Instituto de Investigaciones Socio Económicas

Documento de Trabajo No. 03/06
Junio 2006

Social Capital in the Urban Informal Sector in Developing Countries – Micro Evidence from Small Textile Producers in Bolivia

por:
Kurt Annen

Social Capital in the Urban Informal Sector in Developing Countries – Micro Evidence from Small Textile Producers in Bolivia

Kurt Annen

University of Guelph
Department of Economics, Guelph, ON N1G 2W1, Canada
kannen@uoguelph.ca

Abstract

In a setting with a low level of anonymous trust and without an effective shadow of courts, the possibility to return a low quality good can work as a simple mechanism to overcome moral hazard in buyer seller transactions. Informal firms – in contrast to formal ones – operate in the hidden and do not use receipts for their transactions. They appear on informal markets on a more or less frequent basis. These factors make it difficult for buyers to return a good unless there is a social link between the seller and the buyer. According to this idea, social trust relationships increase sales for informal firms but not for formal ones. Furthermore, formal firms have more sales than informal ones when controlling for the level of social capital of informal firms.

The paper uses micro-level data obtained from surveying small textile producers in Bolivia to test these predictions. The results show that family relationships and trust relationships substantially increase sales for informal firms but not for formal ones. Furthermore, informal firms without social capital earn substantially less than formal firms.

Keywords: Social Capital, Anonymous Trust, Informal Sector, Small Firms.

1. Introduction

There is a growing acceptance among social scientists that social capital -here broadly defined as being linked to other individuals- matters. But exactly through which channels it affects economic outcomes -and by how much- is less clear.[1] The present paper contributes to this inquiry by using micro-level data from a survey conducted among small formal and informal textile producers in La Paz and El Alto in Bolivia.

As in many developing countries, the level of *anonymous trust* in Bolivia is low, and the *shadow of the courts* for contract enforcement is virtually absent. For example, the survey reveals that the average assessment of the trustworthiness of unknown persons expressed on a scale between 1 (not at all trustworthy) and 10 (very trustworthy) is 2.74. Maybe more strikingly, 40% of the respondents indicate that one cannot trust unknown persons at all by responding with "1" to this question.[2] Regarding the effectiveness of the shadow of the courts, the survey reveals that virtually all respondents consider the threat to go to court as a way to resolve a conflict useless. Furthermore, the median disputed dollar amount for which respondents would seek the courts for conflict resolution is 28% of yearly sales.[3] Considering the fact that virtually all economic transactions involve small dollar amounts, using courts for conflict resolution seems hardly worthwhile.

I perceive an analysis of the role of social links in a setting without anonymous trust and a shadow of courts of particular importance. Not only because this situation is common to many (informal) economies throughout the developing world, but also because this setting constitutes a useful test ground for differing view points on how social links affect economic outcomes. In Section 2, I present a bargaining model between buyers and sellers with endogenous market outside options and moral hazard. The model gives a theoretical explanation of why social links involving trust are a valuable asset, particularly for informal firms -e.g. non-registered firms. The model shows that a buyer's threat- when credible - to return a low-quality good gives a seller an incentive to produce the high-quality good. But the credibility of this threat depends on the transaction cost associated with returning a good. Formal firms work in a visible location and maintain regular opening hours. Furthermore, they use receipts which can be used as a proof of transaction. These two factors reduce the transaction cost associated with returning a good. In contrast, informal firms operate in hidden locations, and appear on informal markets in a more or less frequent manner. Transactions are concluded without receipts. These two factors make it more difficult for an anonymous buyer to return a low quality good. However, in this case a social link between a buyer and a seller can work as a substitute for "formal status" not only because the buyer knows where to locate a seller but also because in a trust relationship no proof of transaction is needed. Thus, trust relationships between buyers and sellers lead to the production of the

---

[1] Empirical evidence about the value of social capital is ambiguous, and there are also differing theoretical views regarding the underlying mechanisms generating the benefits that are associated with social capital. For a survey of the literature on social capital see Durlauf and Fafchamps (2004), and Woolcock (1998).

[2] Similar to this result, the Latino-barometer (2003) reveals that 21% of respondents in Bolivia say yes to the following question: "Generally speaking, would you say that you can trust most people, or that you can never be too careful when dealing with others?" This number, for example, is 50% for the US, 66% for Sweden (taken from Inglehart, 1997) - but only 4% for Brazil (Latino-barometer 2003).

[3] The mean amount with 85% of yearly sales is much larger and shows that a considerable fraction of the respondents would use the courts only when the disputed amount exceeds total yearly sales.

high quality good which in the model leads to higher prices and more business.[4] The theory produces two predictions which are tested in Section 4: First, social capital matters –i.e. increases sales– for informal firms but not for formal ones. Second, formal firms have more sales than informal firms when controlling for the level of social capital of informal firms.

The paper finds that there is a positive relationship between the number of extended family members, competitors from the same family, trustworthy friends, and the number of known consumers and the level of sales for an informal firm but not for a formal one. The output elasticities with respect to the various measures of social capital are large and significant. In contrast, there is no such relationship for the number of known non-family competitors, and suppliers no matter the formal status. This finding confirms the theoretical prediction that trust relationships are important for firms working in the informal sector. The results do not change when adding a large number of control variables giving confidence that the result is robust and that it is unlikely to suffer from omitted variable bias. Second, the paper finds that a formal firm has between almost three to five times the sales of an informal firm without social capital, when the two firms are identical in all other respects. Again, this finding goes along with the prediction made by the model. It emphasizes the important role of social capital for informal firms. The firm which does most poorly in the sector is the informal firm without connections and social links.

These findings do not support the view on social capital which originates from the seminal paper on the "strength of weak ties" by Granovetter (1973). This view claims that social links are useful because of the information generated in such links. Being linked to others leads to information about valuable sales opportunities, where to find quality supplies and reliable workers etc. According to this view, loose or inclusive forms of social links are more beneficial than more closed or exclusive forms of social links because the information exchanged between individuals who are only loosely linked is less likely to have redundant content (Granovetter 1973). If social capital serves this role then we would find a positive relationship between social capital and sales no matter the formal status of the firm. Furthermore, links to competitors and suppliers, for instance, should be particularly useful since competitors and suppliers can be expected to know business relevant information. However, I find no evidence that supports this view. For example, in a similar study Fafchamps and Minten (2002) support this view by showing a strong causal positive relationship between the number of known competitors and sales for an agricultural trader in Madagascar.

The paper does not only give answers to the question of how social links affect economic outcomes. It also sheds light on the question of how the formal status of a firm affects economic outcomes even then when formal institutions such as courts do not work effectively. Non-effective institutions does no mean that a government does not affect or intervene with the private sector in any way. There is some enforcement of tax laws and other regulations which explains that informal firm owners are very careful in hiding their economic activity. For example, public officials have an incentive to enforce tax laws since it gives them the opportunity to collect some extra income by accepting bribes. Thus, a striking feature which distinguishes formal from informal firms is that formal firms have a visible appearance while informal firms work in the hidden. I had to learn about the difficulty in

[4] It is easy to show that opportunistic behaving players may find it worthwhile to be trustworthy if they are in relationships with indefinite duration, or if they are included in a social network that stores information regarding the trustworthiness of their members (Annen 2001, Annen 2003).

locating informal firms when collecting the data for the survey.[5] The model in Section 2 makes clear how this difference in appearance affects the business of the two kinds of firms. The ability of buyers to return a low quality good gives sellers an incentive to produce the high quality good. This simple mechanism does not work if transactions are limited to one-shot interactions only. The remainder of the paper is structured as follows: Section 2 introduces a bargaining model with endogenous market-outside options and moral hazard. It identifies an economic channel through which social links affect the economic outcome for the various types of firms competing in a market. Section 3 specifies the predictions made by the model and gives some general descriptions of the garment producers in El Alto and La Paz. Section 4 presents the empirical results. It includes a section analyzing a firm owner's decision of being formal or informal. Final remarks conclude the paper.

2. Thinking about Social Capital

The paper defines social capital as being linked to others. Social capital is measured by the number of links a given player maintains to some categories of other players, such as family members, trustworthy friends, competitors, suppliers, etc.

The exact role of this form of social capital is not well understood. While scholars agree that anonymous trust is a valuable resource in an economy, there is no such agreement regarding the role of social capital based on social linkage. For example, in their cross-country study, Knack and Keefer (1997) find a positive relationship between anonymous trust and economic growth, but no relationship between associational activity -i.e. social capital due to social linkage- and economic growth. There is not only a lack of empirical evidence regarding this form of social capital, but also a lack of theory that specifies through which channels social links affect economic outcomes. In this section I develop a formal model that identifies a channel through which social links affect sales for formal and informal firms competing in a market.

2.1 A Bargaining Model with Endogenous two-sided Market-outside Options

Consider a market of many buyers and many sellers, each seller selling one unit of an indivisible good. Buyers are labeled *B* and sellers are labeled *S*. In each period, buyers and sellers are randomly matched into pairs. It is assumed that a buyer is matched with a seller with probability γ, and a seller is matched with a buyer with probability $\hat{\alpha}\gamma$.[6] The parameters γ, and $\hat{\alpha}$ introduce market frictions into the model, so sellers may have to wait for buyers, and buyers may have to search for sellers. Time is measured in discrete equally spaced time intervals $t = 0, 1, 2, \ldots$ Players discount time with a common discount factor $\delta \in (0, 1)$. Once a buyer and a seller are matched, they bargain over the price of the good by playing an alternating-offer s bargaining game where each player can opt out of the bargaining relationship at any time in the bargaining process. In case a player opts out, it is assumed that the buyer and seller find another trading partner in the following period with

[5] Details regarding the collection of data are explained in Appendix 2.

[6] Note that the parameter ˆ_ will be determined endogenously once I introduce two types of sellers in the following section. It measures how much business one type of seller has compared to the other type.

probability γ and $\hat{\alpha}\,\gamma$ respectively.[7] If an offer gets accepted, the bargaining game ends. I assume that buyers and sellers are equally likely to be first proposers in the bargaining game.

Sellers can produce the indivisible good in two kinds of qualities: High and low quality. The buyer values the high and the low quality good by v_H and v_L respectively, where $v_H > v_L$. The seller's cost of producing the high and low quality good is equal to c_H and c_L respectively, where $c_H > c_L$. It is assumed that $v_H - c_H \equiv s_H > 0$ and $v_L - c_L \equiv s_L > 0$, and $s_H - s_L > 0$. Thus, there is an exchange surplus if the two parties trade, and to trade the high quality good is Pareto efficient. I assume that the buyer is not able to instantly verify of whether the good is of high or low quality (asymmetric information). However, if a buyer is unhappy about the quality of the good (he or she finds out later that the good is of low quality), he or she has the opportunity to return the good and get a full refund at a cost of c.[8] This cost is a transaction cost associated with returning the good. It includes not only the cost of going back to the seller, but also the cost of possibly uneasy arguments with the seller of why the quality is unsatisfactory. Note that if buyers have no incentive to return the good, sellers will always provide the low quality good no matter the price. Thus, in order for the high quality good to be traded, buyers must have an incentive to return a low quality good. The decision to return depends on how much the buyer paid for the good. A buyer will return a low quality good if and only if the price $p \geq v_L + c$ because then the buyer's payoff when keeping a low quality good is $v_L - p \leq -c$. The right-hand side of this inequality is the buyer's payoff when returning a good. Thus, if $p \geq v_L + c$, the seller will produce the high quality good. Otherwise, the low quality good is produced. The possibility to return the good allows the seller to credibly commit to the production of the high quality good. The fact that players can walk out of the bargaining process at any time, changes the alternating-offers bargaining model introduced by Rubinstein (1982) in a substantial way: If the bargaining model has a unique equilibrium, the equilibrium is not the one derived by Rubinstein (1982), and if the equilibrium by Rubinstein is an equilibrium, then the bargaining game has many other equilibria. Ponsati and S´akovics (1998) show that in bargaining games with two-sided outside options, the following strategy is always a sub-game perfect equilibrium:

Definition 1. (Ultimatum Strategy). *The buyer [seller] offers xS [xB] to the seller [buyer] and keeps $s_k - x_S$ [$s_k - x_B$] for him- or herself, where $k \in \{H, L\}$. Players opt out after a rejection.*

This strategy is an equilibrium because a player's threat to opt out in case of a rejection is credible given the opponent makes an offer equal to the proposer's outside option in the following period. This holds also if outside options are zero.

Denote by the pair (β, σ) a market profile of strategies, where β is the buyers' market profile of strategies specifying one bargaining strategy for each buyer active in the market. σ is the sellers' market profile of strategies specifying one bargaining strategy for each seller active in the market. That is each buyer or seller plays the same bargaining strategy independent of the identity of his or her partner.[9]

---

[7] See Ponsati and S´akovics (1998) for the analysis of bargaining games with two-sided outside options. The bargaining game presented here is closer to the one analyzed in Ponsati (2004).

[8] In a similar setting than here, Kessler and Lülfesmann (2004) analyze the impact of a return policy on the seller's quality choice when quality is unverifiable. In contrast to the paper here, bargaining takes place in a standard Rubinstein alternating-offers bargaining game.

[9] See for example, Rubinstein and Wolinski (1990) for the analysis of market equilibria where buyers and sellers use player-identity-specific bargaining strategies.

Definition 2. (Market Equilibrium). *A market profile* (β, σ) *is a market equilibrium if and only if the following three conditions are met:*

i) In all randomly matched pairs, buyers and sellers propose to trade the same good (high or low quality).

ii) The expected payoff for a buyer or a seller is identical across matching partners.

iii) For all randomly matched pairs of buyers and sellers (i, j) on the market the strategy pair (β(i), σ(j)) is a subgame perfect equilibrium of the bargaining game with outside options equal to $x_B(\beta, \sigma)$ and $x_S((\beta, \sigma)$.

Condition i) requires that in any given match the same quality good will be traded, no matter whether the seller or the buyer is the first proposer. This restriction is introduced for simplicity only. In Appendix 1 I discuss the additional market equilibrium that may emerge without Condition i) Note also that condition ii) is trivially satisfied since all buyers are identical with each other and so are the sellers. However, this condition will become important in the following section in which I analyze market equilibria with two types of sellers. The economic intuition behind condition ii) is that random matching as a matching mechanism is unsatisfactory if expected payoffs vary across matching partners. In that case, players will choose to be matched with higher paying matching partners. However, random matching is a reasonable assumption if matching partners are identical expected payoff wise.

Lemma 1 *Assume buyers and sellers trade always the high-quality or low quality product. Furthermore, assume that* $\gamma > \frac{2\delta}{1+\delta+\hat{\alpha}\delta}$. *Then the game has a unique market equilibrium in which each player plays the "ultimatum strategy" as the unique sub game perfect equilibrium of the alternating-offers bargaining game. The buyer [seller] as the first proposer gets a payoff of* $(1-\hat{\alpha}\gamma\delta)/(\theta-(1-\hat{\alpha}))S_k\ [\gamma\delta/(\theta-(1-\hat{\alpha})\gamma\delta))S_{k\}}]$ *and the seller [buyer] as the first responder gets a payoff of* $(\hat{\alpha}\gamma\delta/(\theta-(1-\hat{\alpha})\gamma\delta))S_k[(\gamma\delta/(\theta-(1-\hat{\alpha})\gamma\delta))S_k]$ *for* $k \in \{H,L\}$. $\theta \equiv \gamma\delta$.

Proof. Denote the seller's and buyer's market outside option value by *xS* and x_B respectively. The bargaining strategy to offer your opponent his or her outside option value, and keep the rest of the exchange surplus for yourself, and opt out in case your opponent rejects is clearly a sub game perfect equilibrium. The threat to opt out is credible since opting out yields x_i while staying in the game yields δx_i, for $i \in \{B, S\}$, given players follow the "ultimatum strategy". In a market profile *(β, σ)* in which all players play the "ultimatum strategy" outside options are as follows:

$$x_S = \delta\left[\gamma\hat{\alpha}\left(\frac{1}{2}(S_k - x_B) + \frac{1}{2}x_S + (1-\gamma\hat{\alpha})x_S\right)\right], \text{and} \qquad (1)$$

$$x_B = \delta\left[\gamma\left(\frac{1}{2}(S_k - x_B) + \frac{1}{2}x_B\right) + (1-\gamma)x_B\right], \quad \text{for } k \in \{H,L\} \qquad (2)$$

Using (1) and (2) to solve for x_S and x_B yields $x_S = \frac{\gamma\delta\hat{\alpha}}{(2-2\delta+\gamma\delta+\hat{\alpha}\gamma\delta)} S_k \equiv (\hat{\alpha}\gamma\delta/((\theta-(1-\hat{\alpha})\gamma\delta))S_k$, and $x_B = \frac{\gamma\delta}{(2-2\delta+\gamma\delta+\hat{\alpha}\gamma\delta} S_k \equiv (\gamma\delta/(\theta-(1-\hat{\alpha})\gamma\delta))S_k$.

The bargaining game has multiple subgame perfect equilibria if and only if $x_i \leq \delta^2 s_k - \delta x_j$, *where* $i \neq j$, for all $i, j \in \{B, S\}$ *and* $k \in \{H, L\}$. Otherwise the "ultimatum strategy" is the unique subgame perfect equilibrium (see Ponsati and S´akovics, 1998, p. 670). Uniqueness is assured if $\gamma = \frac{2\delta}{1+\delta+\hat{\alpha}\delta}$. Thus, the market profile in which each player plays the "ultimatum strategy" is the unique market equilibrium.

Lemma 1 stipulates the production of the high- or low quality good. But as discussed earlier, the negotiated price has to be at least $v_L + c$ so that a buyer has an incentive to return the low quality good. Since the buyer's payoff is given by $v_h - p$, the highest payoff a buyer can achieve if the high quality product has to be produced is equal to $v_H - v_L - c$. Let $w \equiv v_H - v_L - c$. Thus, w is the upper bound of a buyer's payoff implying that the seller need to get a payoff of at least $s_H - w$ in order to produce the high quality good. This constraint affects the equilibrium outcome as follows:

Proposition 1. *Assume that* $\gamma > \frac{2\delta}{1+\delta+\hat{\alpha}\delta}$. *There is a unique market equilibrium in which the high quality good is produced if* $\omega \geq 2S_H\left(1-\frac{1}{2-\hat{\alpha}\gamma}\right)$. *There is a unique market equilibrium in which the low quality good is produced* $w < 0$. *For* $0 < w\ 2S_H\left(1-\frac{1}{a-\hat{\alpha}\gamma}\right)$ *the model has at least one but at most two market equilibria. If* $\omega > (\gamma\delta/(\theta-(1-\hat{\alpha})\gamma\delta))S_L$, *then all equilibria produce the high quality good, otherwise an equilibrium producing the high quality good coexist with an equilibrium producing the low quality good. In particular, if* $w > 0$ *there is always a market equilibrium in which the high quality good is produced.*

Proof. See Appendix 1

The presence of an upper-bound, ω, for the buyer's payoff affect the bargaining game in the following way: First, for the "ultimatum strategy" in Lemma 1 it has to be the case that the proposer's offer has to be equal to the responder's outside option. Otherwise the responder rejects (if the offer is smaller than the outside option) or the responder's threat to reject a slightly smaller offer than the equilibrium offer is not is credible (if the offer is larger than the outside option). However, this property does not necessarily apply in the bargaining model here. The buyer may offer the seller a larger payoff than the value of the seller's outside option –removing the seller's ability to credibly reject a slightly smaller offer– which, however, does not destroy the equilibrium since the buyer does not benefit from making a slightly smaller offer. More precisely, if the buyer offer s the seller $s_H - \omega > x_S$ (the minimal offer that produces the high quality well), slightly reducing this offer will lead to the production of the low quality good which may make the buyer worse off. Thus, the buyer will not reduce this offer.

Second, offering the seller more than the value of his or her outside option leads to two possible situations:

- First, the offer is large enough to pay the value of the seller's outside option but low enough so that the seller's threat to opt out after a rejection remains credible (e.g. s_H -

$\omega > x_S\,\delta(s_H - \omega))$. In this case for a strategy to be sub game perfect it is necessary that the seller's offer is equal to the buyer's outside option because otherwise the buyer's threat to reject a slightly smaller offer would not be credible.

- Second, the offer is generous enough so that the seller's threat to opt out after a rejection is no longer credible (e.g. $x_S \leq \delta(s_H - \omega))$. In this case the seller's offer to the buyer has to be at least δz, where z is the buyer's equilibrium offer made by the buyer, because otherwise the buyer will reject. However, z has to be equal to ω because if $z > \omega$ the low quality good is produced, and if $z < \omega$ the buyer has a beneficial deviation by the first observation made above. Thus, $z < \omega$.
- Third, opting out for the buyer is *always* credible. If the seller offers the buyer x_B (which happens only if the seller's threat to opt out is credible), opting out is obviously credible since $x_B < \delta x_B$. The most generous offer the seller can make to the buyer in a subgame perfect equilibrium is $\delta\omega$. An offer cannot be higher because otherwise the buyer's threat to reject a slightly smaller offer is not credible, given the buyer offers him- or herself exactly ω. In this case the buyer's outside options equals:

$$x_B = \delta\left[\gamma\left(\omega/2 + \delta\omega/2\right) + \left(1-\gamma\right)x_B\right] = \frac{\gamma\delta\left(1+\delta\right)}{\theta}\,\omega \qquad (3)$$

The outside option $x_B > \delta^2\omega$ if $\gamma > \frac{2\delta}{1+2\delta}$. Since it is assumed that $\gamma > \frac{2\delta}{1+\delta+\alpha\delta}$ it is always the case that $x_B > \delta^2\omega$. Thus, there is no equilibrium strategy asking the buyer not to opt out after a rejection.

These observations lead to the definitions of the following two additional bargaining strategies:

Definition 3. (Two-sided ω-ultimatum Strategy). *The buyer [seller] offers* $s_H - \omega$ *[*x_B*] to the seller [buyer] and keeps* ω *[*$s_H - x_B$*] for him- or herself. Players opt out after a rejection,* and,

Definition 4. (One-sided ω-ultimatum Strategy). *The buyer [seller] offers* $s_H - \omega$ *[*$\delta\omega$*] to the seller [buyer] and keeps* ω *[*$s_H - \delta\omega$*] for him- or herself. The seller never opts out. The buyer opts out after a rejection*.

All market equilibria that are derived by bargaining strategies with two-sided "ultimatum strategies" (i.e. both players opt out after a rejection) cannot coexists with each other. Multi-equilibria, however, emerges because of the presence of the market equilibrium based on the one-sided ultimatum strategy (Definition 4). Here the seller can no longer credibly threaten to opt out after a rejection. This inability to credibly threaten to opt out weakens the seller's bargaining position which lowers his market outside option value. This implies that there will always be some values of ω for which the market equilibrium based on the two-sided ω-ultimatum strategy coexist with the market-equilibrium based on the one-sided ω-ultimatum bargaining strategy. If $\delta > \frac{2}{4-\gamma-2\alpha\delta}$ then the market equilibrium described in Lemma 1 coexists with the market-equilibrium based on the one-sided ω-ultimatum strategy.

As long as ω is positive, there are market equilibria in which the high quality good is traded. However, if the transaction cost associated with returning the low quality good are sufficiently large, more precisely, if $c \geq v_H - v_L$ then there is no market equilibrium in which

the high quality good is traded. Interesting is that for some parameter values (namely, if $\omega < s_L\ \gamma\delta/(\theta-(1-\alpha)\ \gamma\delta))$ the model has two market equilibria: In one equilibrium (when playing the one-sided ultimatum strategy) the high quality good is traded, and in another one (when trading the low-quality good in Lemma 1) the low quality good is traded. This raises the question about equilibrium selection: For example, the role of active guilds and business associations campaigning in the public for high quality standards may help to select the high quality good equilibrium, which benefits the sellers and harms the buyers. On the other hand, if such institution working for higher "quality standards" are not in place -as for example the case in the sector I am studying-, the low-quality market equilibrium may be more likely to be selected.

2.2 Bargaining in a two-sector Market

Consider a market with two kinds of sellers: low-transaction cost sellers and high-transaction cost sellers. For low-transaction cost sellers the cost associated with returning a good equals $c > 0$ as before. For high-transaction cost sellers the cost equals $c' > v_H - v_L$. Correspondingly let ω and ω' be the upper bound of the buyer's payoff when matched with a low- and high transaction cost seller respectively. Let α be the fraction of buyer-seller transactions that take place with a high-transaction cost seller in any given period, and let 1 - α be the fraction of buyer-seller transactions that take place with a low-transaction cost seller in any given period. Thus, a buyer finds a high [low] transaction cost seller with probability $\gamma\alpha\ [\gamma\ (1-\alpha)]$. Denote by x_{SL} *and* x_{SH} the market outside option value of a seller with low and high transaction costs respectively.

Since for high-transaction cost sellers $\omega' < 0$, these sellers have no way of committing to the production of the high quality good. High-transaction cost sellers will only produce the low quality good (see Proposition 1). The presence of a high-transaction cost sector affects market equilibria as follows:

Proposition 2. *Assume that* $\gamma > \frac{2\delta}{1+\delta}$. If $\omega > \frac{s_H(2\gamma\delta+\theta)}{\gamma\delta(1+\delta 1+\theta}$, *then there is a unique market equilibrium in which the high quality good is produced. In this equilibrium no low quality good is produced (i.e.* $\alpha = 0$) if $s_L/s_H \le (1-\gamma\delta/\theta)$, *and both the low quality good and the high quality good are produced (i.e.*$\alpha \in (0, 0.5)$*) otherwise. If* $\omega \le 0$, *then there is unique market equilibrium in which both high and low transaction cost sellers produce the low quality good.* $0 < \omega < \frac{s_H(2\gamma\delta+\theta)}{\gamma\delta(1+\delta 1+\theta}$ *the model has at least one but at most two market equilibria. In particular, for* $\omega \in (s_L/(1+\delta)$, *no high quality good is produced, and* $\omega \in (s_L/(1-\delta), \frac{s_L\theta}{(1+\delta)(\theta-\gamma\delta)})$ *is sufficient but not necessary that on the market both the high quality good and the low quality good are produced no matter the quality difference* s_L/s_H.

Proof. See Appendix 1

The market share, α, of the two types of sellers is derived endogenously, namely by the requirement that the buyer's payoff has to be identical across matching partners. For example, for the market equilibrium in Lemma 1, the larger the quality difference $s_H - s_L$, the lower the value of high-transaction cost seller's outside option since identical expected

payoff across matching partners requires that $s_H - x_{SL} = s_L - x_{SH}$. x_{SH} decreases in α which explains that high-transaction cost firms have no business if the quality difference becomes sufficiently large. By the same reasoning low-transaction cost sellers can run out of business, namely then when ω is sufficiently small. When playing the one-sided ultimatum strategy an identical expected payoff across matching partners requires that $\omega + \delta\omega = s_L - x_{SH} + x_B$. A lower ω requires a larger outside option value for the high-transaction cost firm, thus, increasing α. If $\omega \leq s_L/(1+\delta)$ *then* $\alpha = 1$ which explains that the high quality good is no longer produced. Without the high-transaction cost sector there is always an equilibrium in which the high-quality good is produced if $\omega > 0$. In the two sector economy, buyers buy increasingly from the high-transaction cost sector. The presence of the high-transaction cost sector prevents buyers to be exploited as in the case described in Proposition 1.

Note that if the difference in transaction costs between high- and low transaction costs firm is sufficiently large, then low-transaction cost firms not only will charge a higher price than the high-transaction cost firms but they will also have more business. Thus, under this condition the model predicts that low-transaction cost firms have higher sales.

2.3 The Optimal Level of Hassle when Returning a Good

In this section I analyze the question of how the level of transaction costs, *c*, affect the payoff of low-transaction cost sellers given fixed transaction costs, *c´*, for high-transaction cost sellers. Since the transaction cost includes the cost of convincing the seller of taking back the good, the seller to some extent is able to choose the cost associated with returning a good. Assume, first, that low-transaction cost sellers can choose *c* which – for simplicity – I will equate with choosing ω. Second, assume that this choice has to be made before any bargaining takes place. Once the buyer and seller agreed on that price, the seller is not able to change *c*. For example, the firm owner specifies for his or her staff some proceedings which have to be followed when the buyer returns a good.

For sufficiently large ω, the seller's payoff is not affected by ω. In this case the seller's payoff equals $\gamma s_H/2$ *if* $\alpha = 0$ *and* $\gamma½ (x_{SL} + (s_H - x_B) < s_H/2$ *if* > 0, *where* $x_{SL} = \frac{s_L\gamma\delta + 0(s_H - s_L)}{2\theta - \gamma\delta}$, *and* $x_B = \frac{(s_H - s_L)\gamma\delta}{2\theta - \gamma\delta}$. The next result shows that low-transaction cost sellers can strictly increase their payoff by increasing transaction costs associated with returning the good.

Proposition 3. *The low-transaction cost seller's payoff is maximized when* $\omega = \omega^*$, *where* $\omega^* = \min\left\{\frac{\sqrt{2s_H s_L}}{1+\delta}, \frac{\theta s_L}{(1+\delta)(\theta-\gamma\delta)}\right\}$ *or* $\omega^* = \min\left\{\sqrt{\frac{\sqrt{2s_H s_L(\theta-\gamma\delta)}}{\theta}}, s_L\right\}$. *The low quality good and the high quality good are produced if and only if* $s_L > \frac{2s_H(\theta-\gamma\delta)^2}{\theta^2}$. *Furthermore, low-transaction cost sellers earn a strictly larger payoff than high-transaction cost sellers not only by charging a higher price but also by having more business (*$\alpha < 0.5$*).*

Proof. The seller's optimization problem has an interior solution because of a trade-off associated with a decrease in ω. On the one hand, decreasing ω increases the seller's payoff because the seller can extract a larger share of the surplus when bargaining with the buyer. The marginal benefit of decreasing ω equals. $\frac{\theta(s_L(1-\delta)\omega)}{2\omega\alpha}$. *If* $\alpha = 0$, then decreasing ω has only a benefit and no cost till the high-transaction cost sellers start to get some of the market.

Once the high-transaction cost have a positive market share, decreasing ω has a cost which comes from the fact that the market share of low-transaction cost sellers decreases. The marginal cost equals $\frac{s_L 0(2s_H - \omega(1-\delta)}{2\delta(1+\delta)\omega^2}$. If the marginal benefit is larger than marginal cost when $\omega = \frac{s_L \theta}{(1-\delta)(\theta - \gamma\delta)}$, then the optimal ω is determined by equating marginal benefit with marginal cost and solving for ω which yields $\omega = \frac{\sqrt{(s_H - s_L)}}{1+\delta}$. If, in contrast, the marginal benefit is smaller than the marginal cost than the optimal ω equals $\omega = \frac{s_L \theta}{(1+\delta)(\theta - \delta)}$.

It is straightforward to check that there is no other market equilibrium that generates a higher payoff for the cases where $s_L < (1-\gamma\delta/\theta)s_H, (1-\gamma\delta/\theta)s_H < s_L < \frac{2s_H(\theta-\gamma\delta)^2}{\theta^2}$, and $s_L < \frac{2s_H(2s_H(\theta-\gamma\delta)^2}{\theta^2}$

If low-transaction cost sellers can commit to an ex ante optimally chosen return policy then low-transaction cost seller cannot only charge a higher price but they have also more business than high-transaction cost sellers. Note that the same prediction applies for the case where sellers cannot choose the buyer's transaction cost associated with returning a good as long as the transaction cost difference between the two types of firms is sufficiently large.

Thus, if the difference in transaction cost is sufficiently high, or if there is a mechanism in place which allows firms to ex ante determine optimally the transaction cost then low-transaction cost firms have higher sales than high-transaction cost firms.

3. Description of Small Formal and Informal

Textile Producers in Bolivia

The empirical analysis is based on survey data which I produced during a field trip in April and May in 2002 in Bolivia. In this time period, 13 students from the public university in El Alto and the private university Católica "San Pablo" in La Paz, and myself interviewed 145 small informal and formal textile firms. The study was supported by Swisscontact - a well established Swiss development agency in Bolivia.[10]

The sample consists of 145 small firms. Descriptive statistics are shown in Table 1. The firms are small. The average informal firm has 2.19 full-time workers not including the owner and the average formal is slightly larger with 2.84 full-time workers.[11] A few large garment producers in La Paz making clothing on an industrial basis were not included in the sample.[12] The educational level of the firm owners is surprisingly high. The average informal firm owner completed secondary school. The average formal firm owner started higher technical school after secondary school. Of the informal firm owners, 13% have completed higher education, and of the formal firm owners, 27% have done so. The average (median) yearly sales is US$ 11068.- (4714.-). On average, 57% of total sales are directly to final consumer. This average with 76% of total sales for formal firms is considerably higher than for informal ones that sell on average 49% to final consumers. When firms sell to re-

[10] See Appendix 2 for details about how the data was collected.
[11] The difference in size is statistically significant at a 10% level (p-value=0.09).
[12] For a recent survey see the World Bank (2001).

sellers, the quantities exchanged at one time are usually small. Many intermediaries buy three dozen pieces or less which they then resell at their sales stand somewhere in the city streets.

Of the sample, 100 firms are informal and 45 are formal. A firm is informal, if it is not registered with the tax authorities. Firms that are registered have a RUC number. RUC stands for "Registro Unico del Contribuyente". Only persons having RUC pay taxes. There are different tax regimes. In particular, there is a so called "Régimen Simplificado" for firms that work with capital of US$ 3000 or less. These firms are taxed on the basis of their declared capital.[13] Taxes are paid bimonthly. Larger firms must register in the "Regimen General" where the tax is a value-added tax, and, therefore, depends on sales. About half of the formal firms in the sample are in the "Régimen Simplificado". Virtually all informal firms (93%) produce in their homes, while 73% of formal firms produce in their homes. Informal firms are located all over La Paz and El Alto. They are hidden and not visible from the outside of the street for obvious reasons. The typical textile producer occupies two to three rooms in his or her home with two to three workers, each working with a sewing machine. There is also a big cutting table, on which cloth is cut mostly by hand. The firm owner or a family member sells the produced products on a more or less regular basis on local markets such as the one on Tumusla in La Paz or the market "16 de Julio" in El Alto, or sell their products to intermediaries that smuggle the products to neighboring countries such as Peru, Argentine, Brazil, or Chile. Only small quantities are traded at one time.

The model introduced in the previous section captures some key features of the market of small textile producers I am describing: First, there are high- and low-transaction cost firms because formal status of a firm affects the transaction cost associated with returning a good in the following way:

i) Formal firms can maintain a visible location with fixed opening hours which often happens to be at their production cite. In contrast, informal firms produce on hidden production sites (mostly in the firm owners home in neighborhood far from the center) and they sell their products on informal markets (such as the early morning market at Tumusla) where they show up on a more or less regular basis.

ii) Formal firms hand out a receipt for their transactions which can be used as a proof of transaction. In contrast, there is no receipt in transactions with informal sellers.

The difficulty to locate a seller and the lack of a proof of transaction make it difficult for an anonymous buyer to return a good to an informal seller. However, if there is a social link between the buyer and the informal seller then returning a good is easier not only because a buyer knows how to easily locate the seller, but also because no proof of transaction is needed when there is trust between the seller and buyer. Trust is important since without trust it will always be in the seller's interest to deny the transaction. Furthermore, because of the illegal status of the firm, to convey the seller's location is in itself an act of trust. Thus, a social network with reliable and trustworthy friends, partners, and family members is particularly important for informal firms. Thus, there are two categories of firms: First, high-transaction cost firms which include informal firms without social capital, and, second, low-transaction cost firms which include formal firms and informal firms with social capital.

Second, there is considerable uncertainty regarding the quality of products in the market I am describing. The firms produce every kind of clothing, including all kinds of sports wear, jackets (leather and cloth), children's wear, jeans, shirts, custom dresses for ladies and man. There are also firms specialized in the production of traditional clothing such

[13] Tax rates vary between 0.018 and 0.14 per invested dollar per year, depending progressively on total investments.

as traditional skirts called "polleras" according to the Aymara culture. The sector produces a large palette of products mostly in the lower quality range. Respondents indicate that moral hazard is a common problem in the sector. Garments are stitched with a low number of stitches so that they fall easily apart, zips are of lacking quality which comes apparent after a few uses, the sizes indicated on labels are wrong (typically the true size is smaller than the one on the label), the fabric has not the content indicated on the label, sellers show good quality products but deliver low quality ones, etc. Many of these deficiencies cannot be detected immediately, in particular if an intermediary buys several pieces a time. One of the reasons for quality differences is the labor intensive way of producing the garments. The working capital of the firms consists of electric sewing-machines with an average (median) value of US$ 4074 (US$ 2000) where each is operated by one person. Most of the firms use two kinds of sewing machines: They use industrial sewing machines called "Recta", and machines for sewing the edges called "Overlook". Only about 20% of the firms own an electric cutting machine. The rest of the firms cut the cloth by hand. The average number of machines the firms own is 5.2.

There is an excess of machines relative to labor which is explained by the current economic crises. Many firms have not enough work in order to use all their equipment. Third, the markets in Bolivia have characteristics of a Bazaar economy where bargaining is a common practice even in formal firms. This can be expected on markets that are rapidly changing, and in which the average buyer lacks information and market oversight.

4. Empirical Results

The model developed in Section 2 produces the following three predictions:

- First, social capital increases sales for informal firms but not for formal ones. Trust relationships between a seller and buyers allow the firm to commit to the production of the high quality product which increases sales (via an increase in price and the number of sales).
- Second, formal firms have higher sales than informal firms when controlling for the level of social capital for informal firms.
- Third, if the low- and the high-transaction cost sector both have business then the quality difference between the high and the low quality good cannot be too large (i.e. $s_L / s_H > \frac{2(\theta - \gamma\delta)^2}{\theta^2}$

I do not have the data to test the last prediction. But, a clear impression one gets when walking through the street in La Paz is that the quality differences between formal and informal firms typically are not very large. In the following, an empirical test of the first two predictions is obtained.

4.1 Social Capital and the Formal Status of Firms

To estimate the impact of social capital on sales for formal and informal firm (Prediction 1), I estimate the following equation for formal and informal firms separately using OLS:

$$y_i = \beta_0 + \beta_1 S + \beta_2 X + \varepsilon_i . \qquad (4)$$

y_i denotes firm *i's* yearly sales, *S* is a set of social capital variables such as the number of close family members (children, brothers and sisters), the number of extended family members (uncles and cousins), the number of trusted non-family persons, the number of known non-family competitors, the number of competitors who are from the same family, the number of known suppliers, and finally the number of known clients. By a "known" person I mean a person who is either a member of the respondent's family, association, church, club, neighborhood, or network of friends. Thus, to know somebody establishes a social link to this person. The set of social capital variables includes also a dummy variable indicating whether the respondent is member of a business association. All these measures refer to the social linkage of a firm owner and measure social capital as defined in the paper.

X is a set of control variables and includes variables such as labor, working capital, firm age, education, gender, and ethnicity. β_1 and β_2 are both vectors of estimation parameters, whereby the coefficients in β_1 are of interest here. Most of the variables are expressed in logs so that the estimation parameters express elasticities.

The regression results are presented in Table 2. Specification (I) estimates equation (4) without the social capital variables. Specification (II) estimates equation (4) with all social capital variables, and specification (III) includes only the social capital variables that were significant for informal firms in specification (II). *It is immediately apparent that social capital affects sales differently for formal and informal firms*. As predicted by the theory introduced earlier, none of the social capital variables is statistically significant for formal firms. Furthermore, the fact that the estimate regarding the impact of the "share of direct sales" is large and significant for formal firms (in specifications (I) and (III)) but not significant for informal firms is evidence which supports the theory, namely that formal firms are able to commit to high quality (generating more sales with higher prices) in anonymous one time interactions simply based on the buyer's threat to come back and return a low quality product. For informal firms, in contrast, the number of known consumers affects sales positively which again does not reject the theory developed earlier.

For both, informal and formal firms the output elasticities for labor are higher than the output elasticities for physical capital. The results are reassuring because they confirm the highly labor intensive way of producing garments. Also, the output elasticity with respect to part-time labor is smaller than the one for full-time labor which is expected. Furthermore, those elasticities add up to more than one which can be expected at the scale of production these firms are operating. Note that the estimates remain more or less the same across specifications. Worthwhile to mention is that for informal firms the coefficient for physical capital drops somewhat in specification (II) and (III) compared to specification (I). It may point to an omitted variable bias in specification (I), where physical capital captures some of the effect on sales that is due to social capital. For formal firms, firm age is not significant in specification (I) and increases and becomes significant in specifications (II) and (III).

The various forms of social capital affect sales of informal firms differently. For example, there is no effect for close family members. Note, however, that in many firms close family members work directly in the firm either as part- or full-time labor. Their contribution, therefore, is captured by the labor variables (full-time and part-time). There is no impact on sales by the number of known non-family competitors. However, there is an impact by the number of competitors from the same family. This reinforces the point that only social links involving trust have a positive impact on sales. Trust is a scarce commodity and it can be found only in social relations within the same family or trustworthy friends. The fact that the number of trustworthy friends has the largest impact on sales reinforces the point that trust created through social relationships is critical. The point estimate suggests that a 1%

increase in trustworthy friends increases sales by 0.4%. This is a higher output elasticity than the one observed for physical capital. There is also a positive relationship between sales and being a member of a business association. The interpretation of the estimate is that being a member increases sales by roughly 0.46 log points, which corresponds to a change in sales of about 58%. Being in a business association helps firms to achieve some semi-legal status. The leaders of those associations are often very well articulated and represent forcefully the interests of the small firms when negotiating with the government. They organize strikes and "bloqueos" as it is common in Bolivia.

There is a positive relationship between anonymous trust and sales. To be a trusting person with unknown others is beneficial in this distrusting setting. The point estimate suggests that an increase in the assessment of the trustworthiness of unknown persons by 1 point increases sales by roughly 14%. Contrary to the general perception in this sector, to trust seems to pay off. Note that anonymous trust is also significant for formal firms (in specification I).

Worthwhile to mention is that long-term labor relationships impact sales positively for informal firms and negatively for formal ones. The positive impact for informal firms goes with the general point made in this paper, namely that social links are important for informal firms. The longer a work relationship, the higher the possibility that a trust relationship between worker and firm owner can develop. The strong negative impact of long-term labor for formal firms is somewhat surprising. One explanation could be that labor laws in Bolivia give workers who are hired for more than three months labor protection. Social security payments and minimal wage regulation may have the consequence that formal firms with a high ratio of long-term workers are run overstaffed and with staff who is overpaid (relative to informal firms). In conclusion, it is apparent that for firms operating in the informal sector there is a strong positive relationship between sales and being connected with others. Social links characterized by trust such as trustworthy friends and family are particularly important.

The fact that social links do not matter for formal firms, an d the fact that social links to suppliers and competitors are insignificant for informal firms presents evidence against a view of social capital which originates from Granovetter's seminal paper on the "strength of weak ties" (1973). Granovetter perceives social links as a means to obtain valuable business relevant information. Furthermore, the weaker the social tie the more valuable this link because the exchanged information in such a link is less likely to have redundant content. If this hypothesis applies to the sector studied here, then one would expect that social capital affects sales not only for informal but also for formal firms. Furthermore, one would expect links to competitors and suppliers to be particularly valuable because suppliers and competitors can be expected to have business relevant information. However, I do not find any evidence supporting this theory. For example, in a similar study Fafchamps and Minten (2002) support this view by showing a strong causal positive relationship between the number of known competitors and sales for an agricultural trader in Madagascar.

The coefficients for gender and ethnicity (being a female firm-owner, and being an Aymara) has a positive and large impact on sales. The interpretation is that female firm owners have sales that are more than twice as much as male firm owners, and an Aymara firm owner has roughly 77% higher sales than a non-Aymara firm owner. Part of this large effect can be associated with the perception of trustworthiness of women and Aymaras. In the survey I asked the question of whom respondents believe is more likely to return lent money (the amount in question was roughly US$ 100). 65% of the respondents indicate that they believe that woman are more likely to return lent money than man. This belief is shared

equally by man and women. Similarly, 62% of the respondents indicate that an Aymara is more likely to return the money than a person coming from any other ethnic group living in the area. 83% of the respondents rank an Aymara first or second when assessing the likelihood of returning lent money. Note that this effect is driven by the fact that most of the respondents in the sample are Aymaras (60%). For example, most respondents who are Quechua (the second largest ethnic group on the area) believe that a Quechua is most likely to return lent money. Thus, part of this large gender and ethnicity effect may be explained by the fact that woman and Aymaras are perceived as being more trustworthy than man or persons from other ethnic groups.

4.2 Endogeneity Bias of Social Capital

The estimates of the impact of social capital on sales may be biased. First, the estimates may suffer from reversed causality. For example, if it is the case that firms with more social capital have higher sales (by the channel specified in the theory) and that more sales leads to more social capital (by a channel not specified by the theory) than the estimates in Table 2 are upward biased. Unfortunately, I do not have a valid instrument for social capital to account for reversed causality or other problems that may cause an endogeneity bias. The theory presented in Section 2 specifies an exact channel through which social capital causes a change in sales. I am convinced that the theory captures key features of the reality in which formal and informal firms are operating. Thus, there is no doubt that there is a causal link between social capital and sales. Second, most of the social capital measures capture social links that are either not a choice variable of the firm (extended family) or are social links which are established over a long time period only (close family, trustworthy friends). For this reason I do not believe that current sales have a causal impact on the number of social links of a firm. For example, in the questionnaire the question regarding trustworthy friends was phrased in the following way: "How many non-family persons do you know who are responsible and trustworthy, and when they make a promise they will comply with it? This is a difficult question; please take your time to think about it."[14] This question emphasizes the trustworthiness and reliability of known non-family members which usually can be known after some time only. In particular, this question does not ask about the number short acquaintances which may be clearly affected by current sales. I, therefore, am confident that the estimates do not suffer from reversed causality.

Another worry is that the social capital measures may capture some other effect (not related to the role of social capital) for which no control variable is included in the regression analysis (omitted variable bias). For example, family and friends may be helping out by giving credit. If having easy access to credit positively affects sales then the error term is correlated with social capital and the estimates, therefore, are biased. Or if being catholic affects both the number of family member and the level of sales, then, again, the estimates are biased. Or if the number of languages a person speaks is correlated with sales and the number of family member and friends then again the estimates will be biased. In all those cases the effect has nothing to do with the role of social capital as perceived in the theory. In Table 3, I address the potential for omitted variable bias by including additional controls. As can be seen all the social capital measures remain essentially unaffected when adding

[14] The question in Spanish is as follows: "¿Cuántas personas (no familiar) conoce usted que usted sabe que son responsibles y honorables y si dan su palabra, van a cumplir? Esta es una pregunta muy dificil, favor toma su tiempo para pensarla bien."

controls such as being catholic and whether respondents indicated that the first source of credit comes from friends and family. Similarly there is no change in the estimates when adding controls for sub-contracting, whether a firm owner made an investment last year, travels abroad, is single, or owns a car. There is also no change in the estimates when adding the number of languages a firm owner speaks as a control. This analysis indicates that the estimates are robust, and it is unlikely that they suffer from omitted variable bias. However, although the estimates remain unaffected by the additional controls and although the point can be made that the estimates are unlikely to suffer form reversed causality, without a valid instrument the doubt that the estimates may suffer from endogeneity bias can of course not be ruled out entirely.

4.3 The Benefit of Being Formal

The second prediction made by the model indicates that formal firms have higher sales than informal firms when controlling for the level of social capital of informal firms. In order to test this prediction I estimate the following equation for the sample which includes formal and informal firms (again using OLS):

$$y_i = \beta_0 + \beta_1 S' + \beta_1, (F_i * S') + \beta_2 X + \beta_3 F_i + \varepsilon_i \qquad (5)$$

F_i is a dummy variable which equals 1 if firm i is a formal firm, and S' is the set of social capital variables that are statistically significant in equation (4). β_3 is the coefficient of interest here. The prediction of the model introduced earlier is that formal firms have higher sales than informal ones after controlling for social capital. Thus, β_3 is expected to be positive. I use an interaction term for social capital variables to control for social capital for informal firms. The estimation result is reported in Table 3. Without any controls such as controls for firm size and physical capital, etc. a formal firm sells roughly nine times as much as an informal firm without social capital. When introducing controls such as labor, physical capital, and human capital then the coefficient for the formal status drops by a little bit more than one half indicating that a formal firm sells about three times as much as an informal firm without social capital. When gender is added as a control variable, the coefficient for formal status becomes insignificant. However, it is still positive as predicted by the theory.

If I add an interaction term for the share of long-term labor, then β_3 increases substantially indicating that a formal firm has about 5 times higher sales than an informal firm without social capital *and without long-term labor relationships*. Thus, a firm owner who starts business without a network of reliable and trustworthy persons will earn about 5 times less than a formal firm owner who employs the same number of persons, has the same equipment, the same level of education, same ethnic background and the same gender. The theory developed earlier explains this large gap by the fact that a formal firm can commit to better quality products by the simple reason of being more visible and easily accessible for buyers than an informal firm.

4.4 The Choice of Becoming Formal

In the model developed in Section 2 the status of a firm (high- or low transaction cost firm) is exogenous. But since the theory suggests that there is some "substitution" effect between "being formal" and "being included in a network of trustworthy persons" since both factors

lead to low transaction cost when dealing with buyers, in may be well the case that the level of social capital may affect a firm owner's decision of becoming formal. One, therefore, may expect firm owners with more social capital less likely to become formal. In order to test this hypothesis I estimate the following equation using a Probit specification for the sample which includes formal and informal firms:

$$F_i = \beta_1 S + \beta_2 X + \varepsilon_i \qquad (6)$$

F_i is a dummy variable which equals one if firm i is formal. As before S and X denote a set of social capital and control variables respectively. B_1 and β_2 are both vectors of estimation parameters, whereby the coefficients in β_1 are of particular interest here.

In specification (I) I estimate equation (6) without any controls. First, being a member of a business association significantly decreases the probability of becoming formal. This result is robust and holds also when adding controls. This result is as expected since being in a business association gives members some semi-formal status as explained earlier. Second, an increase in the number of trustworthy non-family friends increases the likelihood of becoming formal. This result comes as a surprise and runs against the "substitution hypothesis" developed earlier. In contrast, as expected the number of family competitors decreases the likelihood of becoming formal.

The estimates for all the other social capital variables show the expected sign, they, however, are not significant. Once firm age is added as a control (Specification II) the number of close family members strongly decreases the likelihood of becoming formal. This result does not necessarily support the "substitution hypothesis" since close family members mostly serve as labor for informal firms as explained earlier.

Worthwhile to mention is that human capital positively affects the likelihood of becoming formal (in specifications (III) and (IV). Moreover, an increase in the share of direct sales to final consumers increases the likelihood of becoming formal which is expected by the "substitution hypothesis". The more firms sell to final consumers, the larger the benefits for a firm of being formal. In short, having family and being member of a business association have a strong negative effect on the likelihood of becoming formal. In contrast, to have trustworthy non-family friends, being educated, and when mostly selling to final consumers has a positive effect on the likelihood of becoming formal. Thus, social linkage via family and business association increases the likelihood of being informal while linkage via non-family friends decreases the likelihood of being informal.

5. Conclusions

As in many developing countries, the level of anonymous trust in Bolivia is low, and the shadow of the courts for contract enforcement is virtually absent. In such a setting a specific mechanism has to be in place in order to overcome moral hazard in buyer-seller transactions. One such mechanism is to give buyers the possibility to return a good if they are not satisfied with it. Critical for this mechanism to work is that transaction costs associated with returning a good are sufficiently low. The paper shows that the formal status of a firm affects this transaction cost. Informal firms operate in the hidden and do not use receipts for their transactions. They appear on informal markets on a more or less frequent basis. These factors make it difficult for buyers to return a good unless there is a social link between the seller and the buyer. Correspondingly, the model predicts that social trust relationships are valuable

for informal firms but not for formal firms since a return policy can be implemented without the presence of a social link. A formal firm operates in a visible location and maintains regular opening hours. Furthermore, receipts are used for its transactions. Based on a bargaining model with endogenous market-outside options it is shown that formal firms and informal firms with social capital not only can charge a higher price but they have also more business than informal firms without social capital. Thus, the model predicts that social capital increases sales for informal firms, and that formal firms have higher sales than informal firms when controlling for the level of social capital of informal firms.

I use micro-level data obtained from surveying informal and formal textile producers in Bolivia to test the two predictions. The results, first, show that there is a positive relationship between sales and the number of extended family members, competitors from the same family, trustworthy friends, and the number of known consumers for informal firms. The output elasticities with respect to the various forms of social capital are large, larger than the output elasticity for physical capital. I use an extensive list of control variables to address the problem of a potential omitted variable bias. All the social capital measures remain unaffected when adding these controls indicating that the result is robust and unlikely to suffer form omitted variable bias. Furthermore, the share of sales to final consumers has a positive impact on sales for formal firms which reinforce the point made in the model that formal firms can overcome moral hazard in one-time interaction with their buyers. Second, the paper shows that a formal firm ears roughly three to five times as much as an informal firm without social capital. Thus, social capital created through social links within families and networks of trustworthy friends are an important asset for the economic success of informal firms. The paper shows also that having a trusting attitude towards unknown others pays off even in a setting that is characterized by a high level of distrust. This is true for formal and informal firms. Thus, measures to increase the level of anonymous trust would clearly be beneficial. Furthermore, it is shown that social linkage via family and a business association increase the likelihood of a firm of being informal. Thus, these forms of social capital and "formal status" work as substitutes. On the other hand social linkage via trustworthy friends increases the likelihood of being formal. Education also reduces the likelihood of a firm being informal. From a policy perspective, to increase the level of anonymous trust and to encourage the development of trust relationships between non-family members not only benefits firms currently operating in the informal sector but it also increases the likelihood that those forms will become formal.

References

Annen, Kurt (2001). ”Inclusive and Exclusive Social Capital in the Small-Firm Sector in Developing Countries,” Journal of Institutional and Theoretical Economics 157, (2), 319–330.

Annen, Kurt (2003). ”Social Capital, Inclusive Networks, and Economic Performance,” Journal of Economic Behavior and Organization 50, 449–463.

Durlauf, Steven; Fafchamps, Marcel (2004). ”Social Capital,” NBER Working Paper 10485, Fafchamps, Marcel; Minten, Bart (2002). ”Returns to Social Network Capital Among Traders,” Oxford Economic Papers 54, 173–206.

Granovetter, Mark S. (1973). ”The Strength of Weak Ties,” American Journal of Sociology 78, (6), 1360–1380.

Inglehart, Ronald (1997). Modernization and postmodernization: Cultural, economic, and political change in 43 societies. Princeton: Princeton University Press.

Kessler, Anke S.; L¨ulfesmann, Christoph (2004). ”Bilateral Bargaining, Unverifiable Quality, and Options to Return,” Economic Theory 23, 395–410.

Knack, Stephen; Keefer, Philip (1997). ”Does Social Capital Have an Economic Payoff? A Cross-Country Investigation,” Quarterly Journal of Economics 112, 1251–88.

Ponsati, Clara (2004). ”Search and Bargaining in Large Markets with Homogenous Traders,” Contributions to Theoretical Economics 4, (1), 1–23.

Ponsati, Clara; Sakovics, Jozsef (1998). ”Rubinstein Bargaining with Two-sided Outside Options,” Economic Theory 11, 667–672.

Rubinstein, Ariel (1982). ”Perfect Equilibrium in a Bargaining Model,” Econometrica 50, 97–109.

Rubinstein, Ariel; Wolinsky, Asher (1990). ”Decentralized Trading, Strategic Behavior and the Walrasian Outcome,” Review of Economic Studies 57, 63–78.

Woolcock, Michael (1998). ”Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework,” Theory and Society 27, (2), 151– 208.

Appendix 1

Proof of Proposition 1. Market Equilibrium 1-1: Assume a market profile in which players play Bargaining Strategy 1. Given this market profile, outside options are as described in Lemma 1. This market profile can only be a market equilibrium if $\omega \geq s_H - x_S = (1-\hat{\alpha}\gamma\delta/(\theta-(1-\hat{\alpha})\gamma\delta))s_H \equiv \underline{\omega}^1$. Otherwise, the low quality good will is provided if the buyer is the first proposer. For only a slightly lower value of ω the buyer is better off to propose to the seller $s_H - \omega$ instead of x_S. Thus, bargaining strategy 1 ceases to be a subgame perfect equilibrium in the bargaining game. Note that since $x_B < s_H - x_S$, the high quality good will be produced if the seller is the first proposer.

Market Equilibrium 1-2: Assume a market profile in which players play Bargaining Strategy 2. Given this market profile, outside options are as follows:

$$x_B = \delta[\gamma(\omega/2 + x_B/2) + (1-\gamma)x_B] = \left(\frac{\gamma\delta}{\theta-\gamma\delta}\right)\omega, \text{ and} \qquad (7)$$

$$\begin{aligned} x_B &= \delta[\gamma\hat{\alpha}((s_H-\omega)/2 + (s_H - x_B)/2) + (1-\gamma\hat{\alpha})x_S] \\ &= \hat{\alpha}\gamma\delta\left(\frac{s_H(\theta-\gamma\delta) - (\theta/2)\omega}{(\theta-\gamma\delta)(1-\delta(1-\hat{\alpha}\gamma))}\right) \end{aligned} \qquad (8)$$

The bargaining strategy is a subgame perfect equilibrium in the bargaining game given outside options x_S and x_B if and only if

$$x_S < s_H - \omega \quad \Leftrightarrow \quad \omega < (1-\hat{\alpha}\gamma\delta/(\theta-(\hat{\alpha})\gamma\delta))s_H \equiv \overline{\omega}^{1-2},$$

and if and only if

$$x_S \geq \delta(s_H - \omega) \quad \Leftrightarrow \quad \geq \left(1 - \frac{\hat{\alpha}\gamma}{(2-\hat{\alpha}\gamma-\delta(1-\hat{\alpha}\gamma)}\right)s_H \equiv \underline{\omega^{1-2}}$$

Thus, for $\underline{\omega^{1-2} \leq \omega < \overline{\omega}^{1-2}}$ the bargaining strategy is a subgame perfect equilibrium which establishes the market profile in which players play this bargaining strategy as market equilibrium.

Equilibrium 1-3: Assume a market profile in which players play Bargaining Strategy 3. Given this market profile, outside options are as follows:

$$x_B = \delta[\gamma(\omega/2 + \delta\omega/2) + (1-\gamma)x_B] = \left(\frac{\gamma\delta(1+\delta)}{\theta}\right)\omega, \text{ and} \qquad (9)$$

$$x_B = \delta\left[\gamma\hat{\alpha}\left((s_H - \omega)/2 + (s_H - \delta\omega)/2\right) + (1 - \gamma\hat{\alpha})x_S\right] \quad (10)$$

$$= \frac{\hat{\alpha}\gamma\delta\,(2s_H - (1+\delta)\,\omega)}{2 - 2\delta\,(1 - \hat{\alpha}\gamma)}$$

The bargaining strategy is a subgame perfect equilibrium in the bargaining game given outside options x_S and x_B if and only if

$$x_S \leq \delta(s_H - \omega) \Leftrightarrow \omega \leq 2s_H\left(1 - \frac{1}{2 - \hat{\alpha}\gamma}\right) \equiv \bar{\omega}^{1-3}$$

Equilibrium 1-3 is a market equilibrium for any $\omega > 0 \equiv \underline{\omega}^{1-3}$. The reason is that a buyer has no way of unilaterally initiate the trade of the low quality good.

Market Equilibrium 1-4: Assume a market profile in which players play Bargaining Strategy 4. Given this market profile, outside options are as described in Lemma 1. The low quality market equilibrium described in Lemma 1 is obtained if $\omega > x_B = (\gamma\delta(\theta - (1-\hat{\alpha})\gamma\delta)s_L \equiv \bar{\omega}^4$. Then the price is such that the low quality product is produced no matter whether the seller or the buyer is the first proposer.

Since $\underline{\omega}^{1-3} = 0 < \bar{\omega}^{1-4}$ $\lessgtr$ $\underline{\omega}^{1-2} < \bar{\omega}^{1-3}$ $\lessgtr$ $\bar{\omega}^{1-2} = \underline{\omega}^{1-1}$ it follows that market equilibrium 1-1 is unique if and only if $\omega > \max\left\{\bar{\omega}^{1-3}, \underline{\omega}^{1-1}\right\}$. Market equilibrium 4 is unique if and only if $\omega \leq \underline{\omega}^{1-3}$. For all other values of ω there is at least one but at most two market equilibria. As long as $\omega > \bar{\omega}^{1-4}$ both buyer and seller prefer to coordinate on the trade of the high quality good. For a lower value of ω the buyer prefers to trade the low quality good while the seller prefers to trade the high quality good. Similarly, if $\underline{\omega}^{1-1} < \omega < \bar{\omega}^{1-3}$ the buyer prefers to coordinate on market equilibrium 3 while the seller is better off with market equilibrium 1.

Note that depending on ω there is another market equilibrium which emerges if condition i) in Definition 1 is relaxed. It is based on the following bargaining strategy: Sellers play Bargaining Strategy 1 and buyers play Bargaining Strategy 4. To simplify calculations let $\hat{\alpha} = 1$. In a market profile in which players play this strategy, outside options are as follows:

$$x_B = \delta\left[\gamma\left((S_l - X_s)/2\right) + (1-\gamma)x_B\right], \text{ and} \quad (11)$$

$$x_S = \delta\left[\gamma\left(S_h - x_B\right)/2 + x_S/2 + (1-\gamma)x_S\right] \quad (12)$$

Using (11) and (12) to solve for x_B and x_S yields $x_B = \gamma\delta/\theta(s_L - \phi)$ and $x_S = \gamma\delta/\theta(s_H - \phi)$, where $\phi = \frac{(s_H - s_L)\gamma\delta}{2(1-\delta)}$. This equilibrium is only a market equilibrium if $s_L \geq s_H(\gamma\delta)/(\theta - \gamma\delta)$ because otherwise the buyer's outside option is negative. When $s_L - x_S > \omega > 0$ then the buyer prefers to trade the low quality good to the high quality good while the seller prefers to trade the high quality good. Note that equilibrium 1 and 3 cannot coexist. When $\omega > s_L - x_S$ the buyer can unilaterally increase the offer to the seller to $s_H - \omega$ which will provide the production of the high quality good and gives the buyer a payoff of ω. However, equilibrium 2 and 3 can

coexist. Obviously, the buyer prefers equilibrium 2 to 3 while the seller has the reversed preference.

Proof of Proposition 2. The proof gives a full description of all market equilibrium existing in the model.

Market Equilibrium 2-1: Consider the following market profile of strategies: In a match with a low-transaction cost seller, players play bargaining strategy 1. In a match with a high-transaction cost seller, players play bargaining strategy 4. Given this market profile, outside option are as follows:

$$x_B = \delta\left[\gamma\left(\alpha(s_L - x_{SH})/2 + (1-\alpha)(s_H - x_{SL})/2\right) + x_B/2\,(1-\gamma)x_B\right] \quad (13)$$

$$x_{SH} = \delta\left[\gamma\alpha\left((s_L - x_B)/2 + x_{SH}/2\right) + (1-\gamma\alpha)x_{SH}\right] \quad (14)$$

$$x_{SL} = \delta\left[\gamma(1-\alpha)(s_H - x_B)/2 + x_{SL}/2\right) + (1-\gamma)x_{SL}\right] \quad (15)$$

In a market equilibrium, expected payoffs have to be identical across matching partners which requires that

$$s_L - x_{SH} = s_H - x_{SL} \quad (16)$$

Using equations (13), (14), (15), and (16) to solve for x_B, x_{SH}, x_{SL}, and α yields

$$x_B = \begin{cases} \dfrac{(s_H + s_L)\gamma\delta}{2\theta - \gamma\delta} & \text{if } s_L - (2-\gamma\delta)s_H \\ s_H\,\gamma\delta/\theta & \text{if } s_L - (1-\gamma\delta/\theta)s_H, \text{ and} \end{cases}$$

$$x_{SL} = \begin{cases} \dfrac{(s_H\,\gamma\delta + \theta\,(s_H + s_L)}{2\theta - \gamma\delta} & \text{if } s_L > (2-\gamma\delta)s_H \\ s_H\,\gamma\delta/\theta & \text{if } s_L \le (1-\gamma\delta/\theta)s_H \end{cases}$$

and $x_{SH} = \max\left\{0, \frac{s_H\gamma\delta - \theta(s_H - s_L)}{2\theta - \gamma\delta}\right\}$. α is determined endogenously and equals $\alpha* = \max\left\{0, \frac{s_H\gamma\delta - \theta(s_H - s_L)}{(s_H + s_L)\gamma\delta}\right\}$. Note that α* cannot be larger than 0.5.

It is necessary for this market profile to be a market equilibrium that $\omega \geq s_H - x_{SL}$. Thus,

$$\underline{\omega}^{2-1} = \begin{cases} \dfrac{(s_H\,s_L)(\theta\,\gamma\delta)}{2\theta - \gamma\delta} & \text{if } s_L > (2-\gamma\delta)s_H \\ (1-\gamma\delta/\theta)s_H & \text{if } s_L \le (1-\gamma\delta/\theta)s_H \end{cases}$$

Note that $\alpha^* = 0$ if $s_L \leq (1 - \gamma\delta/\theta)s_H$. Thus, if the difference between s_H and s_L is large enough, high-transaction cost firms will have no business.

Since $\gamma > 2\delta/(1+\delta)$, bargaining strategy 4 is the unique subgame perfect bargaining equilibrium in a match with a high-transaction cost seller even if x_{SH} is approaching zero. Since $x_{SL} > x_{SH}$, bargaining strategy 1 is clearly the unique subgame perfect equilibrium in a match with a low-transaction cost seller.

Market Equilibrium 2-2: Consider the following market profile of strategies: In a match with a low-transaction cost seller, players play bargaining strategy 2. In a match with a high-transaction cost seller, players play bargaining strategy 4.

Given this market profile, outside option are as follows: $x_B = \frac{\gamma\delta\omega}{\theta - \gamma\delta} = \min\{0, s_L - \omega\}$ *and*

$$x_{SL} = x_S^{1-2}(\hat{\alpha} = 1-\alpha^*)(1-\alpha^*)\gamma\delta\left(\frac{s_H(\theta-\gamma\delta)-(\theta/2)\omega}{(\theta-\gamma\delta)(1-\delta(1-\alpha^*)\gamma))}\right)$$

where

$$\alpha^* = \begin{cases} 1 & \text{if } \omega \leq (1-\gamma\delta/\theta)\, s_L \\ \frac{(s_L - \omega)(\theta - \gamma\delta)}{\gamma\delta\omega} & \text{if } (1-\gamma\delta)/s_L < \omega < s_L \\ 0 & \text{if } \omega \geq s_L \end{cases}$$

The bargaining strategy is a subgame perfect equilibrium in the bargaining game given outside options x_{SL} and x_B if and only if

$\delta(s_H - \omega) \leq x_{SL} < s_H - \omega$

These inequalities define a range of values for ω for which the market profile is a market equilibrium. They are as follows:

$$\varpi^{2-2} = \begin{cases} s_H & \text{if } \omega \leq (1-\gamma\delta/\theta)\, s_L \\ \frac{(s_L - \omega)(\theta - \gamma\delta)}{2\theta - \gamma\delta} & \text{if } (1-\gamma\delta)/s_L < \omega < s_L \\ (1-\gamma\delta/\theta)s_H & \text{if } \omega \geq s_L, \text{ and} \end{cases}$$

$$\varpi^{2-2} = \begin{cases} s_H & \text{if } \omega \leq (1-\gamma\delta/\theta)\, s_L \\ \frac{(\theta-\gamma\delta)(s_L(\theta-1-\gamma\delta)+s_H(\theta-\delta)-\varphi}{4+(2\gamma\delta-4\delta)(2\theta+\delta-2\gamma\delta)} & \text{if } (1-\gamma\delta/)/\theta)s_L < \omega < s_L \\ 1-\frac{\gamma}{(2-\gamma)(2\theta+\delta)s_H} & \text{if } \omega \geq s_L, \end{cases}$$

where $\varphi = [(s_L(\theta - 1 - \gamma\delta))^2 + (s_H(\theta - \delta))^2 - 2s_Hs_L(2 - \delta(9 - 4\gamma - (2 - \gamma)(3 - 2\gamma)\delta)]^{1/2}$.

Market profile 2-2 is a market equilibrium only if $\omega^{2-2} \leq \omega \leq \varpi^{2-2}$. Note that $\omega^{2-2} \leq \varpi^{2-2}$ for all parameter values of the model, and that $\omega^{2-2} > (1-\gamma\delta/\theta)s_L$, which implies that α^* is always smaller than one. If $\omega \geq s_L$ then high-transaction cost firms have no business since $\alpha^* = 0$. Finally, note that $s_L\ \omega^{2-2}$ which implies that under this market equilibrium there is a range of values for ω in which high-transaction cost sellers will have business no matter the difference between s_H and s_L.

Market Equilibrium 2-3: Consider the following market profile of strategies: In a match with a low-transaction cost seller, players play bargaining strategy 3. In a match with a high-transaction cost seller, players play bargaining strategy 4. Given this market profile, outside option are as follows: $x_B = \quad x_B^{1-3} = \frac{\gamma\delta\,(1+\delta)\omega}{\theta}$,

$$x_{SL} \quad = \quad x_S^{1-3}(\hat{\alpha} = 1-\alpha^*) = \frac{(1-\alpha^*)\gamma\delta\,(2s_H - (1+\delta)\omega))}{(\theta - (1-\alpha^*))\,\gamma\delta))},$$

where

$$\alpha^* \;=\; \begin{cases} 1 & \text{if } \omega \le (1-\gamma\delta/\theta)\, s_L \\ \dfrac{\theta s_L - (1+\delta)\,(\theta - \gamma\,\delta)\omega}{\gamma\delta\,(1+\delta)\omega} & \text{if } (1-\gamma\delta/)/\,\theta) s_L < \omega < s_L \\ 0 & \text{if } \omega \ge \dfrac{s_L\theta}{(1+\delta)\,(\theta - \gamma\,\delta)}, \end{cases}$$

and

$$x_{SH} \;=\; \begin{cases} s_L\,\gamma\delta/\theta & \text{if } \omega \le s_L/(1+\delta) \\ s_L - \dfrac{\omega(1-\delta)\,(\theta - \gamma\delta)}{\theta} & \text{if } s_L/(1+\delta) < \omega < \dfrac{s_L\theta}{(1+\delta)\,(\theta - \gamma\,\delta)}, \\ 0 & \text{if } \omega \ge \dfrac{s_L\theta}{(1+\delta)\,(\theta - \gamma\,\delta)}. \end{cases}$$

Bargaining strategy 3 is a subgame perfect equilibrium in the bargaining game given outside options x_{SL} and x_B if and only if

$$x_{SL} \quad \le \quad s_H - \omega$$

This condition defines an upper bound of values for ω for which this market profile is market equilibrium.

$$\varpi^{2-3} \;=\; \begin{cases} s_H & \text{if } \omega \le s_L/(1+\delta) \\ \dfrac{s_H + s_L + (s_H - s_L\,(1-\gamma)\delta}{(1+\delta)\,(\theta + \gamma\delta)} & \text{if } s_L/(1+\delta) > \omega < \dfrac{s_L\theta}{(1+\delta)\,(\theta - \gamma\delta)}, \\ \dfrac{s_H\,(2\gamma\delta + \theta)}{\gamma\delta\,(1+\delta) + \theta} & \text{if } \omega \ge \dfrac{s_L\theta}{(1+\delta)\,(\theta - \gamma\,\delta)}. \end{cases}$$

The lower bound of ω for this market profile to be a market equilibrium is $\varpi^{2-3} = 0$. Note that for low enough value of ω low-transaction cost sellers have no business. If $\omega \le s_L/(1+\delta)$, high-quality goods are no longer produced.

Market Equilibrium 2-4: Consider the following market profile of strategies: In any given match players play bargaining strategy 4. Given this market profile, outside options are as in Market Equilibrium 1-4 with $\hat{\alpha} = 1/2$. This market equilibrium exists only if $\omega < x_B = \gamma\delta s_L/(\theta - \gamma\delta/2) \equiv \varpi^{2-4}$.

Note, first, that $\varpi^{2-3} \ge \varpi^{2-2}$ *and* $\underline{\omega}^{2-3} < \underline{\omega}^{2-2}$ for all parameter values of the model which implies that when ever market equilibrium 2-2 is an equilibrium, equilibrium 2-3 is as well. Second, if $\omega < s_H/(1+\delta)$ only low quality products will be produced.

Appendix 2

A random selection of small firms is not straightforward to obtain for several reasons: First, given the high number of informal firms, there is no centralized registry that keeps names and locations of firms. Second, firms are not clustered in one geographical area. Firms are dispersed all over El Alto and La Paz, the largest city in Bolivia with a population of approximately 1.6 million. Third, informal firms worry about being detected by public officials which makes the access to them difficult. These factors constituted a serious constraint for constructing a random sample.

We accessed firms through three different channels: First, I could convince private organizations and public institutions that work with firms in the textile sector including micro-finance institutions and business associations of textile producers, etc. to provide me with their membership directories. From these directories, firms were picked randomly.15[15] The support of these organizations - in particular the micro finance institutions and the small firms associations - not only helped us to locate firms but also to gain the trust of firm owners which is particularly important for informal firms because of their fear from tax authorities. About 40% of the firms in the sample were selected in this way. The second channel to access firms was to find them were they appear in public. As indicated earlier, many firms do not have such an appearance at the location where they produce because they are informal. However, they appear in public if they sell their products. Accordingly, we located firms on markets. This in two ways: First, firms have been selected because they have a shop in a specific area. Second, firms have been selected because they sell their products on the largest and most important two informal markets. About 10% of the firms were selected because they have a sales shop somewhere in the streets in La Paz and El Alto. Students entered more or less randomly in these shops and asked whether they are willing to give an interview. The wholesale market takes place in two specific geographical areas. The biggest market takes place in the area around the street called Tumusla. Early in the morning from about 7am to 10 am, firms (among which most are informal) sell their products to resellers. The second area is the biggest (informal) market in La Paz and El Alto called 16 de Julio which takes place on Thursdays and Sundays in El Alto. Again here, many small informal firms present their products for sale. When walking through these two markets, we asked people randomly whether they would be willingly to participate in an interview. Many persons declined such an interview since mistrust is very high. We have to be aware that this introduces a bias towards more trusting persons into our sample. Approximately, 40% of the data is generated in this way. The third way of selecting firms was selection trough acquaintances. In particular the students from the Public University El Alto - where many come from a similar socioeconomic background than the persons we interviewed - had friends and family members who work in the textile sector. Approximately, 10% of the data was collected in this way. The questionnaire consisted of 120 questions as a maximum. The average interview took about the time of one hour. The respondents were not paid for the interview.

[15] The following organizations provided their membership directories: Idepro (micro finance institution), Fie SA (micro finance institution), Federation de Micro y Pequeños Empresarios de La Ciudad de el Alto y Provincias (small firm association), Asociación A.P.T.A (small firm association), Asociación 16 Agosto (small firm association), Palace Sports (small firm association), Asociación Departamental de la Pequeña Industria (small firm association), Instituto Boliviano de la Pequeña Industria y Artesana (Ministry of Development), Camex (chamber of export), Senarec (registry of commerce), and Tax registry of the city of El Alto.

Table 1: Descriptive Statistics

	Informal Firms (100 Observations)					Formal Firms (45 Observations)				
	Mean	**Median**	**SD**	**Max**	**Min**	**Mean**	**Median**	**SD**	**Max**	**Min**
# of full-time workers	2.19	1	3.5	20	0	2.84	3	2.32	7	0
# of part-time workers	0.95	0	1.37	7	0	1.47	0	2.59	11	0
Stock of machines (US$)	3023	1925	3854	26550	60	6411	2200	10983	65800	20
Firm age	8.69	5	7.56	37	1	9.78	9	6.2	24	1
Education (levels)	3.71	3.5	1.59	7	1	4.82	4	1.83	8	2
Sales (US$)	11434	4479	18919	117143	250	10256	5129	13139	62000	329
Share of sales to final consumer	0.49	0.41	0.4	1	0	0.76	1	0.34	1	0
Share long-term labor (< one year)	0.6	0.67	0.41	1	0	0.69	1	0.39	1	0
Close family	7.34	7	2.97	18	1	6.67	7	2.69	12	1
Extended family	17.11	10	31.88	300	0	10.91	8	9.74	40	0
# of trusted non-fam. Persons	3.32	3	2.87	15	0	10.29	2	30.34	200	0
# of known non-fam. competitors	10.65	5	15.92	86	0	12.91	1	38.9	250	0
# of family competitors	3.73	1	11.7	100	0	0.64	0	1.73	10	0
# of known suppliers	1.3	0	2.12	15	0	1.02	0	2.89	16	0
# of known consumers	5.1	2	9.34	50	0	4.09	0	8.59	50	0
Anonymous Trust	2.67	2	1.74	7	1	2.89	2	2.32	10	1
Business association	0.38	0	0.49	1	0	0.13	0	0.34	1	0
Aymara	0.7	1	0.46	1	0	0.38	0	0.49	1	0
Quechua	0.07	0	0.26	1	0	0.13	0	0.34	1	0

Table 2: Sales and Social Capital Dependent Variable log(sales)

	Informal Firms (100 Observations)						**Formal Firms (45 Observations)**					
Specification	**(I)**		**(II)**		**(III)**		**(I)**		**(II)**		**(III)**	
Intercept	**3.77**	(0.93)	**3.07**	(0.95)	**2.77**	(0.76)	**4**	(1.34)	**2.69**	(1.49)	**3.25**	(1.36)
# of full time workers1 (log)	**0.63**	(0.15)	**0.63**	(0.14)	**0.63**	(0.14)	**0.64**	(0.25)	**0.87**	(0.27)	**0.83**	(0.25)
# of part time workers1 (log)	0.2	(0.2)	**0.33**	(0.19)	0.27	(0.18)	0.25	(0.29)	0.36	(0.3)	0.32	(0.27)
Stock of machines (log)	**0.29**	(0.1)	0.16	(0.1)	**0.19**	(0.1)	**0.26**	(0.11)	**0.25**	(0.12)	**0.28**	(0.11)
Firm age (log)	0.17	(0.12)	0.09	(0.12)	0.09	(0.12)	**0.43**	(0.21)	**0.44**	(0.25)	**0.45**	(0.25)
Education (log)	0.16	(0.25)	0.21	(0.22)	0.19	(0.21)	0.05	(0.45)	0.06	(0.44)	0.07	(0.45)
Sales to final consumer (ratio)	0.22	(0.28)	0.24	(0.27)	0.29	(0.29)	**1.20**	(0.62)	1.26	(0.76)	**1.19**	(0.66)
Longterm labor (ratio)	0.3	(0.25)	**0.56**	(0.23)	**0.58**	(0.22)	**-0.92**	(0.42)	**-0.91**	(0.47)	**-0.88**	(0.45)
Close family1 (log)			0	(0.31)					0.49	(0.47)		
Extended family[1] (log)			**0.32**	(0.11)	**0.31**	(0.1)			-0.15	(0.19)	-0.08	(0.18)
Trusted non-fam. persons1 (log)			**0.42**	(0.15)	**0.40**	(0.15)			0.16	(0.16)	0.24	(0.15)
Known non-fam. competitors1 (log)			-0.14	(0.09)					0.06	(0.17)		
Family competitors[1] (log)			**0.23**	(0.11)	**0.18**	(0.1)			0.5	(0.37)	0.39	(0.35)
Known suppliers[1] (log)			-0.06	(0.17)					-0.18	(0.3)		
Known consumers[1] (log)			**0.19**	(0.09)	**0.16**	(0.08)			0.05	(0.18)	0.04	(0.15)
Business association			**0.46**	(0.2)	**0.37**	(0.19)			-0.28	(0.39)	-0.22	(0.37)
Anonymous Trust (log)	**0.15**	(0.06)	**0.13**	(0.05)	**0.13**	(0.05)	**0.14**	(0.06)	0.12	(0.09)	0.11	(0.08)
Female	**0.97**	(0.22)	**0.82**	(0.21)	**0.86**	(0.21)	-0.05	(0.34)	0.04	(0.4)	0.01	(0.42)
Aymara	**0.58**	(0.26)	**0.63**	(0.24)	**0.55**	(0.25)	0.47	(0.29)	0.3	(0.36)	0.47	(0.3)
R-Squared	0.43		0.6		0.59		0.34		0.5		0.48	
Adjusted R-Squared	0.36		0.51		0.51		0.17		0.16		0.2	
F-Statistic	6.65		6.69		7.95		2.03		1.5		1.75	

Standard errors in parentheses. Estimated with White heteroskedasticity-consistent standard errors & covariance;
Numbers in bold indicate a significance level of 10%, 5%, or 1%.
[1]Added 1 to these variables in order to avoid a loss of data in case of zeros.

Table 3: Social Capital and Additional Controls

	Informal Firms (100 Observations)								
Close family (log)	-0.02 (0.32)	0.02 (0.31)	-0.01 (0.32)	0.04 (0.3)	0.03 (0.31)	-0.08 (0.3)	0.04 (0.3)	-0.08 (0.32)	-0.14 (0.29)
Extended family (log)	0.31 (0.11)	0.32 (0.11)	0.3 (0.11)	0.3 (0.11)	0.29 (0.12)	0.32 (0.12)	0.32 (0.11)	0.32 (0.1)	0.26 (0.12)
Trusted n. f. persons (log)	0.43 (0.16)	0.41 (0.15)	0.44 (0.16)	0.41 (0.15)	0.43 (0.16)	0.42 (0.16)	0.42 (0.16)	0.45 (0.16)	0.49 (0.17)
Known n. f. comp. (log)	-0.14 (0.09)	-0.13 (0.09)	-0.15 (0.09)	-0.12 (0.09)	-0.13 (0.09)	-0.13 (0.08)	-0.14 (0.09)	-0.1 (0.09)	-0.06 (0.09)
Family competitors (log)	0.23 (0.11)	0.22 (0.11)	0.24 (0.11)	0.22 (0.11)	0.23 (0.12)	0.24 (0.12)	0.23 (0.12)	0.18 (0.12)	0.19 (0.14)
Known suppliers (log)	-0.03 (0.17)	-0.03 (0.19)	-0.08 (0.17)	-0.07 (0.16)	-0.08 (0.2)	-0.06 (0.16)	-0.04 (0.17)	-0.04 (0.16)	0 (0.18)
Known consumers (log)	0.21 (0.09)	0.18 (0.09)	0.2 (0.09)	0.2 (0.09)	0.21 (0.09)	0.19 (0.09)	0.19 (0.09)	0.17 (0.08)	0.2 (0.09)
Business association	0.46 (0.2)	0.45 (0.2)	0.45 (0.2)	0.42 (0.19)	0.42 (0.2)	0.5 (0.2)	0.47 (0.2)	0.46 (0.2)	0.48 (0.2)
catholic (=1 if yes)	0.18 (0.21)								0.18 (0.22)
credit f. & friends (=1 if yes)		-0.11 (0.26)			-0.01 (0.27)				-0.12 (0.26)
sub-contracting (=1 if yes)			0.49 (0.33)		0.35 (0.37)				0.51 (0.38)
investment l. year (=1 if yes)				0.34 (0.2)	0.30 (0.22)				0.36 (0.23)
# of languages (log)						0.07 (0.42)			0.07 (0.45)
travel (=1 if yes)						0.46 (0.21)			0.5 (0.23)
single (=1 if yes)							0.31 (0.43)		0.05 (0.43)
owns a car (=1 if yes)								-0.59 (0.29)	-0.74 (0.3)
R-Squared	0.6	0.6	0.6	0.61	0.61	0.62	0.6	0.6	0.66
Adjusted R-Squared	0.51	0.5	0.51	0.52	0.51	0.52	0.51	0.51	0.54
F-Statistic	6.36	6.29	6.41	6.59	5.88	6.46	6.36	6.33	5.4

Standard errors in parentheses. Estimated with White heteroskedasticity-consistent standard errors & covariance;

Table 4: Formal Status and Sales

	Formal	S.E.[1]	p-value
No controls	2.22	0.66	0.0011
Controlling for labor and physical capital	1.14	0.6	0. 0601
+ controlling for human capital and firm age	1.04	0.62	0.097
+ controlling for share long-term labor	1.05	0.62	0.0911
+ controlling for female and Aymara	0.8	0.6	0.1887
+ interaction term for share long-term labor	1.6	0.71	0.0248

[1]Estimated with White heteroskedasticity-consistent standard errors & covariance

Table 5: Choosing Formal Status. Dependent Variable formal (=1 if yes). Probit.

	Formal and Informal Firms (n=145)									
Specification	(I)		(II)		(III)		(IV)		(V)	
Close family[1] (log)	-0.11	(0.18)	-0.35	(0.23)	-0.82	(0.31)	-0.97	(0.32)	-0.75	(0.34)
Extended family[1] (log)	-0.08	(0.12)	-0.08	(0.12)	-0.17	(0.14)	-0.17	(0.14)	-0.15	(0.15)
Trusted non-fam. persons[1] (log)	0.45	(0.18)	0.45	(0.19)	0.46	(0.2)	0.4	(0.2)	0.34	(0.21)
Known non-fam. competitors[1] (log)	-0.12	(0.11)	-0.14	(0.11)	-0.12	(0.11)	-0.08	(0.12)	0.01	(0.13)
Family competitors[1] (log)	-0.43	(0.19)	-0.4	(0.19)	-0.5	(0.2)	-0.49	(0.21)	-0.48	(0.22)
Known suppliers[1] (log)	-0.23	(0.18)	-0.15	(0.19)	-0.16	(0.2)	-0.16	(0.2)	-0.18	(0.21)
Known consumers[1] (log)	-0.06	(0.11)	-0.07	(0.11)	-0.03	(0.12)	-0.09	(0.12)	-0.11	(0.13)
Business association	-0.75	(0.31)	-0.78	(0.31)	-0.79	(0.32)	-0.8	(0.33)	-0.88	(0.35)
Firm age (log)			0.25	(0.15)	0.14	(0.17)	0.15	(0.18)	0.13	(0.18)
Stock of machines (log)					0.08	(0.09)	0.13	(0.09)	0.15	(0.09)
Education (log)					0.53	(0.27)	0.48	(0.28)	0.38	(0.29)
Sales to final consumer (ratio)							0.72	(0.35)	0.91	(0.38)
Longterm labor (ratio)							-0.55	(0.35)	-0.55	(0.36)
Anonymous Trust (log)									0	(0.07)
Female									-0.58	(0.28)
Aymara									-0.59	(0.3)

Standard errors in parentheses. Numbers in bold indicate a significance level of 10%, 5%, or 1%.
[1] Added 1 to these variables in order to avoid a loss of data in case of zeros.