Economic Returns to Social Capital in the Urban Informal Sector in Developing Countries: Micro Evidence from Small Textile Producers in Bolivia

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Abstract

The paper uses micro-level data obtained from surveying informal and formal small textile producers in Bolivia to estimate the economic returns to social capital. Social capital is defined as being linked to other individuals. The paper studies forms of social links that vary with respect to their inclusiveness and their ability to enforce cooperation. The paper shows, first, that social capital has an economic return for informal firms but not for formal ones. Informal firms operate without the shadow of courts in an environment that is characterized by a lack of anonymous trust which makes self-enforcing social links valuable. Second, more inclusive social capital generates a higher return as long as the self-enforcement constraint is met. The evidence supports the hypothesis that the "strength of weak ties"- argument advanced by scholars such as Granovetter, Putnam, and Fukuyama has to be complemented by the game-theoretic condition requiring exchange among linked players to be (self)-enforceable.

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JEL-Classification: Z13, O12, L14, O17

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1. Introduction

There is a growing acceptance among social scientists that social capital – broadly defined as being linked to other individuals – matters. But exactly *how* it matters – and by *how much* – is less clear. 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.

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.[1] Many approaches emphasize the function of social links in providing information that is relevant for business. Social capital affects economic outcomes by affecting the level of knowledge (human capital) available for an economic activity. 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. Or put more generally: Inclusive social capital generates higher exchange surpluses than exclusive social capital. This idea has been strongly advanced by many scholars, including Granovetter (1973), who stresses the advantage of "weak ties" over "strong ties"; Putnam (2000, p. 22), who distinguishes between "bridging" and "bonding" social capital; and Fukuyama (1995, p. 27), who points to the benefits of

[1] Some argue that these benefits are not necessarily Pareto optimal for the overall economy because organized groups may conspire against unorganized groups making them worse off (Olson 1982). For example, Adam Smith pointed to the danger of a "conspiracy against the public" that may occur if "people of the same trade" meet with each other (quoted in Granovetter 1985, p. 484). For a survey of the literature on social capital see Woolcock (1998) and Sobel (2002).

"spontaneous sociability" over more traditional forms of social capital that are associated with family membership or ethnicity. These theories lead to the prediction that the more social ties a player has, and the more inclusive these ties are, the better will be the economic performance of the player.

The economic approach to social capital emphasizes the importance of wide social networks, but adds the *game-theoretic* constraint that exchange of information and other goods is (self-) enforceable (see Woodruff 1998, Fafchamps 1996, Greif 1994, McMillan and Woodruff 1999, Annen 2003). Problems of moral hazard or asymmetric information may prevent players from realizing exchange surpluses. The game-theoretic approach emphasizes the role of social networks in enforcing cooperative strategies via repeated play and effective information sharing. In Annen (2003), I present a theory of optimal social networks, where optimality is determined by the degree of inclusiveness that maximizes exchange surplus *subject to the constraint that exchange in the network is self-enforcing*.[2]

While this idea can be easily described in theory, it is more difficult to detect empirically. One of the reasons is that cooperation may be supported by various mechanisms other than social linkage. *Formal institutions* such as the threat of punishment by courts and police on the one hand, and *anonymous trust*[3] on the other are two other ways to enforce cooperation in exchange relationships. In most cases, it is difficult to attribute successful cooperation among players to one specific mechanism since all mechanisms are present

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[2] In Annen (2004), I analyze incentive problems related to communication in social networks such as slander and false denial.

[3] The term "anonymous trust" refers to trust among strangers as opposed to "specific trust" which refers to trust among players, who personally know each other (social linkage). Anonymous trust is a valuable resource in an economy as suggested by cross-country estimates (Knack and Keefer 1997).

at the same time. This complexity makes it difficult to get a clear understanding of the exact role of social links in generating economic benefits. Fortunately, the data used in this paper allows for a differentiation among the types of enforcement:

1) The sample consists of 45 formal and 100 informal textile producers in La Paz and El Alto in Bolivia. Thus, two thirds of the firms in the sample are *informal* – that is, they are not registered with the tax authorities. These firms cannot rely on formal institutions for the enforcement of contracts and the protection of their property. These firms operate without the shadow of the courts. This paper draws on a rather unique data set in which most of the sampled firms are informal.[4]
2) Another characteristic of the sample is that the small-firm sector in Bolivia is characterized by a surprisingly low level of anonymous trust. 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. [5] And even more strikingly, 40% of the respondents indicate that one cannot trust unknown persons at all by responding with "1" to this question.

As a result one can expect that social links that satisfy the (self)-enforceability constraint are a particularly scarce – and, thus, a valuable resource – for informal firms. Informal firms cannot draw on formal institutions nor on anonymous trust for enforcement. Furthermore, one can expect that a reliable exchange structure due to social linkage is more valuable for informal firms than for formal ones since the latter can overcome moral hazard by the threat to go to police or to use courts. Formal firms are able to rely

[4] To get a hold of these firms is not straightforward. Section 3 gives the details regarding the sampling method.

[5] The interval estimate with a 1% significance level is [2.322, 3.154].

on enforcement mechanisms that support exchange in more anonymous exchange-relationships making social linkage less valuable. According to this prediction, the paper finds that the forms of social capital considered here generate economic returns for informal firms but not for formal ones. Evidence indicates that formal firms are involved in business transactions that are more anonymous in its nature.

Second, one can expect that according to the game-theoretic view more inclusive social links generate a higher economic return than less inclusive social links *as long as the (self)-enforceability constraint is met*. According to this prediction, the paper shows that for informal firms the economic returns to social capital increase for lower levels of inclusiveness of social networks as inclusiveness increases as long as the enforceability constraint is met. Once the constraint fails to be met, returns to social capital disappear. For the most inclusive form of social capital used here, which is the number of known competitors, there is no economic return. There is evidence that indicates that cooperation in these relationships is not self-enforceable (see Section 4.3). Thus, *informal firms seem not to draw any value from simply knowing people, but they draw a value from knowing people who are trustworthy and reliable*.

This paper substantiates the claim that enforceability is a necessary ingredient for making social links valuable. Such links are particularly valuable in an environment that lacks formal institutions and anonymous trust. The point I want to make is very similar to Geertz' (1978) interesting insights about the functioning of the "Bazaar-economy" in Sefrou, Morocco. Geertz (1978, p. 29) notes that "in the bazaar information is poor, scarce, maldistributed, inefficiently communicated, and intensely valued." Important is that in this setting, the low level of information is not given because of a technical

constraint or because of a lack of social linkage but because it is in the participants interest "to reduce such ignorance for someone, increase it for someone, or defend someone against it." The exchange of information is a strategic game in itself. Not any social link is valuable, but only links that are characterized by trust and trustworthiness.

Social capital has not only the role of enhancing exchange-surpluses among linked players but also the role of securing property rights. This latter role affects the players' incentive to invest in physical and human capital. It is well established that "good" (formal) institutions are important because of their positive impact on investments which then in return generate higher per capita incomes (Knack and Keefer 1995, Acemoglu et al. 2001). By regressing the stock of physical capital on the various forms of social capital, it is shown that informal firm owners with more social capital have a higher stock of physical capital than the ones with less social capital.[6] Furthermore, in contrast to the previous result, inclusiveness is negatively related to the returns to social capital. With respect to property rights protection, the most exclusive form of social capital – which is close family membership – has the highest return.

The remainder of the paper is structured as follows: Section 2 defines various measures of social capital and discusses the theoretical predictions regarding the economic return to social capital. Section 3 gives some general descriptions about the textile firms in La Paz and El Alto in Bolivia. Section 4 presents the empirical results. Section 5 analyses the role of social capital in securing property rights. Finally, the paper concludes with suggestions for further research.

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[6] Unfortunately, I do not have data on investments.

2. Thinking about Social Capital

The paper equates social capital with social linkage. Social capital is measured by the number of links a given player maintains to some categories of other players, such as family, competitors, etc. Thus, the analysis of the paper focuses on social capital built on specific trust rather than on anonymous trust – i.e. trust among strangers. While scholars generally agree that social capital built on anonymous trust is a highly valuable resource in an economy, there is no such agreement regarding specific trust. Social capital built on specific trust is not very well understood. 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. The previous discussion identified two main factors that may influence the economic value of social links:

- First, *inclusiveness* of social links because inclusiveness increases the potential exchange surplus in an exchange relationship, and
- second, *enforceability of exchange* in social links because a potential exchange surplus is only realized when exchange is enforceable.

The paper distinguishes between different forms of social capital that vary along these two dimensions.

2.1 Forms of Social Capital

The paper distinguishes between four types of social links that vary with respect to their *degree of openness* or *inclusiveness*. By “openness” or “inclusiveness” I mean the extent to which a social link is self-chosen as opposed to being predefined by birth. As indicated earlier, inclusiveness affects exchange surplus that can be potentially realized in an

exchange relationship. Within a family, the capacities, aptitudes, and talents of the members may fail to mesh with the requirements for the specific economic activity (Pollak 1985). Furthermore, family links may involve social obligations which may negatively impact business. For example, a firm owner is forced to employ his unproductive brother because of family pressure. However, it seems plausible that such obligations occur less between extended family relationships (cousins, uncles) than close family relationships (children, brother, and sister). Typically, the number of extended family members is large, and players are more able to choose with whom of the cousins and uncles to interact with. Accordingly, I define the size of the close family (children, brothers, and sisters) and the size of the extended family living in the same area (cousins and uncles) as the two first measures of social capital. Close family is perceived as being less inclusive than extended family. It seems evident that self-chosen links such as friendships or partnerships are not subject to these limitations or at least to a lower extent. A player can choose his or her friends from a large pool of possible candidates such that affinities and the requirements for the specific economic activity are more likely to match. In addition, social obligations that may intervene with business necessities are less likely to occur. Marshall (1938, p. 272) wrote almost a hundred years ago that "there are often strong friendships between employers and employed: but neither side likes to feel that in case of any disagreeable incident happening between them, they must go on rubbing against one another: both sides like to be able easily to break off old associations should they become irksome."

While exchange surpluses in predefined social links may be lower than in self-chosen ones, the self-enforceability constraint may be easier satisfied in the former ones. For

example, the theory of repeated games emphasizes the importance of high discount factors for the self-enforcement of cooperative strategies. Family relationships, which play an important role in developing countries (Hart 1973, Elwert 1980), are expected to last one's whole life. These relationships are characterized by what anthropologists call "generalized reciprocity", which means that people expect exchanges to balance only in the long run (Sahlins 1972). Furthermore, family members have the ability to impose effective punishments and rewards. First, the intimate knowledge about a player allows families to identify weak points of a player. They can use this knowledge for the determination of punishments and rewards. Second, the threat of social exclusion gives families a powerful instrument to enforce their norms. Humans have the need to belong and to be attached to others (Baumeister 1995), and families play an integral part in satisfying that need. In a recent paper, La Ferrara (2004) points to the fact that family members are dynastically linked so that the action of the parents can fall upon the children. To the extent that parents depend on their children's support, dynastical linkage helps to enforce cooperative strategies. One, therefore, can expect that the enforcement constraint is more likely to be satisfied in family relationships.

Among the self-chosen links I investigate, first, links to individuals outside the family who are trustworthy and reliable, and, second, links to competitors outside the family who may be neighbors, members of an association, or other acquaintances. I asked each respondent how many non-family persons he/she knows who are "responsible and trustworthy and if these persons give their word, they will comply with it." For these self-chosen links, exchange-surpluses can be expected to be high. Furthermore, because the element of trust is an explicit part of the question, exchange in these links should be self-

enforcing. I also asked each respondent how many non-family competitors he/she knows, whether as neighbor, member of a common association, or known by any other means. While potential exchange-surpluses from cooperation among competitors are large, the self-enforcement constraint is not necessarily met. In fact, Section 4.3 will present evidence that suggests that the (self)-enforcement constraint among competitors is not met.

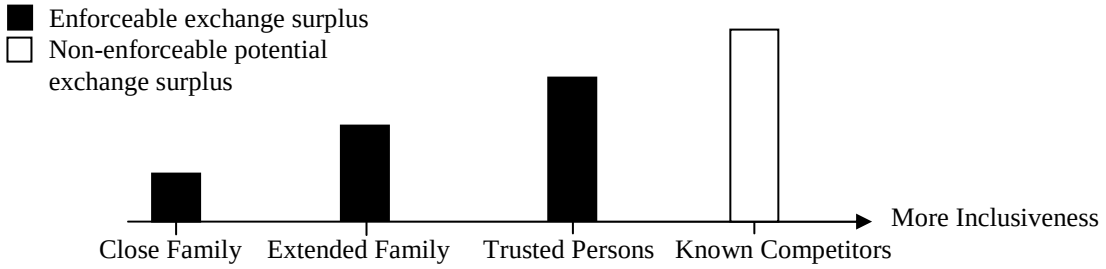

Figure 1 – Expected Returns to Social Capital

Figure 1 summarizes the discussion. The forms of social capital are arranged in order of higher inclusiveness from left to right. While "known competitors" is the most inclusive form of social capital with a high potential exchange surplus, cooperation in these links is not enforceable.

2.2 Estimating the Economic Returns to Social Capital

Markets are not perfect. In situations of asymmetric information and moral hazard, social capital may be a valuable asset because it may help to overcome these problems. The capacity to trade at low costs is an important input factor in any production process. Already Marshall (1938, p. 139) recognized when discussing the differences among factors of production that "[c]apital consists in a great part of knowledge and organization." He identifies *organization as a factor of production*. According to

Marshall, organization is important because it helps to exploit the benefits of "differentiation" which manifests itself "… in such forms as the division of labour, and the development of specialized skill, knowledge and machinery." (Marshall 1938, p. 241) A higher differentiation means a higher interdependence among players which is only sustainable in the presence of a reliable exchange structure. The organization of exchange is an important part of a firm's activity, and social capital affects a firm's organization of exchange. Then, a firm's production function has to be expanded to include social capital as an additional factor of production. The output, Y, of a firm not only depends on the amount of labor, L, physical capital, K, and human capital, H, but also on the amount of social capital, S. Consider a firm's output to be described by the following Cobb-Douglass production function,

$$Y = A \cdot L^{\alpha} \cdot K^{\beta} \cdot H^{\chi} \cdot S^{\delta}.$$

If there is an economic return to social capital, the partial derivative $\partial Y / \partial S$ would be positive. That is, everything else the same, more social capital leads to higher output. The channels through which social capital affects output may be direct or indirect. First, a good name may influence a consumer's decision to do business with this seller. Thus, social capital affects demand directly. But social capital may also affect output via the supply side. Social capital influences sales indirectly by making production less costly. For example, a good name helps to attract better qualified workers, cheaper and better quality supplies, and it may lower production costs by having subcontracts with other producers. The literature on small-firm clusters emphasizes these supply side related benefits (Schmitz 1995). Inter-firm cooperation among small firms allows these firms to exploit economies of scale and scope. There is a large body of literature which shows

how small-firm sectors can benefit from inter-firm cooperation (Annen 2001). Finally, for a firm with a good name, it may be easier to obtain credit, an aspect that is particularly important for small firms in developing countries (Karlan 2001, La Ferrara 2004).

3. Survey of Small Textile Producers in Bolivia

The empirical analysis is carried out with survey data obtained during a field trip in April and May in 2002. In this time period, 13 students from the public university in El Alto and the private university Católica 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.

3.1 Data Collection

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.[7] 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

[7] 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 Artesanía (Ministry of Development), Camex (chamber of export), Senarec (registry of commerce), and Tax registry of the city of El Alto.

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 socio-economic 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.[8]

The questionnaire consisted of 120 questions as a maximum.[9] The average interview took about the time of one hour. The respondents were not paid for the interview.

3.2 Characteristics of the Firms

The sample consists of 145 small firms. Descriptive statistics are shown in Table 1. The average firm has 3.7 workers. Formal firms are larger averaging 4.3 workers compared to 3.3 for informal firms.[10] A few large garment producers in La Paz making clothing on an

[8] I am aware that the sampling method has its limitations. Firms selling at specific locations, being member of specific associations, getting micro credits from specific micro credit institutions were more likely to be included in the sample than other firms. In this sense, the sample is not truly random. But there is no other way to get access to informal firms.

[9] The questionnaire can be requested by the author.

[10] p-value for one-sided test in the difference in means is 0.05.

industrial basis were not included in the sample.[11] The average (median) yearly sales is US$ 11068.- (4714.-). This number is not very high if one considers that the official yearly minimum wage in Bolivia is US$ 804.-. 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.[12] When firms sell to resellers, 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 de Contribuyente". Only persons having RUC pay taxes. There are different tax regimes. In particular, there is a so called "Regimen 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 "Regimen Simplificado".

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 as

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[11] For a recent survey of these firms see the World Bank (2001).

[12] p-value for one-sided test in the difference in means is <0.001.

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

traditional skirts called “polleras” according to the Aymara culture. The sector produces a large palette of products mostly in the lower quality range.

The working capital of the firms consists of electric sewing-machines with an average (median) value of US$ 4074 (US$ 2000). 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.

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.

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 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 regular bases 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.

3.3 Fierce Local Competition and a Low Level of Anonymous Trust

The producers operate in an environment of fierce local competition. Most firms indicate that they have more than 500 competitors. When asking the firms about their strongest competitor, most of the firm owners indicate that they face the strongest competition from other local firms. Many indicate that own family members, neighbors, friends, people selling in the same area, or other firms in the same association are the strongest competitors. When asking about their production capacities, 36% of the firms responded that they “generally do not have much work”, 49% indicate that “generally they have work, but they could easily produce more”, 13% indicate that “generally they have a lot of work”, and only 2% indicate that they are “generally overburdened with work”. It can therefore be concluded that competition among the textile producers is strong.

Another striking feature of the environment of these firms is a surprisingly low level of anonymous trust in the sector. Respondents were asked to assess the anonymous trustworthiness of unknown persons on a scale of 1 (not at all trustworthy) to 10 (very trustworthy). The mean response was 2.7. Even more strikingly, the most frequent answer with 40% of the respondents is 1. Thus, 40% of the responses were “1” (not at all trustworthy). In many occasions it was apparent that Bolivian are aware of this. Many respondents mentioned in personal conversations that Bolivians do not trust each other and that the low level of trust is a big problem among firm owners and Bolivians in general.

4. Results

To estimate the economic returns to social capital, we use the Cobb-Douglass production function introduced in Section 2.2 in log form:

$$Log(Y) = \beta_1 + \beta_2 Log(L) + \beta_3 Log(K) + \beta_4 Log(H) + \beta_5 Log(S) + \varepsilon, \qquad (1)$$

where ε denotes the random error. The coefficients β_2 till β_5 denote the output elasticities of labor (L), working capital (K), human capital (H), and social capital (S) respectively. As indicated in the previous section, S includes various forms of social capital. 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, and the number of known competitors are included as the various forms of social capital. These forms can be ranked according to their inclusiveness, whereby close family membership is the least and known competitors is the most inclusive form of social capital (see Figure 1).

4.1 Returns to Social Capital for Formal and Informal Firms

The regression results are presented in Table 2. I estimate the model for formal and informal firms separately. It is immediately apparent that social capital affects sales differently for formal and informal firms. For formal firms, none of the social capital variables is statistically significant. The economic behavior of formal and informal firms appears to obey different structural models. The Chow test reported in Table 3 confirms this claim.

This result confirms the prediction that the social links considered here seem not to generate any economic value for formal firms. As indicated earlier, the theory predicts that formal firms can rely on formal enforcement mechanisms – threat to go to police or

use courts – that supports exchange in more anonymous exchange-relationships. There are several factors that support this claim: First, Table 2 indicates that formal firms that specialize in retailing (high share of sales to final consumer) have higher sales than firms that work mainly with intermediaries. This measure is not significant for informal firms. Second, firm age is positively associate with sales for formal firms (p-value 0.107), but not for informal ones. Firm age is important not only to build working experience impacting the capabilities of a firm but also to build a good name in order to establish a steady clientele that goes beyond the social linkage captured in the social capital variables. Thus, formal firms seem to do their business in more anonymous exchange relationships, and the social links considered here have no impact on the performance of these firms. For formal firms, reputations matter for business that go beyond the social links considered here.

4.2 Returns to Social Capital and Inclusiveness of Social Links

For informal firms, two of the four social capital measures are statistically significant. Figure 2 plots the estimated coefficients for the various forms of social capital. The black dots in the graph depict the point estimate for each of the four forms of social capital. It is apparent that Figure 2 looks very similar to Figure 1 – which is the figure derived from the theoretical predictions. Figure 2 makes clear that social capital returns increase as the inclusiveness of social capital increases as long as the self-enforcement constraint is met.

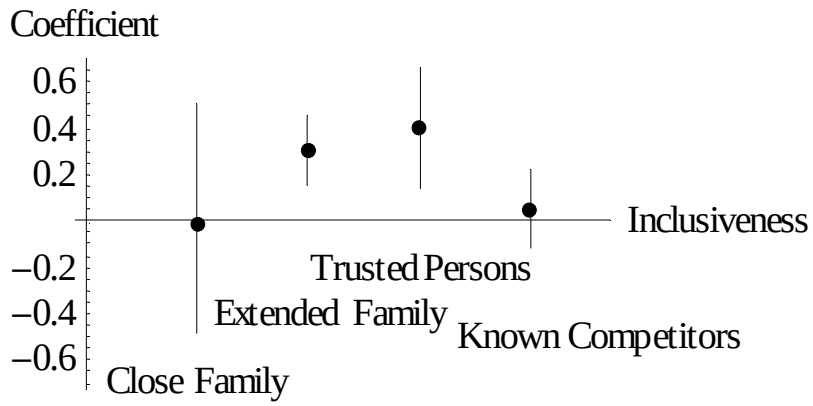

Figure 2 – Social Capital Value and Inclusiveness of Social Networks

First, there is no social capital return for the most exclusive form of social capital, the number of close family members. The reason may be that close family ties are too strong – in the sense of Granovetter – to yield beneficial exchange opportunities. Furthermore, these ties may involve social obligations that may run against business interests. Second, the number of extended family members is positively associated with sales. The point estimate suggests that having 10% more extended family members living in the area increases sales by 3.1%. The impact of this form of social capital on sales is higher than the one of physical capital. As argued before, social links among extended family are more inclusive. In average, respondents indicate to have 17 extended family members in the area of La Paz and El Alto while having 6 close family members. Most likely, there is more diversity among extended family members, which positively affects exchange surpluses.

Third, the number of trustworthy friends has the highest social capital return. The point estimate suggests that having 10% more trustworthy friends will increase sales by 4%.

Inclusiveness of these links is higher without that the enforcement constraint fails to be met. Note, however, that the point estimates regarding extended family and trusted non-family members are statistically not different from each other. A Wald test fails to reject the null hypothesis that the coefficient for extended family and the coefficient for trusted non-family persons are the same (F-statistic 0.322). Finally, the most inclusive form of social capital defined as the number of known competitors does not yield any return. The coefficient is not significantly different from zero. According to the theory developed earlier this happens because in these links the enforcement constraint fails to be met. In contrast to close family interaction, inter-firm cooperation would generate considerable amounts of exchange surpluses.

These estimates may suffer from endogeneity bias. The social capital estimates could be biased because of reversed causality. While the social capital variables related to family can be considered as being exogenous in this setup, this is not clear for the other two social capital measures. More successful firms may have more trustworthy friends, and/or may know more competitors. I did a Hausman test for these two variables using the respondents' immigrant status and the number of fluently spoken languages as an instrument for these two variables. Being an immigrant and the number of spoken languages is an *exogenous variation* that positively affects the number of known competitors and the number of trustworthy friends. This claim is substantiated by the reduced form estimation reported in Table 4. Furthermore, there are good reasons to believe that the *exclusion restriction* is met. I claim that the two instrumental variables affect sales via the social capital variables only. The common language on markets is Spanish, and this is the language spoken in more anonymous exchange relationships so

that the fact of speaking the other two ethnic languages spoken in La Paz does not really matter on this level. However, the ability to speak native languages affects the network of friends since they have a tendency to segregate along ethnic lines. Somebody speaking both ethnical languages Aymara and Quechua in addition to Spanish is able to connect to members of both groups. Similarly, being an immigrant affects sales only via social linkage. Since immigrants tend to have less family around, they tend to have more social links that do not go along family lines.

The Hausman test reported in Table 4 indicates that there is no endogeneity bias. I, therefore, conclude that the OLS estimates reported in Table 2 are not biased.

4.3 Missing Cooperation among Firms: Slander and Shame of Being Cheated

Figure 1 claims that there is a high potential exchange surplus resulting from inter-firm cooperation, but this exchange surplus is not realized because it is not enforceable. As indicated earlier, there is a vast amount of unused productions capacities. Part of the low usage of capacities is due to the fact that these capacities are uncoordinated. The fragmentation and segmentation of the market due to a lack of cooperative practices among the firms has the impact that the sector is not able to produce orders that ask for large minimum quantities. The capacity to produce large orders is particularly important for gaining orders from foreign retail chains. This capacity is not only a matter of scale, but also a matter of being able to guarantee a level of quality which is the same across firms cooperating with each other, to comply with timetables, etc. I have some anecdotes where cooperation failed because firms did not comply with quality agreements. For example, a firm owner told me that another firm cooperating with him did sew the cloth

with a lower number of stitches than they had previously agreed. In this case, cooperation failed. Thus, in the sector there is a large amount of *uncoordinated production capacity* that prevents firms from attracting large orders. Furthermore, there is evidence that there is virtually no division of labor across firms and that most of the firms are fully vertically integrated and work completely independent. About 25% of the interviewed firms in the clothing sector indicate that they *sub-contract* part of their production. However, the vast majority of these firms (80%) indicate that they are sub-contracting part of their production only rarely. Only about 20% of these firms (or 5% of all firms in the sample) indicate that they are subcontracting all the time. Subcontracting occurs mostly when a firm receives an order with a magnitude which this firm is not able to fulfill itself. In this sense, subcontracting does not lead to a specialization in production steps across firms.

This raises the question why these exchange surpluses are not realized. A repeated game setting indicates that for cooperation to be sustainable (Folk theorem) in a community of players two factors have to be satisfied: First, information about cheating behavior of a player has to spread in a community, and second, the communicated information in the community has to be accurate. A cheater has to be known as a cheater and punished accordingly. Then, a future punishment may deter players from cheating. If the behavior of a player is not observed by every player in the community (private monitoring), truthful communication among the players is key in order to establish incentives for cooperation (Annen 2004). Gossip among players that distorts information removes the players' incentive for cooperation.

The survey asked several question related to gossip and communication among the firms. First, the results show that there is considerable communication among the firms. The

picture of a large number of anonymous firms only indirectly linked via market prices is misleading. Firms know each other and communicate with each other. However, as it turns out, most of the firm owners (69%) have doubts regarding the accuracy of information conveyed in gossip. Similar to the "Bazaar Economy" described by Geertz (1978), the exchange of information is in itself a strategic game. For example, more than half of the respondents indicate that they heard unjustified rumors about their work or their person. 31% indicates that they hear such rumors about their own person some times, and 13% indicate they heard such rumors all the time. More strikingly, many more successful firms indicate to have problems with slander than non-successful ones. 50% of the 10% most successful firms according to their sales indicate that they hear unjustified rumors all the time, and 30% indicate that they hear them some times. In contrast, only 4% of the 90% less successful firms indicate that they hear unjustified rumors all the time. Thus, successful firms seem to be more confronted with slander than non-successful ones. Most of the respondents indicate that competitors slander by giving wrong information to clients in order to attract more clients or that competitors slander by giving other competitors wrong information.

A second factor that explains why inter-firm links are not enforceable is that information about cheating behavior does not spread easily in the sector. The reason is that players are *ashamed of being cheated*. The knowledge of the lack of anonymous trust in the sector leads to a reversal of responsibilities in case of cheating. It is generally known that one cannot trust others. Thus, somebody who trusts and gets cheated should have known better. Because players are ashamed of being cheated, they are reluctant to pass over this information to others. Thus, the lack of anonymous trust directly impacts the

sustainability of the mechanism that is based on specific trust. In response to the question of to whom they talk if they get cheated, only 16% of the respondents indicate to talk to as many persons as possible about this incidence. A surprisingly high number, namely 33%, indicate that they talk to nobody about such an incidence since it is a private matter. 51% indicate that they only talk to people that are very close to them, such as family. From that we can conclude that the communication of information related to cheating is limited in the sector.

This evidence supports the claim that the self-enforcement constraint for the most inclusive form of social capital is not met. Incentives to slander and the limitations regarding the communication of information related to cheating are the two factors that explain why exchange in inter-firm links is not enforceable.

5. Social Capital and Property Rights

There is a large literature in institutional economics that emphasizes the role of (formal) institutions in providing incentives for investment in physical capital and human capital. Key is that a formal institutional framework in a given context secures property rights and avoids distortionary policies (Acemoglu et al. 2001, Knack and Keefer 1995). Secure property rights produce higher saving rates, which in return amount in a higher per capita income. This literature studies mainly the role of *formal* institutions in securing property rights. For example, Acemoglu et al. (2001, p. 1370) focus on property rights and checks against government power, and use the protection against "risk of expropriation" index from Political Risk Services as a proxy for institutions. But if formal institutions fail, there may be informal substitutes that take over the role of securing property rights. It is reasonable to assume that social networks as the one studied here can have this role.

Thus, social capital may not only positively influence economic outcomes by increasing exchange surpluses but by improving the incentives to invest in physical capital, which in return will generate higher incomes.

Social capital given by close and extended family membership and the other forms of social capital as measured here in this study may affect the security of property rights. One may expect a firm owner with more social capital to invest more in physical capital than a firm owner who has less social capital. Here, inclusiveness of social networks is not necessarily an asset regarding their role in securing property rights. Close networks may actually be more beneficial for the protection of property rights.

Informal firms in particular lack formal protection of property rights. As mentioned earlier, informal firms are at a disadvantage in using the formal institutions to enforce their contracts and protect their property. They must also hide from public officials enforcing tax laws and seeking bribes. Some respondents told me that a common practice of public officials is to confiscate sewing machines or threaten to do so, with the aim of extracting bribes. Security of property is an important problem. Sewing machines are a considerable investment (value of about US$ 800 each) for the firm owners. These machines can be easily moved and stolen. In case of a robbery, informal firm owners cannot go to the police reporting the theft. If there is always somebody around, which is more likely when the close family is large, the owners may keep more machines.

Unfortunately, I do not have data on investment. However, I have data on the stock of accumulated investments given by the stock of physical capital owned in each firm. I can therefore estimate the stock of physical capital as a function of social capital. When I do this, I find significant coefficients for the measures of social capital for informal firms.

However, in contrast to the previous section, returns to social capital decrease with increasing inclusiveness of social links. Table 5 presents the regression results for informal and formal firms. The following insights follow from the result:

1) As before, social capital matters only for informal firms but not for formal ones.
2) More inclusive forms of social capital have smaller coefficients. For the most inclusive form of social capital given by the number of known competitors the coefficient is negative and significant.

Figure 3 graphs the estimated coefficients for informal firms. The dots represent the point estimate while the vertical lines indicate the 90% confidence interval.

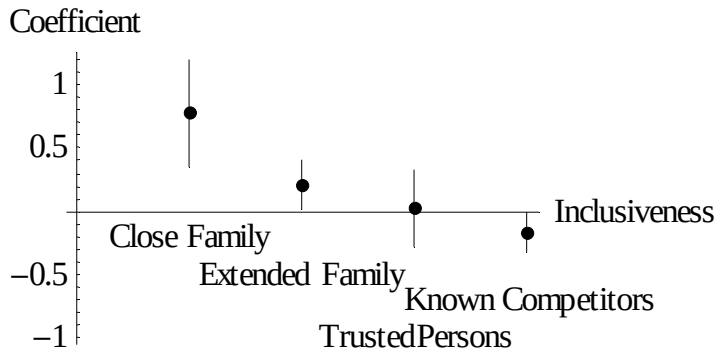

Figure 3 – Social Capital as Property Rights

The drawback of not having data on investment is that there are other explanations than the "security of property rights argument" that may explain the relationship between social capital and physical capital. For example, family members may make physical capital available either by lending equipment or by lending money for buying such machines. Informal firms have a higher difficulty in obtaining credits. We asked firms where they could obtain credit most easily, from family, local business, informal lenders, rotating credit associations, micro-credit banks, or regular banks. Among the informal

firms, 46% chose family as the best option of getting credit, while 34% of formal firms did. This difference is statistically significant (p-value 0.08). To control for this, the regression reported in Table 5 includes the variable "informal credit", a dummy variable which is equal to one if the respondent indicated that the easiest way of obtaining credit is through family, or other forms of informal credit. The coefficient for this dummy variable is negative and significant: respondents who indicate informal sources of credit to be their best way of getting credit have an about 50% lower stock of physical capital. For this reason, I am confident that this alternative story can be ruled out as an explanation for the positive relation between social capital and physical capital.

6. Conclusions

The evidence presented here suggests that the "strength of weak ties" argument advanced by important scholars such as Granovetter, Putnam, and Fukuyama has to be complemented by the game-theoretic condition that exchange among linked players has to be self-enforceable. The paper shows that to the extent that exchange among linked players is enforceable, social capital matters. The social capital return increases for more inclusive forms of social capital. This, however, holds only for informal firms, indicating that an inclusive informal exchange structure that is characterized by trust is particularly valuable for these firms. Formal firms, in contrast, specialize in transactions that are more anonymous in its nature. These kinds of links are not captured by the social capital measures used here.

The most inclusive form of social capital considered here does not generate any return because exchange in these relationships is not enforceable. This point differs from the result reported by Fafchamps and Minten (2002) on agricultural traders in Madagascar.

They measure social capital by the number of known traders and show a strong causal positive relationship from social capital to sales. There may be two explanations for the difference between the study in Madagascar and the results reported here. First, there may be a higher amount of anonymous trust in the setting in Madagascar, and, second, competition among the traders may be lower. As shown in the paper, the level of anonymous trust in the small-firm sector in Bolivia is strikingly low, and competition among the firms is strong.

Finally, the paper analyses the role of the different forms of social capital in protecting property rights affecting the players' incentive to invest in physical and human capital. Again, social capital matters for informal firms only. In contrast to the social capital's function of generating exchange surpluses, more inclusive forms of social capital generate a higher return regarding the protection of property rights.

More has to be known about the *underlying mechanisms* generating the benefits that are usually associated with social capital. For this purpose detailed micro-level data on parameters as identified by game-theoretic models on mechanisms of cooperation is needed. Further research would benefit tremendously if similar data were available in other countries with different cultural backgrounds. In particular, it would be worthwhile to investigate the role of social capital and the mechanism behind it in a small-firm sector that is more successful than the sector studied here.

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Descriptive Statistics

		All firms					Informal firms		Formal firms	
		Mean	SD	Median	Max	Min	Mean	Median	Mean	Median
Labor	# of full time and part-time workers	3.65	4.06	2.5	35	0.5	3.34	2.25	4.34	4
Stock of machines	US$	4074.17	7039.08	2000	65800	20	3022.7	1925	6410.8	2200
Firm age	Years	9.03	7.16	6	37	1	8.69	5	9.78	9
Human capital	Levels with 8=completed university	4.06	1.74	4	8	1	3.71	3.5	4.82	4
Sales	US$	11068.5	17295.4	4714	117143	250	11434	117143	10256	5129
Sales of sales to final consumer	Sales to final consumers to total sales	0.57	0.4	0.6	1	0	0.49	0.41	0.76	1
Share longterm labor	# of labor working for more than one year to total labor	0.63	0.41	0.75	1	0	0.6	0.67	0.69	1
Close family	# of persons	6.39	2.78	6	13	0	6.47	6	6.2	6
Extended family	# of persons	15.19	27.13	10	300	0	17.11	10	10.91	8
Number of trusted non-fam. Persons	# of persons	5.48	17.24	3	200	0	3.32	3	10.29	2
Number of known competitors	# of persons	18.06	30.69	7	250	0	16.34	7	21.87	6
Assessment of anonymous trustworthiness	scale between 1 (not trustworthy) and 10 (very trustworthy)	2.74	1.93	2	10	1	2.67	2	2.89	2
Business association	Dummy=1 if member	0.3	0.46	0	1	0	0.38	0	0.13	0
Female	Dummy=1 if yes	0.44	0.5	0	1	0	0.45	0	0.42	0
Aymara	Dummy=1 if yes	0.6	0.49	1	1	0	0.7	1	0.38	0
Immigrant	Dummy=1 if yes	0.45	0.5	0	1	0	0.46	0	0.42	0

Table 1 – Descriptive Statistics

Dependent Variable: Sales in Log					
		Informal Firms Observations: 100		Formal Firms Observations: 45	
Independent Variables:		OLS	S.E.[1]	OLS	S.E.[1]
Intercept		2.7***	0.98	3.44**	1.61
Labor[3]	Log	0.61***	0.17	0.75***	0.34
Stock of machines	Log	0.21**	0.1	0.27**	0.12
Firm age	Log	0.15	0.12	0.4	0.24
Human capital	Log	0.21	0.22	0.06	0.41
Share sales to final consumer	ratio	0.36	0.3	1.24*	0.61
Share longterm labor	ratio	0.55**	0.25	-1.15**	0.48
Size of close family[2]	Log	0.01	0.29	0.2	0.44
Size of extended family[2]	Log	0.31***	0.09	-0.14	0.17
Number of trusted non-fam. Persons[2]	Log	0.4***	0.15	0.08	0.13
Number of known competitors[2]	Log	0.05	0.1	0.17	0.13
Assessment of anonymous trustworthiness	Level	0.14**	0.05	0.13*	0.06
Business association	1=yes	0.39*	0.21	-0.49	0.37
Female	1=yes	0.78***	0.23	-0.07	0.38
Aymara	1=yes	0.57**	0.24	0.41	0.31
Adjusted R-Squared		0.46		0.25	
F-Statistic		7.12		2.07	

Table 2 – OLS Production Function Estimation

*, **, and *** indicate a significance level of 10%, 5%, and 1% respectively; [1]Estimated with White heteroskedasticity-consistent standard errors & covariance; [2]Added 1 to these variables in order to avoid a loss of data in case of zeros; [3]Labor is measured by the number of workers including the owner. Part-time workers are counted half, and family members helping in the firm are excluded in order to avoid double-counting.

Chow Test: Formal and Informal Firms		
F-statistic	1.58 p-value	0.085
Log likelihood ratio	29.28 p-value	0.022

Table 3 – Chow Test

Dependent Variable: Number of trusted non-fam. Persons[2]			
		Informal Firms	
		OLS	S.E.[1]
Instrumental Variables			
Immigrant	1=yes	0.2	0.14
Number of fluent languages	Log	0.55*	0.28
R-Squared		0.22	

Dependent Variable: Known Competitors[2]			
		Informal Firms	
		OLS	S.E.
Instrumental Variables			
Immigrant	1=yes	0.5**	0.25
Number of fluent languages	1=yes	0.41	0.54
R-Squared		0.26	

Hausman Test

	Informal Firms	
	OLS	S.E.
Resid(Trusted persons)	0.48	0.81
Resid(Known Competitors)	-0.71	1.21
		p-value
F-statistic	0.19	0.82
Chi-square	0.39	0.82

Table 4 – Reduced Form Equation and Hausman Test

*, **, and *** indicate a significance level of 10%, 5%, and 1% respectively; [1]Estimated with White heteroskedasticity-consistent standard errors & covariance; [2]Added 1 to these variables in order to avoid a loss of data in case of zeros.

Dependent Variable: Log of Working-capital					
		Informal Firms (n=100)		Formal Firms (n=45)	
		OLS	S.E[1]	OLS	S.E[1]
Independent Variables:					
Intercept		4.69***	0.8	6.24***	1.86
Labor[3]	Log	0.86***	0.16	0.7*	0.41
Firm age	Log	0.12	0.12	0.25	0.38
Human capital	Log	0.2	0.23	-0.12	0.66
Share sales to final consumer	ratio	-0.87***	0.28	-1.45*	0.87
Share longterm labor	ratio	0.33	0.27	0.8	0.6
Size of close family[2]	Log	0.78***	0.25	0.76	0.58
Size of extended family[2]	Log	0.21*	0.11	0.08	0.25
Number of trusted non-fam. persons[2]	Log	0.02	0.18	-0.13	0.28
Number of known competitors[2]	Log	-0.17*	0.09	-0.22	0.19
Assessment of anonymous trustworthiness	Level	0.03	0.05	0.1	0.1
Business association	1=yes	-0.16	0.2	0.05	0.71
Female	1=yes	0.09	0.21	-0.21	0.63
Aymara	1=yes	0.02	0.24	-0.54	0.58
Informal Credit	1=yes	-0.59***	0.2	-0.47	0.48
Adjusted R-Squared		0.47		0.11	
F-Statistic		7.22		1.41	

Table 5 – Social Capital and Stock of Physical Capital

*, **, and *** indicate a significance level of 10%, 5%, and 1% respectively; [1]Estimated with White heteroskedasticity-consistent standard errors & covariance; [2]Added 1 to these variables in order to avoid a loss of data in case of zeros; [3]Labor is measured by the number of workers including the owner. Part-time workers are counted half, and family members helping in the firm are excluded in order to avoid double-counting.