

can discuss technical issues with other members, belonging to these networks might improve entrepreneurship performance. Founders might also benefit if they can obtain trade or bank credit through the contacts they meet in these groups.

As belonging to a business association might affect performance differently from the way belonging to a social group does, we also run the analysis with separate dummies for the two groups. This allows membership of business associations and social groups, respectively, to affect performance differently.

The main model includes controls for the founder, the firm, and the community (FC_i). The controls are described in greater detail in the appendix. The first set of controls relates to characteristics of the founder. This includes controls for the founder's education, experience, and financial knowledge. If older, better educated, and more financially savvy founders are better managers and have more social capital than owner, we must control for this when examining how social capital affects performance.¹⁷ We use age as a proxy for experience since we also control for education. To control for financial knowledge, we include a dummy indicating whether the founder has a personal bank account. Having a personal bank account might signal financial sophistication, which might translate into better management.

Biggs and Shah (2006) show that firms with Indian and European founders are more productive than firms with African founders in a group of African countries that includes Zambia. They attribute this to ethnic business networks.¹⁸ To control for this, we add 53 dummies relating to the founder's ethnicity to the model as a robustness check.

The second set of controls relates to the characteristics of the firm. Sector dummies control for systematic differences in productivity across the economy, which have important implications for firm

¹⁷ Previous studies have found African firms with better-educated managers perform better (Biggs et al. 1998; Ramachandran and Shah 1999). *University education* is a dummy coded 1 if the founder has a university education and is 0 otherwise. *Vocational education* is a dummy coded 1 if the founder has a vocational education and is 0 otherwise. *Secondary education* is a dummy coded 1 if the founder has a secondary education and is 0 otherwise.

¹⁸ As discussed below, because the sample in this study mostly comprises small, informal, enterprises, very few firms in this study have non-African founders. We can, however, include detailed dummies based on the founder's tribe and main language.

performance (Boudreaux 2019).¹⁹ Although including firms in different sectors in a single model is not ideal, there are too few firms outside retail trade to estimate separate models for each sector.²⁰ We include firm age in the regression because firms might become systematically more or less productive over time.

Firms will also perform better when they have access to utilities and financial services. To control for this, we add four dummies indicating whether the firm has access to power, public water, a telephone, and a business bank account to the base model as a robustness check. We do not include these in the base model because they may be endogenous; better performing firms will find it easier to afford utility connections and bank accounts. We also separately add the average use of these services in the firm's home district to the model, because the averages are less likely to be endogenous than dummies indicating the firm's own use of these utilities and services.

The final set of variables controls for the characteristics of the firms' home district.²¹ When firms are close to customers, workers, and suppliers, they might find it easier to share knowledge and pool capital, intermediate inputs, and labor. They might also be able to better match with customers, suppliers, and workers when they are in more developed regions. The district level controls are a dummy indicating whether the district is urban or peri-urban, its population density, and its illiteracy rate.

3.3 Econometric Model of Social Capital and the Channels for Business Success

Although the correlation between social capital and firm performance is important, this merely scratches the surface of the issue. To understand the relationship between social capital and performance, we need to understand the paths along which it improves performance. As hypothesized, social capital might affect performance in several ways. Entrepreneurs with high social capital might use their connections to meet customers and to assess whether those customers are creditworthy. They might use their connections to obtain trade credit from suppliers, formal loans from banks, or informal loans from

¹⁹ The sectors are manufacturing, retail trade, services, and other. As a robustness check, we include additional dummies to provide a more complete breakdown (see the section on robustness checks).

²⁰ We also perform a separate regression for retail trade as a robustness check.

²¹ Clarke et al. (2016), for example, show the importance of agglomeration effects for firm growth.

family and friends. Finally, they might use their connections to obtain technical information, share equipment, or obtain commercial information. To ascertain whether social capital works in the first two ways, we examine how it affects a firm’s customer base and its access to credit. Unfortunately, we do not have any information on access to information or equipment.

The first variable indicates how many customers the firm has in an average month—this we use to test H2. The underlying variable is the natural log of the number of customers. That is, the underlying model is:

$$\log(cust_i^*) = \alpha + \beta SC_i + \gamma FC_i + \varepsilon_i \quad (5)$$

The responses, however, were given as ranges and so we estimate the model as an interval regression.²² We assume that the error term, ε , is distributed normally.

The other five dependent variables are dummies related to access to trade credit and loans. For these dummies, we assume there is an underlying variable, y_i^* , related to the firm’s propensity to obtain a loan or trade credit. The model is:

$$y_i^* = \alpha + \beta SC_i + \gamma FC_i + \varepsilon_i \quad (6)$$

As we do not observe the underlying propensity to obtain credit, we cannot directly estimate equation (5). Instead, the dependent variables, y_i , are dummy variables taking the value of 1 if $y_i^* > 0$ and the value of 0 if $y_i^* \leq 0$:

$$y_i = \begin{cases} 1 & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases} \quad (7)$$

We assume that ε is distributed normally and therefore estimate a probit model.

²² As the ranges are known, an ordered probit or logit model is not necessary. We use the *Intreg* command in Stata. The interval regression is a generalization of the Tobit model (Cameron and Trivedi 2010).

The first two variables refer to the firm's current behavior regarding giving and receiving trade credit. To test H3b, we construct *receives credit*, a dummy variable coded 1 if the entrepreneur receives credit from suppliers and 0 otherwise. To test H4, we construct *provides credit*, a dummy variable coded 1 if the entrepreneur currently provides credit to customers and 0 otherwise.

To test H3a, we construct three variables that indicate whether the firm has ever received a loan. Although, ideally, the questions would refer to recent loans, too few firms currently had loans to make this practicable.²³ For these three variables, we therefore have to assume that founders who currently have high social capital also had high social capital in the past. This would be the case if people who currently belong to clubs were also more likely to belong to clubs in the past. If character traits that affect club membership, such as sociability and extroversion, are persistent, this seems reasonable. The first variable is coded 1 if the entrepreneur had ever had a loan. The second and third dummy variables concern loans from family and friends and loans from banks, respectively. They are coded 1 if the entrepreneur had had a loan from that source.

4. RESULTS

4.1 Social Capital and Firm Performance

This section presents the results of estimating equation (3), which measures the effect of social capital on TFP. As discussed above, we focus on retail, service, and manufacturing firms because it is difficult to measure own consumption for agricultural firms. We also run separate regressions, as a robustness check, for retail firms. As the survey contains few manufacturing or service firms, we do not do the same for these groups.

4.1.1. Main results

INSERT TABLE 1 ABOUT HERE

²³ Only 34 firms had any type of loan at the time of the survey.

When we estimate equation (3), the coefficient on social capital is positive and statistically significant. Firms whose founders belong to a business association or social group are 34% more productive than similar firms whose founders do not (see column 1 of Table 1).²⁴

When we include separate dummies for business and social groups, only the second coefficient is statistically significant (see column 2). Firms whose founders belong to a social group are about 39% more productive than firms whose founders do not. In contrast, firms whose founders belong to business associations are not more productive than other firms; the coefficient on the business association dummy is negative but statistically insignificant. We reject the null hypothesis that the two coefficients are equal at a 5% level ($p = 0.02$).

The results with separate dummies for business and social groups suggest that only social group membership affects firm performance. Few founders, however, belong to business associations and most that do also belong to social groups.²⁵ This might make it difficult to find significant results for business association membership.

4.1.2. *Labor productivity*

As discussed in Section 3.2, we do not have good measures of the amount of capital—making it difficult to estimate TFP. We, therefore, estimate a second model for labor productivity (see equation (4)). The main results are similar: the coefficient on social capital remains positive and statistically significant. Labor productivity is approximately 42% higher for firms whose founders belong to business or nonbusiness groups than it is for firms whose founders do not. The results are similar when we include the capital dummies in the labor productivity model and when we include separate dummies for business and nonbusiness groups.²⁶

²⁴ Halvorsen and Palmquist (1980) derive the formula $(e^\beta - 1)$ for the percentage change in the dependent variable for a dummy variable in a semi-log regression.

²⁵ Only 54 founders of the 1,609 firms in the regression belonged to business associations. Of these, only 12 belonged to a business association but not to a nonbusiness association.

²⁶ Including the capital dummies does not affect the size or statistical significance of the results. When we include the two social capital variables separately, the coefficient on nonbusiness associations remains positive and statistically

4.1.3. *Two-stage least squares estimates*

One concern about social capital is that it may be endogenous. Successful founders might be more likely to join business groups either because they focus more on business issues than do less successful founders or because they can more easily afford to do so. The same might also be true—although perhaps to a lesser extent—for social groups. For this reason, we rerun the analysis using two-stage least squares (2SLS), which allows for social capital to be endogenous (see column 4).

The instruments for social capital are the percentage of the district’s business founders who speak the same main language as the founder and the percentage of the district’s business founders who belong to business and nonbusiness groups. Founders who speak the same language as other business owners in the same district might be more likely to join such organizations than are other owners. Similarly, founders might be more likely to join groups when other owners in the same district belong to them. We do not expect that owners’ group membership or other owners’ ethnicity will directly affect the firm’s productivity. The founder’s ethnicity might, however, affect business performance because of ethnic business networks.²⁷ We therefore show that the 2SLS and OLS results are robust to including ethnicity dummies in the regression.²⁸

Hypothesis tests suggest that the instruments are good; they are strongly correlated with social capital and uncorrelated with productivity. The first-stage partial F-stat is 187.7—much larger than the 5% critical value of 19.93—suggesting the instruments are strong. Furthermore, because we have two instruments, we can test the over-identifying assumption. The Sargan $\chi^2(1)$ is 0.59 (p-value = 0.44), meaning we cannot reject the null hypothesis and the instruments are valid.

significant. The coefficient on business associations remains negative, but becomes marginally statistically significant at the 5% level.

²⁷ Biggs and Shah (2006) argue ethnic business networks in Africa affect firm performance and growth. Recent evidence also suggests that ethnic diversity promotes small business venturing within the local region (Boudreaux 2018).

²⁸ As discussed below, the ethnicity dummies are not collinear with the instrument based on ethnicity because the share of the population belonging to each ethnicity varies by district.

The coefficient on social capital remains positive and statistically significant in the 2SLS regression. It is slightly larger than in the OLS model; firms with founders who belong to one of these groups are about 49% more productive than firms with founders who do not. A Wu-Hausman test, however, fails to reject the null hypothesis that social capital is exogenous (p-value = 0.54). This favors the more efficient OLS estimates over the 2SLS estimates.

One explanation for the similar results is that although more successful founders might be more likely to join business groups, they might not be more likely to join social groups. As more founders belong to social groups than business associations—and almost all founders who belong to business associations also belong to social groups—social capital mostly measures social group membership. It might therefore not be endogenous.

4.1.4. *Other robustness checks*

To check the results' robustness, we present some results from alternative models in this section (see Table 2). Although the regressions include all the controls, for the sake of brevity, the table shows only the coefficients on social capital.²⁹ Social capital remains correlated with productivity in most models.

INSERT TABLE 2 ABOUT HERE

4.1.4.1 Alternative functional forms

In the main analysis, we estimate how social capital affects productivity using OLS and 2SLS, sales as the measure of output, and separating paid and unpaid workers. In this subsection, we show that the results are robust to different estimation approaches.

We use sales rather than value added as our measure of output in the base model because of missing data and negative values for value added. As the first robustness check, we use value added instead. This results in a smaller sample—908 rather than 1,609 observations. Despite this, the coefficient on social

²⁹ Full results are available on request.

capital remains positive and statistically significant (see Table 2). The estimated effect is smaller—a 25% increase rather than a 34% increase.

To show that a few outliers do not drive the results, we estimate the model using LAD estimation as a second robustness check. This estimator, which minimizes absolute rather than squared errors, is more robust to outliers. The results, however, are similar in size and statistical significance (see Table 2).

For the third check, we estimate the model as a frontier model. The frontier model, as indicated above, allows for two error terms: a two-sided normal error, which reflects measurement error and temporary shocks, and a one-sided half normal error, which represents technical efficiency. Once again, this does not affect the result's size or significance.

For the fourth check, we estimate the model using a two-stage approach. We first regress output on labor and capital alone and then calculate TFP using the residual. We then regress TFP on social capital and the other controls in a second-stage regression. Although many studies estimate TFP in this way (see footnote 12), this approach will result in biased estimates when the control variables affect capital and labor choices (Escribano and Guasch 2005; Escribano et al. 2005). The results, however, are very similar to the main results, when we estimated the first stage using OLS. When we calculate the residuals based on the one-sided error from the frontier model, the effect is smaller but still statistically significant.

For the fifth check, we estimate the model combining paid and unpaid workers into a single group. The assumption here is that paid and unpaid workers are equally productive and perfectly substitute each other. Doing so does not affect the size or statistical significance of the main results.

As the final check, we measure social capital by the number of different types of groups that the founder belongs to rather than using a dummy indicating membership of any group. If, for example, an founder belonged to a church, a women's group, or a business association, we would code it as 3.³⁰

³⁰ As the survey asked only about membership of different types of organizations and not about the number of organizations of a particular type, this is not a count of the number of separate groups. If, for example, an founder belonged to two churches and no other organizations, the variable would be coded as 1 (rather than 2).

The coefficient on social capital remains positive and statistically significant: firms owned by people who belong to more organizations are more productive than firms owned by people who belong to fewer. Increasing the number of organizations the founder belongs to from zero to one would increase productivity by 13%.

4.1.4.2 Infrastructure

Firms with better access to infrastructure and financial services might be more productive than firms without access to these. We therefore include several variables that indicate whether the firm has power, water, and fixed line phone connections and whether the founder has a personal or business bank account. We do not include this in the base model due to concerns about endogeneity. Although having access to infrastructure or finance might positively affect firm performance, the reverse might also be true. That is, it may be the case that only productive firms are able to afford such access.

Including these variables directly in the regression does not affect the coefficient on social capital: It remains statistically significant, though it becomes slightly smaller. After controlling for infrastructure use, founders' firms are about 29% more productive when they belong to an association than when they do not.

As a further robustness check, due to concerns about the endogeneity of infrastructure, we also estimate the regression having included district averages for the infrastructure variables rather than the firms' own use. That is, we include a variable that indicates the percentage of firms in the same district that have a power connection rather than the firms' own use of power. This indicates how easy it is to obtain access to services rather than the firm's actual use of those services. The coefficient on social capital remains positive and statistically significant when we do this.

4.1.4.3 Sector analysis

The main model pools firms in services, manufacturing, retail trade, and other sectors (e.g., mining, health, and electricity). As noted above, we exclude agricultural firms because it is difficult to measure own

consumption in these firms. Most of the remaining firms are in the retail trade (approximately 75%). The model also includes four dummies to control for systematic differences in productivity between sectors.

To check whether the results are robust after better controlling for the sector, we perform two robustness checks. In the first, we include more detailed sectoral dummies—14 in all.³¹ In the second, we estimate the model for retail firms only. As there are few firms in the other three sectors, we do not estimate a separate model for them.

The coefficient on social capital remains statistically significant and approximately the same size after including the detailed sector dummies. It also remains positive and significant after restricting the sample to retail firms. In this case, however, the coefficient is larger: retail firms whose founders belong to business and nonbusiness groups are about 48% more productive than those whose founders do not.³²

4.1.4.4 Ethnicity dummies

Using data from Zambia and three other African countries, Biggs and Shah (2006) found European- and Indian-owned firms outperform African-owned firms. They argue this is because European and Indian founders form tight ethnic business networks that they use to gain access to finance and information. It seems possible that our measure of social capital might function as a proxy for these ethnic networks.

However, although this is possible, it seems unlikely for our data. Europeans and Indians constitute a large part of the formal business community and so a large part of Biggs and Shah (2006)'s sample of mostly larger, formal firms. In contrast, Europeans and Indians own few of the small, informal firms in the ZBS—less than 3% have non-African founders.³³ Given that Europeans and Indians make up less than

³¹ The sectors are mining and excavation; manufacturing; electricity; construction; retail trade; car, motorcycle, and household goods repair; hotels, catering, food and beverages; transportation and storage; information and communication technology; finance; real estate; leasing and business services; health services; and other.

³² There are fewer firms in the other sectors—only 414 firms with enough data to estimate TFP. When we run a similar regression for these firms, the coefficient on social capital is not statistically significant. This may be because social capital is more important for retail firms—perhaps because they rely more on having a large number of customers than do other firms. It may, however, also be because the small sample size makes parameter estimates imprecise.

³³ The survey poses three questions related to ethnicity. It first asks whether the individual is Zambian. It then asks Zambians what tribe they belong to and asks non-Zambians what their citizenship is. None of the possible tribal affiliations are European or Indian. Of the 2,202 respondents to the survey, only 54 answered “other” to this question.

0.8% of the population (Central Statistical Office 2012), it is not surprising that they account for only a small share of MSE founders. As a result, it is unlikely that European and Indian ethnic business networks drive our results. Consistent with this, excluding Europeans, Indians, and non-Zambians from the sample does not affect the results: the coefficient on social capital remains positive and significant (see Table 2).

A broader question is whether social capital acts as a proxy for ethnicity. To ascertain whether this is the case, we add approximately 50 dummies indicating ethnicity to the main regression.³⁴ Including them does not affect the size or significance of the coefficient on social capital (see Table 2). Including a different set of dummies based on the founder's "main language" does not affect the results for social capital either.³⁵

One of the instruments used in the 2SLS model was based on ethnicity. It measured the percentage of founders in the same district who had the same ethnicity as the firm's founder. The instrument is not collinear with the ethnicity dummies because ethnic groups are not uniformly distributed within Zambia.³⁶ Including the dummies, however, does not affect the 2SLS results either. The coefficient on social capital remains similar in size and significance after we add the ethnicity and language dummies to the 2SLS model.

4.1.4.5 Different types of firms

A final concern is that social capital might be proxying for size or formality. The sample consists mostly of small informal firms—the median firm has no workers other than the founder and only 10% have more than five workers. The sample does, however, include some larger formal firms—approximately 2.5% have more than 20 workers and about 15% are registered with at least one government agency. If these

Since this group will also include African members of smaller tribes and people who refused to answer the question, this suggests that fewer than 54 are European or Indian. We exclude all 54 people who did not report their tribe and an additional 18 non-Zambians.

³⁴ These include separate dummies for 44 Zambian tribes, one dummy for Zambians who did not answer the question on tribe (including Europeans and Indians), and eight dummies for non-Zambians, based on their country of citizenship.

³⁵ The linguistic dummies include 32 dummies for different languages and one additional dummy for people who did not answer.

³⁶ For example, the percent of people who are Bemba, the largest ethnic group, varies from less than 0.1 percent of the population to 100 percent between districts.

larger formal firms are more productive and their founders are more likely to join business and nonbusiness groups, this might result in a spurious correlation between social capital and firm performance.

To ascertain whether this is the case, we restrict the sample in various ways to check whether the results hold for smaller samples. We first omit all registered firms. We then omit all firms with more than five employees, restricting the sample to microenterprises. We then omit all firms with any employees at all, restricting the sample to single-person firms. We finally restrict the sample to informal single-person firms.³⁷ The coefficient on social capital remains positive and statistically significant in all of these regressions. This suggests that the results are not due to differences between larger formal firms and smaller informal firms.

4.1.5. Other findings

As expected, the coefficient on paid workers is positive and significant. In contrast, the coefficient on unpaid workers is small, negative, and insignificant. This suggests that using unpaid workers does not increase output. This might be because some unpaid workers are family members who the founder employs not because he or she needs them but because he or she feels obligated to do so. Another possibility is family members, who are not afraid of being fired, do not work as hard as paid workers.

Consistent with previous studies (Biggs et al. 1998), firms with better educated founders perform better than other firms. Firms whose managers have been to university are 174% more productive than firms whose founders have a primary education or less (the omitted group). Firms whose founders have been to university are also significantly more productive than firms whose founders have been to a vocational or secondary school (p-values of 0.01 and 0.00, respectively). Firms whose founders have finished vocational or secondary schools are respectively about 68% and 50% more productive than firms whose founders have only been to a primary school. The difference between firms with founders with secondary and vocational education is insignificant (p-value = 0.50).

³⁷ Due to the small samples for large formal firms, we do not do the same for larger firms.

In contrast, firms whose founders are older are no more productive than firms with younger founders. If age were a proxy for experience, the coefficient on founder's age should be significant and positive. Older firms are more productive—perhaps due to survivorship bias. In addition, firms in urban districts are more productive than similar firms in rural districts. In contrast, population density does not affect performance. Finally, firms are less productive in districts where illiteracy is more common.

4.2 Examining Social Capital's Operational Channels

4.2.1. Main results

We find that social capital strongly predicts access to credit and the size of the firm's customer base. After controlling for sector and other firm and founder characteristics, the coefficients on the dummies indicating that the founder belongs to a business or social group are mostly positive and significant (see Table 3). Founders with more social capital have more customers, are more likely to get trade credit from suppliers, are more likely to give trade credit to their customers and are more likely to have had a loan than are other firms. These findings support our second, third, and fourth hypotheses (H2, H3a, H3b, and H4). The one exception is that firms whose founders belong to business associations or social groups are no more likely to have had bank loans than are other firms.

INSERT TABLE 3 ABOUT HERE

The effects social capital are substantial. Firms whose founders belong to a business or nonbusiness association have 6.2 more customers per month than firms whose founders do not. Since the median firm reports having between 11 and 50 customers in a month, this difference is large. Furthermore, about 15.6% of firms whose founders belong to a business or nonbusiness association have had a loan. By comparison, only 12.4% of firms with founders who do not belong to these groups have had a loan—a 3.2 percentage point difference. The difference is 6.9 percentage points for providing credit to customers, 2.4 percentage points for getting credit from suppliers, and 3.2 percentage points for having had a loan from family or friends.

We also ran similar regressions in which we replaced the single dummy with two separate dummies for membership of business and social groups (see Table 4).³⁸ The coefficients on the dummies are significant in most regressions. This suggests that simultaneous membership of business associations and social groups increases the likelihood that firms give and receive trade credit, increases the likelihood they get formal and informal loans, and increases the size of the firm's customer base.

INSERT TABLE 4 ABOUT HERE

There are, however, some differences between belonging to a business association and to a social group. First, belonging to a business group appears to affect access to credit and to the customer base more than belonging to a social group does. The coefficients on the business association dummy are mostly larger than the coefficients on the social group dummy.

Second, the coefficient on social group membership is insignificant in the regression for bank loans, while the coefficient on business association membership is insignificant in the regression for loans from family and friends. Intuitively, this makes sense. Belonging to a social group increases the likelihood of obtaining loans from friends, whom the founder might have met or got to know better at the social group.³⁹ In contrast, belonging to a business association might mean the founder gets to know members of the more formal business community better.

4.2.2. *Other findings*

There are few clear and consistent patterns in the regressions for obtaining loans and trade credit. Larger firms are more likely to have had loans and to obtain trade credit; however, the coefficients are often not statistically significant. University educated founders and firms in urban areas are more likely to obtain

³⁸ Full results for these regressions are available on request.

³⁹ It is, however, important to note that despite being statistically insignificant, the coefficient on business association membership in the regression is positive for loans from family and friends and is about the same size as the coefficient on social group membership. In contrast, the coefficient on membership in a social group is negative but statistically insignificant in the regression for loans from banks.

bank, but not most other, loans. Although other variables are significant in some of the regressions, there are few clear patterns there either.

In contrast, several variables are statistically significant in the regression for the number of customers. Larger and older firms have more customers than other firms. In contrast, firms with older founders have fewer, not more, customers. Firms in densely populated districts also have more customers. Finally, firms with better-educated founders have more customers than other firms.

We also find that membership of a nonbusiness association seems to increase the likelihood that the firm has had a loan from a family member or a friend, but not from a commercial bank. Business founders who belong to business associations are statistically more likely to receive a loan from a bank or other commercial lender but not from informal sources such as friends and family members. These findings imply that when it comes external credit, the type of association an MSE's founder belongs to can matter.

5. DISCUSSION and CONCLUSION

We have used a unique dataset of survey data collected by the World Bank on formal and informal MSEs in Zambia to examine how founders' social capital affects firm productivity and to gain a deeper understanding of the channels through which social capital operates.

Our results suggest that social capital plays an important role in fostering an environment of business success. Our findings indicate that small business founders with more social capital (i.e., ones who are members of an association) are more productive than other small business founders. We find that when the founder of an MSE is a member of an association, productivity is approximately 34% higher, *ceteris paribus*. Although these results are important, however, they only examine the link between social capital and productivity at a superficial level. That is, these results do not reveal the operational channels of social capital. To address this problem, our study also examined several possible channels through which social capital operates. We theorized that social capital might enhance productivity by expanding a business founder's customer base, by granting easier access to credit from suppliers and from family and friends, and by providing credit to customers.

Our results support these hypotheses. We find that founders with more social capital are more likely to obtain loans from suppliers and from friends and family, more likely to give and receive trade credit, and have a larger customer base. We find these results plausible.

A managerial implication of our paper is that founders of MSEs should actively become members of various organizations as this might build social capital and increase the productivity of their small business. A policy implication of our study is that encouraging people to participate in associations can increase the productivity of MSEs by increasing the likelihood of higher productivity, better access to credit, and better customer relations.

As with any other study, our study also has certain limitations. One limitation is its external validity. It is important to note that our findings rely on data from entrepreneurs in Zambia. While this serves as a perfect opportunity to observe how different forms of social capital might affect productivity in the developing world, one concern is that our findings might not be generalizable to settings in other countries, particularly developed countries and those with better quality institutions and better protection of private property. Thus, future work should increase our knowledge of this issue by extending this type of analysis to other country settings and, possibly, comparing the findings for countries in the developed world with those for countries in the developing world.

References

- Acquaah M (2007) Managerial Social Capital, Strategic Orientation, and Organizational Performance in an Emerging Economy. *Strategic Management Journal* 28 (12):1235-1255
- Acs ZJ, Audretsch DB (1988) Innovation in Large and Small Firms: An Empirical Analysis. *The American Economic Review* 78 (4):678-690 doi:10.2307/1811167
- Adler PS, Kwon SW (2002) Social Capital: Prospects for a New Concept. *Academy of Management Review* 27 (1):17-40
- Akcomak IS, ter Weel B (2009) Social Capital, Innovation and Growth: Evidence from Europe. *European Economic Review* 53 (5):544-567 doi:DOI 10.1016/j.eurocorev.2008.10.001
- Arenius P, De Clercq D (2005) A Network-Based Approach on Opportunity Recognition. *Small business economics* 24 (3):249-265
- Audretsch DB, Heger D, Veith T (2015) Infrastructure and Entrepreneurship. *Small Business Economics* 44 (2):219-230
- Ayyagari M, Demirgüç-Kunt A, Maksimovic V (2008) How Important Are Financing Constraints? The Role of Finance in the Business Environment. *The World Bank Economic Review* 22 (3):483-516
- Baron DP (2001) Private Politics, Corporate Social Responsibility, and Integrated Strategy. *Journal of Economics & Management Strategy* 10 (1):7-45
- Bastié F, Cieply S, Cussy P (2013) The Entrepreneur's Mode of Entry: The Effect of Social and Financial Capital. *Small Business Economics* 40 (4):865-877
- Beck T, Demirguc-Kunt A, Laeven LUC, Levine R (2008a) Finance, Firm Size, and Growth. *Journal of Money, Credit and Banking* 40 (7):1379-1405 doi:10.1111/j.1538-4616.2008.00164.x
- Beck T, Demirgüç-Kunt A, Maksimovic V (2008b) Financing Patterns around the World: Are Small Firms Different? *J. Finan. Econ.* 89 (3):467-487
- Berger AN, Udell GF (1995) Relationship Lending and Lines of Credit in Small Firm Finance. *Journal of Business*:351-381
- Berger AN, Udell GF (2002) Small Business Credit Availability and Relationship Lending: The Importance of Bank Organisational Structure. *The Economic Journal* 112 (477):F32-F53
- Biggs T, Ramachandran V, Shah MK (1998) The Determinants of Enterprise Growth in Sub-Saharan Africa: Evidence from the Regional Program on Enterprise Development. *World Bank. RPED Discussion Paper* 103:283-300
- Biggs T, Shah MK (2006) African Smes, Networks, and Manufacturing Performance. *Journal of banking & Finance* 30 (11):3043-3066
- Bosma N, Van Praag M, Thurik R, De Wit G (2004) The Value of Human and Social Capital Investments for the Business Performance of Startups. *Small Business Economics* 23 (3):227-236
- Boudreaux CJ (2019) The Importance of Industry to Strategic Entrepreneurship: Evidence from the Kauffman Firm Survey. *Journal of Industry, Competition and Trade*:1-22

- Boudreaux, C. J. (2018). Ethnic diversity and small business venturing. *Small Business Economics*, 1-17.
- Boudreaux CJ, Nikolaev B (2018) Capital Is Not Enough: Opportunity Entrepreneurship and Formal Institutions. *Small Business Economics*:1-30
- Bradley SW, McMullen JS, Artz K, Simiyu EM (2012) Capital Is Not Enough: Innovation in Developing Economies. *Journal of Management Studies* 49 (4):684-717
- Brüderl J, Preisendörfer P (1998) Network Support and the Success of Newly Founded Business. *Small business economics* 10 (3):213-225
- Buonanno P, Montolio D, Vanin P (2009) Does Social Capital Reduce Crime? *Journal of Law & Economics* 52 (1):145-170
- Butters JK, Lintner JV (1945) Effect of Federal Taxes on Growing Enterprises. Division of Research, Graduate School of Business Administration, Harvard University,
- Calderón C, Servén L (2004) The Effects of Infrastructure Development on Growth and Income Distribution. The World Bank,
- Cameron AC, Trivedi PK (2010) *Microeconometrics Using Stata vol 2*. Stata press College Station, TX,
- Carpenter RE, Petersen BC (2002) Is the Growth of Small Firms Constrained by Internal Finance? *Review of Economics and statistics* 84 (2):298-309
- Cassiman B, Golovko E (2011) Innovation and Internationalization through Exports. *Journal of International Business Studies* 42 (1):56-75
- Caves RE, Barton DR (1991) *Efficiency in Us Manufacturing Industries*. Mit Press,
- Cestone G, White L (2003) Anticompetitive Financial Contracting: The Design of Financial Claims. *The Journal of Finance* 58 (5):2109-2142
- Chen Y, Huang RJ, Tsai J, Tzeng LY (2015) Soft Information and Small Business Lending. *J. Finan. Services Res.* 47 (1):115-133
- Clarke G, Li Y, Xu LC (2016) Business Environment, Economic Agglomeration and Job Creation around the World. *Applied Economics* 48 (33):3088-3103
- Clarke GR, Shah MK, Pearson Jr RV (2010) *The Business Landscape for Msmes and Large Enterprises in Zambia*. World Bank: Washington DC
- Coelli TJ, Rao DSP, O'Donnell CJ, Battese GE (2005) *An Introduction to Efficiency and Productivity Analysis*. Springer Science & Business Media, United States of America
- Coleman JS (1988) Social Capital in the Creation of Human Capital. *American Journal of Sociology* 94:S95-S120
- Cooke P, Wills D (1999) Small Firms, Social Capital and the Enhancement of Business Performance through Innovation Programmes. *Small business economics* 13 (3):219-234
- Coucke K, Sleuwaegen L (2008) Offshoring as a Survival Strategy: Evidence from Manufacturing Firms in Belgium. *Journal of International Business Studies* 39 (8):1261-1277
- Dess GG, Shaw JD (2001) Voluntary Turnover, Social Capital, and Organizational Performance. *Academy of Management Review* 26 (3):446-456

- Dollar D, Hallward-Driemeier M, Mengistae T (2005) Investment Climate and Firm Performance in Developing Economies. *Economic Development and Cultural Change* 54 (1):1-31
- Elfring T, Hulsink W (2003) Networks in Entrepreneurship: The Case of High-Technology Firms. *Small business economics* 21 (4):409-422
- Ellis P (2000) Social Ties and Foreign Market Entry. *Journal of international business studies* 31 (3):443-469
- Ellis P, Pecotich A (2001) Social Factors Influencing Export Initiation in Small and Medium-Sized Enterprises. *Journal of Marketing Research* 38 (1):119-130
- Elsas R, Krahenen JP (1998) Is Relationship Lending Special? Evidence from Credit-File Data in Germany. *Journal of Banking & Finance* 22 (10-11):1283-1316
- Escribano A, Guasch JL (2005) Assessing the Impact of the Investment Climate on Productivity Using Firm-Level Data: Methodology and the Cases of Guatemala, Honduras, and Nicaragua. The World Bank,
- Escribano A, Guasch JL, Pena J, Orte M (2005) Investment Climate Assessment on Productivity and Wages: Analysis Based on Firm Level Data from Selected South East Asian Countries.
- Fukuyama F (1997) Social Capital and the Modern Capitalist Economy: Creating a High Trust Workplace. *Stern Business Magazine* 4 (1)
- Fukuyama F (2001) Social Capital, Civil Society and Development. *Third World Quarterly* 22 (1):7-20
- Galor O, Zeira J (1993) Income Distribution and Macroeconomics. *The review of economic studies* 60 (1):35-52
- Gatti R, Love I (2008) Does Access to Credit Improve Productivity? Evidence from Bulgaria *Econ. Transition* 16 (3):445-465
- Granovetter MS (1977) The Strength of Weak Ties. In: *Social Networks*. Elsevier, pp 347-367
- Greene WH (2003) *Econometric Analysis*. Pearson Education India,
- Guiso L, Sapienza P, Zingales L (2004a) Cultural Biases in Economic Exchange. National Bureau of Economic Research,
- Guiso L, Sapienza P, Zingales L (2004b) Does Local Financial Development Matter? *Quart. J. Econ.* 119 (3):929-969
- Guiso L, Sapienza P, Zingales L (2004c) The Role of Social Capital in Financial Development. *Amer. Econ. Rev.* 94 (3):526-556
- Guiso L, Sapienza P, Zingales L (2006) Does Culture Affect Economic Outcomes? *Journal of Economic Perspectives* 20 (2):23-48
- Halvorsen R, Palmquist R (1980) The Interpretation of Dummy Variables in Semilogarithmic Equations. *Amer. Econ. Rev.* 70 (3):474-475
- Harhoff D, Körting T (1998) Lending Relationships in Germany—Empirical Evidence from Survey Data. *Journal of Banking & Finance* 22 (10-11):1317-1353
- Harrison AE, Lin JY, Xu LC (2014) Explaining Africa's (Dis) Advantage. *World Devel.* 63 (1):59-77

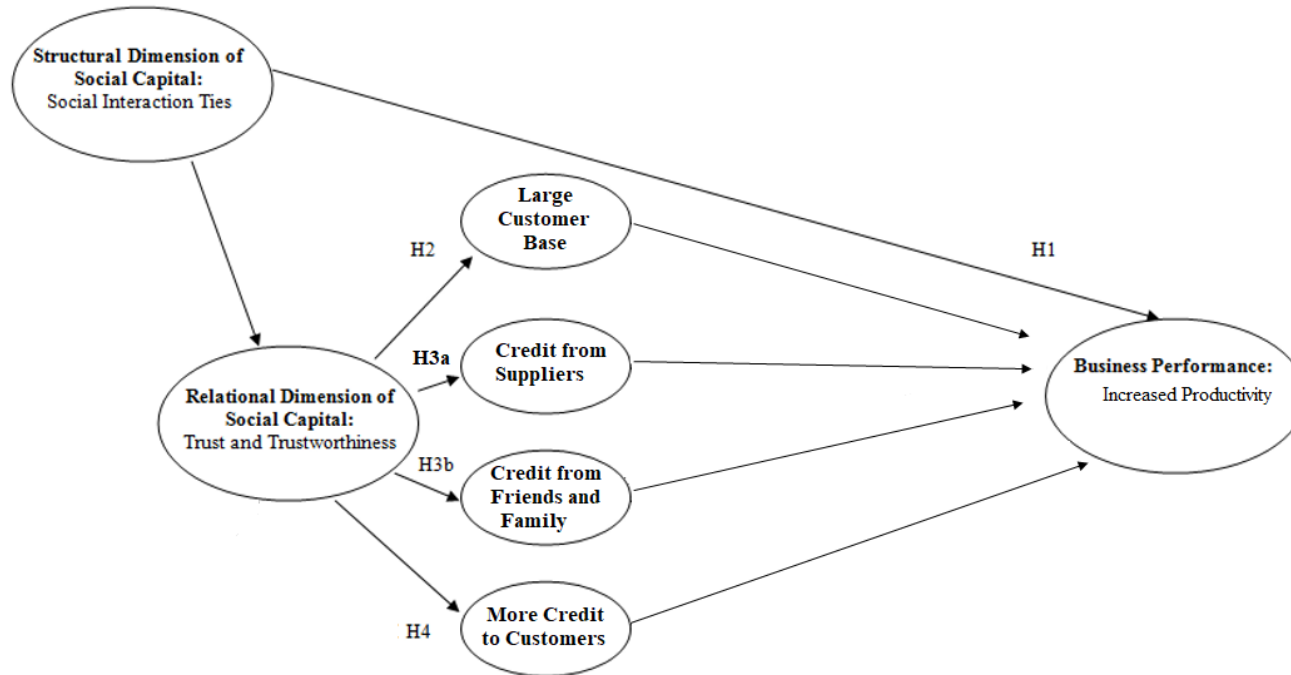
- Hasan I, Hoi CK, Wu Q, Zhang H (2017) Social Capital and Debt Contracting: Evidence from Bank Loans and Public Bonds. *J. Finan. Quant. Anal.* 52 (3):1-31
- Hayter CS (2013) Conceptualizing Knowledge-Based Entrepreneurship Networks: Perspectives from the Literature. *Small Business Economics* 41 (4):899-911
- Jha A, Chen Y (2015) Audit Fees and Social Capital. *Acc. Rev.* 90 (2):611-639 doi:10.2308/accr-50878
- Karlan DS (2005) Using Experimental Economics to Measure Social Capital and Predict Financial Decisions. *Amer. Econ. Rev.* 95 (5):1688-1699
- Karlsson C, Dahlberg R (2003) Entrepreneurship, Firm Growth and Regional Development in the New Economic Geography: Introduction. *Small Business Economics* 21 (2):73-76
- Kim PH, Aldrich HE, Keister LA (2006) Access (Not) Denied: The Impact of Financial, Human, and Cultural Capital on Entrepreneurial Entry in the United States. *Small business economics* 27 (1):5-22
- Knack S, Keefer P (1997) Does Social Capital Have an Economic Payoff? A Cross-Country Investigation. *Quart. J. Econ.* 112 (4):1251-1288
- Kumbhakar SC, Lovell CK (2003) *Stochastic Frontier Analysis*. Cambridge university press. doi: <https://doi.org/10.1017/CBO9781139174411>
- Laursen K, Masciarelli F, Prencipe A (2012) Regions Matter: How Localized Social Capital Affects Innovation and External Knowledge Acquisition. *Organization Science* 23 (1):177-193 doi:DOI 10.1287/orsc.1110.0650
- Lee HS (2017) Peer Networks in Venture Capital. *Journal of Empirical Finance* 41:19-30
- Levine R (1997) Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature* 35 (2):688-726
- Levinsohn J, Petrin A (2003) Estimating Production Functions Using Inputs to Control for Unobservables. *The Review of Economic Studies* 70 (2):317-341
- Lin N, Cook KS, Burt RS (2001) *Social Capital: Theory and Research*. Transaction Publishers,
- Lins KV, Servaes H, Tamayo A (2017) Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility During the Financial Crisis. *Journal of Finance* 72 (4):1785-1824
- Nelson RE (1989) The Strength of Strong Ties: Social Networks and Intergroup Conflict in Organizations. *Academy of Management Journal* 32 (2):377-401
- Olley GS, Pakes A (1992) The Dynamics of Productivity in the Telecommunications Equipment Industry. National Bureau of Economic Research,
- Petersen MA, Rajan RG (1994) The Benefits of Lending Relationships: Evidence from Small Business Data. *The journal of Finance* 49 (1):3-37
- Petersen MA, Rajan RG (1995) The Effect of Credit Market Competition on Lending Relationships. *The Quarterly Journal of Economics* 110 (2):407-443
- Putnam RD (1995) Tuning in, Tuning out - the Strange Disappearance of Social Capital in America. *Ps-Political Science & Politics* 28 (4):664-683

- Putnam RD (2000) *Bowling Alone : The Collapse and Revival of American Community*. Simon & Schuster, New York
- Putnam RD (2001) Social Capital: Measurement and Consequences. *Isma: Canadian Journal of Policy Research* 2:41-51
- Putnam RD, Leonardi R, Nanetti R (1993) *Making Democracy Work : Civic Traditions in Modern Italy*. Princeton University Press, Princeton, N.J.
- Ramachandran V, Shah MK (1999) Minority Entrepreneurs and Firm Performance in Sub-Saharan Africa. *The Journal of Development Studies* 36 (2):71-87
- Robb AM, Robinson DT (2014) The Capital Structure Decisions of New Firms. *The Review of Financial Studies* 27 (1):153-179
- Santarelli E, Tran HT (2013) The Interplay of Human and Social Capital in Shaping Entrepreneurial Performance: The Case of Vietnam. *Small Business Economics* 40 (2):435-458
- Sapienza HJ, De Clercq D, Sandberg WR (2005) Antecedents of International and Domestic Learning Effort. *Journal of Business Venturing* 20 (4):437-457
- Schneider F, Enste DH (2013) *The Shadow Economy: An International Survey*. Cambridge University Press,
- Stam W, Arzlanian S, Elfring T (2014) Social Capital of Entrepreneurs and Small Firm Performance: A Meta-Analysis of Contextual and Methodological Moderators. *Journal of Business Venturing* 29 (1):152-173
- Syverson C (2011) What Determines Productivity? *Journal of Economic Literature* 49 (2):326-365
- Tsai W, Ghoshal S (1998) Social Capital and Value Creation: The Role of Intrafirm Networks. *Academy of Management Journal* 41 (4):464-476
- Uzzi B (1996) The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect. *American Sociological Review* 61 (4):674-698
- Van Biesebroeck J (2005) Firm Size Matters: Growth and Productivity Growth in African Manufacturing. *Economic Development and Cultural Change* 53 (3):545-583
- Wei Y, Liu X (2006) Productivity Spillovers from R&D, Exports and Fdi in China's Manufacturing Sector. *Journal of international business studies* 37 (4):544-557
- Westlund H, Bolton R (2003) Local Social Capital and Entrepreneurship. *Small business economics* 21 (2):77-113
- Woolcock M, Narayan D (2000) Social Capital: Implications for Development Theory, Research, and Policy. *World Bank Res. Observer* 15 (2):225-249
- Yli-Renko H, Autio E, Sapienza HJ (2001) Social Capital, Knowledge Acquisition, and Knowledge Exploitation in Young Technology-Based Firms. *Strategic Management Journal* 22 (6-7):587-613
- Zak PJ, Knack S (2001) Trust and Growth. *The Economic Journal* 111 (470):295-321

Zhou L, Wu W-p, Luo X (2007) Internationalization and the Performance of Born-Global Smes:
The Mediating Role of Social Networks. *Journal of International Business Studies* 38
(4):673-690

Figure 1

A model of social capital and the channels that affect business performance



Notes on Figure 1: This figure summarizes our hypotheses and the channels by means of which we argue social capital might affect MSEs' productivity.

Table 1: Effect of social capital on firm performance

Column	(1)	(2)	(3)	(4)
Estimation Method	OLS	OLS	OLS	2SLS
Dependent Variable	TFP	TFP	Labor Productivity	TFP
Social Capital				
Any association	0.291*** (3.95)		0.351*** (4.23)	0.401** (2.41)
Non-business association		0.330*** (4.50)		
Business association		-0.169 (-0.84)		
Factors of Production				
Paid workers (log)	0.391*** (5.45)	0.402*** (5.58)		0.393*** (5.50)
Unpaid workers (log)	0.035 (0.70)	0.040 (0.80)		0.036 (0.72)
Firm Characteristics				
Founder has university education (dummy)	1.008*** (6.88)	1.002*** (6.85)	1.067*** (6.85)	0.993*** (6.76)
Founder has vocational education (dummy)	0.520*** (3.03)	0.527*** (3.08)	0.641*** (3.43)	0.499*** (2.91)
Founder has secondary education (dummy)	0.408*** (5.16)	0.403*** (5.10)	0.477*** (5.47)	0.401*** (5.06)
Age of firm (log)	0.140*** (3.58)	0.141*** (3.61)	0.153*** (3.49)	0.130*** (3.28)
Age of entrepreneur (log)	-0.116 (-0.89)	-0.117 (-0.90)	-0.361** (-2.47)	-0.118 (-0.90)
District Characteristics				
Population density	-0.023 (-0.83)	-0.024 (-0.86)	-0.052* (-1.68)	-0.022 (-0.80)
Firm is in urban area of district (dummy)	0.359*** (4.53)	0.354*** (4.47)	0.499*** (5.62)	0.356*** (4.43)
Illiteracy rate	-0.024*** (-6.24)	-0.025*** (-6.27)	-0.035*** (-8.00)	-0.025*** (-6.11)
Constant	15.420*** (30.06)	15.415*** (30.09)	16.298*** (28.35)	15.388*** (29.85)
Capital Dummies	Yes	Yes	No	No
Sector (industry) Dummies	Yes	Yes	Yes	Yes
Observations	1,609	1,609	1,609	1,583
R-Squared	0.243	0.246	0.150	0.242

Notes on Table 1: This table reports the results of TFP regressions. It tests H1: Entrepreneurs with high social capital are likely to be more productive. Columns 1 and 2 examine TFP. Column 3 examines labor productivity. In columns 1, 2, and 3, the method used is OLS. Column 4 uses 2SLS to examine TFP. The instruments for social capital are the percentage of the district's business founders who speak the same main language as the founder and the percentage of the district's business founders who belong to business and nonbusiness groups. The results suggest that firms with high social capital are more productive in terms of their output, as well as their output per unit labor. Sector (industry) Dummies represent indicator variables for Retail trade, Manufacturing, Services or Other. Capital Dummies represent indicator variables of equipment such as whether the firm MSE has car (for company use), fax, oxen, oxcart, calculator etc.

Authors' calculation based upon data from the World Bank's *Zambia Business Survey*. t-statistics in parentheses. **, *, * Statistically significant at 1%, 5%, and 10% significance levels, respectively.

Table 2: Coefficients on business and nonbusiness associations, robustness checks for TFP

Model	Obs.	Coef. on Social Capital	t-stat	Average effect
Base Model				
OLS	1,609	0.291***	(3.95)	34%
2SLS	1,583	0.401**	(2.41)	49%
Alternative functional forms				
Value added	908	0.225**	(2.21)	25%
Least absolute deviations	1,609	0.338***	(4.25)	40%
Frontier model	1,609	0.291***	(3.99)	34%
2-stage estimation (OLS)	1,609	0.295***	(3.98)	34%
2-stage estimation (frontier)	1,609	0.079***	(3.77)	8%
Combined Workers	1,609	0.280***	(3.83)	32%
# of groups	1,609	0.123**	(2.53)	13%
Infrastructure included				
With infrastructure (actual)	1,561	0.251***	(3.42)	29%
With infrastructure (district averages)	1,609	0.307***	(4.18)	36%
Sector controls				
Extra sector dummies	1,609	0.296***	(4.05)	34%
Retail only	1,195	0.390***	(4.63)	48%
Ethnicity				
Non-African Zambians excluded	1,556	0.303***	(4.03)	35%
With ethnicity dummies	1,609	0.307***	(4.09)	36%
2SLS with ethnicity dummies	1,583	0.404**	(2.38)	50%
Language dummies	1,609	0.295***	(3.96)	34%
2SLS with language dummies	1,583	0.452***	(2.65)	57%
Different types of firms				
Informal firms only	1,359	0.345***	(4.47)	41%
MSEs only	1,447	0.308***	(4.01)	36%
Single-person firms only	906	0.349***	(3.92)	42%
Single-person informal firms only	813	0.380***	(4.07)	46%

Notes on Table 2: The purpose of this table is to succinctly report a variety of robustness tests and the average treatment effect (i.e., the economic significance) for H1: *Entrepreneurs with high social capital are likely to be more productive*. Models include control variables identical to the variables in column 1 of Table 1. The coefficient on social capital is the coefficient on the dummy that is equal 1 if the entrepreneur belongs to any association. The instruments for social capital are the percentage of the district's business founders who speak the same main language as the founder and the percentage of the district's business founders who belong to business and nonbusiness groups. Overall, these results suggest that the positive association between social capital and a firm's productivity is robust when using alternative functional forms, additional controls, and subsamples. Authors' calculations based upon data from the World Bank's *Zambia Business Survey*. t-statistics in parentheses.

***, **, * Statistically significant at 1%, 5%, and 10% significance levels, respectively.

Table 3: Impact of social capital on access to credit and customers

Column	(1)	(2)	(3)	(4)	(5)	(6)
Model	Interval regression	Probit	Probit	Probit	Probit	Probit
Dependent Variable	Log of number of customers	Obtains credit from suppliers	Provides credit to customers	Any loan	Loan from friends/family	Loan from bank
Social Capital						
Any association	0.161** (2.31)	0.197* (1.94)	0.197*** (3.11)	0.152** (1.98)	0.281*** (2.82)	-0.055 (-0.40)
Firm Characteristics						
Paid workers (log)	0.265*** (4.04)	0.172** (2.13)	0.015 (0.25)	0.089 (1.36)	0.180** (2.25)	0.095 (0.92)
Unpaid workers (log)	0.009 (0.19)	-0.137* (-1.81)	0.039 (0.93)	0.029 (0.58)	0.023 (0.36)	0.107 (1.32)
Founder has university education (dummy)	0.326** (2.49)	0.146 (0.81)	-0.226* (-1.84)	0.338*** (2.62)	-0.240 (-1.35)	0.823*** (4.30)
Founder has vocational education (dummy)	0.193 (1.25)	0.340* (1.78)	-0.252* (-1.70)	0.124 (0.80)	0.030 (0.16)	0.314 (1.28)
Founder has secondary education (dummy)	0.187** (2.50)	0.223** (2.05)	0.034 (0.51)	-0.097 (-1.19)	-0.256** (-2.55)	-0.024 (-0.14)
Age of firm (log)	0.061* (1.65)	0.090* (1.79)	0.003 (0.09)	-0.018 (-0.46)	-0.040 (-0.79)	-0.014 (-0.20)
Age of entrepreneur (log)	-0.540*** (-4.35)	-0.063 (-0.36)	-0.249** (-2.23)	0.340** (2.53)	-0.214 (-1.25)	-0.014 (-0.06)
District Characteristics						
Population density	0.083*** (3.31)	-0.039 (-1.15)	0.024 (1.03)	0.045* (1.72)	-0.080** (-2.27)	0.018 (0.40)
Firm is in urban area (dummy)	-0.056 (-0.75)	0.234** (2.36)	-0.027 (-0.41)	0.150* (1.89)	0.084 (0.84)	0.313** (2.19)
Illiteracy rate	-0.001 (-0.19)	-0.002 (-0.36)	-0.017*** (-4.75)	0.002 (0.39)	-0.008 (-1.48)	0.002 (0.26)
Constant	5.028*** (10.38)	-1.666** (-2.44)	0.686 (1.57)	-2.766*** (-5.24)	-0.282 (-0.42)	-2.529*** (-2.70)
Sector (industry) dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,539	1,844	1,954	1,971	1,971	1,971
Pseudo R-Squared		0.0546	0.0362	0.0412	0.0284	0.159

Notes on Table 3: The purpose of this table is report the tests for *H2: Entrepreneurs with more social capital have a larger customer base (column 1)*, *H3a: Entrepreneurs with more social capital have easier access to credit from suppliers (column 2)*, *H3b: Entrepreneurs with more social capital have easier access to credit from friends and family (column 5)*, and *H4: Entrepreneurs with more social capital are more likely to extend trade credit to customers (column 3)*. Authors' calculations based upon data from the World Bank's *Zambia Business Survey*. t-statistics in parentheses. ***, **, * Statistically significant at 1%, 5%, and 10% significance levels, respectively.

Table 4: Increase in probability of having loans, trade credit, and number of customers when founder belongs to business and nonbusiness associations

Dependent Variable	Any Association		Nonbusiness		Business	
	Coefficien t (t-stat)	Increase	Coefficien t (t-stat)	Increase	Coefficien t (t-stat)	Increase
Any loan	0.152** (1.98)	3.2%	0.126* (1.66)	2.7%	0.399** (2.40)	10.3%
Loan from friends/family	0.281*** (2.82)	3.2%	0.277*** (2.80)	3.2%	0.261 (1.28)	3.8%
Loan from bank	-0.055 (-0.40)	-0.3%	-0.099 (-0.74)	-0.6%	0.657*** (2.98)	5.9%
Provides credit to customers	0.197*** (3.11)	6.9%	0.178*** (2.83)	6.2%	0.284* (1.79)	10.4%
Gets credit from suppliers	0.197* (1.94)	2.4%	0.182* (1.81)	2.2%	0.438** (2.19)	7.3%
Log of number of customers	0.161** (2.31)	6.2	0.115* (1.65)	4.4	0.333* (1.84)	15.1

Notes on Table 4: The purpose of this table is to succinctly report the results when, rather than using any association as a measure of social capital, we separate the type of association. The purpose is also to report the average treatment effect (i.e., the economic significance). Results for either association are based on coefficient estimates from Table 3. Results for business and nonbusiness are from analogous regressions replacing the dummy for any association with two dummies for business and nonbusiness associations. Increase is the average increase calculated across all observations. Authors' calculations based upon data from the World Bank's *Zambia Business Survey*. t-statistics are in parentheses.

***, **, * Statistically significant at 1%, 5%, and 10% significance levels, respectively.

Appendix: Sample and Data

This paper uses data from the nationally representative ZBS. The survey, which was conducted in late 2008, includes data from 4,801 MSEs with 50 or fewer workers. The survey covers commercial firms that produce goods or services that are sold to firms or people outside the founder's household. The survey firm (Steadman Research Services) selected firms using area sampling.⁴⁰ First, the survey firm randomly selected 320 enumeration areas from a stratified list based on the 2000 census. Once the survey firm had selected the enumeration areas, they listed all the houses and other buildings in the area and checked whether the buildings contained people running their own businesses. The survey firm used information to compile a list from which they randomly selected people. The sample, therefore, includes small, home-based firms as well as formal businesses.

Sample

The sample is, therefore, very different from the samples that other surveys cover. The WBES and the earlier RPED surveys, for example, focus on larger formal firms. The median firm in the ZBS is tiny—with only one employee—and most (85%) are not registered with any government agency, including local government agencies.

The study focuses on nonagricultural firms. We exclude farms for two reasons. First, many small farms are not commercial firms—they are subsistence farms that sell excess produce. Second, it is difficult to measure how much these farms produce. To calculate how much a farm produces, a farmer has to estimate how much his or her family consumes and how much it is worth. These imprecise estimates mean it is difficult to estimate how productive subsistence farms are.⁴¹

The firms were mostly small shops—about 75% of the sample. The remaining firms were active in manufacturing (10%), services (15%), and other areas such as mining, health, and electricity (1%). Although the sampling frame included firms with up to 50 workers, few were this large. Firms had an

⁴⁰ See Clarke et al. (2010) for a more detailed description of the survey.

⁴¹ Consistent with the idea that the estimates are imprecise, most farmers estimated that self-consumption amounted to a round number. Almost half said either 20, 30 or 40% of output.

average of 1.8 paid workers (including the founder) and 1.7 unpaid workers (often family members). The sample, however, was skewed. About 78% of firms had no paid workers except the founder, and 57% had no paid or unpaid workers except the founder. Only 10% of firms had more than five workers (paid or unpaid), and only 5% had more than 10 workers (paid or unpaid).

Few firms used sophisticated production methods. Only 18% had electricity, only 14% had water from a public source, and only 2% used a fixed line phone. Approximately 43% of firms had or used a calculator, about 5% had or used a car, and only 2% had or used factory machinery. In addition, only about 14% of firms used a business bank account and only 6% of firm founders used a personal bank account.

Social Capital

Many founders, however, belonged to social groups or business associations. Social groups include men's and women's groups, political parties, sports teams, social groups, and churches and other religious groups. About 67% belonged to a social group and about 5% belonged to a business association. About 99% of founders who belonged to either a business association also belonged to a social group. That is, most founders that belonged to a business association also belonged to a social group.

Although few firms had a loan at the time of the survey (about 2%), more firms (14%) had had a loan at some point. As so few firms had a current loan when surveyed, we look at them ever having had a loan rather than having had one at the time of the survey. Firms with founders who belonged to business associations and social groups were more likely to have had loans than firms with founders who did not. Only 12% of firms with founders who were not members had ever had a loan, compared to 16% of firms with founders who were members. The difference is statistically significant at a 5% significance level. There was also a difference as regards loans from friends and family (5% for nonmembers compared to 7% for members) and bank loans (3% and 4% percent, respectively). The difference was statistically significant for loans from friends and family, but not for bank loans.

Founders who belonged to a business association or social group were also more likely to provide customers with credit and to receive credit from suppliers. About 36% of members provided credit to customers and 8% of members received credit from suppliers. In comparison, only 31% of nonmembers

gave credit and only 5% received credit. The differences are statistically significant. In contrast, firms with founders who were members did not have more customers than firms whose founders were not members. The median firm in both groups reported between 11 and 50 customers in a month.⁴²

Control Variables

The regression includes several variables to control for characteristics of the founder, the firm, and the community in which the firm operates. At the individual level, we include controls for the age, experience, and education of the founder. *Age of entrepreneur* is measured as the natural log of the business founder's age. Firms with older founders might perform better if the age of the founder is a reasonable proxy for experience. Previous studies using enterprise level data for sub-Saharan Africa have found that firms perform better when the founder is better educated (Biggs et al. 1998; Ramachandran and Shah 1999). Therefore, we include several dummy measures of individual-level education. *University education* is a dummy coded 1 if the founder had a university education and is 0 otherwise. *Vocational education* is a dummy coded 1 if the founder had a vocational education and is 0 otherwise. *Secondary education* is a dummy coded 1 if the founder had a secondary education and is 0 otherwise. The omitted category is primary education or less than that. *Personal bank account* is a dummy coded 1 if the founder had a personal bank account and is 0 otherwise. Possessing a personal bank account is a signal that the manager is financially sophisticated, which should hopefully translate into better firm management.

At the firm level, we control for age, access to infrastructure, access to finance, and sector of operations. *Firm age* is measured as the natural logarithm of the age of the firm. Given the large body of literature linking access to infrastructure and finance to economic growth, and the recent literature linking infrastructure and entrepreneurship (Audretsch et al. 2015), it is likely that infrastructure affects performance.⁴³ *Public water* is a dummy coded 1 if the firm had access to public water and is 0 otherwise. *Public power* is a dummy coded 1 if the firm had access to public power and is 0 otherwise. *Fixed telephone*

⁴² Founders responded with ranges rather than with exact numbers. The ranges were: 0 customers; 1–5 customers; 6–10 customers; 11–50 customers; 51–100 customers; 101–500 customers; 501–1,000 customers; and more than 1,000 customers.

⁴³ See, for example, Calderón and Servén (2004) on infrastructure and economic growth and Levine (1997) on financial sector development and growth.

line is a dummy coded 1 if the firm had a fixed telephone line and is 0 otherwise. *Business bank account* is a dummy coded 1 if the firm had a business bank account and is 0 otherwise.

In addition to founder and organization attributes, it is important to capture regional variation that might influence small business performance. We include several regional-level variables to control for agglomeration effects. *Urban or peri-urban* is a dummy coded 1 if the region was categorized as either urban or peri-urban and is 0 otherwise. This designation is based on the classification in the 2000 census, which was used for sampling. This is used as a proxy for the potential presence of economies associated with agglomeration. *Population density* is measured as the population per square kilometer. Population density is included as an additional measure of the agglomeration effects. When firms are close to customers, workers, and suppliers, they might find it easier to share knowledge or pool capital, intermediate inputs, and labor. Agglomeration may also improve matching between firms and their customers, suppliers, and workers. *Illiteracy rate* is the measured rate of illiteracy. It is included as it might affect the potential for knowledge sharing.

Table A1: Summary statistics

	All firms	Not member of organization	Member of organization
Performance			
Sales per year (2008 kwacha)	65,000,000	119,000,000	39,900,000
Sales per year (2008 US\$)	\$18,271	\$31,775	\$10,654
Social Capital			
Any association	68%	0%	100%
Nonbusiness association	67%	0%	99%
Business association	5%	0%	7%
Firm Characteristics			
% in district speaking same language as founder	55%	52%	56%
Paid workers	1.8	1.9	1.8
Unpaid workers	1.7	1.6	1.7
Founder has university education (dummy)	7%	4%	8%
Founder has vocational education (dummy)	6%	6%	6%
Founder has secondary education (dummy)	51%	56%	49%
Age of firm (years)	7.2	6.3	7.6
Age of entrepreneur (years)	39.6	40.4	39.2
Regional variables			
Population density	792	664	855
Firm is in urban area (dummy)	46%	45%	46%
Illiteracy rate	30%	28%	31%
Sector			

	All firms	Not member of organization	Member of organization
Retail trade	75%	70%	77%
Manufacturing	10%	14%	7%
Other	1%	1%	1%
Services	15%	15%	15%
Capital			
Has car (for company use)	5%	3%	6%
Has fax	1%	1%	1%
Has photocopier	1%	1%	1%
Has cash register	5%	2%	6%
Has calculator	43%	43%	43%
Has storage space for business	39%	37%	40%
Has vault or safe	21%	19%	22%
Has credit card reader	1%	0%	1%
Has factory machinery	2%	3%	1%
Has tractor	0%	0%	0%
Has mill	1%	1%	1%
Has water pump	0%	0%	0%
Has oxen	2%	0%	2%
Has oxcart	1%	1%	2%
Has plough	2%	3%	2%
Has hoe	17%	18%	17%
Infrastructure and banking			
Has water from public source	14%	10%	17%
Has electricity	18%	14%	20%
Has fixed line phone	2%	1%	2%
Has personal bank account	6%	4%	7%
Has business bank account	14%	11%	16%

Note: The kwacha was devalued in 2013. One new kwacha replaced 1,000 old kwacha. The average exchange rate in 2008 was 3,745 kwacha to the US dollar.

Source: Authors' calculations based upon data from the World Bank's *Zambia Business Survey*.

Table A2: Percent of firms with access to credit, by association membership

	Any association		Test of equality for proportions	
	Nonmember	Member	Z-test	p-value
Ever had loan	12.1%	16.0%	-2.53**	0.01
Ever had loan from friends or family	4.8%	7.4%	-2.44**	0.02
Ever had loan from bank	2.5%	3.6%	-1.36	0.18
Provides credit to customers	31.2%	36.6%	-2.56**	0.01
Obtains credit from suppliers	5.3%	8.0%	-2.29**	0.02
# of customers (median)	11-50	11-50	—	—

Source: Authors' calculations based upon data from the World Bank's *Zambia Business Survey*.

***, **, * Statistically significant at 1%, 5%, and 10% significance levels, respectively.