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# Community Membership and Reciprocity in Lending: Evidence from Informal Markets

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# Community Membership and Reciprocity in Lending: Evidence from Informal Markets[⋆]

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**Abstract**

We study how wholesalers assess borrower credit risk and extend trade credit to retailers in economies where formal market institutions, such as financial reporting systems, auditing, and courts, are nonexistent or function poorly. Using the setting of a large market in India, we find that community membership plays a strong role in the access to credit. Wholesalers are more likely to provide trade credit and to offer less restrictive credit terms to within-community retailers, are more lenient when these retailers default, and are less likely to experience defaults from them. Our analyses suggest that this cooperation between same-community wholesalers and retailers is achieved through an indirect reciprocity mechanism, which is sustained by within-community information flows and provides insurance against income shocks.

*JEL Classification*: D82, G21, G28, O10, O16, O17, Z10, Z13
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## 1. Introduction

A large body of literature examines how private lenders extend credit to borrowers, including the economic factors that affect their lending decisions and the information they use to evaluate borrower risk (Berger et al., 2005; Diamond, 1984, 1991; Fama, 1985; Petersen & Rajan, 1994, 1997, 2002). Studies also emphasize the importance of financial reporting, auditing, and courts for efficient lending decisions (Carrizosa & Ryan, 2017; Christensen et al., 2016; Dou, 2020; Dyreng et al., 2017; Honigsberg et al., 2021; Minnis, 2011). However, there is relatively little evidence on how borrower risk is assessed and credit is extended in the absence of financial reporting, auditing, and legal systems, such as in informal markets where these systems do not exist or function poorly.[1]

The limited insight into the informal economy stems from a lack of organized data sources and the difficulty in accessing this largely unorganized sector. We approach this challenge by surveying traders in a large organized marketplace, or bazaar, and exploring factors that influence wholesalers' decisions to extend trade credit to retailers. The marketplace, called Iewduh, is located in northeast India and is the epicenter of trade in the region (Figure 1 shows its geographic location). We interview a probability sample of 503 traders operating in the market, of whom 146 are wholesalers and the rest retailers. We ask them about their links to other traders, resulting in a data set with information on 1,230 wholesaler-retailer links (relationships). For each link, we collect data on the provision of trade credit, including whether it is provided and if so, under what terms, wholesalers' responses to retailer defaults, information collected by wholesalers, and characteristics of the link, such as the length of the wholesaler-retailer relationship. We also collect demographic information about the traders such as their gender, age, education, and years in operation.

Given the important role that the community plays in informal markets in mitigating

[1] The informal sector is broadly defined by economic activity that is not de facto or de jure regulated or protected by the state. Even though these activities may be carried out within the formal reach of the law, regulation is ineffective because enforcement is too costly (OECD/ILO, 2019).

informational frictions and facilitating risk-sharing (Fafchamps & Lund, 2003; Ghatak & Guinnane, 1999; Ghatak, 1999; Hoff & Stiglitz, 1990; Karlan, 2007; Townsend, 1994; Udry, 1990, 1994), we explore how the community influences the allocation of credit and the mechanisms through which within-community allocation is achieved. Relying on the exogenous nature of community membership, which is determined by birth, and a within-wholesaler estimation, we find that wholesalers are more likely to lend to retailers from within their community. Specifically, wholesalers are 11.5% more likely to provide trade credit to retailers from their community, relative to retailers from other communities. Conditional on providing credit, wholesalers also provide 8% more credit to retailers within their community.[2] Moreover, wholesalers are 13.6% less likely to experience defaults by these retailers. We also find that wholesalers are more lenient toward defaulting retailers from their community: they are less likely to repossess goods, deny future credit, or take other actions against them. That wholesalers are more lenient toward same-community retailers in case of default might imply that retailers should repay outside-community wholesalers before repaying same-community wholesalers, resulting in higher within-community defaults. We find, however, that wholesalers face fewer defaults from same-community retailers; this finding and the evidence that wholesalers lend preferentially within their communities suggest the presence of a mechanism that incentivizes same-community wholesalers and retailers to cooperate.

We contend that a reciprocity norm explains this cooperation. Reciprocity can be indirect: a wholesaler who is more generous toward a retailer may derive benefits from other community members who are aware of her generosity (Ferrara, 2003; Nowak & Sigmund, 2005). Because credit allocation within communities insures against income fluctuations (Besley & Coate, 1995; Kinnan & Townsend, 2012; Udry, 1994), we conjecture that reciprocity within the community is a response to income instability and a lack of formal sources of insur-

[2] The observed amounts and terms of trade credit reflect both the supply and demand for credit. However, our analyses should primarily capture the effect of community membership on the supply of credit, because, lacking formal sources of financing, retailers are credit constrained and rely heavily on trade credit from wholesalers. That is, all retailers demand credit, but wholesalers ration access to it.

ance. Furthermore, reciprocity is sustained by members' belief that adherence to the norm will lead to community support in times of need. In case of shocks to income, traders rely on community members for help and, in return for this insurance, assist other community members even when doing so is costly. The cost to wholesalers arises from having to obtain additional resources to support larger amounts of trade credit to same-community retailers, while the cost to retailers relates to them not exploiting the leniency of same-community wholesalers.

To provide evidence for the reciprocity norm, we examine whether wholesalers who are more likely to benefit from the norm are also more likely to follow it.[3] We find that wholesalers who do not have an alternative source of recurring income (e.g., rental income or family members with a stable job) and therefore depend on their community in times of economic distress provide 17% more credit to within-community retailers. Similarly, wholesalers who have low levels of education and fewer outside options are also more likely to rely on community members in case of income shocks. These wholesalers provide 14% more credit and offer relatively longer repayment times to within-community retailers. Furthermore, wholesalers with retail business benefit directly from the reciprocity norm, because they not only provide but also receive trade credit. We find that they are 23.5% more likely to provide trade credit and, conditional on providing credit, lend 42% more to retailers from their community. Finally, wholesalers who have significant business contacts outside their community are less likely to depend on the community. We find that these wholesalers are 29% less likely to provide credit, provide 18% lower amounts of credit, and offer shorter repayment times.

Indirect reciprocity requires within-community information flows, because community members cannot reciprocate unless they know that a member adheres to the norm (Nowak & Sigmund, 2005). Experimental research also highlights the importance of an information channel in sustaining indirect reciprocity, as the channel allows members to develop a reputa-

[3] We focus on wholesalers' incentives to reciprocate, rather than on measuring the benefits that they receive, because there is no single outcome that reflects these benefits and because the benefits can occur in any form, at any time, and through any community member.

tion for reciprocity (Bolton et al., 2005; Engelmann & Fischbacher, 2009; Seinen & Schram, 2006; Wedekind & Milinski, 2000). We contend that the community is more likely to form accurate beliefs about members' reciprocal behavior when these members have greater ties to the community, facilitating information transmission. Consistent with this argument, we find that preferential within-community lending is stronger among wholesalers whose family members are all married within the community and among those who meet more often with their community members for social events. These wholesalers provide 22%–38% more credit and offer more generous credit terms to retailers from their communities. Overall, these findings based on wholesalers' incentives to reciprocate and their ties to the community are consistent with reciprocity contributing to the provision of trade credit.

To supplement the wholesaler-based analyses, we explore characteristics of retailers that are associated with their incentives to reciprocate, such as having no alternative sources of recurring income or little education. We do not find that these characteristics explain retailers' propensity to default on trade credit from within-community wholesalers, potentially because, relative to wholesalers, retailers tend to be smaller and poorer and therefore most rely on their community for insurance against shocks to income. With respect to how the community assesses retailers' reputations for reciprocity, we find that wholesalers speak with other wholesalers from their community to collect this information. However, we do not find that wholesalers publicize instances of same-community retailer defaults, possibly because doing so may be frowned upon by other community members, who could believe the retailer has fallen on hard times. Thus the greater leniency toward same-community retailers who default may enhance a wholesaler's reputation as someone who helps the community.

To further support the reciprocity mechanism, we focus on the lending of immigrant communities, to which most traders in our sample belong. Newer immigrant communities, which we identify based on community growth, are more likely to face large income fluctuations, necessitating members' reliance on their community to smooth income. Traders in small communities are also more likely to have stronger community ties (Munshi, 2011), facilitating the formation of accurate beliefs about other traders' incentives to reciprocate. Consistent with the reciprocity norm, we find that wholesalers' preferential lending is stronger in small, high-growth immigrant communities and is present, though weaker, in small, low- and medium-growth immigrant communities. Moreover, retailers in small immigrant communities are less likely to default on trade credit from same-community wholesalers. Thus, similar to wholesalers, retailers who depend more on their community and who can better establish a reputation for collaboration behave according to the reciprocity norm.

Finally, we conduct additional interviews with 20 traders in our sample following the COVID-19–related lockdown and its associated income shock to gauge their beliefs about community support. Many traders responded that they felt a responsibility to help their community members and believed that community members would reciprocate. Traders' responses corroborate our proposition that indirect reciprocity within the community helps members weather income shocks.

We next address potential alternative explanations for our findings of preferential within-group lending and lower retailer defaults. Our findings could be attributed to an asymmetric information mechanism (De Meza & Webb, 1987; Stiglitz & Weiss, 1981), which suggests that community ties allow for better screening of retailers and more efficient enforcement (De Meza & Webb, 1987; Fisman et al., 2017; Greif, 1993; McMillan & Woodruff, 1999; Stiglitz & Weiss, 1981). Better screening, due to a more precise evaluation of within-community retailers, should result in greater variation in the amount of credit offered to these retailers, relative to retailers from other communities (Cornell & Welch, 1996; Fisman et al., 2017). In contrast, we find less variation in the amount of trade credit for within-community retailers, which is consistent with wholesalers being less discerning within the community.[4] In addition, our finding that wholesalers are more lenient toward same-community retailers who default and are less likely to take actions against these retailers does not comport with more efficient

[4] Although our finding of smaller within-community variation in the amount of trade credit could be consistent with better screening if credit is rationed, our headline results that trade credit is more prevalent for within-community retailers suggests that credit rationing within the community is an unlikely explanation.

enforcement within the community. Furthermore, although wholesalers are more likely to speak about same-community retailers with wholesalers from their community, they do not actively spread information about defaults. Therefore our findings are overall less consistent with enforcement and more consistent with within-community information flows allowing the community to assess retailers' incentives to reciprocate. Moreover, our findings of stronger preferential within-community lending by wholesalers who depend more on their community cannot be explained by screening or enforcement.

We also address other alternative explanations, including taste-based or statistical discrimination and lending based on personal relationships, and show that these alternatives are unlikely to explain our findings.[5] Although we cannot rule out the possibility that alternative mechanisms may also be at work in our setting, when considered in their entirety, our findings indicate that indirect reciprocity plays an important and distinct role in supporting the flow of trade credit from wholesalers to same-community retailers.

Our work contributes to several streams of literature. Most research related to lenders' information collection and credit allocation assumes well-functioning legal and financial reporting systems (Balakrishnan & Ertan, 2021; Ball et al., 2008; Campbell et al., 2019; Carrizosa & Ryan, 2017; Christensen et al., 2016; Dou, 2020; Dyreng et al., 2017; Honigsberg et al., 2021; Minnis, 2011). We extend this line of work by exploring how credit is extended in informal markets in the absence of such well-performing systems. The informal sector is important because it accounts for about 30% of GDP and 70% of employment in developing economies; however, it is marked by low levels of development and productivity (World Bank, 2019).[6] Businesses in this sector have limited access to banks and capital markets and rely heavily on trade credit. Therefore an understanding of the factors that can ease access to trade credit in the informal sector can help improve trade and investment in this sector, aiding its long-term growth (Fisman & Love, 2003; Petersen & Rajan, 1997; Rajan & Zingales,

[5] We discuss these alternative channels in detail in Section 5.

[6] Figure 2 shows the distribution of informal employment, which dominates in the Global South.

1998).

Second, we add to studies that explore how group membership and social networks alleviate informational frictions in lending (Engelberg et al., 2012; Fisman et al., 2017; McMillan & Woodruff, 1999). We extend these studies by showing the importance of within-community indirect reciprocity in the provision of trade credit. Importantly, our study differs from work that explores the effect of cultural similarities on bank lending. Fisman et al. (2017) use data from a large bank in India and conclude that cultural proximity between loan officers and borrowers serves to reduce informational frictions in lending. While Fisman et al. (2017) suggest that cultural proximity mitigates these information frictions, due to such commonalities as codes, language, and religion, we propose that reciprocity incentivizes same-community retailers and wholesalers to cooperate. Furthermore, Fisman et al. (2017) explore cultural proximity through the prism of a bilateral relationship between the loan officer and borrower, but the mechanism of indirect reciprocity in our setting extends beyond bilateral relationships and likely encompasses the entire community. Overall, we demonstrate that, as opposed to a simple dyadic exchange, the flow of credit in the informal sector is embedded in a larger social structure.

Finally, our work also relates to the extensive trade credit literature. Theoretical and empirical studies of trade credit focus primarily on developed markets, where trade credit allocation is supported by robust reporting, auditing, and legal systems (Barrot, 2016; Biais & Gollier, 1997; Costello, 2019; Johnson et al., 2002; Klapper et al., 2012; Longhofer & Santos, 2003; McMillan & Woodruff, 1999; Mian & Smith, 1992; Nilsen, 2002; Petersen & Rajan, 1997; Uchida et al., 2013). We add to this research by highlighting the unique features of trade credit arrangements in informal economies. In particular, we show that cooperation between same-community wholesalers and retailers helps shape the disbursement of trade credit and its repayment, and that the interplay between risk-sharing arrangements and information sharing through indirect reciprocity sustains such cooperation.

## 2. Survey methodology

Our objective is to study the flow of credit in economies with poorly functioning financial reporting and legal systems. Because businesses that operate in these economies typically do not borrow from formal sources of capital and do not report financial data, we rely on the survey method to collect data from traders in a large bazaar in northeast India. This bazaar is called Iewhuh and is central to trade in the region. We select this market as our setting for several reasons. First, retailers in Iewduh rely on trade credit from wholesalers. Second, this marketplace is characterized by the presence of multiple products and ethnic communities, allowing us to take advantage of the rich variation in the data. The traders we survey belong to nine communities, sharing common languages, cultures, and places of migration. Third, bazaars such as this exist across the developing world, making our setting a microcosm for the informal sector. Finally, focusing on a single market allows us to communicate directly with the traders and to better understand the social and economic constraints within which they operate and that affect their credit and business decisions.

### *2.1. Feasibility study*

We conducted a feasibility study to understand the features of the market and the viability of a study there.[7] The feasibility study involved in-depth interviews with 22 traders in the market and limited data-collection from 49 additional traders. The study revealed that the use of trade credit is prevalent in the market. Wholesalers often need to provide trade credit to distribute their goods, because many retailers cannot afford to pay cash upfront for larger amounts of goods. On the other hand, retailers tend not to provide credit to their customers, because of the difficulty of tracking them. Furthermore, trade credit is an important source of financing for retailers, because they tend not to access loans from the formal banking system. We found that several factors inhibit formal access to credit.

[7] The feasibility study was conducted in August 2018. In July 2019, we created a list of all shops in the market. Piloting of the survey questionnaire was conducted in October 2019, and the main survey ran from December 2019 to February 2020.

These include a lack of understanding of loan applications, limited education, lack of trust in formal institutions, an inability to provide land or other assets as collateral, discomfort with debt, and religious reasons for not taking loans with explicit interest payments. In addition, although microfinance institutions are common in India (Banerjee et al., 2013, 2015), traders in the market have limited access to microfinance loans, because of the relative paucity of these institutions in the northeastern states.[8]

We also found considerable variation in the terms of credit provided. For example businesses that provide services, such as salons or electrical goods repair shops, tend not to use trade credit. Traders of highly perishable products, such as raw meat, also do not use trade credit. On the other hand, retailers of general provisions typically receive three to four weeks of credit, whereas retailers of metal goods, such as knives and agricultural implements, receive, on average, only four to five days of credit.

The feasibility study also revealed the typical terms of trade credit in the market. Retailers typically do not receive credit in their first transaction with a wholesaler. Wholesalers start a new credit relationship with a retailer by extending a small amount of credit. Once the retailer establishes a reputation for repaying on time, the wholesaler increases the credit limit. Wholesalers do not price discriminate based on credit provision. That is, retailers do not receive a discount if they pay in cash versus if they take credit. Also, there is no early payment discount and no interest charged for delayed payment. Thus the variation in credit terms comes primarily from the amount of credit provided and stipulated repayment time. Some wholesalers also provide trade credit with no stipulated repayment time. In such cases, the retailer repays the wholesaler whenever they transact next.

Interestingly, wholesalers have little recourse in case of default. Many wholesalers, who tend to be immigrants to the region, can neither repossess goods, nor threaten the use of force because of the multiple ethnic groups operating in the market and the possibility of ethnic

[8]Only 3.5% of all households in the state of Meghalaya (where we conduct our study) are served by microfinance institutions. This figure varies between 0.1% for the state of Chandigarh to 35.9% for the state of Andhra Pradesh (Champatiray et al., 2010).

conflict such actions can incite. Also, because courts are inefficient, litigating is generally not an option. However, cases where the retailer never repays are rare. Importantly, wholesalers consider the retailer as defaulting on her credit obligations if she does not repay within a stipulated time. Moreover, wholesalers do not write off retailer debt: even if the retailer experiences hardship and cannot pay on time, she is expected to repay in small amounts until the entire debt is settled. Given wholesalers' perception of defaults and the fact that nonrepayments are rare, default events in our study are defined as instances where the retailer does not repay within the stipulated time.

Finally, the feasibility study helped us define the communities operating in the market, which include Khasi, Jaintia, Marwari, Bengali, Bihari, Nepali, Punjabi, Assamese, and Muslim. With the exception of the Muslim community, which is based on religion, these communities are based on ethnicity, which represents shared language, culture and place of migration. Khasis are the dominant ethnic group and are indigenous to the region, whereas the remaining groups are largely immigrants from other parts of India or other countries. Although Muslims could also belong to another group (for example, Bengali), they self-identify as belonging to the Muslim community. Self-identification is important in our setting, because our objective is to discern the social network traders belong to and the information they can access. Therefore, although defined by religion, Muslims in the region can also be considered to be an ethnic group. We did not ask respondents about their caste; being traders, they belong to similar castes.

### *2.2. Sampling*

To select a representative sample of the market, we created a list of all businesses there. This resulted in a list of 5,254 shops with information on the location, product category, and gender of the trader. Because the listing was based on observation, rather than direct interaction with the trader, we could not collect additional auxiliary information, such as whether the trader is a wholesaler or retailer or the person's ethnicity. Several shops were unoccupied or could not be classified into distinct product categories (for example, warehouses) and are eliminated from the list, which left us with 4,437 shops.

Because our objective is to explore access to credit, we retain only product categories where trade credit is prevalent, based on our findings from the feasibility study. After eliminating shops in product categories where trade credit is uncommon (as described in Section 2.1), we retain 2,537 shops. Lastly, to ensure enough shops within each product group, we further restrict shops to product groups with at least 150 shops. This requirement results in a target population of 1,877 shops and consists of the following product categories: general stores, footwear, household appliances, textiles, tobacco, and betel.

We select a sample size of 612 traders, which is approximately one-third of our target population. We draw a probability sample from the target population by using a stratified random-sampling approach, where the strata are defined as product groups. We randomly select traders (shops) within each stratum.[9] Probability sampling allows us to pick a representative sample, so that inferences drawn from the sample can be generalized to the population. Given that the terms of trade credit relate to product type, the variance of our outcome variables is likely to be higher across product groups than within them. Therefore the use of stratified random sampling increases the precision of our estimates (Frankel, 2010). Our sampling unit is a trader who is the sole proprietor of a shop (each trader is associated with only one shop). A trader can be a wholesaler, a retailer, or both. In cases where traders state that they engage in both wholesale and retail business, we ask about the proportion of the total sales that comes from the wholesale business and classify the trader as wholesaler if this proportion is at least 70%. We impose these criteria to classify traders primarily as providers or recipients of trade credit. Wholesalers, by definition, are fewer in number. Therefore we oversample them by using disproportionate sampling based on screening.[10] When performing the empirical analysis, we adjust for the oversampling and

[9] We used a disproportionate stratified random sampling approach, where we oversampled from strata with low response rates. We adjust our sample weights for the oversampling.

[10] To achieve a larger sample of wholesalers, after ascertaining whether the trader is a wholesaler or retailer, we oversample wholesalers by continuing the full interview at different rates for wholesalers and retailers (Piazza, 2010). We could estimate the proportion of wholesalers in the market by product by randomly

nonresponses in our sample weights (Frankel, 2010).

Table 1, Panel A shows the distribution of the population, sample, and response rates by strata. Column (1) shows the number of shops by product category in the target population, and column (2) shows the percentage distribution of the shops. Textile shops comprise the largest share, with 38% of all shops falling in this group. General stores comprise the next highest share at 17%, with the remaining categories accounting for between 9% to 13% of the total. Columns (3) and (4) of Table 1, Panel A show the number and distribution of shops in the survey sample. The sample distribution corresponds to the population distribution. Finally, columns (5) and (6) of the table show the number of responses and response rates by product category. The overall response rate is 82% and varies by product type, ranging from 70% for household appliances to 91% for tobacco. Thus our final sample includes survey responses from 503 traders. Of these, 146 are wholesalers, and the rest are retailers.

In a pilot study preceding our main survey, we interviewed 13 wholesalers and 45 retailers and asked them for information about their top 10 connections, based on the percentage of sales (purchases) in the previous year for wholesalers (retailers). Because the average number of links identified in the pilot survey was two and the maximum number of links was five, we asked traders for their top five links in the main survey.[11] Our final sample of 503 traders resulted in data on 1,230 wholesaler-retailer links.[12] A wholesaler in our final sample has, on average, links to 3.40 retailers, whereas a retailer has links to 2.06 wholesalers.

The link between a wholesaler and retailer is the unit of observation in our empirical analyses. We conduct a power analysis to assess the adequacy of our sample size (Land & Zheng, 2010). Figure 3 shows a plot of power (the probability of avoiding a Type II error) by sample size for values of the multiple-partial correlation between the predictor variables

selecting traders to interview.

[11] As we report in Panel B of Table 1, a link on average accounts for 20.72% of the sales (purchases) for a responding wholesaler (retailer), further suggesting that limiting our survey to the top five links is unlikely to bias our results.

[12] All of the links in our sample are one-sided (i.e., we only interview one party in the wholesaler-retailer link).

and outcome ranging from 0.05 to 0.2, at a 0.05 significance level. As can be seen from the plot, at 80% power and with a sample of 1,000 wholesaler-retailer links, we should be able to detect a partial correlation of 0.08 and above.

*2.3. Survey instrument and data*

The survey instrument consists of three main sections. The first section is relatively short and asks for identifying information, such as the shop name, the trader's name, and whether the trader is a wholesaler or retailer. The second section is the core of the survey and contains six main questions with several subparts. For each of the top-five wholesalers or retailers we ask traders to identify, we require details related to the provision and terms of trade credit. This includes whether trade credit is provided to the retailer, if credit was provided the first time that the wholesaler and retailer traded, the number of cash transactions before the wholesaler provided credit, the amount of trade credit provided, and the repayment time. We also ask traders about the incidence of defaults. Wherever relevant, we ask them to provide a range of estimates. Besides questions related to credit access, we ask about the types of information they collect and their actions to collect that information as well as about trader-specific characteristics, such as the number of years that the wholesaler and retailer have been in business, the community and gender of the other party, and the share of sales. Finally, part three of the questionnaire includes questions related to the responding trader's demographic characteristics.

We took several measures to ensure the accuracy of responses. Research has found greater levels of missing data and less detailed answers for items that appear later in the questionnaire (Krosnick & Presser, 2010). Therefore demographics questions appeared toward the end of the questionnaire to minimize fatigue, as traders would need to exert less effort to answer basic questions about themselves. Furthermore, our survey team consisted of 12 enumerators who were local to the region and well versed in the language and customs. The enumerators were carefully selected from a pool of applicants who were mainly graduate students from local universities. A three-day training session was conducted for them. All interviews were conducted face-to-face and the data were recorded electronically in a survey application. The software also recorded the location coordinates of the interviews and the time taken to complete the questionnaire. The survey managers conducted 20% spot checks and 10% back checks.[13] As an additional check, with the traders' permission, we asked enumerators to take photographs of themselves with the trader in the place where the interviews were conducted.

Table 1, Panel B presents descriptive statistics for the variables used in our primary analyses for our sample of 1,230 wholesaler-retailer links. Of these links, 33% are between traders belonging to the same community, and 57% are between traders of the same gender. A link, on average, accounts for 20.72% of sales for the responding trader. The mean relationship length between the wholesaler and retailer is 7.8 years. Geographically, 53.3% of the businesses in our sample are located close to their trading partners, which we define as a distance of less than or equal to three kilometers.[14]

The use of trade credit is prevalent in our product categories, with 893 (72.6%) of the trading links having some amount of trade credit. For the remaining 27.4%, we asked wholesalers (retailers) their reasons for not providing (receiving) trade credit. The responses included prior nonrepayment of credit, the distance from the retailers' shop being too great, a lack of trust, the retailer not comprising a significant portion of sales, the wholesaler being too small or having a policy of not giving credit to anyone, the retailer being new to the business, the wholesalers' parents never giving credit (in the case of an inherited business), and the retailer visiting the wholesaler's shop infrequently.

Of the 893 cases where credit is provided, only in 30.7% instances is trade credit provided in the first transaction between the wholesaler and retailer. On average, 5.35 cash transac-

[13] A spot check is when survey managers observe the enumerators conducting the interviews. In a back check, survey managers revisit the respondent and ask selected questions again.

[14] Distance is specified as such because the market is densely packed and it is therefore difficult to accurately measure the distance between shops, especially for shops located close together. Based on the shop addresses provided by traders, those within a distance of three kilometers from each other are located within the city of the surveyed market. In addition, 45% of the trading partners are located within the surveyed market.

tions occur before credit is provided, and the mean amount of credit equals 40.45% of sales. As discussed in Section 2.1, the cost of trade credit varies primarily along the repayment-time dimension; 32.4% of the links are associated with a short repayment time, defined as 15 days or less. However, in 20.7% of the cases, the repayment time is not fixed.[15] That is, the retailer can repay the wholesaler whenever they transact next. Finally, default, defined as the retailer not repaying within the stipulated time, occurs in 18% of our sample.

We have data on wholesaler characteristics for 40% of the sample (for 496 wholesaler-retailer links from the 146 wholesalers we interviewed). Wholesalers we interviewed have been in business for an average of 17 years and have few family members involved in their business, ranging from zero to three, with an average of 0.5. Furthermore, 46.4% are entrepreneurs (i.e., have not inherited a business) and the wholesaler is female in 15.5% of the cases. Because traders are reluctant to share information on the size of their businesses, we asked for responses on a relative scale from 0 (low) to 10 (high). The average wholesaler reports a size of 5.8. We also collect information on size using an absolute but coarser scale (untabulated): a majority (59.5%) of wholesalers report total asset value in the range of INR 100,000–1,000,000, which translates to $1,359–$13,587 at an exchange rate of 73.6 INR/USD.

Importantly, wholesalers rely primarily on income from the business: in 76.2% of the links, they do not have an alternative source of recurring income, such as rental income or family members with stable employment. Moreover, 47.3% do not have a high school degree, which we classify as low education. Thirty-one percent also engage in some retail business. We further asked wholesalers about their significant business ties, which are defined as contacts who have helped them through a crisis in their business career, their most valuable employee, or contacts who provide them with information related to the product area and market trends. Only 6.6% of wholesalers have significant business ties outside their community. We also asked for information to assess ties to the community. We expect these ties to be

[15] In the case when the repayment time is not fixed, the default is defined as the retailer not repaying the wholesaler at the next transaction.

stronger for wholesalers whose family members are all married within the community, which characterizes 96% of wholesaler links in our sample.[16] Wholesalers who frequently attend community social events, such as weddings, festivals, meetings at places of worship, and other such events, are also more likely to have stronger community ties. We classify social event attendance as high if a wholesaler attends these events at least once a week (20.7% of links fall in this category).

Finally, we collect information on the population of these communities from the 2001 and 2011 Censuses of India. We identify community population at the district level (East Khasi Hills district) by using mother tongue and religion tables from the censuses. We classify immigrant communities as large or small based on their share of the immigrant population in the district. We define large communities as those that comprise 15% or more of the immigrant population in the region, while small communities are further divided into high-growth (10-year growth of greater than 100%) and low- and medium-growth communities. (Large immigrant communities do not have high growth.) As reported in Table 1, Panel B, 29% of our sample links belong to large immigrant communities, 31.5% to small low- and medium-growth immigrant communities, and 10.7% to small high-growth immigrant communities.

## 3. Empirical specification and main results

### *3.1. Provision of trade credit and the incidence of default*

Our baseline empirical specification identifies the effect of community membership on the provision and terms of trade credit. An advantage of our setting is that group membership is exogenous and determined by birth. To control for unobserved wholesaler-specific characteristics that can drive trade credit-related decisions, we examine how the same wholesaler differs in her lending behavior toward retailers within versus outside her community. We can

[16] Marriage outside the community is rare. Genetic evidence suggests that the marriage rule in India (persons should marry within their caste) dates back 1,900 years and that out-of-caste marriage is a recent phenomenon (Moorjani et al., 2013).

operationalize a within-wholesaler design, because wholesalers in our sample have multiple retailer links that span communities. Specifically, we estimate variations of the following OLS model.

$$Y_{ij} = \alpha + \theta Same\ Community_{ij} + \beta_k X_{ij} + \lambda_i + e_{ij}, \tag{1}$$

where $i$ indexes wholesalers and $j$ retailers. The dependent variable $Y$ represents trade credit related outcomes and indicates whether the wholesaler provides trade credit to the retailer, the terms, and the incidence of default. *Same Community* is an indicator variable that equals 1 if the wholesaler and retailer belong to the same community and zero otherwise; $X$ is a vector of $k$ control variables and includes link-specific characteristics. Specifically, $X$ includes the number of years that the wholesaler and retailer have had a trading relationship (*Relationship Length*), the share of total sales that flows through the wholesaler-retailer link as a measure of link importance (*Share of Sales*), whether the wholesaler and retailer are of the same gender (*Same Gender*), and a measure of the geographic distance between the wholesaler's and retailer's shops (*Distance (Close)*). Wholesaler-specific characteristics are captured by wholesaler fixed effects, $\lambda_i$: the inclusion of $\lambda_i$ implements the within-wholesaler estimation. Finally, $e$ is the error term.

The observed amounts and terms of trade credit reflect both its supply by wholesalers as well as retailers' demand for credit. However, our analyses assume that all retailers demand credit but that access to it is rationed. Our interviews suggest this assumption is reasonable, as retailers tend not to rely on banks as a source of financing but rather on personal funds or loans from relatives and friends. As discussed in Section 2.1, although retailers may have access to loans from banks, they tend to be skeptical of the process and the cost of borrowing from banks. The lack of formal sources of financing makes retailers heavily reliant on trade credit from wholesalers. Therefore our research design should allow us to primarily capture the effect of community membership on the supply of credit.

Table 2 presents results from the estimation of Equation 1. The dependent variable in column (1) is an indicator for whether the wholesaler provides trade credit to the retailer.

Columns (2) and (3) indicate whether, conditional on providing credit, the wholesaler provided credit the first time she traded with the retailer, and the number of cash transactions before credit was provided for the first time. Columns (4) to (6) provide additional details related to the terms of trade credit: the dependent variable in column (4) is the amount of trade credit provided as a percentage of sales in the last year, whereas columns (5) and (6) provide measures of the repayment time. Finally, column (7) measures whether the wholesaler experienced default in the last year.

The results indicate that wholesalers are 11.5% more likely to provide trade credit to retailers from their community, relative to retailers from a different community. Furthermore, conditional on providing credit, wholesalers provide 8.1% more credit to retailers within their community. These results indicate preferential lending to within-community retailers. However, there is no evidence that wholesalers provide same-community retailers credit in the first transaction or after fewer cash transactions. Community membership also does not endow retailers with more lenient repayment times. Finally, wholesalers are 13.6% less likely to experience defaults from same-community retailers, relative to retailers from other communities. In robustness analyses (untabulated), we include product and wholesaler community fixed effects, instead of wholesaler fixed effects. Our results continue to hold. Our results are also unchanged when we include enumerator fixed effects, to account for any idiosyncratic effects of enumerators. Finally, our results continue to hold when we control for whether wholesalers collect information about the retailer before providing credit.

Other factors, such as the importance of the retailer, length of the relationship, and proximity to the wholesaler, also influence wholesalers' decision to provide credit and its terms. Wholesalers are more likely to provide trade credit and provide more trade credit to retailers who account for more of their total sales and are therefore more important to the wholesaler's business. Wholesalers also provide such retailers credit after fewer cash transactions but require them to repay more quickly. These findings suggest that, although wholesalers provide more credit to more important retailers, they also employ caution by offering a shorter repayment time. In addition, wholesalers are more likely to provide trade credit and offer nonfixed repayment times to retailers with whom they have a longer relationship. Interestingly, wholesalers were less likely to have provided these retailers with trade credit the first time they transacted and to have provided them credit after a greater number of cash transactions.[17] Whether the wholesaler and retailer are the same gender does not significantly impact the access to and terms of trade credit.

Finally, proximity to the wholesaler matters in access to credit. Wholesalers are more likely to provide credit at the first transaction and after fewer cash transactions to retailers who are located closer to their shops versus retailers located farther away.[18] These results can be explained by wholesalers having personal relationships with retailers whose shops are located close by, as personal relationships in lending have been shown to increase credit availability (Fisman et al., 2017; Haselmann et al., 2018). We also find that wholesalers are more likely to experience defaults from proximate retailers. This higher default frequency also comports with lending based on personal relationships, which may lead to worse lending decisions (Haselmann et al., 2018).

### *3.2. Actions taken in case of default*

We asked traders about the actions taken in the case of default, based on the 161 cases of default in our sample. When asked whether they talked with specified parties about defaults, no wholesalers reported that they talked to other wholesalers, their community members, or community members of retailers about the defaults (Table 3, Panel A). When wholesalers did take some action, 39% of the time they attempted to persuade the retailer to repay. Other actions included repossessing the goods (6%), threatening or putting pressure on the retailer (3%), and refusing future credit (3%). There is also no evidence that wholesalers

[17] The relationship length is not greater for within-community wholesalers and retailers. The correlation between *Same Community* and *Relationship Length* is negative and insignificant, further highlighting that the effect of community membership cannot be explained by existing relationships.

[18] The correlation between *Same Community* and *Distance (Close)* is $-0.11397$ (p-value of $< 0.0001$), indicating that same-community retailers are not located closer to wholesalers' shops.

took legal action against defaulting retailers, consistent with weak legal systems. Overall, we find that, of the 161 defaults in our sample, wholesalers took action in 43% of them.

In Table 3, Panel B, we explore the actions taken by wholesalers in case of default in a multivariate model. The majority of wholesalers in our default sample do not face multiple defaults. Therefore, instead of wholesaler fixed effects as in our primary analyses in Table 2, we rely on product and wholesaler-community fixed effects to capture time-invariant industry and community characteristics that may explain wholesalers' actions in the event of default. The dependent variables are indicators corresponding to a particular action. The results show that wholesalers are more lenient toward retailers from their community. For instance, the negative and significant coefficient on *Same Community* in column (1) suggests that wholesalers are 23% less likely to use persuasion to deal with defaulting retailers from within their community, relative to defaulting retailers from a different community. Wholesalers are also less likely to take other actions, including repossessing goods, threatening or pressuring, or denying future credit against same-community retailers who default (columns (2)–(4)). Overall, wholesalers are 29% less likely to take any action against defaulting retailers from within their community than against defaulting retailers from outside communities (column (5)). Interestingly, this evidence that wholesalers are more lenient toward defaulting retailers from their community may suggest that some of the within-community defaults may be strategic, as retailers are likely to be aware of this leniency (Pérez-Cavazos, 2019). However, strategic defaults should be associated with a higher default probability, which is inconsistent with the lower within-community retailer defaults we document in Table 2.

To summarize, our findings in Table 2 and Table 3 suggest that, controlling for the other important determinants of the access to trade credit and its terms, there is preferential lending within the community in terms of the likelihood and the amount of trade credit. Furthermore, our finding that wholesalers are more lenient toward same-community retailers in case of default might imply that a rational retailer should repay outside-community wholesalers before same-community wholesalers, resulting in higher within-community defaults. In contrast, we find that wholesalers face lower defaults from same-community retailers. Overall, these findings suggest the presence of a mechanism that incentivizes same-community wholesalers and retailers to cooperate. We conjecture that reciprocity explains this cooperation and helps protect against unexpected shocks to traders' income. This reciprocity combines elements of community dependence and greater within-community information flows, as we elaborate on below.

## 4. Reciprocity and lending to community members

### *4.1. Discussion*

A reciprocity norm implies that adherents are obligated to behave reciprocally and that any deviation from the norm will result in a reduced ability to rely on community members. This mechanism is distinct from a pure economic exchange, because the currency may not be monetary and the timing of repayment is undetermined (Portes, 1998). Importantly, reciprocity could be indirect and extend beyond bilateral agreements, which imply repeated interactions between two individuals, to a more generalized view that extends to nontrading members of the group (Ferrara, 2003). Such indirect reciprocity has also been demonstrated in experimental research. For example, in experimental settings of donor–recipient games, recipients who have helped others in the past receive greater transfers from donors, who base their decision on recipients' cooperative behavior (Bolton et al., 2005; Engelmann & Fischbacher, 2009; Seinen & Schram, 2006; Wedekind & Milinski, 2000). These studies highlight the importance of transmitting information about members' helping behavior to third parties, suggesting that indirect reciprocity is closely linked to reputation. That is, indirect reciprocity channels support toward those who build reputations for collaboration (i.e., those who helped others in the past) and, at the same time, provides an incentive to cooperate, because noncompliance is associated with credible threats to withdraw cooperation (Nowak & Sigmund, 2005). Thus, in our setting, a wholesaler who is lenient towards same-community retailers may receive benefits not only from that particular retailer but also from others in the community who do not directly benefit from the current transaction.

Indirect reciprocity is critical in our setting, because credit allocation within communities serves as informal insurance to smooth income shocks (Besley & Coate, 1995; Fafchamps & Lund, 2003; Kinnan & Townsend, 2012; Udry, 1994).[19] If idiosyncratic shocks to income occur, in the absence of social security or other kinds of formal safety nets, traders can smooth their income by relying on community members for aid. Such insurance is not costless, as wholesalers, by extending more trade credit to same-community retailers, may need to obtain additional resources to finance their operations. Similarly, by repaying same-community wholesalers over outside-community wholesalers, retailers forgo the benefits of the leniency from same-community wholesalers. We argue that reciprocity explains the cooperative relationship between same-community retailers and wholesalers, such that wholesalers lend more to within-community retailers and are more lenient when these retailers default and that retailers repay these wholesalers.

### *4.2. Community dependence, information flows, and incentives to reciprocate*

Indirect reciprocity is difficult to test because there is no single outcome that measures the benefits traders receive. Therefore, to test for its presence, we take an approach based on wholesalers' incentives to reciprocate: those who are more likely to benefit from the norm are also more likely to follow it. Specifically, we expect reciprocity to be stronger among wholesalers who depend more on their community for insurance against idiosyncratic shocks to income. We use a number of measures of wholesalers' community reliance to assess whether reciprocity affects their lending to members within the community.

We expect reciprocity to be stronger among wholesalers who do not have an alternative source of recurring income (e.g., rental income or family members with stable jobs) and are therefore more likely to rely on their community in times of economic distress. Also, wholesalers with little education, defined as not having a high school degree, have fewer

[19] The importance of reciprocity in informal economies is further supported by a strong ethic of reciprocity among the poor as an adaption to poverty (Desmond, 2012; Stack, 1975).

outside options if their business fails. Therefore we expect reciprocity and reliance on the community to be higher among these wholesalers. These predictions comport with the work of Munshi & Rosenzweig (2016), who show that households with lower income and those with a higher variation in their income benefit to a greater extent from a community insurance network. Wholesalers who also engage in retail business are likely to directly benefit from reciprocity, as they not only provide credit as part of their wholesale business but also require credit for their retail business.[20] Finally, wholesalers whose business contacts are mainly within their community have fewer outside alternatives and depend more on their community and thus more likely to reciprocate. We therefore expect wholesalers with outside business contacts to be less likely to lend preferentially within their community.

To test for the presence of reciprocity, we re-estimate Equation 1 for the issuance of trade credit and its terms and include interactions of *Same Community* with variables associated with wholesalers' incentives to reciprocate (*No Alternative Recurring Income, Low Education, Wholesale and Retail Business,* and *Outside-Community Business Contacts*).[21] In Table 4, Panel A we present the results of these estimations. Because these analyses rely on wholesaler characteristics, instead of wholesaler fixed effects as in our primary tests, we incorporate product and wholesaler-community fixed effects. To account for other wholesaler characteristics that may affect whether trade credit is offered and its terms, we control for the wholesaler's experience (*Number of Years of Operation*), the size of the business (*Size*), gender (*Female*), the number of family members working with the wholesaler (*Number of Family Members in Business*), and whether the wholesaler started the business or inherited it (*Entrepreneur*).[22]

[20]One could argue that wholesalers that engage in retail business could be funding their competitors by offering credit to retailers. However, such wholesalers have substantially smaller retail businesses, relative to their wholesale operations, which cannot be sustained without providing credit to retailers who typically cannot pay upfront for large amounts of goods. This suggests that the rewards from providing credit to retailers exceed the costs.

[21]The indicator variables reflecting the incentive to reciprocate are also included but not tabulated for brevity in Table 4, Panel A and Panel B.

[22]Our results are qualitatively similar in Table 4, Panel A and Panel B if we also include link-specific controls as in our primary analyses in Table 2.

Consistent with our predictions, we find that wholesalers without an alternative source of recurring income provide 17% more credit to community members than to noncommunity members. Also, wholesalers with little education provide 14% more credit to retailers from the same community. These wholesalers are also less likely to require a short repayment time. Wholesalers who also engage in the retail business are 23.5% more likely to provide credit and, conditional on providing credit, lend 42% more to their community members. Finally, wholesalers with significant outside-community business contacts are 29% less likely to provide credit, provide 18% lower amounts of credit, and are less likely to allow a nonfixed repayment time to retailers within their communities. These results are consistent with reciprocity contributing to the provision of trade credit.

We further argue that indirect reciprocity requires information transmission, because community members cannot reciprocate unless they are aware that a member behaves reciprocally. That is, community members develop a reputation for reciprocity and reciprocate if they can discern which individuals are more likely to return the favor (Nowak & Sigmund, 2005). Therefore ties to the community are important in accessing such information. We employ two variables that measure ties to the community. First, marriage-based networks facilitate information exchange within the community (Munshi, 2011; Rosenzweig & Stark, 1989), suggesting that reciprocity should be stronger if all of the wholesaler's family members married within the community. Second, wholesalers who meet more often with their community members for social events are likely to be more tied to the community, which should also ease information transmission.

Results related to community ties are presented in Table 4, Panel B, where *Same Community* is interacted with variables that reflect ties to the community (*Married Within Community* and *High Social Events*). All other model specifications are the same as in Panel A. Consistent with our predictions, wholesalers whose family members are all married within the community and those who attend many community social events provide 22%–38% more credit to retailers within their communities, relative to outside-community retailers. We also find that these wholesalers provide additional beneficial terms of credit. Specifically, relative to noncommunity retailers, they are 28%–30% more likely to provide credit to community retailers the first time they transact and require 71%–88% fewer cash transactions before providing trade credit. Wholesalers who frequently attend social events also provide relatively more favorable repayment times to same-community retailers. These findings are consistent with our conjecture that wholesalers are more likely to reciprocate when community members can form more accurate beliefs about their incentives.

Our results thus far assess wholesalers' incentives to reciprocate and how they build a reputation for reciprocity.[23] We also explore retailer characteristics that are likely associated with their incentives to reciprocate, such as having no alternative sources of recurring income or little education. However, we do not find that these characteristics explain retailers' propensity to default on trade credit from within-community wholesalers (untabulated). These results might be explained by the fact that, relative to wholesalers, retailers tend to be smaller and poorer and therefore the majority rely on their community for insurance against shocks to income. Furthermore, the small number of defaults (161) in our sample limits our ability to analyze the variation in defaults based on retailers' characteristics.

With respect to how the community assesses retailers' reputation for reciprocity, our findings in Table 3 indicate that wholesalers do not publicize instances of retailer defaults. At the same time, the presence of channels for within-community information flows (e.g., attending community social events) suggest the possibility that information about same-community retailers who default would be disseminated to the community. To better address how the community forms beliefs about retailers' incentives to reciprocate, we explore the parties with whom wholesalers speak to collect information about the retailer. Specifically,

[23]To provide additional support for the reciprocity mechanism, we could also explore how wholesalers' leniency toward defaulting retailers varies with the wholesalers' dependence on the community and their community ties. However, the limited sample of 161 defaults precludes us from conducting these analyses.

we estimate the following OLS model.

$$Talk_{ij} = \alpha + \theta Same\ Community_{ij} + \beta_k X_{ij} + \lambda_i + e_{ij}, \tag{2}$$

where *Talk* represents the parties wholesaler $i$ speaks with about retailer $j$. These parties include wholesalers from within their community, other members from their community, wholesalers from outside their community, other retailers operating in the market, and retailers' associates, including family or friends of retailers. The remaining variables in Equation 2 are as defined before. As we report in Table 5, wholesalers are more likely to talk with other wholesalers from within their community about same-community retailers. These results indicate that, although wholesalers do not actively publicize instances of default, they transmit information about retailers to their community networks and this information contributes to forming retailers' reputations. Publicizing defaults of same-community retailers is likely to be frowned upon by other community members, who may believe that the retailer has fallen on hard times. Therefore showing leniency to the retailer (as we find in Table 3, Panel B) enhances the wholesaler's reputation for being committed to the well-being of the community. However, as our results in Table 5 indicate, wholesalers talk about same-community retailers more generally, which helps the community assess retailers' reputations for reciprocity.

*4.3. Reciprocity in immigrant communities*

To provide additional support for the reciprocity mechanism in lending, we study the lending of immigrant communities. In our setting, 26% of the population in the district where Iewduh is located are immigrants. However, 51% of our sample of traders (71% of wholesalers and 36% of retailers) are immigrants, reflecting the preponderance of immigrants in trade and commerce in the region. Traders' dependence on community insurance networks is likely to be stronger in newer immigrant communities that are not yet established in the region and are therefore expected to have larger income fluctuations. Traders in these communities also have fewer outside alternatives or connections, further leading them to depend more on their community. Furthermore, in smaller immigrant communities, traders are more likely to form accurate beliefs about other traders' incentives to reciprocate, as community ties are likely to be stronger (Munshi, 2011). Therefore we expect the norm of indirect reciprocity to be more pronounced when immigrant communities are smaller and newer. To identify newer immigrant communities, we rely on community growth, which allows us to distinguish current and active immigration from immigration that may have occurred in the past due to historical reasons.[24]

In Table 6, we present results from the estimation of Equation 1 after including interactions of *Same Community* with characteristics of the immigrant communities (*Small High Growth Immigrant Community, Small Low and Medium Growth Immigrant Community*, and *Large Immigrant Community*).[25] Because we are interested in the average lending behavior of immigrant groups, we exclude wholesaler-community fixed effects from the estimation. We control for industry-specific factors that may drive the provision of trade credit by including product fixed effects. The coefficient estimates are relative to the group that is native to the region (Khasis). Consistent with expectations, our results show that wholesalers from small, high-growth immigrant communities provide 31% more credit to members of their community. Wholesalers belonging to this group are also 40% more likely to provide credit to retailers from their community the first time they transact and require 89% fewer cash transactions before providing credit, relative to retailers from outside communities. However, wholesalers from this group offer more stringent repayment times, potentially due to their more limited financial resources. We find weaker results for preferential lending within community by wholesalers from low- and medium-growth communities. These findings suggest that reliance on the community is generally stronger for wholesalers who are more likely to face income fluctuations and have a greater ability to establish a reputation for collabora-

[24] For example, Hindu Bengali administrative officers were imported to the region by the British East India Company (Weiner, 1978).

[25] The indicator variables reflecting the characteristics of immigrant communities are also included but not tabulated for brevity.

tion, consistent with the mechanism of reciprocity. Importantly, retailers in small immigrant communities are also less likely to default on trade credit from same-community wholesalers. This evidence highlights that retailers who depend more on their community also adhere to the reciprocity norm.

The importance of a community's immigration status in determining access to credit can be also assessed in light of the findings of Munshi & Rosenzweig (2016), who position the decision to migrate as a trade-off between access to community insurance networks and an increase in income from migrating. They argue that, as long as the insurance from rural community networks is sufficient, members will not migrate to urban areas. Our results suggest that immigrants tap into existing community networks at their new location, further supporting traders' dependence on the community and the presence of a reciprocity norm, which aids lending to community members.

### *4.4. Reciprocity under the COVID-19-related income shock*

To further support our proposition that reciprocity protects against unexpected shocks to income and thus explains within-community coordination, we explore the recent COVID-19 related lockdown. In November 2020, we conducted follow-up telephone interviews with 20 traders in our sample.[26] At that time, the market was functioning at a reduced capacity and only essential shops, such as general provision stores and pharmacies, were allowed to operate. Along with several questions aimed at understanding the impact of the lockdown on businesses, we also included questions to assess whether reciprocity figured in the response to the income shock during the lockdown. Most traders reported a 70%–80% decline in sales, indicating, as expected, a very significant COVID-19-related income shock.

Although reciprocity should be more effective in the face of idiosyncratic shocks to income, rather than aggregate ones, the effect of the lockdown may substantially vary across traders based on their wealth and whether they were allowed to remain open. Thus traders' responses

[26] In our main survey, 60% of the respondents provided us with their telephone numbers and agreed to follow-up interviews. Of these, we reached out to a random sample of 34 traders, for a response rate of 59%.

provide us with insights into how they expect to cope with the income shock and whether reliance on the community plays a role. Specifically, we asked traders two community-related questions: *Do you feel a responsibility to help your community members in this time of need? What motivates you?* and *Do your community members expect you to help them during the crisis? Why or why not?*

To the first question, many traders responded that they feel a responsibility to help their community members but could not at present, because they were struggling as well. Other traders responded that they helped by providing food and donations to community members. In terms of what motivated them to help, responses included the following: "I help community members because I believe that if you give, you get in return double of what you give"; "We help the community because when we need help, they will give us a helping hand"; and "I don't know what motivates me, this is how our community functions." To the second question on whether community members expected help during the crisis, many traders replied that community members did not expect them to help, because conditions were difficult for everyone. Other responses included the following: "I don't know about the community expecting us to help, but we expect the more fortunate to help us," and "As a community, we expect everyone to help. God will bless you, and the community will look after you." These responses corroborate our main hypothesis that a reciprocity norm operates within the community.

## 5. Alternative explanations

In this section, we address several additional mechanisms and show that our full set of results is unlikely to be explained by these alternatives. Specifically, we address credit under asymmetric information, discrimination, and lending based on personal relationships.

### *5.1. Information asymmetry via ex ante screening and ex post enforcement channels*

Our findings in Table 2 of a higher likelihood and greater proportion of trade credit as well as a lower probability of default within the same community could be consistent with models of credit provision under asymmetric information (De Meza & Webb, 1987; Stiglitz & Weiss, 1981). Although these models predict that a decrease in asymmetric information could increase or decrease the amount of credit, they have an unambiguous prediction with respect to credit quality. Lower information asymmetry in within-group lending should result in reduced defaults, as better-informed lenders can screen out low-quality borrowers. Importantly, reduced information asymmetry, due to greater within-group information sharing, can also lead to stronger enforcement by increasing the group's ability to sanction customers who renege (Fafchamps, 2000; McMillan & Woodruff, 1999).

The literature finds empirical support for the importance of within-group information flows in lending. Fisman et al. (2017) examine within-group lending by using a sample of loans from a large bank in India and find that reduced information asymmetry, due to cultural proximity between loan officers and borrowers, increases the quantity of credit provided and reduces its cost. McMillan & Woodruff (1999), in their study of credit through informal business networks in Vietnam, document that these networks provide both information about customers' reliability and the means to sanction customers that default, thus allowing greater access to trade credit within these networks. In our setting, community membership could reduce information asymmetry, because the wholesaler should be able to access information about retailers through the community networks. These networks should allow not only for better screening of retailers but also for more efficient enforcement, as publicizing information about retailers' defaults could damage their reputation. Therefore reduced information asymmetry, due to community membership, could lead to the greater access to credit and lower default rates that we document.

We start by addressing the screening channel. Notably, the results of our cross-sectional tests based on wholesalers' community dependence (Table 4), including wholesalers' alternative sources of recurring income, education, engagement in retail business, and outside-community business contacts, cannot be driven by screening. Screening also cannot explain the evidence we document regarding wholesalers being more lenient toward same-community retailers who default (Table 3). To provide further support for our conjecture that the more efficient screening of within-community retailers is unlikely to be the primary explanation for our findings, we also explore how community membership affects the variation in credit terms offered.

Building on Cornell & Welch (1996), Fisman et al. (2017) argue that a higher dispersion of loan size within the group should indicate greater screening based on better information. Because the creditworthiness of outside-group borrowers is harder to assess, lenders offer more homogeneous loan terms that reflect the average outside-group credit risk. However, as lenders receive more precise signals of within-group borrowers' creditworthiness, they can be more discerning and provide varying terms. Fisman et al. (2017) indeed find that within-cultural group loans have a substantially larger size dispersion than out-group loans.

To explore the variation in trade credit size across same- and outside-community retailers, we focus on the standard deviation and interquartile range of the amount of trade credit as a percentage of sales. Specifically, for each wholesaler with sufficient data available, we estimate these dispersion measures for the wholesaler's lending to within- and outside-community retailers. The control variables are estimated accordingly as the average for within- and outside-community retailers. All other model specifications are the same as in Equation 1.

As we report in Table 7, the coefficients on *Relationship Length* and *Distance (Close)* are positive and significant, supporting the validity of our dispersion measures as reflecting information flows about retailers. Wholesalers are likely to have better information about retailers with whom they have longer relationships and about those nearby, which explains a greater dispersion in trade credit size. However, inconsistent with the screening channel, we find that the standard deviation and interquartile range of the amount of credit as a percentage of sales are significantly smaller for within-community lending. This smaller variation in the amount of trade credit for within-community retailers comports with the reciprocity mechanism. Wholesalers are less discerning within community, because they are obligated to reciprocate and lend to same-community retailers.[27]

Our findings also do not provide strong support for the enforcement channel. Community sanctioning presupposes that lenders publicize incidents of default. Sanctioning by the community works only if most community wholesalers refuse to lend to the defaulting retailers, as opposed to only the wholesaler who endured the default (Bernstein, 2018; Greif, 1993; Kandori, 1992). In contrast, we find that wholesalers do not publicize defaults (Table 3), which can be explained by the community perceiving such actions to be in poor form if retailers are in economic distress. Furthermore, we also show that wholesalers are more lenient toward same-community retailers. Wholesalers are 29.6% less likely to take any action against defaulting retailers from within their community versus defaulting retailers from outside communities (Column (5) of Table 3, Panel B). Although we find in Table 5 that wholesalers talk about same-community retailers with other wholesalers from their community, our findings are more in line with within-community information flows allowing the community to assess retailers' incentives to reciprocate rather than with enforcement. Finally, the results of our cross-sectional tests based on wholesalers' community dependence (Table 4) cannot be explained by an enforcement channel.

### *5.2. Taste-based and statistical discrimination*

Models of taste-based discrimination predict that preferential in-group lending is driven by animus towards other groups or favoritism of one's own (Becker, 1957; Pope & Sydnor, 2011; Ross et al., 2008).[28] These models predict that members who discriminate would be willing to incur a cost in return for the utility derived from favoring in-group members. In our setting, if wholesalers were prejudiced in this manner, they would face additional costs of lending in the form of higher default rates in exchange for lending more to their community

[27] We acknowledge that the lower within-community dispersion in loan size can occur if wholesalers ration credit to lower quality retailers from their communities. However, this potential explanation contradicts our primary finding in Table 2 that trade credit is more prevalent for within-community retailers.

[28] There is substantial evidence of discrimination in credit markets, such as the mortgage market. See, for example, Blanchflower et al. (2003); Ladd (1998); Pope & Sydnor (2011) and Ross et al. (2008).

members (Fisman et al., 2017, 2020; Haselmann et al., 2018). In contrast, our finding in Table 2 that same-community members default less suggests that taste-based discrimination is an unlikely explanation for preferential in-group lending.[29]

On the other hand, models of statistical discrimination do not assume animosity toward out-group members but presume that agents are less capable of assessing the quality of these members, due to poor information (Arrow, 1973; Phelps, 1972). However, in our sample, wholesalers lend extensively to members outside their community: 66% of retailer contacts identified by wholesalers belong to outside communities (Table 1, Panel B). Also, the average relationship length with retailers from outside communities is 7.92 years for the wholesalers in our sample. Therefore, over time, wholesalers should form accurate beliefs about the creditworthiness of these communities. Furthermore, a majority of sample wholesalers (53%) operate multigenerational businesses (i.e., wholesalers inherited their businesses) and therefore are likely to have substantive knowledge about other communities. Even wholesalers who are entrepreneurs (i.e., those who started their businesses) have operated in the market on average for 16 years, further reducing the possibility that they have mistaken beliefs about the creditworthiness of outside communities. Therefore we contend that statistical discrimination is an unlikely explanation for preferential in-group lending in our setting. Furthermore, our findings that wholesalers who are more likely to face income fluctuations and those who have a greater ability to establish a reputation for collaboration lend more and offer better terms to their community cannot be explained by statistical or taste-based discrimination.

### *5.3. Lending based on personal relationships*

Finally, we assess whether our findings can be attributed to personal relationships between wholesalers and retailers. These relationships can be associated with both asymmetric

[29] We also test whether our results could be attributed to an anti-Muslim bias (Fisman et al., 2020). Although we find that Muslim retailers receive worse credit terms (they are more likely to have short repayment times and less likely to have a repayment time that is not fixed), our primary findings of preferential within-community lending are unaffected when we control for whether the retailer is Muslim.

information and taste-based discrimination. Specifically, research highlights that personal relationships may facilitate access to credit and reduce its cost, due to lower information asymmetry between related lenders and borrowers or lenders' favoritism toward these borrowers. For example, Engelberg et al. (2012) find that, when lenders and borrowers are connected through their respective managers having attended the same college or worked together, borrowers benefit from a significantly lower interest rate on their loans. Similarly, Haselmann et al. (2018) examine personal interactions between lenders and borrowers through membership in the same social club in Germany and show that connected borrowers obtain more credit. Interestingly, these studies derive opposite conclusions with respect to what drives their findings and the benefits of personal relationships. Engelberg et al. (2012) find that relationship deals are better than other deals, as measured by the borrower's performance, and attribute these findings to better information flows when lenders are personally connected to their borrowers. In contrast, Haselmann et al. (2018) document that personal relationships distort the allocation of resources, as evidenced by a lower return on relationship deals and the inefficient use of extra funds by personally connected borrowers, which they attribute to lenders' favoring these borrowers.

Although communities in our sample are large, wholesalers are more likely to have personal relationships with same-community retailers than with retailers from other communities.[30] For example, these relationships could be formed by attending community social events. Thus personal relationships may explain the greater availability and better terms of trade credit within a community. However, our analyses in Table 2 indicate that wholesalers are not more likely to provide same-community retailers credit in the first transaction or after fewer cash transactions, relative to other retailers, as would be the case if personal relationships were driving credit availability. At the same time, we do find that retailers who

[30] Based on estimates from the 2011 Census of India, community size in the district ranges from 2,113 for the Marwari community to 611,559 for the Khasi community. Furthermore, retailers and wholesalers from the same community who trade with each other are not likely to be relatives, defined as mother, father, sister, brother, son, daughter, wife, husband, in-laws, cousins, niece, nephew, uncle, aunt, and other relatives. In our sample, over 95% of retailers are not related to their wholesalers.

are located nearby and therefore have a greater propensity to develop personal relationships with wholesalers are more likely to receive credit in the first transaction and after fewer cash transactions. These results suggest that personal relationships cannot be the primary driver of our main findings.

Furthermore, personal relationships presume that wholesalers should have substantial information about same-community retailers from social interactions, which would necessitate less information collection with respect to the provision of trade credit. Accordingly, we assess the types of information that wholesalers collect directly from retailers and the actions they take to collect this information. Specifically, we estimate the following OLS model.

$$A_{ij} = \alpha + \theta Same\ Community_{ij} + \beta_k X_{ij} + \lambda_i + e_{ij}, \tag{3}$$

where the dependent variable $A_{ij}$ represents the information collected or action taken to collect information by wholesaler $i$ directly from retailer $j$. The remaining variables are as defined before.

We ask wholesalers about the types of information they collect both before and after providing credit. In particular, we ask whether they collect basic information, financial information, or customer-related information from retailers. Basic information includes the location of the retailer's shop and the age of the business, whereas financial information includes sales and prices. We find that wholesalers collect basic, financial, and customer information in 68.5% (37.9%), 55.6% (67.6%) and 15.4% (18.1%) of cases, respectively, before (after) providing credit (untabulated).

As we report in Table 8, Panel A, the information collected from retailers belonging to the same community does not significantly differ from the information collected from outside-community retailers, both before and after providing credit. These findings suggest that within-community personal relationships are an unlikely driver of our results, as that would imply *less* information collection from within-community retailers (and a negative coefficient on *Same Community*). Interestingly, we find that wholesalers are relatively less likely to collect information from retailers who are located close by, consistent with wholesalers having personal relationships with these retailers. These findings echo the evidence in Table 2 that nearby retailers are more likely to receive credit on the first transaction and after fewer cash transactions, consistent with their personal relationships with wholesalers. With respect to other control variables, not surprisingly, wholesalers are more likely to collect information about the location of the retailer's shop and how long she has been in business when the retailer comprises a larger proportion of their sales. Wholesalers are also more likely to collect financial information from retailers with whom they have longer lending relationships, potentially because these retailers are more willing to reveal sensitive information about their prices.

Next, we re-estimate Equation 3 while focusing on the actions wholesalers take to collect information about retailers. These actions include visiting retailers' shops and calling them on the phone. Wholesalers visit retailers' shops in 18.9% (29.5%) of the cases and call the retailers on the phone in 9.0% (15.9%) of the cases before (after) giving credit (untabulated). Results presented in Table 8, Panel B suggest that wholesalers are not less likely to take these actions to collect information from same-community retailers either before or after providing credit. In terms of control variables, wholesalers are more likely to take actions to collect information about retailers who comprise more of their sales. Overall, our results in Table 8 indicate that wholesalers do not collect less information and do not exert less effort to collect it from same-community retailers, relative to outside community retailers, suggesting that personal relationships are an unlikely explanation for our findings. Moreover, as with the discrimination and information asymmetry mechanisms, personal relationships cannot explain preferential within-community lending by wholesalers who are more likely to face income fluctuations and have a greater ability to establish a reputation for collaboration.

## 6. Conclusion

By investigating how community ties affect trade credit in a large marketplace in India, we study access to credit in markets without well-developed financial reporting, auditing and legal systems. Relying on a survey of 503 traders in this market, we explore whether wholesalers offer trade credit and on what terms and how they respond to retailer default. We find evidence of preferential within-community lending: wholesalers are more likely to provide trade credit and offer less restrictive credit terms to retailers from their community, relative to retailers from other communities, and they are more lenient when within-community retailers default. Wholesalers are also more likely to be repaid by same-community retailers. Building on prior literature (Ferrara, 2003; Nowak & Sigmund, 2005), we conjecture that these findings are explained by an indirect reciprocity mechanism. Credit allocation within communities helps mitigate income shocks (Besley & Coate, 1995; Ferrara, 2003; Kinnan & Townsend, 2012; Udry, 1994), therefore when traders experience a shock to their income, they rely on the community for support. In return, traders assist other community members even when it is costly. This reciprocity incentivizes same-community wholesalers and retailers to cooperate.

Measuring wholesalers' incentives to reciprocate by their dependence on the community, we find strong support for the reciprocity mechanism. In particular, wholesalers who do not have an alternative source of recurring income, have low education, and also engage in some retail business—wholesalers who are more likely to benefit from reciprocity—provide better credit terms to within-community retailers. On the other hand, wholesalers with stronger outside-community business contacts depend less on their community and are less likely to lend preferentially to within-community retailers. We also explore the information aspect of reciprocity, which is required because community members cannot help unless they know a member is likely to follow the reciprocity norm. Relying on the strength of wholesalers' ties to the community to measure whether community members can form accurate beliefs about wholesalers' behavior, we show that preferential within-community lending is more pronounced for wholesalers with stronger marital ties to the community and those who frequently attend social events. Further supporting the reciprocity mechanism, we show that preferential within-community lending and lower defaults are more pronounced for small and high-growth immigrant communities, which are characterized by larger income fluctuations and stronger community ties. Furthermore, our interviews with traders following the COVID-19 shock to their income also corroborate the importance of reciprocity within the community.

Although markets similar to the one we explore exist across many countries in Asia, Africa, and Latin America, we acknowledge that institutional differences may threaten the generalizability of our inferences. For example, our findings may not generalize to informal markets with less ethnic diversity and thus potentially weaker within-community ties. We leave it to future research to further investigate the role of the reciprocity mechanism in credit access in other institutional settings. Future research could also explore whether educating traders to maintain proper books of accounts and providing them with the tools to do so can increase the flow of credit in informal markets. Although it has been documented that financial reporting systems benefit both lenders and borrowers, their role and efficacy in informal markets is unclear. For example, informal economic arrangements, such as the indirect reciprocity mechanism documented here, could continue to dominate the allocation of credit in informal markets.

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## Appendix A. Variable definitions

| Variable | Definition |
|---|---|
| *Trade link–specific variables* | |
| Same Community | Indicator for whether the wholesaler and retailer belong to the same community |
| Share of Sales | Percentage of total sales of the wholesaler in the last year that comes through the retailer, mean of range |
| Relationship Length | Number of years that the wholesaler and retailer have been in a trading relationship |
| Same Gender | Indicator for whether the wholesaler and retailer are of the same gender |
| Distance (Close) | Indicator for a distance of less than three kilometers between the wholesaler and retailer |
| | |
| *Variables related to provision and terms of trade credit* | |
| Trade Credit (0/1) | Indicator for whether the wholesaler provides trade credit to the retailer |
| Credit at First Transaction | Indicator for whether the wholesaler provides trade credit to the retailer the first time they engage in a transaction |
| Number of Cash Transactions before Credit | Number of transactions in cash before trade credit is provided, mean of range |
| Trade Credit as a Percent of Sales | Trade credit as a percent of the sales price in the last year, mean of range |
| Short Repayment Time | Indicator for repayment time of less than 15 days |
| Repayment Time Not Fixed | Indicator for when the repayment time is not fixed |
| Default (0/1) | Indicator for whether the retailer defaulted in the last year. Default is defined as whether the retailer failed to repay within the stipulated time. |
| | |
| *Variables related to actions taken in case of default* | |
| Tell Other Wholesalers | Indicator for whether the wholesaler communicates information about retailer defaults to other wholesalers |
| Tell Your Community Members | Indicator for whether the wholesaler communicates information about retailer defaults to community members of the wholesaler |

| Variable | Definition |
|---|---|
| Tell Community Members of the Retailer | Indicator for whether the wholesaler communicates information about retailer defaults to community members of the retailer |
| Use Persuasion | Indicator for whether the wholesaler uses persuasion to compel defaulting retailers to repay |
| Repossess Goods | Indicator for whether the wholesaler repossesses goods from defaulting retailers |
| Threaten or Put Pressure | Indicator for whether the wholesaler threatens or puts pressure to compel defaulting retailers to repay |
| Deny Future Credit | Indicator for whether the wholesaler denies future credit to defaulting retailers |
| Take Legal Action | Indicator for whether the wholesaler pursues legal action against defaulting retailers |
| Take Any Action | Indicator for whether the wholesaler takes any of the above actions against defaulting retailers |
| | |
| *Wholesaler characteristics* | |
| Number of Years of Operation | Number of years that the wholesaler has operated their business |
| Size | Size of the wholesaler's business, ranging from 0 (small) to 10 (large) |
| No Alternative Recurring Income | Indicator that the wholesaler or family members have no alternative sources of recurring income |
| Low Education | Indicator for whether the wholesaler has no high school degree |
| Outside Business Contacts | Indicator for whether the wholesaler has significant business contacts outside their community |
| Wholesale and Retail Business | Indicator for whether a wholesaler also engages in retail business |
| Married within Community | Indicator for whether all of the wholesaler's family members married within the community |
| High Social Events | Indicator for whether the wholesaler attends at least one community social event in a week. |
| Entrepreneur | Indicator for whether the wholesaler started their business (as opposed to inheriting it) |
| Number of Family Members in Business | Number of family members involved in the business |
| Female | Indicator for whether the wholesaler is female |
| | |
| *Community characteristics* | |
| Large Immigrant Community | Indicator for immigrant communities with a population greater than 15% of the total district immigrant population. Source: Census of India |

| Variable | Definition |
|---|---|
| Small Low- and Medium-Growth Immigrant Community | Indicator for immigrant communities with a population less than 15% of the total district population and 10-year growth of less than 100%. Source: Census of India. |
| Small High-Growth Immigrant Community | Indicator for immigrant communities with a population less than 15% of the total district immigrant population and 10-year growth of greater than 100%. Source: Census of India. |
| *Variables related to parties with whom wholesaler speaks* | |
| Talk to Wholesalers within Community | Indicator for whether the wholesaler talks to other wholesalers within their community about the retailer |
| Talk to Other Community Members | Indicator for whether the wholesaler talks to community members (who are not wholesalers) within their community about the retailer |
| Talk to Wholesalers Outside Community | Indicator for whether the wholesaler talks to wholesalers from other communities about the retailer |
| Talk to Other Retailers | Indicator for whether the wholesaler talks to other retailers operating in the market about the retailer |
| Talk to Family of Friends of Retailers | Indicator for whether the wholesaler talks to the retailer's family or friends about the retailer |
| Talk to Community Members of Retailers | Indicator for whether the wholesaler talks to community members of the retailers about the retailer |
| *Variables related to information collection* | |
| Basic Information | Indicator for whether the wholesaler collects information related to location of retailer's shop and length of time the retailer's business has been in operation |
| Financial Information | Indicator for whether the wholesaler collects financial information from the retailer |
| Customer Information | Indicator for whether the wholesaler collects information related to customers from the retailer |
| Call Retailer on Phone | Indicator for whether the wholesaler calls the retailer on the phone to collect information |
| Visit Retailer's Shop | Indicator for whether the wholesaler visits the retailer's shop to collect information |

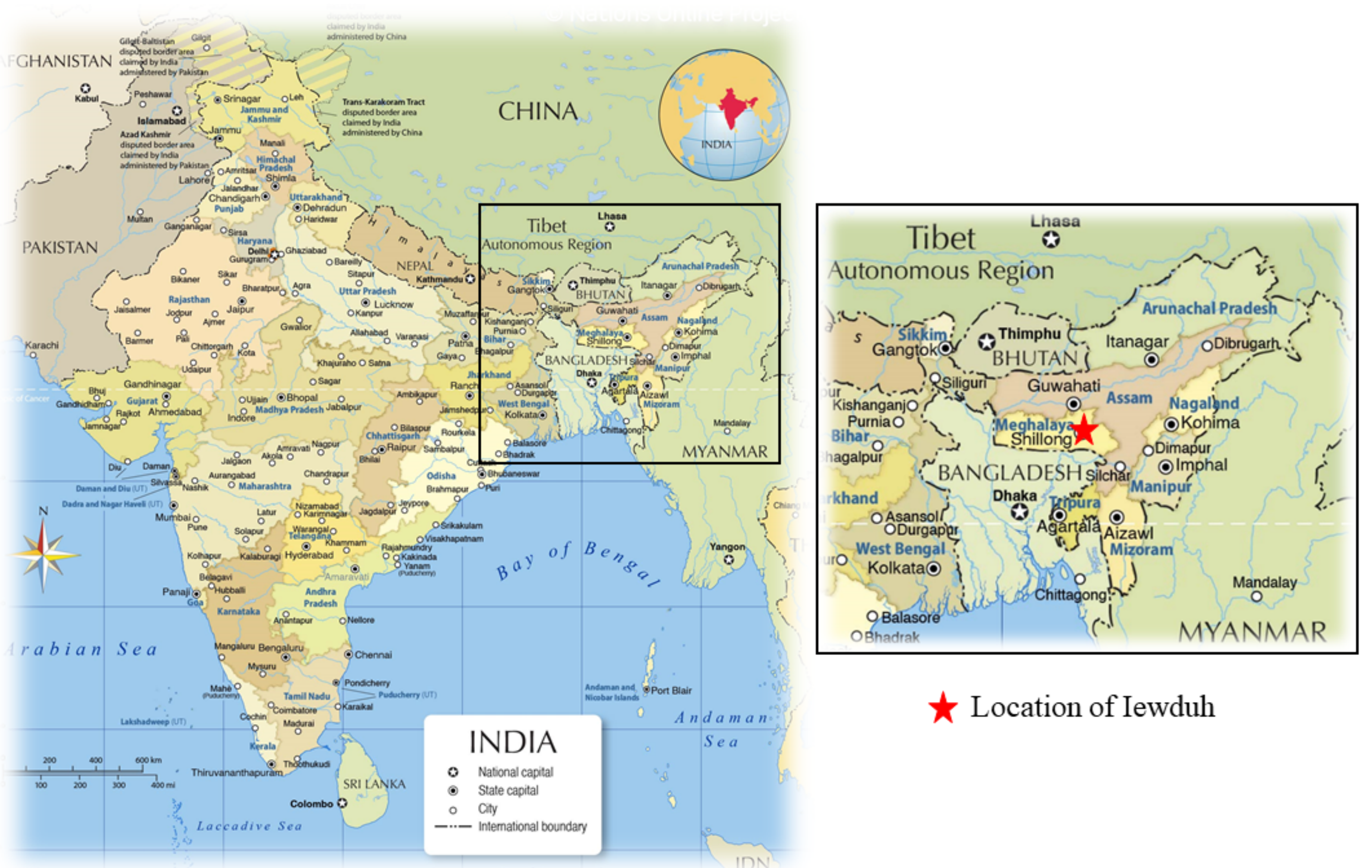


Figure 1: Map showing location of study

This figure shows the geographical location of the marketplace (Iewduh). The map is sourced from Nations Online Project (www.nationsonline.org).

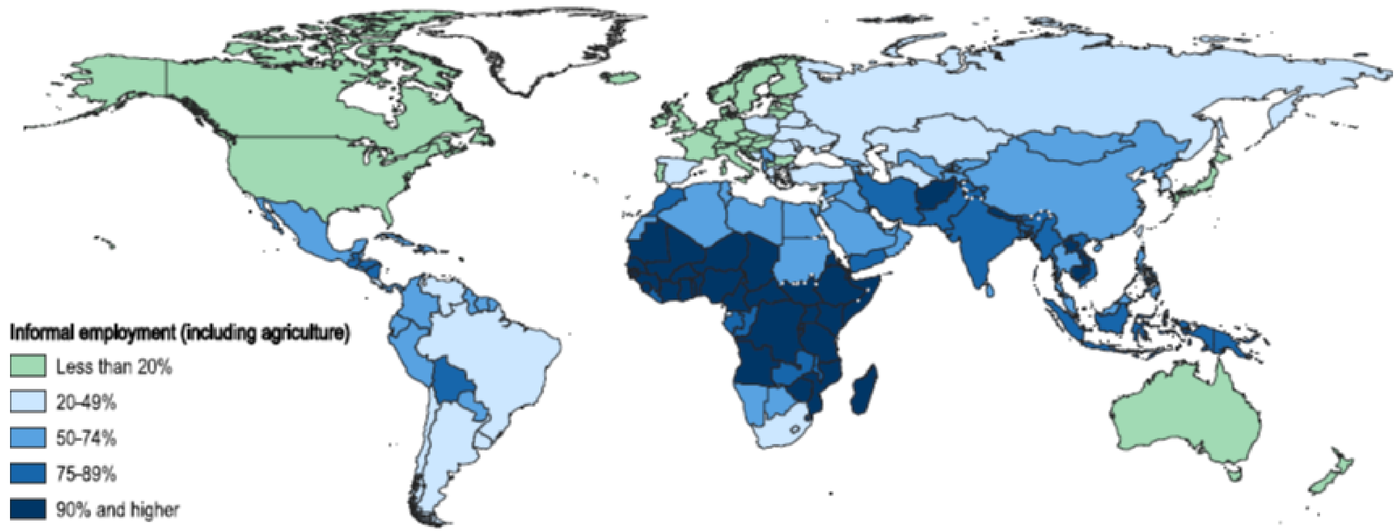


Figure 2: Distribution of informal employment (2016)

This figure shows the distribution of informal employment. The figure is sourced from the report *Tackling Vulnerability in the Informal Economy* (OECD/ILO, 2019).

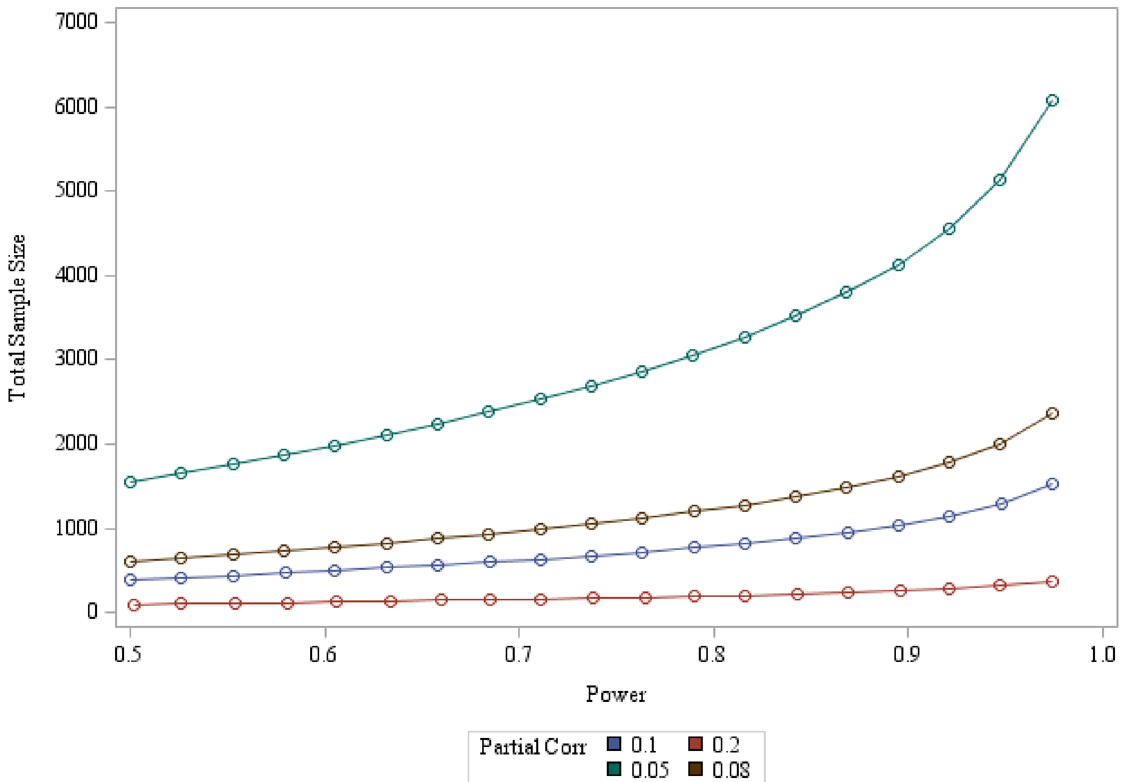


Figure 3: Plot of power by sample size

This figure shows a plot of power by sample size for values of the multiple partial correlation between the predictor variables and outcome ranging from 0.05 to 0.2, at a 0.05 significance level.

Table 1: Sample distribution, response rates, and descriptive statistics

This table shows descriptives related to the sample composition and variables used. Panel A shows the sample distribution by product category and response rates. Panel B presents descriptive statistics for the variables used in our primary analyses. All variables are defined in Appendix A.

Panel A: Sample distribution and response rates

| Product Category | Population | %Population Distribution | Sample | %Sample Distribution | Responses | Response Rate |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| General Store | 319 | 17% | 101 | 17% | 88 | 87% |
| Footwear | 179 | 10% | 64 | 10% | 52 | 81% |
| Household Appliances | 171 | 9% | 70 | 11% | 49 | 70% |
| Textile | 719 | 38% | 243 | 40% | 193 | 79% |
| Tobacco | 252 | 13% | 70 | 11% | 64 | 91% |
| Betel | 237 | 13% | 64 | 10% | 57 | 89% |
| Total | 1877 | 100% | 612 | 100% | 503 | 82% |

Table 1: Sample distribution, response rates, and descriptive statistics, continued

Panel B: Descriptive statistics

| | N | Mean | Median | Std |
|---|---|---|---|---|
| *Trade link–specific variables* | | | | |
| Same Community | 1230 | 0.330 | 0.000 | 0.470 |
| Same Gender | 1230 | 0.570 | 1.000 | 0.495 |
| Share of Sales | 1230 | 20.721 | 20.000 | 14.360 |
| Relationship Length | 1230 | 7.803 | 5.000 | 7.506 |
| Distance (Close) | 1230 | 0.533 | 1.000 | 0.499 |
| *Variables related to the provision and terms of trade credit* | | | | |
| Trade Credit (0/1) | 1230 | 0.726 | 1.000 | 0.446 |
| Credit at First Transaction | 893 | 0.307 | 0.000 | 0.461 |
| Number of Cash Transactions before Credit | 893 | 5.351 | 5.000 | 5.241 |
| Trade Credit as a Percent of Sales | 893 | 40.450 | 22.500 | 34.935 |
| Short Repayment Time | 893 | 0.324 | 0.000 | 0.468 |
| Repayment Time Not Fixed | 893 | 0.207 | 0.000 | 0.406 |
| Default (0/1) | 893 | 0.180 | 0.000 | 0.385 |
| *Wholesaler characteristics* | | | | |
| Number of Years of Operation | 496 | 17.226 | 15.000 | 12.079 |
| Number of Family Members in Business | 496 | 0.526 | 0.000 | 0.727 |
| Entrepreneur | 496 | 0.464 | 0.000 | 0.499 |
| Female | 496 | 0.155 | 0.000 | 0.363 |
| Size | 496 | 5.855 | 6.000 | 2.203 |
| No Alternative Recurring Income | 496 | 0.762 | 1.000 | 0.426 |
| Low Education | 496 | 0.473 | 0.000 | 0.500 |
| Both Wholesaler and Retailer | 496 | 0.313 | 0.000 | 0.464 |
| Outside Business Contacts | 496 | 0.066 | 0.000 | 0.249 |
| Married Within Community | 496 | 0.960 | 1.000 | 0.197 |
| High Social Events | 496 | 0.207 | 0.000 | 0.406 |
| *Community characteristics* | | | | |
| Large Immigrant Community | 1230 | 0.290 | 0.000 | 0.454 |
| Small Low and Medium Growth Immigrant Community | 1230 | 0.315 | 0.000 | 0.465 |
| Small High Growth Immigrant Community | 1230 | 0.107 | 0.000 | 0.310 |

Table 2: Provision and terms of trade credit, and incidence of default

This table presents results from the analyses of the provision and terms of trade credit and the incidence of default. We present $t$-statistics in parentheses below the coefficient estimates; *Same Community* takes the value of 1 if the wholesaler and retailer belong to the same community and 0 otherwise. All other variables are defined in Appendix A. Standard errors are clustered by trader; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

| | Trade Credit (0/1) | Credit at First Transaction | Number of Cash Transactions before Credit | Trade Credit as a Percent of Sales | Short Repayment Time | Repayment Time Not Fixed | Default (0/1) |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Same Community | 0.115*** | -0.032 | 0.059 | 8.069** | 0.022 | 0.011 | -0.136*** |
| | (3.318) | (-0.454) | (0.439) | (2.159) | (0.329) | (0.275) | (-2.595) |
| Share of Sales | 0.002* | 0.003 | -0.007* | 0.602*** | 0.003** | 0.001 | -0.001 |
| | (1.919) | (1.432) | (-1.806) | (5.913) | (2.281) | (0.913) | (-1.102) |
| Relationship Length | 0.009*** | -0.005* | 0.014** | -0.367 | -0.001 | 0.004** | 0.001 |
| | (3.742) | (-1.706) | (2.127) | (-1.610) | (-0.479) | (2.103) | (0.495) |
| Same Gender | -0.040 | 0.017 | -0.051 | 0.449 | -0.010 | -0.018 | -0.018 |
| | (-1.514) | (0.326) | (-0.478) | (0.144) | (-0.268) | (-0.624) | (-0.500) |
| Distance (Close) | 0.054 | 0.228*** | -0.662*** | -2.121 | -0.067 | 0.058 | 0.202*** |
| | (0.995) | (3.936) | (-4.571) | (-0.402) | (-1.121) | (1.152) | (4.593) |
| Observations | 1,230 | 893 | 893 | 893 | 893 | 893 | 893 |
| $R^2$ | 0.882 | 0.806 | 0.819 | 0.854 | 0.812 | 0.918 | 0.805 |
| Estimation Method | OLS | OLS | OLS | OLS | OLS | OLS | OLS |
| Wholesaler FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Table 3: Actions taken by wholesalers in case of default

This table presents the analyses related to the actions that the wholesaler takes in case of retailer defaults. Panel A shows the frequency of various actions that wholesalers take in case of default. Panel B shows the results of multivariate analyses of the actions with a nonzero frequency. We present $t$-statistics in parentheses below the coefficient estimates; *Same Community* takes the value of 1 if the wholesaler and retailer belong to the same community and 0 otherwise. All other variables are defined in Appendix A. Standard errors are clustered by trader; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

Panel A: Frequency of actions taken in the event of default

| | Number taking action | Action taken as share of total defaults |
|---|---|---|
| Tell Other Wholesalers | 0 | 0% |
| Tell Your Community Members | 0 | 0% |
| Tell Community Members of the Retailer | 0 | 0% |
| Use Persuasion | 62 | 39% |
| Repossess Goods | 9 | 6% |
| Threaten or Put Pressure | 5 | 3% |
| Deny Future Credit | 5 | 3% |
| Take Legal Action | 0 | 0% |
| Take Any Action | 69 | 43% |
| Total defaults | 161 | |

Table 3: Actions taken by wholesalers in case of default, continued

Panel B: Actions taken in the event of default

| | Use Persuasion | Repossess Goods | Threaten or Put Pressure | Deny Future Credit | Take Any Action |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Same Community | -0.232** | -0.099** | -0.044* | -0.092* | -0.296*** |
| | (-2.346) | (-2.485) | (-1.914) | (-1.771) | (-3.090) |
| Share of Sales | -0.144 | 0.080** | 0.048** | 0.005 | -0.111 |
| | (-1.604) | (2.479) | (2.035) | (0.192) | (-1.232) |
| Relationship Length | -0.011*** | 0.002 | 0.000 | -0.001 | -0.006 |
| | (-2.589) | (0.927) | (0.133) | (-0.663) | (-1.344) |
| Same Gender | 0.003 | -0.003*** | -0.002** | -0.002* | 0.000 |
| | (1.268) | (-2.672) | (-2.425) | (-1.845) | (0.109) |
| Distance (Close) | -0.065 | -0.012 | -0.033 | 0.028 | -0.091 |
| | (-0.792) | (-0.408) | (-0.988) | (1.396) | (-1.098) |
| Observations | 161 | 161 | 161 | 161 | 161 |
| $R^2$ | 0.154 | 0.351 | 0.091 | 0.120 | 0.153 |
| Estimation Method | OLS | OLS | OLS | OLS | OLS |
| Product FE | Yes | Yes | Yes | Yes | Yes |
| Wholesaler Community FE | Yes | Yes | Yes | Yes | Yes |

Table 4: Wholesaler characteristics and the provision and terms of trade credit

This table presents the analyses of how the provision and terms of trade credit vary with wholesalers' dependence on the community and their community ties. Panel A presents results related to wholesalers' dependence on the community, whereas Panel B presents results related to wholesalers' ties to the community. Each model's t-statistics (in parentheses) and $R^2$ are presented below the coefficient estimates; *Same Community* takes the value of 1 if the wholesaler and retailer belong to the same community and 0 otherwise. All the other variables are defined in Appendix A. Standard errors are clustered by trader; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

Panel A: Wholesalers' dependence on the community

| Model No. | | Trade Credit (0/1) | Credit at First Transaction | Number of Cash Transactions before Credit | Trade Credit as a Percent of Sales | Short Repayment Time | Repayment Time Not Fixed |
|---|---|---|---|---|---|---|---|
| (1) | No Alternative Recurring Income × Same Community | 0.045 | 0.166 | -0.142 | 17.475* | -0.113 | 0.009 |
| | | (0.340) | (1.439) | (-0.478) | (1.925) | (-0.911) | (0.061) |
| | Model $R^2$ | 0.130 | 0.245 | 0.238 | 0.434 | 0.414 | 0.272 |
| (2) | Low Education × Same Community | 0.189 | 0.038 | 0.048 | 13.675* | -0.248** | -0.043 |
| | | (1.614) | (0.379) | (0.195) | (1.685) | (-2.332) | (-0.365) |
| | Model $R^2$ | 0.143 | 0.238 | 0.240 | 0.434 | 0.396 | 0.273 |
| (3) | Wholesale and Retail Business × Same Community | 0.235* | 0.102 | -0.391 | 41.866*** | -0.126 | 0.170 |
| | | (1.754) | (0.755) | (-1.177) | (5.254) | (-0.832) | (1.285) |
| | Model $R^2$ | 0.173 | 0.258 | 0.261 | 0.531 | 0.373 | 0.265 |
| (4) | Outside-Community Business Contacts × Same Community | -0.292* | -0.059 | 0.126 | -18.298*** | 0.112 | -0.247** |
| | | (-1.656) | (-0.721) | (0.313) | (-2.874) | (0.513) | (-2.507) |
| | Model $R^2$ | 0.120 | 0.234 | 0.237 | 0.411 | 0.367 | 0.261 |
| | Observations | 496 | 329 | 329 | 329 | 329 | 329 |
| | Estimation Method | OLS | OLS | OLS | OLS | OLS | OLS |
| | Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| | Product FE | Yes | Yes | Yes | Yes | Yes | Yes |
| | Wholesaler Community FE | Yes | Yes | Yes | Yes | Yes | Yes |

Table 4: Wholesaler characteristics and the provision and terms of trade credit, continued

Panel B: Wholesalers' ties to the community

| Model No. | | Trade Credit (0/1) | Credit at First Transaction | Number of Cash Transactions before Credit | Trade Credit as a Percent of Sales | Short Repayment Time | Repayment Time Not Fixed |
|---|---|---|---|---|---|---|---|
| (1) | Married Within Community × Same Community | -0.121 | 0.301** | -0.884*** | 37.617*** | -0.052 | 0.266* |
| | | (-0.668) | (2.274) | (-3.340) | (2.681) | (-0.370) | (1.700) |
| | Model $R^2$ | 0.114 | 0.236 | 0.239 | 0.418 | 0.376 | 0.260 |
| (2) | High Social Events × Same Community | -0.203 | 0.281** | -0.710** | 22.097** | -0.288** | 0.187 |
| | | (-1.474) | (2.082) | (-2.129) | (1.999) | (-2.111) | (1.377) |
| | Model $R^2$ | 0.14 | 0.254 | 0.257 | 0.442 | 0.387 | 0.315 |
| | Observations | 496 | 329 | 329 | 329 | 329 | 329 |
| | Estimation Method | OLS | OLS | OLS | OLS | OLS | OLS |
| | Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| | Product FE | Yes | Yes | Yes | Yes | Yes | Yes |
| | Wholesaler Community FE | Yes | Yes | Yes | Yes | Yes | Yes |

Table 5: Parties with whom wholesalers speak about retailers

This table presents the results of the analyses of the parties with whom the wholesaler speaks about the retailer. We present $t$-statistics in parentheses below the coefficient estimates; *Same Community* takes the value of 1 if the wholesaler and retailer belong to the same community and 0 otherwise. All the other variables are defined in Appendix A. Standard errors are clustered by trader; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

| | Talk to Wholesalers Within Commnity | Talk to Other Community Members | Talk to Wholesalers Outside Community | Talk to Other Retailers | Talk to Family or Friends of Retailers | Talk to Community Members of Retailers |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Same Community | 0.023* | 0.010 | -0.020 | 0.001 | 0.008 | 0.002 |
| | (1.938) | (0.949) | (-1.239) | (0.784) | (0.210) | (0.860) |
| Share of Sales | -0.003** | 0.001 | -0.000 | -0.001 | -0.002** | -0.001 |
| | (-2.513) | (0.589) | (-0.511) | (-1.008) | (-2.578) | (-1.305) |
| Relationship Length | 0.026 | -0.023 | 0.014 | 0.001 | 0.038 | 0.022 |
| | (0.781) | (-0.906) | (0.689) | (0.227) | (1.472) | (1.378) |
| Same Gender | 0.001 | 0.027** | 0.002 | 0.000 | 0.008 | -0.001 |
| | (0.062) | (2.144) | (1.092) | (0.347) | (1.015) | (-0.726) |
| Distance (close) | 0.051 | 0.004 | -0.011 | -0.001 | 0.080*** | 0.002 |
| | (1.572) | (0.291) | (-1.353) | (-1.134) | (2.619) | (0.916) |
| Observations | 496 | 496 | 496 | 496 | 496 | 496 |
| $R^2$ | 0.630 | 0.693 | 0.817 | 0.744 | 0.579 | 0.408 |
| Estimation Method | OLS | OLS | OLS | OLS | OLS | OLS |
| Wholesaler FE | Yes | Yes | Yes | Yes | Yes | Yes |

Table 6: Community characteristics and the provision and terms of trade credit

This table presents the results of the analyses of how the provision and terms of trade credit, and the incidence of default vary with wholesaler community characteristics. Each model's t-statistics (in parentheses) and $R^2$ are presented below the coefficient estimates; *Same Community* takes the value of 1 if the wholesaler and retailer belong to the same community and 0 otherwise. All the other variables are defined in Appendix A. Standard errors are clustered by trader; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

| | Trade Credit (0/1) | Credit at First Transaction | Number of Cash Transactions before Credit | Trade Credit as a Percent of Sales | Short Repayment Time | Repayment Time Not Fixed | Default (0/1) |
|---|---|---|---|---|---|---|---|
| Small High Growth Immigrant Community × Same Community | -0.204 | 0.403** | -0.891*** | 31.451** | 0.301** | -0.206* | -0.239** |
| | (-1.621) | (2.380) | (-2.622) | (2.400) | (2.262) | (-1.877) | (-2.426) |
| Small Low and Medium Growth Immigrant Community× Same Community | -0.120 | -0.006 | -0.077 | 16.467* | 0.185 | -0.292*** | -0.247*** |
| | (-1.295) | (-0.055) | (-0.326) | (1.763) | (1.446) | (-3.605) | (-2.684) |
| Large Immigrant Community × Same Community | -0.050 | 0.210* | -0.532** | 11.448 | 0.093 | -0.121 | -0.084 |
| | (-0.627) | (1.829) | (-2.234) | (1.251) | (0.921) | (-1.249) | (-0.875) |
| Observations | 1,230 | 893 | 893 | 893 | 893 | 893 | 893 |
| $R^2$ | 0.107 | 0.147 | 0.160 | 0.219 | 0.106 | 0.286 | 0.087 |
| Estimation Method | OLS | OLS | OLS | OLS | OLS | OLS | OLS |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Product FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Table 7: Dispersion of trade credit amounts

This table presents the results of the analyses of the dispersion in the amount of trade credit. We present $t$-statistics in parentheses below the coefficient estimates; *Same Community* takes the value of 1 if the wholesaler and retailer belong to the same community and 0 otherwise. All the other variable are defined in Appendix A . Standard errors are clustered by trader; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

| | Trade Credit as a Percent of Sales Standard Deviation | Trade Credit as a Percent of Sales Interquartile Range |
|---|---|---|
| | (1) | (2) |
| Same Community | -2.574* | -4.403* |
| | (-1.727) | (-1.755) |
| Share of Sales | 0.023 | 0.058 |
| | (0.188) | (0.277) |
| Relationship Length | 0.619* | 0.849* |
| | (1.845) | (1.684) |
| Same Gender | -1.798 | -2.740 |
| | (-1.012) | (-0.963) |
| Distance (Close) | 32.583** | 45.132** |
| | (2.236) | (2.178) |
| Observations | 170 | 170 |
| $R^2$ | 0.932 | 0.905 |
| Estimation Method | OLS | OLS |
| Wholesaler FE | Yes | Yes |

Table 8: Information collection by wholesalers

This table presents the results of the analyses of the type of information that a wholesaler collects directly from the retailer (Panel A) as well as the actions that the wholesaler takes to collect that information (Panel B). We present $t$-statistics in parentheses below the coefficient estimates; *Same Community* takes the value of 1 if the wholesaler and retailer belong to the same community and 0 otherwise. All the other variables are defined in Appendix A. Standard errors are clustered by trader; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

Panel A: Types of information collected by wholesalers

| | Information Collected Before Giving Credit | | | Information Collected After Giving Credit | | |
|---|---|---|---|---|---|---|
| | Basic Information | Financial Information | Customer Information | Basic Information | Financial Information | Customer Information |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Same Community | 0.071 | -0.045 | 0.058 | 0.084 | -0.040 | -0.038 |
| | (1.477) | (-0.657) | (1.155) | (1.161) | (-0.507) | (-0.706) |
| Share of Sales | 0.004*** | 0.000 | -0.001 | 0.006*** | 0.001 | 0.001 |
| | (3.659) | (0.265) | (-0.561) | (4.349) | (0.900) | (0.943) |
| Relationship Length | 0.010 | 0.112*** | 0.030 | -0.004 | 0.086* | 0.032 |
| | (0.295) | (2.883) | (1.235) | (-0.090) | (1.960) | (1.103) |
| Same Gender | 0.017 | -0.031 | -0.035 | 0.111** | -0.068 | 0.026 |
| | (0.422) | (-0.791) | (-1.129) | (2.410) | (-1.357) | (1.019) |
| Distance (Close) | -0.122** | -0.129** | -0.001 | 0.009 | -0.082 | 0.072 |
| | (-2.221) | (-2.193) | (-0.019) | (0.129) | (-1.350) | (1.572) |
| Observations | 1,230 | 1,230 | 1,230 | 893 | 893 | 893 |
| $R^2$ | 0.825 | 0.814 | 0.773 | 0.778 | 0.783 | 0.780 |
| Estimation Method | OLS | OLS | OLS | OLS | OLS | OLS |
| Wholesaler FE | Yes | Yes | Yes | Yes | Yes | Yes |

Table 8: Information collection by wholesalers, continued

Panel B: Actions taken by wholesalers to collect information

| | Actions Taken Before Giving Credit | | Actions Taken After Giving Credit | |
|---|---|---|---|---|
| | Visit Retailer's Shop | Call Retailer on Phone | Visit Retailer's Shop | Call Retailer on Phone |
| | (1) | (2) | (3) | (4) |
| Same Community | -0.062 | 0.021 | -0.020 | 0.040 |
| | (-1.111) | (0.508) | (-0.311) | (0.689) |
| Share of Sales | 0.003** | 0.004*** | 0.002 | 0.002* |
| | (2.067) | (4.143) | (1.119) | (1.882) |
| Relationship Length | -0.022 | 0.019 | 0.001 | 0.057* |
| | (-0.789) | (0.898) | (0.025) | (1.833) |
| Same Gender | 0.017 | 0.038* | 0.040 | -0.064** |
| | (0.457) | (1.856) | (0.902) | (-2.076) |
| Distance (Close) | -0.011 | -0.058* | -0.033 | -0.029 |
| | (-0.267) | (-1.866) | (-0.465) | (-0.664) |
| Observations | 1,230 | 1,230 | 893 | 893 |
| $R^2$ | 0.841 | 0.855 | 0.833 | 0.844 |
| Estimation Method | OLS | OLS | OLS | OLS |
| Wholesaler FE | Yes | Yes | Yes | Yes |