

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

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January 25, 2021

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## Abstract

We study how wholesalers 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 the northeastern part of India, we find that community membership plays a strong role in the access to trade credit. Wholesalers are more likely to provide trade credit and 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. We show that this cooperation between same-community wholesalers and retailers is achieved through a reciprocity mechanism, which provides insurance against income shocks.

*JEL Classification:* D82, G21, G28, O10, O16, O17, Z10, Z13

*Keywords:* Trade Credit, Informal Economies, Lending, Reciprocity, India, Iewduh, Community Enforcement, Asymmetric Information

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\*For helpful discussions and comments, we are grateful to Ray Ball, Marianne Bertrand, Ron Burt, Pradeep Chintagunta, Anna Costello, Doug Diamond, Jung Koo Kang, Christian Leuz, Kaivan Munshi, Shailesh Nagar, Tiplut Nongbri, Rohini Pande, Jane Risen, Raghuram Rajan, Abbie Smith, Amir Sufi, Chad Syverson, George Wu, and Luigi Zingales. We thank seminar participants at the University of Toronto, Tulane University, and USC for their helpful comments and suggestions. We are grateful to Shailesh Nagar and NRMC for help with the data collection. Rimmy E. Tomy gratefully acknowledges the support of the Fama Miller Center and IGM at the University of Chicago Booth School of Business.

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## 1. Introduction

A large body of literature examines the economic factors that affect private lenders' decisions to extend credit to borrowers (Berger et al., 2005; Diamond, 1984; Fama, 1985; Jappelli et al., 2005; Petersen & Rajan, 2002). Yet, we know little about how borrower risk is assessed and credit is extended in markets where auditing and financial systems function poorly and there is limited recourse to the legal system in case of nonrepayment. In this study, we extend prior research by exploring factors that influence wholesalers' decisions to extend trade credit to retailers in an informal sector of a developing economy and focus on the role of community membership in facilitating the flow of trade credit. Our focus is motivated by prior research that highlights the importance of in-group lending in developing economies (Besley & Coate, 1995; Kinman & Townsend, 2012; Udry, 1994; McMillan & Woodruff, 1999).

The informal sector accounts for about 30% of GDP and 70% of employment in emerging market and developing economies (World Bank, 2019).<sup>1</sup> This 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, regulations are not enforced because it is too costly or is not feasible to do so (OECD/ILO, 2019). The informal sector employs a large workforce and has low levels of development and productivity. Businesses in this sector have limited access to formal sources of credit from banks and capital markets, and therefore rely heavily on trade credit. An understanding of the factors that can ease access to trade credit in the informal sector can potentially improve trade and investment in this sector, aiding its long-term growth (Fisman & Love, 2003; Petersen & Rajan, 1997; Rajan & Zingales, 1998).

The limited insight into the informal economy is driven by the lack of organized data sources and the difficulty in accessing this largely unorganized sector. We approach this challenge by surveying wholesalers and retailers in a large organized marketplace, or bazaar,

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<sup>1</sup>Figure 1, sourced from OECD/ILO (2019), shows the distribution of informal employment, which dominates in the Global South.

in the northeast of India, in the state of Meghalaya. The marketplace, called Iewduh, is the epicenter of trade in the region (Figure 2 shows the geographic location of Iewduh). We select this market as the setting for our study for several reasons. First, retailers in Iewduh rely on trade credit from wholesalers. Second, this market is characterized by the presence of multiple products and ethnic groups, allowing us to take advantage of the rich variation in the data. The market includes traders from several communities, defined as those sharing a common language, culture, and place of migration. Third, the market is a microcosmic representation of a larger sector of small business enterprises across Africa, Asia, and Latin America, thereby mitigating generalizability concerns. Fourth, the presence of wholesalers and retailers in a relatively constrained area reduces the cost of conducting a survey. Finally, focusing on a single market allows us to communicate directly with the traders who comprise the observations in our sample and to understand the social and economic constraints within which they operate and which affect their credit and business decisions.

We interview a probability sample of 503 traders operating in the market, of which 146 are wholesalers and the remaining are retailers. We ask the traders about their links to other traders, resulting in a data set with information on 1,230 wholesaler-retailer links (relationships). We collect data on whether trade credit is provided, the terms of trade credit, wholesalers' responses to retailer defaults, the parties with whom wholesalers communicate about retailers, the information wholesalers collect directly from retailers, and the actions they take to collect it.

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 the lack of formal sources of financing makes retailers credit constrained and heavily reliant on trade credit from wholesalers. That is, all retailers demand credit but access to it is somehow rationed by wholesalers. 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 and

are less likely to experience defaults by these retailers. 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 provide 8% more credit to retailers within their community, and face 13.6% less default from these retailers. We also find that wholesalers are more lenient towards 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 towards 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. Our opposing finding that wholesalers face lower defaults from same-community retailers suggests the presence of a mechanism that incentivizes same-community wholesalers and retailers to cooperate.

We contend that a norm of reciprocity explains such wholesaler-retailer cooperation. Reciprocity can be indirect: a wholesaler who is more generous towards a retailer may derive benefits from other community members who are aware of their 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 insurance, and is sustained by members' beliefs 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 it 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 in support of the reciprocity mechanism, we examine whether wholesalers who are more likely to benefit from the norm of reciprocity are also more likely to follow it. We find that wholesalers who do not have a stable source of income (e.g., rental

income, 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 therefore 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. In addition, wholesalers who also have some retail business are direct beneficiaries of the reciprocity norm because they not only provide but also receive trade credit. Such wholesalers are 23.5% more likely to provide trade credit, and conditional on providing credit, lend 42% more to retailers from their community than to those from other communities.

Indirect reciprocity requires within-community information flows because community members cannot reciprocate unless they are aware that a member behaves in a manner consistent with this norm (Nowak & Sigmund, 2005). Experimental research also highlights the importance of an information channel in sustaining indirect reciprocity, as it allows members to develop a reputation 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, which facilitates 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 beneficial credit terms to retailers from their communities. Conversely, wholesalers who have significant business contacts outside their community are less likely to develop a reputation for within-community reciprocity relative to wholesalers whose business contacts are all within their community. Wholesalers with significant business contacts outside their community are also less likely to be dependent 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. Overall, these analyses based

on wholesalers' incentives to reciprocate and their ties to the community are consistent with a reciprocity mechanism 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 stable sources of income or a low 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 the majority rely on their community for insurance against shocks to income. With respect to how the community assesses retailers' reputations for reciprocity, we do not find that wholesalers publicize instances of same-community retailer defaults, possibly because doing so may be seen in bad taste by other community members who could believe that the retailer has fallen on hard times. Thus, the greater leniency towards same-community retailers who default may enhance a wholesaler's reputation as one who helps the community. However, in additional analyses we find that, to collect information about same-community retailers, wholesalers are more likely to speak with other wholesalers from their community, which should help the community form beliefs about retailers' incentives to reciprocate.

To further support the reciprocity mechanism, we focus on the lending behavior of immigrant communities, to which the majority of traders in our sample belong. Newer immigrant communities, which we identify based on community growth, are more likely to face large income fluctuations, necessitating the reliance on other community members 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 norm of reciprocity, we find that wholesalers' preferential lending is stronger in small, high-growth immigrant communities and is also present, albeit 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 are more dependent on their com-

munity and who have a greater ability to establish a reputation for collaboration behave according to the norm of reciprocity.

Finally, we conduct additional interviews with twenty traders in our sample following the COVID-19 related lockdown and the 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 help them in return. Traders' responses corroborate our proposition that a reciprocity mechanism within the community helps members deal with income shocks.

We next address potential alternative explanations for our findings of preferential within-group lending and lower retailer defaults. Prior literature suggests that taste-based discrimination may explain preferential in-group lending (Becker, 1957; Blanchflower et al., 2003; Ladd, 1998). However, such discrimination presumes that lenders would be willing to incur additional costs, such as higher default rates, for favoring in-group members (Haselmann et al., 2018; Fisman et al., 2020). Our finding of a lower likelihood of default for within-community retailers suggests that a taste-based discrimination mechanism is unlikely to drive our findings. It is also possible that statistical discrimination, which assumes that lenders are unable to form accurate beliefs about the creditworthiness of out-group members due to inferior information, explains preferential within-community lending. Our evidence that wholesalers have extensive and long-term lending relationships with and therefore substantial knowledge about members of outside communities suggests that statistical discrimination is also unlikely to explain our findings. Furthermore, our findings that wholesalers who are more likely to face income fluctuations lend more and offer better terms to their community retailers are inconsistent with taste-based and statistical discrimination.

Our findings could also be attributed to the asymmetric information mechanism (De Meza & Webb, 1987; Stiglitz & Weiss, 1981). Under this mechanism, the preferential within-community lending and the lower within-community default rates that we document could be driven by both better ex ante screening of retailers and more efficient ex post enforce-

ment by the community, as within-community information sharing facilitates these channels. (Fisman et al., 2017; Greif, 1993; McMillan & Woodruff, 1999). Two sets of findings reveal that an asymmetric information mechanism is unlikely to be the primary explanation for our findings. First, better ex ante screening due to a more precise evaluation of the creditworthiness of within-community retailers should result in a higher variation in the terms of trade credit for within-community retailers relative to retailers from other communities (Cornell & Welch, 1996; Fisman et al., 2017). In contrast, we find a smaller variation in the amount of trade credit for lending within the community, which rather suggests that wholesalers are being less discerning within the community. Second, our finding that wholesalers are more lenient towards same-community retailers who default indicates that more efficient ex post enforcement within the community does not drive the preferential lending we observe. This argument is further supported by our finding that wholesalers do not spread information about defaults. Although we find that wholesalers are more likely to speak about within-community retailers with wholesalers from their community, our findings are overall more consistent with within-community information flows allowing the community to assess retailers' incentives to reciprocate rather than with ex post enforcement. Moreover, our findings of stronger preferential within-community lending by wholesalers who are more dependent on their community cannot be explained by ex ante screening or ex post enforcement.

Finally, we conduct additional analyses to mitigate concerns that our findings could be attributed to personal relationships between traders, which are likely to be more prevalent for within-community traders. These relationships may facilitate access to credit due to lower information asymmetry between connected traders, or wholesalers' favoritism toward traders with whom they have personal relationships (Engelberg et al., 2012; Haselmann et al., 2018). Our findings that wholesalers are not more likely to lend to same-community retailers the first time they transact or to provide them with credit after a fewer number of cash transactions, as would be the case if personal relationships were driving credit availability, indicate that preferential within-community lending is unlikely to be driven by wholesaler-retailer



personal relationships. Furthermore, lending based on personal relationships presumes that wholesalers have substantial information about same-community retailers from prior social interactions, reducing the need for information collection. We study wholesalers' information collection decisions, including information on the location of retailers' shops and the length of time retailers' businesses have existed. We find that wholesalers do not collect less information from same-community retailers relative to other retailers, as lending based on personal relationships would imply. Moreover, wholesalers exert as much effort (measured as visiting retailers' shops or calling them) to actively collect information about retailers in their community as about those outside their community. These results further reinforce our inference that personal relationships cannot be the main driver of our findings.

Our work contributes to the understanding of credit flow in the informal sector. Prior studies document that because of weak enforcement and the difficulty in assessing borrower risk, businesses in this sector have limited access to formal sources of credit, such as bank loans (Hoff & Stiglitz, 1990). Our study highlights the role of community membership in facilitating access to credit in the informal sector. In this respect, our findings also complement recent work that studies how the introduction of formal financial institutions, such as microfinance or development programs, influences credit availability and growth in developing economies (Banerjee et al., 2013, 2015). While these institutions are often beneficial, they also crowd out both informal lending relationships and social interactions unrelated to lending (Banerjee et al., 2018; Heß et al., 2020). Our evidence of the role of community in providing access to trade credit and thus insuring against income shocks underline the risks of eroding informal economic structures.<sup>2</sup>

Our work further adds 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

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<sup>2</sup>Rajan (2019) highlights the important role that the community plays even in developed economies, where it fills the gaps left by formal government and market systems.

a reciprocity mechanism in the provision of trade credit in informal economies. Our work also connects studies of in-group lending to those that explore the reciprocity that arises in informal economies to deal with income fluctuations and the lack of formal insurance (Besley & Coate, 1995; Kinnan & Townsend, 2012; Udry, 1994). We document that the wholesalers who are more likely to rely on communal reciprocity in the case of a shock to their income are also the ones who assist community members by providing them with preferential access to trade credit.

Importantly, our study is distinct 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 shared commonalities, such 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 the borrower, but the mechanism of reciprocity in our setting extends beyond bilateral relationships and is likely to encompass 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.

## **2. Survey methodology**

Our objective is to study the flow of credit in informal economies and to understand the frictions that prevent access to credit. Because businesses that operate in informal 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 India. The survey includes questions about operations of the business with a focus on lending and access to credit. In this section, we describe our data and the data-collection process.

## *2.1. Feasibility study*

We conducted a feasibility study to understand the features of the market and the viability of a study there.<sup>3</sup> The feasibility study involved in-depth interviews with twenty-two traders in the market and limited data-collection from forty-nine 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 in 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 access to formal credit institutions. These include a lack of understanding of the loan application process, low levels of education, lack of trust in formal institutions, an inability to provide land or other assets as collateral, discomfort with being indebted, and religious reasons for not taking loans with explicit interest payments.

We also found considerable product-level 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 paying back on time, the wholesaler increases the

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<sup>3</sup>The feasibility study was conducted in August 2018. In July 2019, we carried out a listing exercise to create 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.

credit limit. Wholesalers do not price discriminate based on credit provision. That is, retailers do not receive a discounted price 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 conflict such actions can incite. Also, because courts are inefficient, entering into litigation is generally not an option. However, cases where the retailer never repays are rare. Given 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. These are primarily based on ethnicity, which we interpret as sharing a language, culture and place of migration, with the exception of the Muslim community, which is based on religion. We define communities in this manner because these are the groups with which respondents identify when asked to state their ethnicity. Specifically, the groups are the Khasi, Jaintia, Marwari, Bengali, Bihari, Nepali, Punjabi, Assamese, and Muslim communities. Khasis are the dominant ethnic group and are indigenous to the region, whereas the remaining groups are largely migrants who came into the state from other parts of the country or from 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 because, 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 in the market. This exercise resulted in a list of 5,254 shops with information on the location, product category, and gender of the trader. Because the listing exercise was based on observation rather than direct interaction with the trader, we were not able to collect additional auxiliary information, such as whether the trader is a wholesaler or retailer, or the ethnicity of the trader. 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 not commonly used (as described in [Section 2.1](#)), we retain 2,537 shops. Lastly, to ensure an adequate number of 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 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.<sup>4</sup> 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 are related to product type, the variance of our outcome variables are 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

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<sup>4</sup>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.

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 require at least 70% of the total sales to come from the wholesale business in order to classify the traders as wholesalers. We impose these criteria because we are interested in classifying traders primarily as providers or recipients of trade credit. Wholesalers, by definition, are fewer in number. Therefore, we oversample wholesalers by using disproportionate sampling based on screening.<sup>5</sup> When performing the empirical analysis, we adjust for the oversampling and 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 percent distribution of the shops. Textile shops comprise the largest share with 38% of all shops in the population 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. We select a sample size of 612 traders, which is approximately one-third of the target population of 1,877. Columns (3) and (4) of Table 1, Panel A show the number of shops and percent 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.

We interviewed thirteen wholesalers and forty-five retailers in a pilot study and asked them for information about their top-ten connections, based on the percent of sales (purchases) in the previous year for wholesalers (retailers). On average, wholesalers had connections to 2.08 retailers and retailers to 1.84 wholesalers. The response rate in the pilot survey

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<sup>5</sup>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 were able to estimate the proportion of wholesalers in the market, by product, by randomly selecting traders to interview.

was high at 94%. Therefore, a sample size of 612 traders was expected to yield data on over 1,000 wholesaler-retailer links.<sup>6</sup> 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 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.

Our final sample includes survey responses from 503 traders. Of these, 146 are wholesalers and the remaining are retailers. Combined, they provide data on 1,230 wholesaler-retailer links.<sup>7</sup> Given that the average number of links identified in the pilot survey was approximately two and the maximum number of links was five, we asked traders for their top five links in the main survey.<sup>8</sup> A wholesaler in our final sample has, on average, links to 3.40 retailers, whereas a retailer has links to 2.06 wholesalers. Traders have links both within the market and outside. Based on the locations of wholesalers' and retailers' shops, about 50% of the reported links are within the surveyed market.

### 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

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<sup>6</sup>The calculation is as follows:  $612 \times 94\% \times 2$ . In the final survey, our response rate was only 82%, however, traders reported a greater number of links.

<sup>7</sup>We manually combine data from the responses of wholesalers and retailers using the trader's name, shop name, shop location, telephone number, gender, and ethnicity. That is, if retailers mention a wholesaler we interviewed (and vice-versa), we form a connection between the two traders if none existed before and assign to it wholesaler (retailer) characteristics obtained from the respective wholesaler (retailer) interviews. All of the links in our sample are one-sided (i.e., we only interview one party in the wholesaler-retailer link). One reason for this is that traders have extensive links outside the market.

<sup>8</sup>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.

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 traders to provide a range of estimates. Besides questions related to credit access, we ask traders about the types of information they collect and the actions they take 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. Prior research has found greater levels of missing data and less detailed answers for items that appear later in the questionnaire (Krosnick & Presser, 2010). Therefore, questions related to demography were asked towards the end of the questionnaire to minimize fatigue effects because traders would need to exert relatively less effort to answer basic demographic questions about themselves. Furthermore, our survey team consisted of twelve enumerators who were local to the region and were 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 the enumerators. 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.<sup>9</sup> As an additional check, with the traders' permission, we asked enumerators to take photographs

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<sup>9</sup>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.



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 traders in our sample are located close to their trading partners, which we define as a radius of less than or equal to three kilometers.<sup>10</sup>

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 and having a policy of not giving credit to anyone, the retailer being new to the business, the wholesalers' parents (in the case of an inherited business) never giving credit, 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 on the first transaction between the wholesaler and retailer. On average, there are 5.35 cash transactions before credit is provided and the mean amount of credit equals 40.45% of sales. With respect to the cost of trade credit, as discussed in Section 2.1, the cost varies primarily along the repayment-time dimension; 32.4% of the links are associated with a short repayment time, defined as fifteen days or less. However, in 20.7% of the cases the repayment time is not fixed. That is, the retailer can repay the wholesaler whenever they transact next. Finally, default occurs in 18% of our sample, where default is defined as the retailer not repaying within the stipulated time.

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<sup>10</sup>We define distance based on this indicator variable because the market is densely packed and it is therefore difficult to accurately measure distance between shops, especially for shops that are located nearby.

We have data on wholesaler characteristics for about 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 seventeen years and rely primarily on income from the business (76.2% have no other stable sources of income). As far as education is concerned, 47.3% do not have a high school degree. 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.

We also asked wholesalers for information to assess their ties to the community. First, we asked wholesalers about their significant business ties, which are defined as contacts who provide wholesalers with information related to the product area and market trends, contacts who have helped them through a significant crisis event in their business career, or their most valuable employee. Only 6.6% of wholesalers have significant business ties outside their community. Second, in 96% of cases, all family members of the wholesaler are married within the community. Third, 20.7% attend community social events at least once a week, which we classify as high social event attendance. Furthermore, few family members are involved in the business, ranging from 0 to 3 with an average of 0.5. Thirty-one percent of wholesalers also engage in some retail business. Finally, 46.4% are entrepreneurs (i.e., have not inherited a business) and the wholesaler is female in 15.5% of the cases.

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 and small based on their share of the immigrant population in the district. We define large immigrant communities as those that comprise 15% or more of the immigrant population in the region. Small immigrant communities are further

divided into high-growth (ten-year growth of greater than 100%), and low- and medium-growth communities (all large immigrant communities have a low 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 to retailers within versus outside their community. We are able to operationalize a within-wholesaler design because wholesalers in our sample have multiple retailer links that span across communities. Specifically, we estimate variations of the following OLS model:

$$Y_{ij} = \alpha + \theta \textit{Same Community}_{ij} + \beta_k X_{ij} + \lambda_i + e_{ij}, \quad (1)$$

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 of credit provided, 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 relation (*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 rest on the assumption that all retailers demand credit, but access to it is somehow rationed. Our interviews suggest this assumption is reasonable because retailers tend not to rely on bank loans 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% 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 a fewer number of cash transactions. Community membership also does not endow retailers with more beneficial 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), instead of wholesaler fixed effects, we include product and wholesaler community 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 play a role in wholesalers' decision to provide credit and its terms. Wholesalers are more likely to provide trade credit and provide larger amounts of trade credit to retailers who account for a greater share 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 within a shorter time. These findings suggest that although wholesalers provide larger amounts of credit to more important retailers, they also employ caution in offering terms to such retailers. 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 also provided them credit after a greater number of cash transactions.<sup>11</sup> 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 a lower number of cash transactions to retailers who are located closer to their shops, relative to retailers that are located farther

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<sup>11</sup>The lending relationships are not stronger 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 lending relationships.

away.<sup>12</sup> 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 documented 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 is also in line 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 wholesalers about the actions they took if retailers defaulted, 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, talked to their community members, or talked to community members of retailers about the defaults (Table 3, Panel A). In cases where wholesalers did take some action, 39% of the time they attempted to persuade the retailer to repay. Other actions include repossessing the goods (6%), threatening or putting pressure on the retailer (3%), and refusing future credit (3%). There is also no evidence that wholesalers take legal action against defaulting retailers, consistent with weak legal systems. Overall, we find that of the 161 cases of default in our sample, wholesalers took action in only 43% of the cases.

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. Interestingly, the results show that wholesalers are more lenient towards retailers from their community. For instance, the negative and significant coefficient on *Same Community* in col-

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<sup>12</sup>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.

umn (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 putting pressure, 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)).

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 term credit. Furthermore, our finding that wholesalers are more lenient towards 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 a reciprocity mechanism explains such cooperation, and provides insurance against unexpected shocks to traders’ income. This reciprocity mechanism combines elements of community dependence and greater within-community information flows, as we elaborate below.

## **4. Reciprocity and lending to community members**

### *4.1. Discussion*

A norm of reciprocity implies that individuals who follow this norm are obligated to behave reciprocally, and deviation results 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 get greater transfers from donors, who base their decision on recipients’ helping 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, the mechanism of indirect reciprocity channels support towards those who build a reputation 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 are not direct beneficiaries in the current transaction.

Indirect reciprocity is critical in our setting because credit allocation within communities serves as an informal insurance mechanism to smooth income shocks over time (Besley & Coate, 1995; Fafchamps & Lund, 2003; Kinnan & Townsend, 2012; Udry, 1994).<sup>13</sup> If idiosyncratic shocks to income occur, in the absence of social security or other kinds of reliable formal safety nets, traders can smooth their income ex post by relying on community members for aid. Such insurance is not costless as wholesalers, by extending larger amounts of 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 the mechanism of reciprocity explains the cooperative relationship between same-community retailers and wholesalers, such that wholesalers lend more

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<sup>13</sup>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).



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 the presence of this mechanism, we take an approach based on wholesalers' incentives to reciprocate: those who are more likely to benefit from the norm of reciprocity are also more likely to follow it. Specifically, we expect reciprocity to be stronger among wholesalers who are more dependent on their community for insurance against idiosyncratic shocks to income. We use a number of measures of wholesalers' community reliance to assess whether a reciprocity mechanism affects their lending to members within the community.

We expect the mechanism of reciprocity to be stronger among wholesalers who do not have a stable source of income (e.g., rental income, family members with a stable job) and are therefore more likely to be reliant on their community in times of economic distress. Also, wholesalers with low education levels, defined as a few years of schooling or no formal education, have fewer outside options if their business fails. Therefore, we expect reciprocity and reliance on the community to be higher among such wholesalers. These predictions are in line with [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 the community insurance network. Furthermore, wholesalers who report that they also engage in retail business are likely to be direct beneficiaries of reciprocity as they not only provide credit as part of their wholesale business, but also require credit for their retail business.<sup>14</sup>

To test for the presence of reciprocity, we re-estimate [Equation 1](#) for the issuance of

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<sup>14</sup>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.

trade credit and its terms and include interactions of *Same Community* with variables that are associated with wholesalers' incentives to reciprocate (*No Stable Income*, *Low Education* and *Wholesale and Retail Business*).<sup>15</sup> 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*).<sup>16</sup>

Consistent with our predictions, we find that wholesalers without a stable source of income provide 17% more credit to community members than to noncommunity members. Also, wholesalers with a low education provide 14% more credit to retailers from the same community. Such wholesalers are also less likely to require a short repayment time. Finally, 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. These results are consistent with a reciprocity mechanism 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 are able to discern which individuals are more likely to return the favor ([Nowak & Sigmund, 2005](#)). Therefore, ties to the community are important in accessing such information.

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<sup>15</sup>The indicator variables reflecting the incentive to reciprocate are also included but not tabulated for brevity in [Table 4, Panel A](#) and [Panel B](#).

<sup>16</sup>Model (1) of [Table 4, Panel A](#) includes *Low Education* and model (2) includes *No Stable Income* as additional controls because wholesalers with little or no formal schooling are also less likely to have a stable source of income. Additionally, 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](#).

We construct three 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.<sup>17</sup> 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. These social events include weddings, festivals, meetings at places of worship, and other such events. We consider a wholesaler as attending a high number of social events if she attends these events at least once a week. Third, wholesalers who have meaningful business contacts outside their community are less likely to develop a reputation for within-community reciprocity relative to wholesalers whose ties are mainly within their community. As we report in Table 1, Panel B, the majority of wholesalers have all of their significant business contacts within their community. For these wholesalers, the significant contacts are mainly close relatives, further emphasizing information transmission within the community. Furthermore, wholesalers whose ties are mainly within their community have fewer outside alternatives and are more dependent on their community, and thus more likely to follow the norm of reciprocity. We therefore expect wholesalers with outside business contacts to be less likely to lend preferentially within their community.

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*, *High Social Events*, and *Outside-Community Business Contacts*). 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 a high number of community social events provide 22%–38% more credit to retailers within their commu-

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<sup>17</sup>Marriage outside the community is rare and, as we report in Table 1, Panel B, 96% of wholesalers reported that all family members married within the community. Genetic evidence suggests that out-marriage is a recent phenomena in India and the marriage rule (persons should marry within their caste) dates back 1,900 years (Moorjani et al., 2013).

nities 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. We also find that 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. The 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.<sup>18</sup> We also explore retailer characteristics that are likely associated with their incentives to reciprocate, such as having no stable sources of income or a low education. However, we do not find that these characteristics explain retailers’ propensity to default on trade credit from within-community wholesalers. These results can be potentially 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

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<sup>18</sup>To provide additional support for the reciprocity mechanism, we could also explore how wholesalers’ leniency towards defaulting retailers varies with wholesalers’ dependence on the community and their community ties. However, the limited sample of 161 defaults precludes us from conducting these analyses.

parties with whom wholesalers speak to collect information about the retailer. Specifically, we estimate the following OLS model:

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

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 seen in bad taste 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](#)) shores up 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 migrant communities*

To provide additional support for the reciprocity mechanism in lending, we study the lending behavior of migrant communities. In our setting, 26% of the population in the district where Iewduh is located are migrants. However, 51% of our sample of traders (71% of wholesalers and 36% of retailers) are migrants, reflecting the preponderance of migrant communities 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 estab-

lished in the region and are therefore expected to have larger income fluctuations. Traders in such communities also have fewer outside alternatives or connections, further leading them to be more dependent on their community. Furthermore, in smaller immigrant communities, traders are more likely to be able to form accurate beliefs about other traders' incentives to reciprocate as community ties are likely to be stronger in these communities (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 migration from migration that may have occurred in the past due to historical reasons.<sup>19</sup> We rely on the mother tongue and religion tables from the 2001 and 2011 Censuses of India to classify immigrant communities by size and growth rate.<sup>20</sup>

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*).<sup>21</sup> 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,

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<sup>19</sup>For example, Hindu Bengali administrative officers were imported to the region by the British East India Company (Weiner, 1978).

<sup>20</sup>Large communities are defined as comprising greater than 15% of the immigrant population. High-growth communities are defined as those with a ten-year growth of greater than 100%. All large communities have a low growth rate.

<sup>21</sup>The indicator variables reflecting the characteristics of immigrant communities are also included but not tabulated for brevity.

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 collaboration, 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 are more dependent on their community also behave according to the norm of reciprocity.

The importance of a community’s immigration status in determining access to credit can be also assessed in light of the findings in [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 sufficiently high, members will not migrate to urban areas. Our results suggest that migrants tap into existing community networks at their new location, further supporting traders’ dependence on the community and the presence of a reciprocity mechanism, which aids lending to community members.

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

To further support our proposition that the reciprocity mechanism provides insurance 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 telephonic interviews with twenty traders in our sample.<sup>22</sup> 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

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<sup>22</sup>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 thirty-four traders, for a response rate of 59%.

understanding the impact of the lockdown on businesses, we also included questions to assess whether the reciprocity mechanism was at play in 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 to their businesses.

Although the reciprocity mechanism should be more effective in the face of idiosyncratic shocks rather than aggregate shocks to income, 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 provide us with insights on 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 norm of reciprocity is at work within the community.



## 5. Alternative explanations

In this section, we address several alternative explanations and show that our results are inconsistent with these alternatives. Specifically, we address the channels of discrimination, credit under asymmetric information, and lending based on personal relationships.

### 5.1. *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).<sup>23</sup> 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 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.<sup>24</sup>

On the other hand, models of statistical discrimination do not assume animosity towards 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, wholesalers in our sample 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%)

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<sup>23</sup>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).

<sup>24</sup>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 is unaffected when we control for whether the retailer belongs to the Muslim community.

operate multigenerational businesses (i.e., wholesalers inherited their businesses from parents or prior generations) 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 Lewduh 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 lend more and offer better terms to their community cannot be explained by statistical or taste-based discrimination.

### *5.2. 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 also be consistent with models of credit 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 ex post enforcement by increasing the group’s ability to sanction customers who renege ([Fafchamps, 2000](#); [McMillan & Woodruff, 1999](#)).

Prior literature finds strong 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 defaulting customers, 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 not only allow for better ex ante screening of retailers, but also for more efficient ex post enforcement, as sharing information about retailers' defaults could damage their reputation and consequently facilitate enforcement. 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 focusing on the ex ante screening channel and 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 be indicative of greater ex ante screening based on better information. Because the creditworthiness of outside-group borrowers is harder to assess, lenders offer more similar 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 loan 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 loan size across same- and outside-community retailers, we focus on the standard deviation and interquartile range of the amount of trade credit as a percent 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 standard deviation and interquartile range of the amount of credit as a percentage of sales are significantly smaller for within-community lending. While these findings do not support the ex ante screening channel, they are in fact in line with the reciprocity mechanism. Wholesalers are less discerning within community because they are obligated to behave reciprocally and lend to same-community retailers. At the same time,

the positive coefficients on *Relationship length* and *Distance (Close)* support 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 a longer relationship, and about those located nearby. In addition to this loan size dispersion evidence, our findings that wholesalers are more lenient towards same-community retailers (Table 3), and the results of our cross-sectional tests based on wholesalers' community dependence (Table 4) cannot be explained by an ex ante screening channel. Thus, more efficient ex ante screening of retailers within the same community is unlikely to be the primary explanation for our findings.

Our findings also do not provide strong support for the ex post enforcement channel. Community sanctioning presupposes that lenders publicize incidents of default. Sanctioning by the community is effective only if most community wholesalers refuse to lend to the defaulting retailers, as opposed to only the wholesaler who faced the default (Greif, 1993; Kandori, 1992). In contrast, we find that wholesalers do not publicize instances of default (Table 3), which can potentially 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 towards same-community retailers. Wholesalers are 29.6% less likely to take any action against defaulting retailers from within their community than against defaulting retailers from outside communities (Column (5) of Table 3, Panel B). Although our results in Table 5 indicate 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 ex post enforcement. This evidence casts further doubt that our findings can be primarily attributed to the asymmetric information mechanism.

### *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 information and taste-based discrimination mechanisms. Specifically, prior research high-

lights 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 towards 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 the 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 the mechanisms that drive 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 ex post 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' favoritism towards 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.<sup>25</sup> 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 for lending within the 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 a fewer number of 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 are located nearby, and therefore have a greater propensity to develop

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<sup>25</sup>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. In our sample, over 95% of retailers are not related to their wholesalers.

personal relationships with wholesalers, are more likely to receive credit in the first transaction and after a fewer number of cash transactions. These results suggest that personal relationships cannot be the primary driver of our main findings.

Furthermore, personal relations presume that wholesalers should have substantial information about same-community retailers from prior 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:

$$A_{ij} = \alpha + \theta \text{Same Community}_{ij} + \beta_k X_{ij} + \lambda_i + e_{ij}, \quad (3)$$

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 length of time the business has existed, whereas financial information includes sales and prices. The types of information collected reflect wholesalers’ incentives to gather this data. Whereas basic and financial information types are related to assessing retailers’ creditworthiness, financial information on prices may also be related to wholesalers’ need to assess market conditions. Furthermore, our interviews with wholesalers reveal that customer information helps them keep track of market trends, allowing them to stock relevant supplies and remain competitive. 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 is not significantly different 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 the community (and a negative coefficient on *Same Community*). Interestingly, we find that wholesalers are relatively less likely to collect information from retailers who are 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 a fewer number of 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 the prices they charge.

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 more likely to take these actions to collect information from same-community retailers either before or after providing credit (columns (1)–(4)). In terms of control variables, wholesalers are more likely to take actions to collect information about retailers who comprise a higher share of their sales. Overall, our results in [Table 8](#) indicate that wholesalers do not collect less information 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

A large literature examines how lenders mitigate information frictions in private lending and provide borrowers with access to debt capital. However, despite the critical role of access to credit in informal economies, there is little evidence on how lenders extend credit in these economies. To shed light on this question, we investigate how community ties affect trade credit in a large marketplace located in the state of Meghalaya, India, which is the epicenter of trade in the region. Relying on a survey of 503 traders in this market, we explore whether wholesalers offer trade credit, what its terms are, and how they respond to 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 a reciprocity mechanism. Because credit allocation within communities serves as an informal insurance channel to mitigate income shocks (Besley & Coate, 1995; Ferrara, 2003; Kinnan & Townsend, 2012; Udry, 1994), when traders experience a shock to their income, they rely on the community for support. In return for this insurance, they assist other community members even when it is costly. This reciprocity mechanism 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 a stable source of income, have low education, and also engage in some retail business (i.e., wholesalers that are more likely to benefit from reciprocity) provide better credit terms to within-community retailers. We also explore the information aspect of the reciprocity mechanism, which is required because community members cannot offer help



unless they are aware that 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' reciprocal 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, while it is less pronounced for wholesalers with stronger connections outside their community. 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 the reciprocity mechanism within the community.

Our findings cannot be explained by a taste-based discrimination mechanism (Blanchflower et al., 2003; Ladd, 1998; Pope & Sydnor, 2011; Ross et al., 2008), which suggests that lenders would face costs from discriminating against out-of-group borrowers. On the contrary, we find that same-community retailers are less likely to default. Furthermore, the majority of wholesalers in our sample have substantial experience lending to outside community retailers and therefore should have formed accurate beliefs about the creditworthiness of outside communities, highlighting that statistical discrimination is also an unlikely explanation for our findings.

Alternatively, an asymmetric information mechanism suggests that community ties allow for better ex ante screening of retailers and more efficient ex post enforcement (De Meza & Webb, 1987; Fisman et al., 2017; Greif, 1993; McMillan & Woodruff, 1999; Stiglitz & Weiss, 1981), which can explain preferential within-community lending and lower defaults. Our findings of lower variation in the amount of trade credit along with evidence that wholesalers do not spread information about retailers' defaults and have greater leniency towards defaulting retailers from their communities do not back this mechanism. Our evidence with respect to the timing of the first credit transaction and wholesalers' information collection

efforts also suggest that our findings cannot be attributed to personal relationships between wholesalers and retailers.

Although our focus on one large marketplace offers a number of advantages in exploring trade credit in informal economies, we acknowledge that it also involves limitations that may threaten the external generalizability of our inferences. For example, our findings may not generalize to informal economies with less ethnic diversity and thus potentially weaker within-community ties. We leave it to future research to further investigate the reciprocity mechanism in other institutional settings. Furthermore, future research can extend our understanding of this mechanism by exploring its effect during extreme shocks to traders' income and well-being, such as during the COVID-19 pandemic. Given substantial frictions in accessing the banking system and the lack of formal forms of insurance, reciprocity within the community is likely to be critical for survival in the face of such extreme shocks to income.

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## Appendix A. Variable definitions

Variable	Definition
<i>Trade link-specific variables</i>	
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
<i>Variables related to provision and terms of trade credit</i>	
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.
<i>Variables related to actions taken in case of default</i>	
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
<i>Wholesaler characteristics</i>	
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 Stable Income	Indicator that the wholesaler or family members have no stable sources of 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
<i>Community characteristics</i>	
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.
<i>Variables related to parties with whom wholesaler speaks</i>	
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
<i>Variables related to information collection</i>	
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

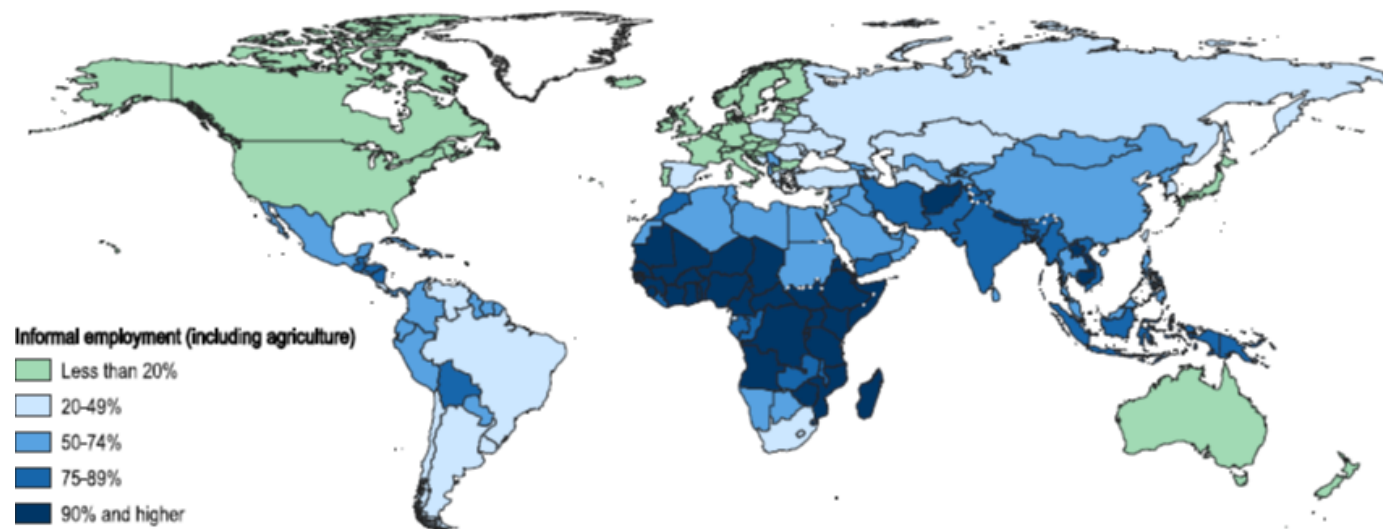


Figure 1: Distribution of informal employment (2016)

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

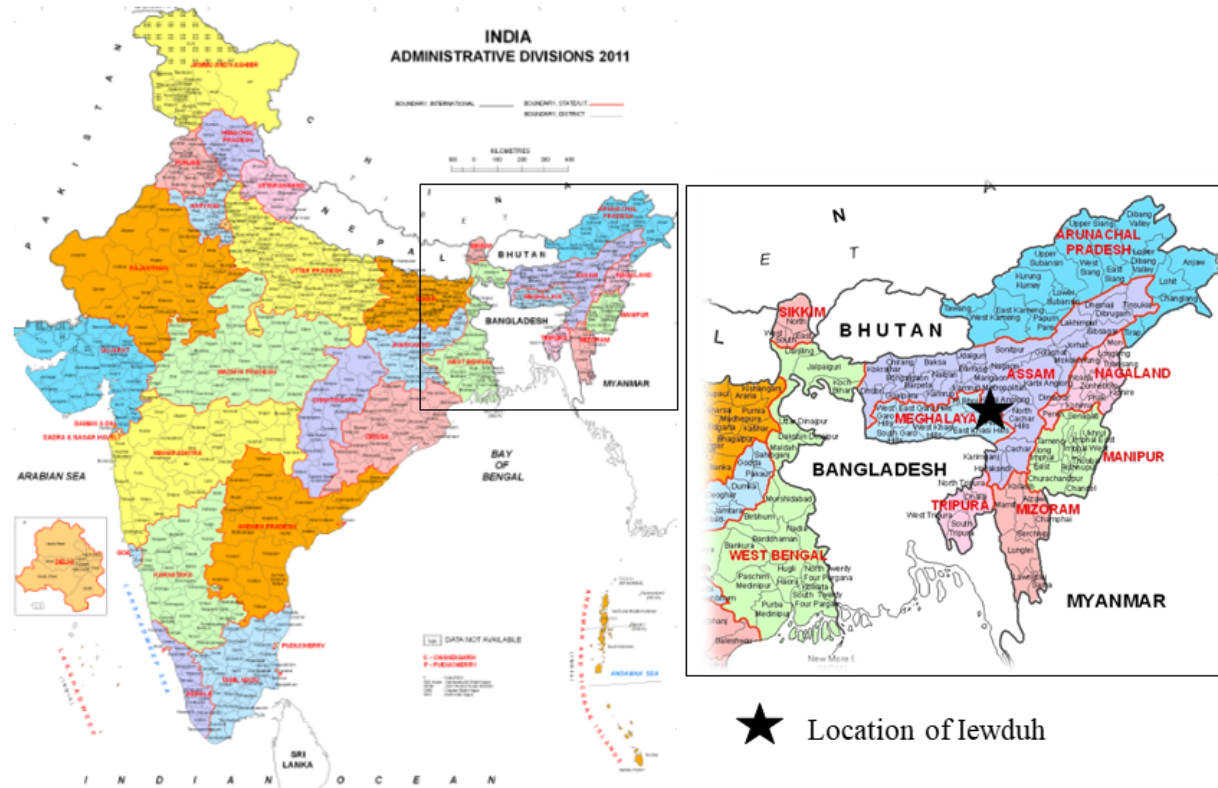


Figure 2: Map showing location of study

This figure shows the geographical location of the marketplace (Iewduh). The maps are sourced from the Survey of India (<https://www.surveyofindia.gov.in>).

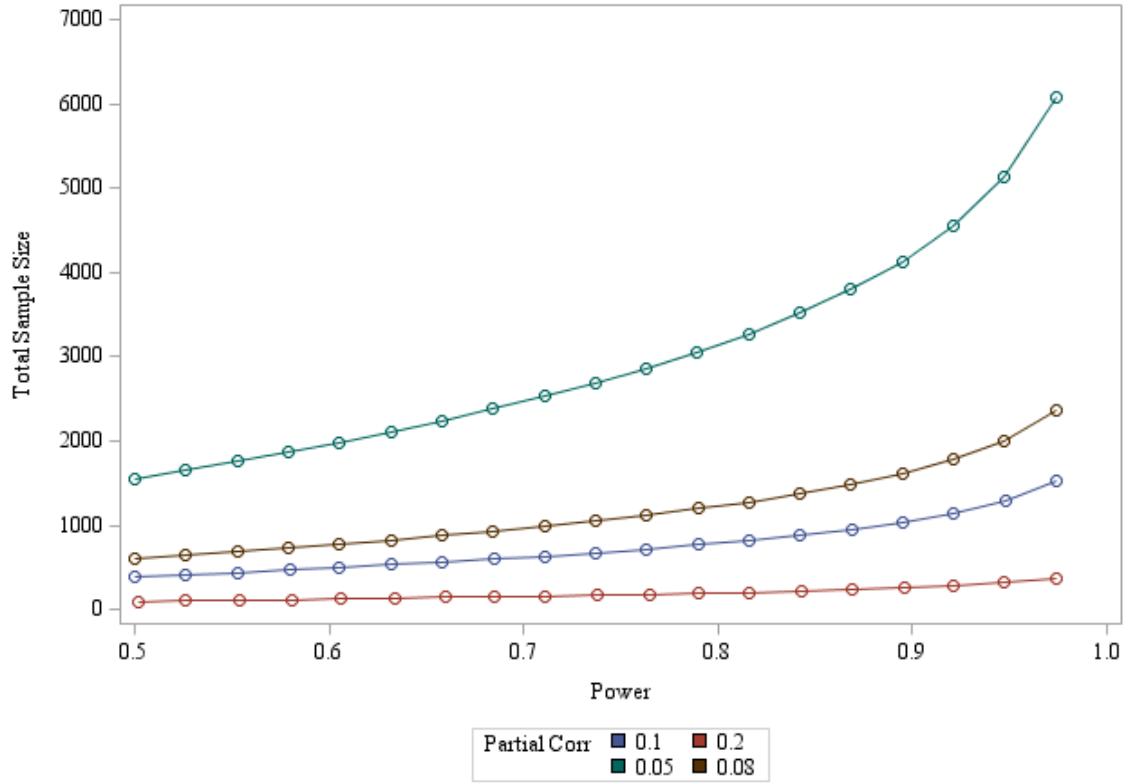


Figure 3: Plot of power by sample size

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
<i>Trade link-specific variables</i>				
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
<i>Variables related to the provision and terms of trade credit</i>				
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
<i>Wholesaler characteristics</i>				
Number of Years of Operation	496	17.226	15.000	12.079
No Stable Income	496	0.762	1.000	0.426
Low Education	496	0.473	0.000	0.500
Size	496	5.855	6.000	2.203
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
Number of Family Members in Business	496	0.526	0.000	0.727
Both Wholesaler and Retailer	496	0.313	0.000	0.464
Entrepreneur	496	0.464	0.000	0.499
Female	496	0.155	0.000	0.363
<i>Community characteristics</i>				
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 give  $t$ -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*** (3.318)	-0.032 (-0.454)	0.059 (0.439)	8.069** (2.159)	0.022 (0.329)	0.011 (0.275)	-0.136*** (-2.595)
Share of Sales	0.002* (1.919)	0.003 (1.432)	-0.007* (-1.806)	0.602*** (5.913)	0.003** (2.281)	0.001 (0.913)	-0.001 (-1.102)
Relationship Length	0.009*** (3.742)	-0.005* (-1.706)	0.014** (2.127)	-0.367 (-1.610)	-0.001 (-0.479)	0.004** (2.103)	0.001 (0.495)
Same Gender	-0.040 (-1.514)	0.017 (0.326)	-0.051 (-0.478)	0.449 (0.144)	-0.010 (-0.268)	-0.018 (-0.624)	-0.018 (-0.500)
Distance (Close)	0.054 (0.995)	0.228*** (3.936)	-0.662*** (-4.571)	-2.121 (-0.402)	-0.067 (-1.121)	0.058 (1.152)	0.202*** (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 give  $t$ -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** (-2.346)	-0.099** (-2.485)	-0.044* (-1.914)	-0.092* (-1.771)	-0.296*** (-3.090)
Share of Sales	-0.144 (-1.604)	0.080** (2.479)	0.048** (2.035)	0.005 (0.192)	-0.111 (-1.232)
Relationship Length	-0.011*** (-2.589)	0.002 (0.927)	0.000 (0.133)	-0.001 (-0.663)	-0.006 (-1.344)
Same Gender	0.003 (1.268)	-0.003*** (-2.672)	-0.002** (-2.425)	-0.002* (-1.845)	0.000 (0.109)
Distance (Close)	-0.065 (-0.792)	-0.012 (-0.408)	-0.033 (-0.988)	0.028 (1.396)	-0.091 (-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 her 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. We give  $t$ -statistics in parentheses below the coefficient estimates and the model  $R^2$  is presented below that; *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 Stable Income $\times$ Same Community	0.045 (0.340)	0.166 (1.439)	-0.142 (-0.478)	17.475* (1.925)	-0.113 (-0.911)	0.009 (0.061)
	Model $R^2$	0.130	0.245	0.238	0.434	0.414	0.272
(2)	Low Education $\times$ Same Community	0.189 (1.614)	0.038 (0.379)	0.048 (0.195)	13.675* (1.685)	-0.248** (-2.332)	-0.043 (-0.365)
	Model $R^2$	0.143	0.238	0.240	0.434	0.396	0.273
(3)	Wholesale and Retail Business $\times$ Same Community	0.235* (1.754)	0.102 (0.755)	-0.391 (-1.177)	41.866*** (5.254)	-0.126 (-0.832)	0.170 (1.285)
	Model $R^2$	0.173	0.258	0.261	0.531	0.373	0.265
	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 $\times$ 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 $\times$ 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
(3)	Outside-Community Business Contacts $\times$ 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 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 give  $t$ -statistics in parentheses below the coefficient estimates and the model  $R^2$  is presented below that; *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 Community	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* (1.938)	0.010 (0.949)	-0.020 (-1.239)	0.001 (0.784)	0.008 (0.210)	0.002 (0.860)
Share of Sales	-0.003** (-2.513)	0.001 (0.589)	-0.000 (-0.511)	-0.001 (-1.008)	-0.002** (-2.578)	-0.001 (-1.305)
Relationship Length	0.026 (0.781)	-0.023 (-0.906)	0.014 (0.689)	0.001 (0.227)	0.038 (1.472)	0.022 (1.378)
Same Gender	0.001 (0.062)	0.027** (2.144)	0.002 (1.092)	0.000 (0.347)	0.008 (1.015)	-0.001 (-0.726)
Distance (close)	0.051 (1.572)	0.004 (0.291)	-0.011 (-1.353)	-0.001 (-1.134)	0.080*** (2.619)	0.002 (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. We give  $t$ -statistics in parentheses below the coefficient estimates and the model  $R^2$  is presented below that; *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 $\times$ Same Community	-0.204 (-1.621)	0.403** (2.380)	-0.891*** (-2.622)	31.451** (2.400)	0.301** (2.262)	-0.206* (-1.877)	-0.239** (-2.426)
Small Low and Medium Growth Immigrant Community $\times$ Same Community	-0.120 (-1.295)	-0.006 (-0.055)	-0.077 (-0.326)	16.467* (1.763)	0.185 (1.446)	-0.292*** (-3.605)	-0.247*** (-2.684)
Large Immigrant Community $\times$ Same Community	-0.050 (-0.627)	0.210* (1.829)	-0.532** (-2.234)	11.448 (1.251)	0.093 (0.921)	-0.121 (-1.249)	-0.084 (-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 give  $t$ -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).

	Trade Credit as a Percent of Sales Standard Deviation	Trade Credit as a Percent of Sales Interquartile Range
	(1)	(2)
Same Community	-2.574* (-1.727)	-4.403* (-1.755)
Share of Sales	0.023 (0.188)	0.058 (0.277)
Relationship Length	0.619* (1.845)	0.849* (1.684)
Same Gender	-1.798 (-1.012)	-2.740 (-0.963)
Distance (Close)	32.583** (2.236)	45.132** (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 give  $t$ -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 (1.477)	-0.045 (-0.657)	0.058 (1.155)	0.084 (1.161)	-0.040 (-0.507)	-0.038 (-0.706)
Share of Sales	0.004*** (3.659)	0.000 (0.265)	-0.001 (-0.561)	0.006*** (4.349)	0.001 (0.900)	0.001 (0.943)
Relationship Length	0.010 (0.295)	0.112*** (2.883)	0.030 (1.235)	-0.004 (-0.090)	0.086* (1.960)	0.032 (1.103)
Same Gender	0.017 (0.422)	-0.031 (-0.791)	-0.035 (-1.129)	0.111** (2.410)	-0.068 (-1.357)	0.026 (1.019)
Distance (Close)	-0.122** (-2.221)	-0.129** (-2.193)	-0.001 (-0.019)	0.009 (0.129)	-0.082 (-1.350)	0.072 (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 (-1.111)	0.021 (0.508)	-0.020 (-0.311)	0.040 (0.689)
Share of Sales	0.003** (2.067)	0.004*** (4.143)	0.002 (1.119)	0.002* (1.882)
Relationship Length	-0.022 (-0.789)	0.019 (0.898)	0.001 (0.025)	0.057* (1.833)
Same Gender	0.017 (0.457)	0.038* (1.856)	0.040 (0.902)	-0.064** (-2.076)
Distance (Close)	-0.011 (-0.267)	-0.058* (-1.866)	-0.033 (-0.465)	-0.029 (-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