

WORKING PAPER · NO. 2023-12

Access to Credit in Informal Economies: Does Financial Information Matter?

Rimmy E. Tomy and Regina Wittenberg-Moerman

JANUARY 2023

Access to Credit in Informal Economies: Does Financial Information Matter?*

Rimmy E. Tomy*

The University of Chicago, Booth School of Business

Regina Wittenberg-Moerman

University of Southern California

January 16, 2023

Abstract

Traders operating in informal economies rarely use financial information in their credit allocation decisions. Using a combination of survey questions and a hypothetical choice experiment, we study the frictions impeding traders' financial information use in a bazaar economy. Based on estimates of wholesalers' willingness to pay for retailer information, we find that although wholesalers value informal information such as retailers' community membership and relationship length, they also overwhelmingly value retailers' sales and profits in making credit decisions. We also show that traders use financial information sparsely not because of financial illiteracy, but because they perceive such information to be unreliable.

JEL Classification: D82, G21, G28, M40, M41, M49, O10, O16, O17, Z10, Z13

Keywords: Financial Information, Community, Informal Economies, Lending, India, Iewduh, Trade Credit, Choice Experiment, Bayesian Methods

*For helpful discussions and comments, we are grateful to Ray Ball, Phil Berger, Natasha Bernhardt, Hans Christensen, Anna Costello, Asabe Danpollo, Yiwei Dou (discussant), Lauren Frederick, Yadav Gopalan (discussant), João Granja, Christian Leuz, Robert Libby, Mike Minnis, Raghuram Rajan, David Reeb (discussant), Kristina Rennekamp, Doug Skinner, Abbie Smith, Eric So, Brian White, and Xinyu Zhang. We thank seminar participants at the University of Chicago, USC, NUS, the 2022 IIM Calcutta–NYU Stern India Research Conference, the 2022 University of Notre Dame Accounting Research Conference, CUHK, the University of Michigan, the 2022 SOAR Accounting Symposium, and the 2023 Hawaii Accounting Research Conference for their helpful comments and suggestions. We thank Shailesh Nagar and Manish Sharma for help with data collection, and Alex Gordon and Jizhou Wang for excellent research assistance. Rimmy E. Tomy gratefully acknowledges the support of the Kathryn and Grant Swick Faculty Research Fund at the University of Chicago Booth School of Business. This research was approved as exempt by the Institutional Review Board at the University of Chicago (ID: IRB21-1976).

*Corresponding author

Email addresses: Rimmy.Tomy@chicagobooth.edu (Rimmy E. Tomy), reginaw@marshall.usc.edu (Regina Wittenberg-Moerman)

[T]he bazaar... is a distinctive system of social relationships centering around the production and consumption of goods and services—that is, a particular kind of economy, and it deserves analysis as such.... The search for information—laborious, uncertain, complex, and irregular—is the central experience of life in the bazaar.—Clifford Geertz, in “The Bazaar Economy: Information and Search in Peasant Marketing” (Geertz, 1978)

1. Introduction

Bazaars are an important means of organizing trade in emerging market and developing economies. These marketplaces consist of multiple small shops, often numbering thousands, located close together in tight spaces. Businesses operating in bazaars are part of the informal economy, which is a large and significant sector of the global economy, comprising about 30% of GDP and 70% of employment (La Porta & Shleifer, 2014; OECD/ILO, 2019).¹ Traders operating in bazaars and informal economies in general rarely use financial information in their credit allocation decisions (Benjamin et al., 2014; Geertz, 1978; Tomy & Wittenberg-Moerman, 2022), even though research highlights that such information aids efficient credit allocation.² Notably, informal economies are marked by low productivity and growth, which is attributed, at least partially, to their low financial development and poor access to credit (Buera et al., 2011; Calderón & Liu, 2003; Farazi, 2014; Levine, 1997; Rajan & Zingales, 1998). Therefore, by promoting efficient lending decisions, the use of financial information in credit allocation could increase access to credit in these economies, leading to their growth and development. Furthermore, multinational agencies and governments have advocated for a shift to formality because it is associated with economic growth and better labor protections

¹The informal sector is broadly defined by economic activity that is not de facto or de jure regulated or protected by the state. Even though these activities may be carried out within the formal reach of the law, regulation is ineffective because enforcement is too costly (Benjamin et al., 2014; De Soto, 1989; La Porta & Shleifer, 2014; OECD/ILO, 2019).

²Examples of studies on the role of financial information in efficient credit allocation include Balakrishnan & Ertan (2021); Ball et al. (2008); Campbell et al. (2019); Carrizosa & Ryan (2017); Christensen et al. (2016); Dou (2020); Dyreng et al. (2017); Honigsberg et al. (2021); La Porta et al. (2000); Leuz et al. (2003); Minnis (2011); Shleifer & Vishny (1997).

([Charmes, 2012](#)).³ Introducing financial information in credit decisions could accelerate this transition to formality. In this paper, we explore the frictions that prevent the widespread use of financial information in credit allocation in informal economies.

The limited use of financial information in informal markets is an equilibrium outcome that many factors could drive. For example, research shows low levels of financial literacy among micro-entrepreneurs and households in developing countries ([Cole et al., 2009, 2011, 2013](#); [Drexler et al., 2014](#)), suggesting borrowers and lenders may lack the skills to produce or analyze financial information. Alternatively, even if lenders had the skills to evaluate financial information, in the absence of a credible verification mechanism, they may not trust this information. Furthermore, wholesalers might also not value retailers’ financial information, even if it were available and trustworthy, and might continue relying on informal mechanisms (e.g., lending based on community membership) that often drive credit decisions in informal markets ([Banerjee & Munshi, 2004](#); [Banerjee et al., 2018](#); [Fafchamps & Lund, 2003](#); [Townsend, 1994](#); [Udry, 1990, 1994](#)). Therefore, unlike in the formal sector, in the informal sector, it is unclear whether introducing financial information would lead to its widespread usage in credit allocation.

The setting of our study is the Iewduh bazaar, a large and historical market and a regional center of trade in northeast India. Wholesalers and retailers collocate in this bazaar and trade in products ranging from groceries and tobacco to textiles and household appliances. Retailers are credit-constrained and tend not to access bank financing for various reasons. These reasons include a lack of trust in formal institutions, an insufficient understanding of loan applications, and an inability to provide collateral. Therefore, trade credit from wholesalers is retailers’ primary source of financing. Interestingly, in contrast to trade credit arrangements in developed economies, wholesalers in the bazaar do not charge interest for delayed payments or offer early payment discounts, and do not offer discounts if retailers pay

³See, for example, [Future of Work, Emerging Sectors and the Potential for Transition to Formality, ILO \(2022\)](#); [Transition from the Informal to the Formal Economy—Theory of Change, ILO \(2021\)](#); and [Transition from the Informal to the Formal Economy Recommendation, 2015 \(No. 204\), ILO \(2017\)](#).

in cash versus buy on credit. Thus, the variation in trade credit terms is primarily across the amount and repayment time.

We use a combination of survey questions and a hypothetical choice experiment to examine the preferences of wholesalers (the providers of credit) for various types of retailers' information that they may use in their credit allocation decisions. A hypothetical choice methodology is critical in our setting because information types used or available in the market may not capture the full set of wholesalers' preferences and may be driven by market constraints. For example, the information that wholesalers use in making credit decisions may not be driven by their preferences but may instead be driven by retailers' inability to provide financial information or their own inability to analyze such information. On the other hand, if wholesalers had access to retailers' financial information, they might provide more credit.

Hypothetical choice methods have been used in several fields, including economics and marketing, to evaluate the preferences of agents when outcomes are unobserved or markets are incomplete (Allenby et al., 2019; Ameriks et al., 2020; Delavande & Zafar, 2019; Louviere & Woodworth, 1983; Rao et al., 2014; Wiswall & Zafar, 2018).⁴ For example, Wiswall & Zafar (2018) use a choice experiment to elicit preferences for workplace attributes from women and men and use these preferences to explain a part of the gender wage gap. They find that women are willing to trade off higher wages for greater work flexibility and job stability. Ameriks et al. (2020) use a similar methodology to assess older Americans' labor force participation. They find that their low participation is driven by a lack of acceptable job opportunities, rather than an unwillingness to work. In marketing, such methods are extensively used to evaluate consumer choice for new products (Allenby et al., 2019). The novelty of our study lies in the application of this technique to the use of information to evaluate credit risk in informal economies.

⁴This methodology is comparable to conjoint analysis in marketing and contingent valuation in environmental economics.

Our hypothetical choice experiment involves offering wholesalers a menu of choices and asking them to select their preferred option. The choices include information about retailers that should help them evaluate retailers’ credit risk and the corresponding amounts of trade credit they would be willing to provide. The choices are randomized for each wholesaler and across the sample of wholesalers. The information types include retailers’ financial information (sales and profits) and nonfinancial information (relationship length and community membership). Both these types of information allow wholesalers to appraise retailers’ creditworthiness. The financial information reflects business size, growth, and efficiency of retailers’ businesses. We include the nonfinancial information types mentioned above because wholesalers’ preferences to provide trade credit may vary based on the length of their trading relationship with the retailer and whether the retailer belongs to their community (Fafchamps & Lund, 2003; Ghatak, 1999; Ghatak & Guinnane, 1999; Mazzocco & Saini, 2012; Townsend, 1994; Udry, 1990, 1994).

Importantly, following the prior literature (e.g., Allenby et al. (2019); Ameriks et al. (2020); Wiswall & Zafar (2018)), we ask wholesalers to assume that retailers are similar in all other aspects except for the information we provide. For example, wholesalers may offer more credit if they can sell more goods. However, under the above assumption, the amount of goods sold is held constant across retailers, who are evaluated only based on the information we provide. Other retailer-specific factors, such as the distance to their shops, are also held constant under this assumption. We further ask wholesalers to assume that all information presented in the experiment is accurate and reliable. Without this assumption, we would be unable to differentiate whether wholesalers do not value financial information because of a strong preference for informal information sources or their beliefs related to its low reliability. These two assumptions are essential for drawing valid inferences from our study.

We use wholesalers’ stated choices and the premise that, of all choices presented to a wholesaler, she would choose the one that provides her with the highest utility (Ameriks

et al., 2020; Delavande & Zafar, 2019; Wiswall & Zafar, 2018). To quantify the utility that traders derive from the different information types, we use a Bayesian hierarchical model (Allenby et al., 2019; Gelman et al., 1995; Rossi et al., 2012). This approach draws information from the population to estimate the parameters for individual traders, thereby taking into account the correlation between traders and limiting the influence of outliers. The analysis allows us to quantify wholesalers’ preferences for information types and estimate how much wholesalers value financial and nonfinancial information types in making credit decisions.

Our headline results show that wholesalers do, in fact, value retailers’ financial information in making credit decisions. Specifically, all else equal, wholesalers are willing to provide 11% more trade credit (as a percentage of sales) to a retailer with sales higher than those of a typical retailer (i.e., a median retailer operating in a given product group) than to one with no sales information. Wholesalers are also willing to provide 2% (0.7%) more (less) trade credit to a retailer with sales equal to (less than) that of a typical retailer than to one with no sales information. Although these figures are conditional on our experimental design, for comparison purposes, consider that the mean (median) amount of trade credit that wholesalers provide to retailers in this marketplace is 40% (22%).⁵ Therefore, at face value, retailers’ financial information appears to have an economically meaningful impact on wholesalers’ willingness to provide trade credit.

We find the same pattern of results for retailers’ profit information. Wholesalers are willing to provide 6.2% and 3.4% more trade credit to retailers with profits higher than or equal to that of a typical retailer, respectively, while providing 2.9% less credit to retailers with profits lower than that of a typical retailer. The level and pattern of results (i.e., retailers with high sales/profits receive the most credit and those with low sales/profits receive the least) allow us to conclude that wholesalers find retailers’ financial information worthwhile in allocating credit. Importantly, although wholesalers would use financial information if

⁵These figures are based on Tomy & Wittenberg-Moerman (2022) who survey traders in this marketplace.

available, they also continue to rely on informal information sources. We find that wholesalers provide 9.5% more trade credit to same-community retailers relative to retailers from outside communities and provide 9%–29% more credit to retailers with whom they have a longer relationship. Thus, using more formal financial information in credit allocation decisions does not imply that wholesalers would stop relying on informal information sources.

We next focus on wholesalers that rely to a greater extent on informal information sources in credit allocation decisions and examine whether they are willing to pay (i.e., provide more trade credit) for borrowers’ financial information or whether they continue relying on informal mechanisms. First, we conjecture that women are more likely to rely to a greater extent on informal information sources because they are more dependant on the relational aspect of business, and access to social networks is particularly relevant for women-owned businesses in developing economies (Butler & Hansen, 1991; De Vita et al., 2014; Welsh et al., 2018). Second, we expect that wholesalers who assess borrowers’ credit-worthiness based on their reputation with other wholesalers use informal sources more extensively. Third, we examine the preferences of wholesalers who state in the survey that they would learn nothing new from retailers’ financial information (relative to informal information sources).

We find that although wholesalers who are women and those who rely more on their networks value informal information more, they value financial information as much as others. We further show that even wholesalers who have strong priors about the low usefulness of retailers’ financial information value it in their decision-making when presented with it. However, not surprisingly, these wholesalers are willing to pay less for financial information relative to wholesalers that do not have such strong priors. Overall, these findings suggest that even wholesalers with a greater tendency to rely on informal information find retailers’ financial information worthwhile in credit decisions.

Next, we explore potential frictions that prevent the widespread use of financial information in informal economies. Surprisingly, we find that wholesalers’ financial sophistication, as measured by whether they understand basic financial concepts, whether they maintain a

record of their transactions, and their education level, is unrelated to their preference for retailers’ financial information. That is, wholesalers who are more financially sophisticated do not value retailers’ sales and profits information more in making credit decisions. Research finds that low financial literacy impedes better business and personal finance decisions in developing countries (Cole et al., 2009, 2011, 2013; Drexler et al., 2014). However, our results suggest that low financial literacy is unlikely to be the primary constraint that prevents the use of financial information in credit allocation because even wholesalers who are less financially sophisticated value retailers’ financial information.

We next evaluate wholesalers’ beliefs related to the truthfulness and reliability of retailers’ financial numbers. Responses to survey questions indicate that wholesalers are concerned about retailers’ financial information reliability. For example, the majority (75%) of wholesalers believed that less than 10% of retailers would report their sales and profits truthfully. However, we find that wholesalers who stated in the survey that they would not believe retailers’ financial information are willing to pay as much for such information as other wholesalers. As discussed above, in practice, wholesalers rarely use retailers’ financial information to make credit decisions. Therefore, we would have expected wholesalers who do not believe in the reliability of financial information not to use it in credit allocation. However, in a world where financial information is always accurate and reliable (as in the hypothetical experiment), even wholesalers who hold these beliefs use financial information when presented with it. These findings allow us to infer that lack of reliability is a key friction that prevents the use of financial information in credit allocation decisions.

We supplement wholesaler-based analyses by surveying retailers (the receivers of credit) to understand better their potential concerns with providing information to wholesalers.⁶ We evaluate retailers’ responses and find that although a majority of retailers agree that providing financial information to wholesalers could improve their access to credit, they are

⁶We do not conduct a choice experiment with retailers because the experiment involves testing how the providers of credit evaluate various types of information in allocating credit.

reluctant to share such information. This reluctance is mainly attributable to retailers being uncomfortable sharing financial information or not trusting that their information would remain confidential. We further show that compared to retailers willing to provide their financial information to wholesalers, retailers not willing to do so are significantly more likely to be concerned regarding information sharing and the truthfulness of financial information (i.e., that wholesalers might not trust numbers reported by retailers due to its low reliability). Importantly, consistent with our results for wholesalers, we find no association between retailers' financial sophistication and their willingness to provide financial information to wholesalers. Overall, our results from retailers' responses corroborate our inferences from wholesalers' responses: a critical friction that prevents the more widespread use of financial information in credit allocation decisions in informal markets is a lack of trust in financial information. That is, wholesalers do not believe that retailers would report truthfully, and retailers are concerned that wholesalers may misuse their information.

Governments worldwide spend substantial amounts of money on financial literacy programs ([OECD/INFE, 2015](#)). The evidence in prior literature on the impact of such interventions in improving business efficiency and personal financial decision-making is mixed ([Agarwal et al., 2011](#); [Hastings et al., 2013](#)). Our results highlight that such interventions are unlikely to substantially increase the use of financial information in credit allocation in informal markets. Instead, mechanisms to improve reporting reliability might be more fruitful. That is, designing a verification mechanism that constrains retailers' ability to lie or wholesaler's ability to misuse information is likely to lead to the more significant usage of financial information in credit allocation. By enhancing the efficiency of lending decisions, such a mechanism could consequently increase access to credit in informal markets.

Our study is subject to certain limitations. First, our results indicate that financial information's perceived lack of reliability is an important friction that prevents its widespread use in credit allocation. However, we cannot say much about how such information could be made more reliable—that is, how it could be verified. Second, we use sales and profits

in the experiment because they capture dimensions of business size, growth, and efficiency. However, wholesalers may also prefer other types of financial information, for example, asset size. Finally, we cannot precisely identify the individual-specific factors that drive the lack of trust in financial reporting. We look forward to future research to study these issues in informal markets.

Our study contributes to several streams of literature. First, our work adds to the literature on credit access in the informal sector ([Banerjee et al., 2013](#); [Fafchamps & Lund, 2003](#); [Ghatak, 1999](#); [Ghatak & Guinnane, 1999](#); [Karlan, 2007](#); [McMillan & Woodruff, 1999](#); [Townsend, 1994](#); [Udry, 1990, 1994](#)). Although this sector is economically important, it is marked by a low level of development and productivity, in part driven by limited access to credit ([Banerjee et al., 2017](#); [Hoff & Stiglitz, 1990](#); [World Bank, 2019](#)). Our findings can help provide a better understanding of whether financial information can ease access to trade credit in the informal sector, contributing to improving trade and investment in this sector and aiding its long-term growth ([Buera et al., 2011](#); [Calderón & Liu, 2003](#); [Fisman & Love, 2003](#); [Levine, 1997](#); [Rajan & Zingales, 1998](#)). Relatedly, our findings also complement recent work on more formal sources of credit, such as microcredit, which suggests that such sources could crowd out both informal lending and social interactions unrelated to lending ([Attanasio et al., 2015](#); [Banerjee et al., 2018](#); [Heß et al., 2020](#)). We show that financial and informal information structures can coexist and mutually assist lenders in credit allocation decisions.

Second, we highlight the importance of understanding lenders’ and borrowers’ preferences before designing credit market interventions. For example, studies on microcredit find that its effect on borrowers’ health, income, and consumption is not transformative ([Banerjee et al., 2015b](#); [Meager, 2019](#)). A primary reason for the modest effect of microfinance is low take-up rates, potentially due to large transaction costs ([Banerjee et al., 2015a](#); [Francis et al., 2017](#)). Understanding preferences could help design interventions with higher take-up rates—for example, by identifying borrowers for whom transaction costs, such as time spent

in group meetings, are a binding constraint. In our setting, traders’ preferences indicate that to increase access to trade credit, researchers and policy-makers may need to direct their efforts to design mechanisms that would increase the reliability of financial information.

Third, we add to the literature on private lending. Although studies have advanced our understanding of the informational features that allow for efficient lending decisions, they typically assume well-functioning financial reporting and legal systems (Balakrishnan & Ertan, 2021; Ball et al., 2008; Campbell et al., 2019; Carrizosa & Ryan, 2017; Christensen et al., 2016; Dou, 2020; Dyreng et al., 2017; Honigsberg et al., 2021; Minnis, 2011). We extend this line of work by exploring lenders’ and borrowers’ preferences for financial information in informal markets, absent well-performing formal institutions.

Finally, our work also contributes to the extensive trade credit literature, which focuses primarily on developed economies (Barrot, 2016; Biais & Gollier, 1997; Costello, 2019; Johnson et al., 2002; Klapper et al., 2012; Longhofer & Santos, 2003; McMillan & Woodruff, 1999; Mian & Smith, 1992; Nilsen, 2002; Petersen & Rajan, 1997; Uchida et al., 2013). Our work highlights the unique features of trade credit arrangements in the informal sector of a developing economy and how financial information can assist lenders’ decisions in this sector.

2. Background and motivation

We conducted our study in Iewduh, a large and historic bazaar located in northeast India and central to trade in the region.⁷ Figure 1 shows its location. The marketplace consists of wholesalers and retailers and is characterized by multiple products and ethnic communities, allowing us to take advantage of the rich variation in the data. Although we focus on only one market, similar bazaars exist in many developing countries, making our setting a microcosm for the informal sector. Furthermore, focusing on a single market allows us to communicate directly with the traders and better design our experiment by considering the constraints

⁷Many institutional features that we discuss in this section are detailed in Tomy & Wittenberg-Moerman (2022).

under which they operate.

We interviewed traders in this marketplace to learn about their credit transactions. We find that wholesalers in the bazaar do not charge interest for delayed payments or offer early payment discounts. Wholesalers also do not offer discounts if retailers pay in cash versus buy on credit. Thus trade credit terms vary primarily across the amount and repayment time. Even repayment times are often not fixed but dictated by when the wholesaler and retailer may transact next. This differs substantially from the trade credit in developed countries, which is typically characterized by early payment discounts, late fees, and terms of sale that are explicitly defined (e.g., [Barrot \(2016\)](#); [Costello \(2019\)](#); [Klapper et al. \(2012\)](#); [Nilsen \(2002\)](#); [Petersen & Rajan \(1997\)](#); [Uchida et al. \(2013\)](#)). There is also considerable variation across product groups in the terms of credit provided.

Furthermore, in terms of information collection, wholesalers collect information before providing credit only in about half of their transactions. The information mainly pertains to shop location and the age of the retailer’s business. Although some wholesalers collect financial information, it relates primarily to retailers’ prices rather than their financials, in order to help wholesalers assess the demand for their products. Wholesalers tend to rely on nonfinancial factors, such as community membership, distance to retailers’ shops, and the length of their relationship with retailers to make credit decisions ([Tomy & Wittenberg-Moerman, 2022](#)).

Importantly, we find that retailers tend to be credit-constrained and depend heavily on trade credit from wholesalers to meet their financing needs. To provide more systematic evidence of retailers’ credit constraints, in an untabulated analysis, we asked retailers about their credit sources. The options we provided included bank loans, microfinance, trade credit, loans from family and community members, and moneylenders. The percentage of retailers who use trade credit *Very frequently* or *Often* is 80%. By comparison, the percentages of retailers who use other sources of credit *Very frequently* or *Often* range from 0.0% to 2.1%.

Retailers may be unable to access bank financing because of several constraints, including

a lack of understanding of loan applications, low levels of education, a 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 interest payments. Furthermore, retailers have limited access to microfinance because few microfinance institutions operate in the region.⁸

The extensive use of trade credit does not imply that retailers obtain sufficient credit or that it is allocated efficiently. Our interviews with traders suggest that most retailers request credit but that the wholesalers ration it. For example, retailers typically do not receive credit in their first transaction with a wholesaler, limiting retailers' ability to purchase a desirable amount of goods. After getting to know a retailer better (after several transactions), wholesalers extend a small amount of credit. Only after the retailer establishes a reputation for paying back on time does the wholesaler increase the credit limit. Gradually learning about the retailer before dispensing credit suggests that credit access could be improved if wholesalers had more financial information about retailers. That is, if financial information were available, retailers might get credit sooner.

Furthermore, because credit is allocated primarily based on nonfinancial factors, it may severely constrain the set of retailers to whom the wholesaler could lend. Financial information has the potential to expand credit access by providing information about retailers who, for example, might be outside the wholesaler's community, may have not transacted with the wholesaler for long, or are located far from the wholesaler's shop.

In addition, wholesalers have limited recourse when retailers default or are delinquent. Although the actual default rate is unknown, the mean delinquency rate is high at 18 percent (Tomy & Wittenberg-Moerman, 2022). The default rate is unknown because there is no concept of a formal write-off. If the retailer does not repay on time, the wholesaler expects the retailer to repay the debt over time, even in small amounts. Most wholesalers tend

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

to be immigrants to the region and cannot repossess goods or threaten the use of force because of the multiple ethnic groups operating in the market and the possibility of ethnic conflict that such actions can incite. Also, they do not sue because the courts are inefficient. Consistent with this, wholesalers take action only in around 40 percent of delinquencies, and their attempts are primarily limited to persuading a retailer to repay—they rarely repossess goods or use undue pressure (Tomy & Wittenberg-Moerman, 2022). Because wholesalers have no recourse and no ex post enforcement capabilities, they need to screen effectively. Collecting more financial information about retailers could enhance such screening.

Also, although wholesalers might sell to many retailers and the retailers could source from several wholesalers, they tend to have few crucial links. On average, a wholesaler has links to 3.40 retailers, whereas a retailer has links to 2.06 wholesalers (Tomy & Wittenberg-Moerman, 2022). This feature of the market—that traders have few important links—is consistent with other studies in bazaars (e.g., Geertz (1978)) and reflects the significant search costs in collecting information (as the opening quote on page 1 suggests). The few links further indicate an important role for financial information: when traders have more formal information, they may be able to expand their trading links to previously unknown parties.

Lastly, governments worldwide have advocated for reducing the size of the informal economy because it is associated with low development and poor worker protection (Ohnsorge & Yu, 2022). Much like firms operating in the informal sector in general, retailers in this sector are credit-constrained and rely on their internal funds or trade credit from wholesalers (Farazi, 2014). The lack of sufficient credit leaves retailers susceptible to cash flow disruptions and limits their ability to grow. By promoting efficient lending decisions, using financial information in credit allocation could increase access to credit in the informal sector, accelerating its transition to formality.

While the discussion above suggests that financial information could benefit traders, these markets are characterized by low reliance on financial information in credit allocation

decisions, indicating the presence of significant frictions that prevent the use of financial information in credit allocation. One way to identify these frictions is to understand traders’ preferences. Lenders might *prefer* to use financial information but may not be able to do so for various reasons. For example, they might be concerned that the accounting information reported by borrowers is not trustworthy and thus might rely on social networks for assessing borrowers’ creditworthiness. Borrowers may also not be willing to share private or sensitive information related to their operations because of concerns that it will not remain confidential. Instead, they may rely on group membership to access credit (Banerjee et al., 2018; Fafchamps & Lund, 2003; Tomy & Wittenberg-Moerman, 2022; Townsend, 1994; Udry, 1990, 1994). Finally, low levels of financial literacy among micro-entrepreneurs in developing countries implies that lenders may be unable to incorporate financial information in credit decisions and borrowers may not have the skills to produce it (Cole et al., 2009, 2011, 2013; Drexler et al., 2014). By examining traders’ preferences, we study the frictions that prevent the widespread use of financial information in credit allocation in informal markets.

3. Data collection, design, and sampling

3.1. Data collection and design

We collect data from wholesalers and retailers in the bazaar to understand their preferences for information types. Specifically, we seek to understand wholesalers’ inclination to use retailers’ financial information in their credit assessment decisions and retailers’ proclivity to provide such information. The first part of the data-collection exercise consists of a hypothetical choice experiment with wholesalers, whereas the second part consists of a survey administered to both wholesalers and retailers. We conduct the choice experiment to elicit the preferences of wholesalers (the providers of credit) for financial information—that is, to estimate how much more trade credit a wholesaler would be willing to provide to a retailer with information on sales and profits relative to one without such information (Allenby et al., 2019; Ameriks et al., 2020; Delavande & Zafar, 2019; Louviere & Woodworth,

1983; Rao et al., 2014; Wiswall & Zafar, 2018). We do not conduct the experiment with retailers because it involves testing how credit providers evaluate various types of information in making credit decisions. Therefore, the experiment is not relevant for the receivers of credit. Instead, we survey retailers to provide descriptive evidence of their sentiments toward producing and sharing financial information.

Hypothetical choice experiments have been used in marketing and economics to study agents’ preferences either when the products are not available, or when markets are incomplete or do not exist. Research in accounting has also used related methods to evaluate auditors’ judgements (Ashton, 1974) and finance professionals’ risk assessments (Clor-Proell et al., 2016; Libby, 1975). In the hypothetical choice experiment, each respondent (wholesaler) is presented with a set of hypothetical choices pertaining to retailers’ portfolios and asked to select one. The choices are combinations of information types that reflect retailers’ creditworthiness. They include a retailer’s financial information (namely, sales and profits) and nonfinancial information (namely, the community of the retailer and the length of the trading relationship between the wholesaler and retailer). While the financial information captures dimensions of business size, growth, and efficiency, we include these two nonfinancial attributes because they are highly significant in explaining credit allocation in developing economies (Fafchamps & Lund, 2003; Ghatak, 1999; Ghatak & Guinnane, 1999; Hoff & Stiglitz, 1990; Karlan, 2007; Townsend, 1994; Udry, 1990, 1994). The information set also includes the amount of trade credit the wholesaler would be willing to provide to the retailer with the specified levels of financial and nonfinancial information. Experimentally varying the information shown to wholesalers allows us to gauge whether and how much wholesalers value information on retailers’ sales and profits while allocating credit. Appendix A provides an example of the hypothetical choices shown to wholesalers.

The information types are not exhaustive of all possible attributes a wholesaler could consider. For example, other things wholesalers could use to assess retailers’ creditworthiness include inventory turnover and foot traffic in retailers’ shops. Indeed, Tomy & Wittenberg-

Moerman (2022) find that distance to retailers’ shops, which can allow wholesalers to more easily observe foot traffic, is associated with a higher provision of trade credit. However, to avoid overwhelming the respondent, we purposefully select only a few characteristics based on prior research. A key feature of the hypothetical experiment is that we ask wholesalers to assume that retailers are similar in all aspects other than our information attributes (e.g., Allenby et al. (2019); Ameriks et al. (2020); Wiswall & Zafar (2018)). We also ask wholesalers to assume that all information provided is accurate and reliable. Our inferences are subject to the caveat that respondents internalize these instructions.

The information types (attributes) and their possible values (levels) are summarized in Table B.1 of Appendix B. These values have been chosen based on a survey of traders in the market (Tomy & Wittenberg-Moerman, 2022). For example, conditional on providing credit, the mean amount of trade credit wholesalers tend to provide is 40% of sales, with most providing amounts below 60% of sales. Therefore, in selecting values for the amount of trade credit, we provide four intervals for amounts ranging from 0% to 60% and include a fifth option of $> 60\%$.

Furthermore, nine communities operate in the market. The communities are characterized by a common language, culture, and place of origin, and include Khasi, Jaintia, Marwari, Bengali, Bihari, Nepali, Punjabi, Assamese, and Muslim.⁹ Of these, the Khasi community is native to the region, whereas others immigrated into the region at different points in time from other parts of the state, other states, or neighboring countries. We list these community names in the information sets shown to wholesalers (Appendix A). In our analysis, we collapse the nine community names into two, based on whether the respondent is of the same community or from a different community. We use this approach to prevent unduly influencing the wholesaler by providing leading information—that is, by not explicitly stating that the hypothetical retailer belongs to the same community as the responding

⁹These communities are mainly ethnic groups and reflect the social network traders belong to and the information they can access. Muslims in the region, although defined by religion, are similar to an ethnic group.

wholesaler.

We presented each wholesaler with a series of 24 scenarios, where each scenario contained two different information sets (e.g., [Appendix A](#)). The scenarios were presented electronically on a tablet and we randomly varied the values of the attributes in the information sets. All wholesalers were provided with a brief explanation of the attributes by the enumerators prior to administering the experiment. We randomized the attribute levels across 100 versions of the questionnaire and across respondents. As [Table B.2](#) of [Appendix B](#) shows, our design is balanced across attributes.

Choice-based methods are closer to revealed rather than stated preferences ([Allenby et al., 2019](#); [Wiswall & Zafar, 2018](#)). A choice-based method matters in our setting because simply asking wholesalers to state which types of information they prefer may result in them selecting all options, thereby masking the trade-offs between various information types. For example, wholesalers may always prefer more information while making credit decisions, impeding identification of their true preferences for the information types. Choice-based methods also allow us to infer the relative importance of different types of information and how it varies based on the characteristics of wholesalers. Finally, the hypothetical choice method also addresses the omitted variable problem ([Allenby et al., 2019](#)). Traders’ actual choices are a function of observed and unobserved factors. The unobserved determinants of their choices could be correlated with the observed ones. By experimentally varying the observed factors, we break the link between observed and unobserved variables and therefore address endogeneity concerns.

Importantly, implementing the experiment in a bustling bazaar economy where traders have limited time and face cognitive constraints is uniquely challenging, making it necessary to adapt the experiment to our setting while at the same time allowing us to draw meaningful inferences. First, we keep the task simple by limiting the options presented to wholesalers to only two hypothetical retailers (corresponding to two different information sets as discussed above). Asking wholesalers to choose between two options allows us to more directly capture

the trade-offs they make. It also allows us to more easily explain the task to respondents. Second, we ask wholesalers to select one option instead of providing a rating or probability for each option. Choice-based methods (as opposed to ratings-based methods) are cognitively less taxing because respondents are not required to evaluate each option but rather only pick their preference from among various alternatives. Choice-based methods are also closer to real-world decision-making (Rao et al., 2014). Third, we do not provide an option where the wholesaler can decline to provide credit to either retailer. Given that the interviews were conducted in the bazaar during business hours, providing such an option may result in wholesalers choosing the path of least resistance (i.e., least cognitive effort) and gravitating towards this option.

Fourth, our design is complicated by the fact that both the type of information and the level of that information-type matter. For example, a wholesaler may prefer information on sales but only when sales are high. We account for this in the experiment by including levels for sales and profits that are relative to a “typical” retailer (i.e., a median retailer operating in a given product group). That is, we ask wholesalers to select between hypothetical retailers where sales of the retailers may be higher than, lower than, or equal to that of a typical retailer. Including the levels of financial information further helps us base our inferences not only on whether wholesalers are willing to pay for information on retailers’ financials but also on whether wholesalers’ willingness to pay varies in a meaningful manner with the level of retailers’ financials. For example, if wholesalers value information on retailers’ sales in making credit decisions, it has to be that they provide more trade credit to retailers with high sales than to retailers with low sales. If our results do not show this predictable pattern, then we cannot conclude that wholesalers value retailers’ financial information.

Our inferences are derived from responses to both the choice experiment and survey questions. The survey questions examine beliefs about the reliability of financial information, evaluate traders’ financial sophistication and collect demographic characteristics. Research has found greater levels of missing data and less detailed answers for items that appear later

in a questionnaire (Krosnick & Presser, 2010). Therefore we collected business-related and demographic questions toward the end of our questionnaire to minimize fatigue. Traders need to exert less effort to answer basic questions about themselves and their business.

3.2. Sampling

We select a representative sample of traders based on a list of shops in the bazaar. The bazaar consists of 5,254 shops, of which several are unoccupied or not classified into distinct product groups (e.g., warehouses). Eliminating these leaves us with 4,437 shops. We also remove shops in product categories without trade credit and require at least 150 shops per product group.¹⁰ Our starting sample thus consists of 1,877 shops in the following product categories: general stores, footwear, household appliances, textiles, tobacco, and betel. We select a stratified random sample by product group. Table 1 shows the sample and response rate by product group. Within each group, we approach a random sample of traders and ascertain whether they are wholesalers or retailers. For traders engaged in both wholesale and retail business, we ask them for the percentage of their sales from wholesaling and classify the trader as a wholesaler if the percentage exceeds 70%. This stringent criteria enables us to identify traders who are primarily wholesalers and are therefore mainly providers (rather than receivers) of trade credit. We received responses from 175 wholesalers and 373 retailers for an overall response rate of 87%.¹¹

The survey questionnaire was administered by a team of enumerators, who were carefully selected from a pool of applicants. The enumerators are mainly graduate students from

¹⁰As documented in Tomy & Wittenberg-Moerman (2022), there is considerable variation across products in credit provision. Businesses that provide services, such as salons or electrical goods repair shops, and traders of highly perishable products tend not to use trade credit. Trade credit is more prevalent in other product groups. For example, retailers of general provisions typically receive three to four weeks of credit. Also, retailers of metal goods, such as knives and agricultural implements, receive, on average, only four to five days of credit.

¹¹To provide a ballpark estimate of the sample size for the choice experiment, we simulated the response data for 100, 150, and 160 respondents. The standard errors for each attribute-level from the estimation of a multinomial logit specification (model specifications are discussed in Section 4) are ≤ 0.10 across levels for a sample size of 100, suggesting that a sample of ≥ 100 wholesalers would allow us to generate meaningful inferences from the data.

local universities with previous survey-related experience. A two-day training session was conducted for the enumerators to familiarize them with the survey software and questions. The survey questionnaire was administered in Hindi, English, or Khasi, depending on the respondents’ comfort level with these languages. The data were collected on tablets using survey software, allowing enumerators to record traders’ responses easily.¹² The survey software also recorded the time taken to complete the questionnaire. The mean (median) time taken to complete the choice experiment was 31 (26) minutes. In our analysis, we remove the bottom 5% of responses to the experiment by the time taken to account for inattention. The responses that were removed for inattention were completed in less than 13 minutes. We also remove wholesalers who have a policy of not providing credit to any retailers because such wholesalers are unlikely to provide meaningful responses to questions related to credit assessment. Our final sample consists of 141 wholesalers.

4. Model and research design

4.1. Modeling utility from traders’ choices

As discussed in [Section 3](#), we asked wholesalers to select their preferred option from several information sets. These information sets are profiles of various retailers to whom they could provide trade credit. Each information set is characterised by X , which is a vector of k attributes, where k represents the types of financial and nonfinancial information as well as the amount of trade credit. There are a finite number of such information sets $j = 1, 2, \dots, J$, such that $X_j = [X_{j1}, X_{j2}, \dots, X_{jk}]$. The choice process assumes that the information set the wholesaler chooses provides her with the highest utility of all other alternatives ([Allenby et al., 2019](#); [Ameriks et al., 2020](#); [Delavande & Zafar, 2019](#); [Rao et al., 2014](#); [Wiswall & Zafar, 2018](#)). Let U_{ij} represent the utility that trader i receives from

¹²To implement the choice experiment, the enumerators first explained the task to respondents using an example printed on paper. Respondents then completed the task by themselves on the tablet.

selecting the information set j . The utility is represented as follows:

$$U_{ij} = u_i(X_j) + \epsilon_{ij}, \quad (1)$$

where $u_i(X_j)$ is based on the observed characteristics, X . The error term, ϵ_{ij} , includes the effect of unobserved individual factors that affect a trader's choice.

4.2. Empirical model

By assuming a linear formulation for the utility $u_i(X_j)$ and an extreme value distribution for the errors ϵ_{ij} , we can give a multinomial logit formulation of [Equation 1](#) ([McFadden, 1974](#); [McFadden & Train, 2000](#)). That is, the probability of trader i choosing option j is given as follows:

$$p_{ij} = \frac{\exp(X_j' \beta_i)}{\sum_{j'=1}^J \exp(X_{j'}' \beta_i)}. \quad (2)$$

Our experimental setup allows us to separately estimate a β_i for each individual trader i because we collect “panel” data from each trader. That is, each trader makes choices across 24 different scenarios and chooses between two options in each scenario. Therefore, for each trader, we have $24 \times 2 = 48$ unique observations.

In terms of log odds ratio, [Equation 2](#) has a linear specification as follows:

$$\ln \left(\frac{p_{ij}}{p_{ij'}} \right) = (X_j - X_{j'})' \beta_i, \quad (3)$$

where β can be interpreted as the marginal change in log odds for some difference in the attributes X . To illustrate, wholesalers will be provided with the following information set $X = \{\text{retailer's sales; retailer's profit; relationship length; retailer's community; amount of trade credit}\}$.

We obtain individual β_i s for each wholesaler using Bayesian hierarchical models ([Gelman et al., 1995](#); [Rao et al., 2014](#); [Rossi, 2019](#); [Rossi et al., 2012](#)). These models simultaneously fit the population and individual respondents' parameters and therefore borrow information

from the population to arrive at better estimates for the β_i s. Individual wholesalers may have different preferences for information types, and hierarchical models can fit data better and make more accurate predictions than single-level models by taking into account the correlation between wholesalers (Rossi, 2019; Rossi et al., 1996). A further advantage of these models is that when the individual β_i s are poorly fitted, they depend more on the population distribution. For example, suppose a wholesaler is an outlier based on her responses. In that case, the model uses more information from the population to arrive at her parameter estimates, limiting the influence of outliers due to poor data. Recent empirical literature in finance and accounting has used Bayesian methods in various settings, for example, to predict stock returns (Shanken & Tamayo, 2012; Smith & Timmermann, 2021), to examine accruals-based earnings management and earnings quality (Breuer & Schütt, 2021; Du et al., 2020), and to study investor learning (Bernard et al., 2018; Neururer et al., 2016; Zhou, 2021). In the context of choice experiments, Bayesian methods have long been used in marketing research to estimate consumers’ preferences for various products (Allenby et al., 2019; Rossi et al., 1996, 2012).

There are two alternatives to using Bayesian hierarchical models. The first is to use a classical approach and estimate β by pooling all the data. However, the pooled approach will provide a point estimate for the parameters, whereas with Bayesian methods we can generate a distribution of the parameter estimates.¹³ A second alternative would be to separately estimate β_i for each wholesaler i ; although this is executable as we collect multiple observations from each wholesaler, this approach is limited because it ignores correlations between the traders’ preferences. On the other hand, Bayesian hierarchical models will use information from other wholesalers to improve the parameter estimates for wholesaler i .

In our estimation, the β_i s for the individual wholesalers are assumed to be drawn from a multivariate normal distribution ($\beta \sim N(\alpha, \Sigma)$). A logit model is assumed for each individual

¹³Nonetheless, for robustness, we provide estimates using the pooled data and a frequentist approach. The results are presented in Table IA1 of the Internet Appendix and provide consistent inferences.

(Equation 2). Initial estimates for α , Σ , and β_i s are chosen as follows: α is set to zero, whereas variances for Σ are set to one and covariances to zero. For each wholesaler, the initial values of β_i is the number of times an attribute level is in the wholesaler's chosen information set scaled by the number of times that attribute level appears in all alternatives shown to that wholesaler. We run 1,000,000 Markov chain Monte Carlo (MCMC) iterations, and the first 750,000 iterations are used to achieve convergence (burn-in). The estimates from the last 250,000 iterations are averaged to provide the parameter estimates.¹⁴

Because the β estimates are difficult to interpret, we calculate willingness to pay (WTP) from the estimated β_i s (Blass et al., 2010; Wiswall & Zafar, 2018). To calculate WTP, we suppose that wholesaler i moves from an information set $X_k = x_k$ to $X_k = x_k + \Delta$. For example, for a wholesaler considering the two information sets, x_k may not include information on the retailer's sales, whereas Δ represents positive sales information. Then $\text{WTP}(\Delta)$ is the additional amount of trade credit that the wholesaler is willing to provide to a retailer with positive sales information, relative to a retailer with no information on sales. The trader's WTP for Δ can be estimated from the following indifference condition, which equates the utility the trader derives from the two information sets:

$$\begin{aligned} x_k \beta_{ik} + \beta_{i1} \ln(Y) &= (x_k + \Delta) \beta_{ik} + \beta_{i1} \ln(Y + \text{WTP}_{ik}(\Delta)) \\ \implies \text{WTP}_{ik}(\Delta) &= \left[\exp\left(\frac{-\beta_{ik}}{\beta_{i1}} \Delta\right) - 1 \right] \times Y, \end{aligned} \tag{4}$$

where Y represents the amount of trade credit.

The wholesaler-level estimation of WTP will allow us to infer how preferences vary based on wholesalers' characteristics. For example, we can estimate how wholesalers with little education value retailers' information relative to wholesalers with more education. Such a detailed understanding of wholesalers' preferences for financial information will allow us to

¹⁴We use a thinning parameter of 10 and a Gibbs Sampler with a random walk–Metropolis algorithm. For more details, please see Gelman et al. (1995) and Rossi et al. (2012).

understand the frictions that drive the current sparse use of retailers’ financial information in credit allocation decisions, potentially allowing researchers to better target interventions aimed at improving access to credit in informal economies.

One concern with using a choice method is that traders may not report their true preferences. Applying standard procedures, such as that proposed by [Becker et al. \(1964\)](#) (BDM), to achieve incentive compatibility is difficult in our setting because the choices are hypothetical and the products (e.g., information sets) do not exist for sale.¹⁵ However, given our objective of assessing preferences for various types of information, we do not directly ask traders for their WTP but infer it from their choices. Also, choice-based methods are closer to revealed rather than stated preferences ([Allenby et al., 2019](#); [Wiswall & Zafar, 2018](#)). Furthermore, several features of our design and analyses make untruthful responses less of a concern. First, traders in our sample do not have an incentive to lie (e.g., they do not have the option to purchase any goods from us after the survey). Second, because we show each trader several scenarios to elicit their preferences, over these multiple scenarios, their choices should converge to their true preferences.

A greater concern is that traders may be inattentive and respond without much thought. Features of our design address inattentive respondents. As discussed in [Section 3.1](#), we have taken several steps to make the task easier for respondents. Also, as discussed in [Section 3.2](#), we record the time that a respondent takes to complete the survey and remove responses that are completed too quickly.

5. Baseline results: Willingness to pay estimates

We estimate the β -parameters from a logit model using the Bayesian hierarchical approach described in [Section 4.2](#). [Table 2](#) presents descriptive statistics for these β -parameters

¹⁵In the BDM procedure, a price is drawn randomly from a distribution. If this price is greater than the respondent’s stated WTP, then she cannot purchase the item. However, if the randomly drawn price is less than the stated WTP, then she can purchase the item for the lower price. This procedure induces incentive compatibility because it removes a respondent’s incentive to either overstate or understate her true WTP.

for the 141 wholesalers in our sample.¹⁶ For ease of interpretation, we calculate willingness to pay estimates from the β -parameters based on the indifference condition presented in [Equation 4](#). The mean WTP estimates, along with their standard deviation and z -statistics based on bootstrap standard errors, are shown in [Table 3](#). These estimates are interpreted relative to the omitted category. Specifically, when moving from the information set of *No information on sales* to *Sales higher than typical retailer*, wholesalers on average are willing to provide 11.3% more trade credit (as a percentage of sales) to the retailers with sales higher than the typical retailer in their product group, relative to a retailer with no information on sales. To clarify, 11.3% more trade credit (as a percentage of sales) refers to trade credit as a percentage of the wholesale price per transaction. For example, suppose that for an item with a wholesale price of ₹100, if the retailer provided no information on her total sales, she would receive a credit of ₹20 (and pay the remaining ₹80 in cash). If, instead, she did provide sales information, she would receive a credit of ₹31.30. Wholesalers are also willing to provide 0.7% *less* trade credit (as a percentage of sales) to retailers with sales lower than a typical retailer in their product group than to retailers with no information on sales. Furthermore, wholesalers are willing to provide 2% more trade credit to retailers whose sales are equal to that of a typical retailer than to retailers with no information on sales. Although these estimates are conditional on the features of our experiment, consider that, in general, the mean (median) wholesaler provides 40% (22%) trade credit as a percentage of sales ([Tomy & Wittenberg-Moerman, 2022](#)). Therefore, these estimates appear to be economically significant.

This pattern of results—that wholesalers’ are willing to provide more credit to retailers with higher sales and less credit to retailers with lower sales than the typical retailer in their product group—is consistent with wholesalers using retailers’ financial information in their credit decisions. The WTP estimates for profits follow the same trend as for sales: wholesalers are willing to provide 6.2% and 3.4% more trade credit (as a percentage of sales)

¹⁶We present plots of the full distribution of parameter estimates in [Figure IA1](#) of the [Internet Appendix](#).

to retailers with profits higher than or equal to that of a typical retailer, respectively, relative to retailers with no information on profits. Wholesalers are also willing to provide 2.9% *less* credit to retailers with profits lower than that of a typical retailer. This evidence further reinforces our inference that wholesalers value retailers’ financial information while making credit allocation decisions.

Table 3 also highlights the important role of nonfinancial information in wholesalers’ credit allocation decisions. Specifically, wholesalers are willing to provide 9.5% more trade credit to same-community retailers relative to retailers from outside communities. Finally, the length of the relationship between the wholesaler and retailer features strongly in wholesalers’ credit decisions. In particular, wholesalers are willing to provide 9%–29% more credit to retailers with whom they have a longer relationship.¹⁷ These findings indicate that although wholesalers would use financial information if available, they also continue to rely on informal information sources. Recent work finds that formal institutions, although valuable, can crowd out informal lending relationships (Attanasio et al., 2015; Banerjee et al., 2018; Heß et al., 2020). In contrast, our findings suggest that formal and informal sources of information can coexist. We explore this further in the next section.

6. Wholesalers’ reliance on informal information

Although we find that wholesalers generally value financial information, this finding may not hold for wholesalers who tend to rely to a greater extent on informal information. Such wholesalers might continue relying on informal mechanisms that typically drive credit decisions in informal markets. We use three measures to capture wholesalers’ increased reliance on informal information sources.

Our first measure of reliance on informal information is the gender of the wholesaler. We conjecture that, relative to men, women are more likely to rely on informal sources of infor-

¹⁷The importance of relationship length is also highlighted by Geertz (1978) in an ethnographic study of a bazaar in Sefrou, Morocco. Geertz finds that once traders establish a relationship, however antagonistic, they prefer to negotiate over price rather than search for better prices from other sources.

mation. The literature suggests that the relational aspect of business (i.e., the volume and quality of relations the business has with key stakeholders) is crucial for women entrepreneurs (Farr-Wharton & Brunetto, 2007). Also, in countries with weak or unstable institutions, access to social networks is important for business success (McMillan & Woodruff, 1999; Udry & Conley, 2005). Women entrepreneurs in these countries face additional challenges, including social acceptance of women as business owners, a low level of education, and limited access to credit (De Vita et al., 2014). Taken together, given the constraints faced by women entrepreneurs in developing countries, access to informal networks is particularly relevant for the success and survival of women-owned businesses (Butler & Hansen, 1991; Welsh et al., 2018).

Consistent with our expectations, in Panel A of Table 4 we find that, relative to men, women have a preference for informal information as they are willing to offer more credit to retailers from their community and to those with whom they have had a longer relationship. Although we find some evidence that men are willing to provide more credit for retailers with profits higher than the typical retailer, in general, women value retailers' financial information as much as men do, suggesting that a stronger preference for informal information does not imply that wholesalers would not use retailers' financial information.

As a second measure of wholesalers' reliance on informal information, we use their inclination to know whether the retailer has a good reputation with other wholesalers before offering trade credit.¹⁸ Caring about retailers' reputations with other wholesalers implies a preference for informal information networks that may provide information about retailers through word-of-mouth discussions with other wholesalers. Panel B of Table 4 shows that, relative to other wholesalers, those with a preference for informal networks are willing to provide more trade credit to retailers with whom they have a longer relationship. However, these wholesalers are willing to pay as much as other wholesalers for retailers' financial information, implying that even wholesalers with a stronger preference for informal networks

¹⁸Please see Question 11 in Appendix C.1.

value retailers' financial information.

Finally, our third measure relates to the preferences of wholesalers with strong priors that, relative to the informal information sources they primarily rely on, retailers' financials add little value when assessing their creditworthiness. Specifically, we focus on the 38 wholesalers who state that retailers' sales and profit information would not change their willingness to provide trade credit because they would learn nothing new from this information.¹⁹ In Panel C of Table 4, we compare the WTP estimates for these 38 wholesalers to the WTP estimates for all other wholesalers. As expected, we find that these wholesalers have a preference for informal sources of information as evidenced by their higher WTP estimates for community membership. However, interestingly, when presented with financial information, they do place weight on it in their decision making. Not surprisingly, these wholesalers have significantly lower WTP estimates for sales and profits that are higher than or equal to that of a typical retailer, relative to wholesalers who do not have such strong priors regarding the usefulness of financial information. These findings further support our conclusion that financial information is useful in assessing retailers' credit worthiness, even in cases where wholesalers have strong preferences for relying on informal information sources.

7. Wholesalers' financial sophistication and beliefs about the reliability of financial information

7.1. WTP by financial sophistication of wholesaler

Our results from the hypothetical choice experiment suggest that wholesalers generally value information on retailers' financials and are willing to offer more credit based on this information. However, in practice, wholesalers tend not to collect information on retailers' sales and profits prior to providing credit, and rely more on nonfinancial characteristics such as community membership and relationship length (Tomy & Wittenberg-Moerman, 2022). One reason for the limited use of retailers' financial information could be low financial

¹⁹Please see Question 1b in Appendix C.1.

literacy. The literature finds low levels of financial literacy among individuals in developing countries, which leads to poor financial decision-making and consequently worse outcomes in terms of individual and household well-being (Cole et al., 2009, 2011, 2013; Drexler et al., 2014; Lusardi & Mitchell, 2011). Consistent with this, Drexler et al. (2014) find that a simple rule of thumb method of separating personal and business finances is more effective than standard accounting training among a sample of micro-entrepreneurs in the Dominican Republic. Importantly, they find that the rule of thumb method is more effective among lower skilled participants. Similarly, in our setting, if wholesalers are not financially literate, then they are unlikely to make extensive use of accounting information in their credit decisions, suggesting that financial literacy is a constraint that prevents the widespread use of retailers' financial information in wholesalers' credit allocation decisions. Therefore, increasing the level of financial knowledge among wholesalers in the market could lead to more efficient use of financial information in credit allocation decisions.

Accordingly, we evaluate whether more financially literate wholesalers are willing to pay more for information on retailers' sales and profits.²⁰ We use several measures of wholesalers' financial sophistication, including whether they understand the concepts of inflation and compounding of interest, whether they maintain a record of their transactions, and their education level. The questions related to inflation and interest compounding were developed by Lusardi & Mitchell (2011), who use them to evaluate financial literacy among various populations in developed and developing countries.²¹ The questions are based on four key principles: (1) Simplicity—focused on measuring basic financial concepts; (2) Relevance—related to everyday financial decisions; (3) Brevity—designed to be brief so they can easily be included in a survey; and (4) Capacity to differentiate—able to differentiate between various financial knowledge levels. Although these questions are general and not specific to

²⁰To clarify, wholesalers, on the whole, understand the concepts of sales and profits. We investigate whether more financially sophisticated wholesalers *value* retailers' sales and profits more in their credit decisions.

²¹Question 4 and Question 5 in Appendix C.1 assess respondents' understanding of the concepts of inflation and interest compounding.

trade in the bazaar, they still capture a dimension of financial sophistication that should help us identify traders who are more or less financially sophisticated. Note that our measure of whether traders maintain a record of their transactions is more specific to trade in the bazaar. Our findings are consistent across all measures of financial literacy.

The results of this analyses are presented in [Table 5](#). In [Panel A](#) of the table, we split our sample into two subsamples based on whether the respondent understands the concept of inflation (column (1)), or does not (column (2)). We do not use responses to the question on interest compounding as only four wholesalers incorrectly answered this question. As the table shows, we do not find evidence that wholesalers with greater financial knowledge value retailers' financial information more.

In [Panel B](#) of [Table 5](#), we split our sample into subsamples based on whether the wholesaler always maintains a record of her transactions (column (1)) or does not always maintain records (column (2)). We find that, relative to wholesalers who do not always maintain a record of transactions, those who do maintain records are not willing to provide significantly more credit to retailers with sales and profits higher than that of a typical retailer. We find similar results for sales and profits lower than a typical retailer. However, we find limited evidence that, relative to wholesalers who do not maintain records, record-keeping wholesalers value retailers with sales and profits equal to the typical retailer more. Interestingly, wholesalers who do not always maintain records value *Relationship length* significantly more than those who do, suggesting that these wholesalers rely to a greater extent on informal information sources.

We also use wholesalers' education levels as a proxy for financial sophistication as financial literacy is highly correlated with level of education ([Lusardi & Mitchell, 2011](#)). In [Table 5](#), [Panel C](#), we split our sample based on whether the wholesaler has a high school degree (column (1)), or not (column (2)). We find no consistent variation in the WTP estimates for retailers' financial information for wholesalers with versus without a high school degree. However, similar to our results in [Panel B](#) for wholesalers who do not maintain records, we

find that wholesalers without a high school degree are more likely to value *Relationship length*. These findings suggest that having less education or not maintaining records captures some element of wholesalers’ greater reliance on informal sources of information. In robustness tests, we differentiate WTP based on whether the wholesaler has a college degree and, consistent with [Table 5, Panel C](#), find no variation in the willingness to pay for retailers’ financial information across wholesalers with or without a college degree (untabulated).

Overall our findings suggest that wholesalers are reasonably financially literate and that their willingness to pay for retailers’ financial information does not vary systematically with their level of financial sophistication. These findings suggest that a lack of financial knowledge is unlikely to be the main friction preventing wholesalers from using retailers’ financial information. Therefore, policies aimed at improving wholesalers’ financial literacy might not substantially increase the use of financial information in credit allocation in informal markets.

7.2. WTP by wholesalers’ beliefs about the reliability of financial information

We next explore whether beliefs about the reliability of retailers’ financial information could be the friction that prevents the widespread use of such information in credit allocation decisions in informal economies. Wholesalers’ responses to survey questions strongly suggest that they are concerned about the truthfulness of retailers’ financial reporting. For example, we asked wholesalers about the concerns they had in asking for and using retailers’ financial information. We found that 27%–33% of wholesalers responded that they were concerned the retailer would not be truthful.²²

We also asked wholesalers about the percentage of retailers they thought would respond truthfully to questions related to their sales and profits. Of the 141 wholesalers in our sample, 49 (i.e., 35%) responded they believed that no retailers would report their sales and profits truthfully. Furthermore, the majority (75%) believed that *less than 10%* of retailers

²²Please see [Question 6](#) and [Question 7](#) in [Appendix C.1](#).

would report their sales and profits truthfully.²³ When asked about the characteristics of retailers who would report truthfully, wholesalers stated that these include retailers who visit their shop frequently (76%), retailers with whom they have a long relationship (85%), and retailers from their community (14%)—all features that allow wholesalers to more easily verify retailers’ information.²⁴

We evaluate whether wholesalers’ willingness to provide additional credit based on retailers’ financial information varies systematically with their beliefs about the truthfulness of retailers’ reports. The results of this analysis are presented in [Table 6](#). In [Panel A](#) of the table, we split our sample by whether the wholesaler is concerned about *asking* for retailers’ sales and profits because she believes that retailers will not be truthful (column (2)), or if she has no such concern (column (1)). The table shows that wholesalers who believe that retailers would not report truthfully *are as willing* to pay for this information as those who do not list retailers’ truthfulness as a concern. This result may appear puzzling because, as discussed in [Section 2](#), wholesalers rarely use retailers’ financial information in credit allocation decisions. Therefore, we would have expected wholesalers who hold beliefs about the unreliability of financial information not to use it. However, recall that in the experiment, we asked wholesalers to assume that all information provided is accurate and reliable. Our results indicate that in a world where financial information is accurate and reliable (as in the hypothetical experiment), even wholesalers who hold these beliefs use financial information when presented with it. These findings allow us to infer that lack of reliability is a crucial friction that prevents the use of financial information in credit allocation decisions. That is, the results in [Table 6, Panel A](#), suggest that wholesalers would value retailers’ financial information if it were reported truthfully.

In [Panel B](#) of [Table 6](#), we split our sample by whether the wholesaler is concerned about *using* retailers’ sales and profits in credit allocation decisions because she believes

²³Please see [Question 8](#) in [Appendix C.1](#).

²⁴Please see [Question 9](#) in [Appendix C.1](#).

that retailers will not be truthful (column (2)), or if she has no such concerns (column (1)). Similar to the results in [Panel A](#), we find that wholesalers who believe that retailers would not report truthfully are as willing to pay for this information as those who do not list retailers’ truthfulness as a concern. Finally, in [Panel C](#), we use variation in wholesalers’ beliefs about the percentage of all retailers who they think would report truthfully. In this panel, we split the sample by whether the wholesaler believes either that no retailers would report their financial information truthfully (column (2)), or if she believes otherwise (column (1)). We find consistent results—wholesalers who are more concerned about retailers’ truthfulness are willing to pay as much for retailers’ sales and profits as those who are less concerned if this information were truthfully reported (as we asked wholesalers to assume in the survey). We find similar results when we split the sample into wholesalers who believed that 10% or fewer retailers would report truthfully versus those who thought that more than 10% of retailers would report truthfully (untabulated).

Collectively, wholesalers’ responses to our questions regarding the truthfulness of retailers’ reports and the results in [Table 6](#) suggest that wholesalers value retailers’ financial information in making credit decisions but are concerned about its reliability. Therefore, designing a verification mechanism to improve the reliability of financial information is likely to lead to wholesalers using such information more in credit allocation decisions, potentially increasing the access to credit in such informal markets.

8. Retailers’ responses to survey questions

We surveyed 373 retailers in our sample to understand the frictions they might face in providing financial information to wholesalers. Specifically, we asked questions related to retailers’ willingness to provide financial information to wholesalers, their financial sophistication, and their beliefs about the reliability of financial information.²⁵

²⁵Retailers’ responses are summarized in [Appendix C.2](#). In general, retailers are much smaller and poorer relative to wholesalers.

When asked whether they would provide information on their sales and profits to wholesalers if it increased their likelihood of getting trade credit, a majority of retailers (69%) responded they would *not* provide such information, 29% stated that they would provide financial information, and 2% were unsure.²⁶ Of the 69% who would not provide financial details, 68% were not comfortable sharing such information and 35% stated that they could not trust that their information would remain confidential.²⁷ To corroborate, we also asked retailers about the concerns they had about sharing their financial information with wholesalers, and received consistent responses. The majority stated that they are not comfortable sharing such information or that they do not trust their data will remain confidential. The 29% who were willing to provide financial information largely believed that it would provide them with a greater access to trade credit (53%), a longer repayment time (46%), or that they may receive more goods to resell (66%).²⁸ Furthermore, when asked what wholesalers could learn from their financials, only 39% of retailers responded that wholesalers would learn nothing new, indicating that a majority of retailers thought such information would be useful to wholesalers.²⁹

We next evaluate factors that may affect retailers' willingness to provide information on sales and profits. Importantly, per the Sixth Schedule to the Constitution of India, retailers in the region are mostly tax-exempt. Therefore, tax avoidance is not an important factor that drives their unwillingness to provide financial information. With respect to financial literacy, our results for wholesalers indicate that this factor is unlikely to be the primary constraint that prevents the widespread use of financial information in their credit allocation decisions. However, if retailers are financially unsophisticated, they may be unable to produce and provide the required financial information to wholesalers. We find that, although the majority of retailers in our sample are reasonably financially sophisticated based on our

²⁶Please see [Question 1](#) in [Appendix C.2](#).

²⁷Please see [Question 1b](#) in [Appendix C.2](#).

²⁸Please see [Question 1a](#) in [Appendix C.2](#).

²⁹Please see [Question 3](#) in [Appendix C.2](#).

measures, they are less so than wholesalers. For example, 65% of retailers maintain a record of their transactions.³⁰ The corresponding figure for wholesalers is 90%. Furthermore, a lower percentage of retailers understood the concepts of inflation (68%) and interest compounding (86%) relative to wholesalers, whose correct answers to these questions accounted for 77% and 97%, respectively.³¹

We evaluate whether retailers' willingness to provide financial information to wholesalers varies systematically with their level of financial sophistication. We use measures based on their responses to the questions related to inflation and interest compounding, whether they maintain a record of transactions, and their education level. The results are presented in [Table 7](#). We find that retailers' willingness to provide financial information to wholesalers is not associated with their level of financial sophistication across all our measures. These results indicate that retailers' financial literacy is unlikely to be the primary constraint that prevents the use of financial information in credit allocation in informal markets.

Finally, we measure retailers' beliefs about the reliability of financial information and their level of trust that their information would not be misused. To measure retailers' beliefs about the reliability of financial information, we asked them about the percentage of *other* retailers that they believed would not truthfully report their financial information. Retailers who believe that other retailers do not report truthfully are less likely to believe in the reliability of financial information. In this case, retailers are likely to be concerned that their financial information may not be adequately accounted for by wholesalers, who would not trust the numbers reported by retailers.

Similar to wholesalers, a majority of retailers believed that other retailers would not truthfully report financial information. In particular, 44% of retailers believed that no other retailers would truthfully report their financial information, whereas 34% believe that only 1%–10% of other retailers would report truthfully.³² Furthermore, we find that of the retailers

³⁰Please see [Question 4](#) in [Appendix C.2](#).

³¹Please see [Question 6](#) and [Question 7](#) in [Appendix C.2](#) for retailers' responses.

³²Please see [Question 8](#) in [Appendix C.2](#).

who are not willing to provide financial information, the majority (55%) believe that no other retailers would report their sales and profits truthfully. However, of the retailers who *are* willing to provide their financial information to wholesalers, only 18% believe that no other retailers would report truthfully. This difference in proportions is significant (Table 7). These findings suggest that, similar to wholesalers, retailers are concerned about the reliability of financial reporting and that wholesalers might not trust the numbers they report.

As a measure of retailers' trust, we use their responses to the following question: *"What concerns do you have about providing information on your sales and profits to wholesalers?"*³³ Here, 20% of all retailers responded that they did not believe their information would remain confidential; 47% stated that they were not comfortable sharing such information; and 5% provided other reasons. We find that of the retailers who are not willing to provide their financial information, the majority (73%) responded that they did not believe their information would remain confidential, or that they were not comfortable sharing such information. However, of the retailers willing to provide financial information, only 20% responded in a similar manner. The difference in proportions is significant (Table 7).

Overall, the results based on retailers' responses corroborate our inferences from wholesalers' responses. Beliefs about the reliability of financial information and suspicions that information might be misused appear to be major constraints that prevent the widespread use of financial information in the marketplace. Furthermore, we do not find that retailers' willingness to provide financial information varies with their financial literacy level. These findings further reinforce our inferences that there should be more emphasis on mechanisms or certification processes that improve the reliability of financial information to increase access to credit in informal markets. Finally, retailers' responses also suggest that protecting the privacy of financial information is a significant concern that drives retailers' decisions regarding sharing their financial data.

³³Please see Question 2 in Appendix C.2.

9. Conclusion

We study the frictions that impede the use of financial information in credit allocation in informal economies. The informal sector comprises a significant portion of employment and GDP in developing markets. However, this sector faces several issues including low growth and development, and a lack of labor protection. Given these issues, governments and multinational agencies have advocated for a transition to formality. Financial information has the potential to accelerate the transition to formality by improving access to credit, business productivity, and compliance with laws and regulations.

We focus on a bazaar economy and use a combination of survey questions and a hypothetical choice experiment to elicit wholesalers' preferences for using financial information in credit allocation decisions. We find that wholesalers value retailers' financial information in their credit decisions and are willing to offer more trade credit to retailers with higher sales and profits. Moreover, we find that wholesalers value financial information even in cases where they have strong preferences for relying on informal information sources.

To investigate why wholesalers' preferences for financial information do not translate to its actual use in the marketplace, we examine how wholesalers' characteristics relate to their willingness to pay for such information. We find that the limited use of financial information in trade credit allocation decisions is unlikely to be attributed to wholesalers' low financial literacy. In contrast, wholesalers' concerns regarding the reliability of financial information prevent a greater usage of this information in assessing borrowers' creditworthiness.

We also survey retailers to examine their willingness to provide financial information. Our findings from descriptive analyses of retailers' survey responses largely echo the wholesaler-based experimental results. Retailers who are less willing to provide financial information are more concerned about the truthfulness of financial information reported to wholesalers and believe that information regarding their performance, if reported, may not remain confidential. This evidence further supports our inference that the reliability of financial reporting and privacy concerns are the primary constraints to the more widespread use of financial

information in trade credit allocation decisions.

Our study is subject to certain limitations. First, our results show that the perceived lack of reliability of financial information, rather than financial illiteracy, drives the current sparse use of financial information in credit allocation. However, our study does not address how financial information could be made more reliable in informal markets. Second, we only consider some types of financial information in the experiment, whereas wholesalers may prefer other types of financial information. Finally, although we find that a lack of trust in financial information impedes the greater use of financial data, we cannot pinpoint the exact features that drive this lack of trust. We look forward to future research to study these issues in informal markets.

In addition, our inferences are based on data from one bazaar and from the responses of traders who agreed to participate in our survey and experiment. By focusing on one bazaar, we are able to conduct in-depth interviews with the participants in our survey, better understand the constraints within which they operate, and therefore better design our study. However, our findings may not generalize to other markets where traders may be less financially sophisticated or in populations with higher levels of trust. Also, such bazaars are typically located in economies with weak legal systems, which limits the role of formal accounting information in contracting ([La Porta et al., 2000](#); [Leuz et al., 2003](#); [Shleifer & Vishny, 1997](#)). Nonetheless, our work highlights the usefulness of trying to understand respondents' preferences and could inform future interventions or policy decisions that aim to improve credit access in informal economies.

References

- Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., & Evanoff, D. D. (2011). Financial counseling, financial literacy, and household decision-making. In *Financial Literacy: Implications for Retirement Security and the Financial Marketplace* (pp. 181–205). Oxford University Press.
- Allenby, G. M., Hardt, N., & Rossi, P. E. (2019). Economic foundations of conjoint analysis. In *Handbook of the Economics of Marketing* (pp. 151–192). Elsevier volume 1.
- Ameriks, J., Briggs, J., Caplin, A., Lee, M., Shapiro, M. D., & Tonetti, C. (2020). Older Americans would work longer if jobs were flexible. *American Economic Journal: Macroeconomics*, 12, 174–209.
- Ashton, R. H. (1974). An experimental study of internal control judgements. *Journal of Accounting Research*, (pp. 143–157).
- Attanasio, O., Augsburg, B., De Haas, R., Fitzsimons, E., & Harmgart, H. (2015). The impacts of microfinance: Evidence from joint-liability lending in Mongolia. *American Economic Journal: Applied Economics*, 7, 90–122.
- Balakrishnan, K., & Ertan, A. (2021). Credit information sharing and loan loss recognition. *The Accounting Review*, 96, 27–50.
- Ball, R., Bushman, R. M., & Vasvari, F. P. (2008). The debt-contracting value of accounting information and loan syndicate structure. *Journal of Accounting Research*, 46, 247–287.
- Banerjee, A., Chandrasekhar, A. G., Duflo, E., & Jackson, M. O. (2013). The diffusion of microfinance. *Science*, 341.
- Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2015a). The miracle of microfinance? Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, 7, 22–53.
- Banerjee, A., Karlan, D., & Zinman, J. (2015b). Six randomized evaluations of microcredit: Introduction and further steps. *American Economic Journal: Applied Economics*, 7, 1–21.
- Banerjee, A., & Munshi, K. (2004). How efficiently is capital allocated? Evidence from the knitted garment industry in Tirupur. *The Review of Economic Studies*, 71, 19–42.
- Banerjee, A. V., Breza, E., Duflo, E., & Kinnan, C. (2017). Do credit constraints limit entrepreneurship? Heterogeneity in the returns to microfinance. Global Poverty Research Lab Working paper.
- Banerjee, A. V., Chandrasekhar, A. G., Duflo, E., & Jackson, M. O. (2018). Changes in social network structure in response to exposure to formal credit markets. Working paper.
- Barrot, J.-N. (2016). Trade credit and industry dynamics: Evidence from trucking firms. *Journal of Finance*, 71, 1975–2016.

- Becker, G. M., DeGroot, M. H., & Marschak, J. (1964). Measuring utility by a single-response sequential method. *Behavioral Science*, *9*, 226–232.
- Benjamin, N., Beegle, K., Recanatini, F., & Santini, M. (2014). Informal economy and the World Bank. Working paper.
- Bernard, D., Cade, N. L., & Hodge, F. (2018). Investor behavior and the benefits of direct stock ownership. *Journal of Accounting Research*, *56*, 431–466.
- Biais, B., & Gollier, C. (1997). Trade credit and credit rationing. *The Review of Financial Studies*, *10*, 903–937.
- Blass, A. A., Lach, S., & Manski, C. F. (2010). Using elicited choice probabilities to estimate random utility models: Preferences for electricity reliability. *International Economic Review*, *51*, 421–440.
- Breuer, M., & Schütt, H. H. (2021). Accounting for uncertainty: An application of Bayesian methods to accruals models. *Review of Accounting Studies*, (pp. 1–43).
- Buera, F. J., Kaboski, J. P., & Shin, Y. (2011). Finance and development: A tale of two sectors. *American Economic Review*, *101*, 1964–2002.
- Butler, J. E., & Hansen, G. S. (1991). Network evolution, entrepreneurial success, and regional development. *Entrepreneurship & Regional Development*, *3*, 1–16.
- Calderón, C., & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics*, *72*, 321–334.
- Campbell, D., Loumiotis, M., & Wittenberg-Moerman, R. (2019). Making sense of soft information: Interpretation bias and loan quality. *Journal of Accounting and Economics*, *68*, 101240.
- Carrizosa, R., & Ryan, S. G. (2017). Borrower private information covenants and loan contract monitoring. *Journal of Accounting and Economics*, *64*, 313–339.
- Champatiray, A., Parul, A., & Santadarshan, S. (2010). Map of microfinance distribution in India. *IFMR Centre for Microfinance Research*, (pp. 1–42).
- Charmes, J. (2012). The informal economy worldwide: Trends and characteristics. *Margin: The Journal of Applied Economic Research*, *6*, 103–132.
- Christensen, H. B., Nikolaev, V. V., & Wittenberg-Moerman, R. (2016). Accounting information in financial contracting: The incomplete contract theory perspective. *Journal of Accounting Research*, *54*, 397–435.
- Clor-Proell, S., Koonce, L., & White, B. (2016). How do experienced users evaluate hybrid financial instruments? *Journal of Accounting Research*, *54*, 1267–1296.

- Cole, S., Giné, X., Tobacman, J., Topalova, P., Townsend, R., & Vickery, J. (2013). Barriers to household risk management: Evidence from India. *American Economic Journal: Applied Economics*, 5, 104–35.
- Cole, S., Sampson, T., & Zia, B. (2009). *Financial Literacy, Financial Decisions, and the Demand for Financial Services: Evidence from India and Indonesia*. Harvard Business School Cambridge, MA.
- Cole, S., Sampson, T., & Zia, B. (2011). Prices or knowledge? What drives demand for financial services in emerging markets? *Journal of Finance*, 66, 1933–1967.
- Costello, A. M. (2019). The value of collateral in trade finance. *Journal of Financial Economics*, 134, 70–90.
- De Soto, H. (1989). The other path: The invisible revolution in the third world.
- De Vita, L., Mari, M., & Poggesi, S. (2014). Women entrepreneurs in and from developing countries: Evidences from the literature. *European Management Journal*, 32, 451–460.
- Delavande, A., & Zafar, B. (2019). University choice: The role of expected earnings, nonpecuniary outcomes, and financial constraints. *Journal of Political Economy*, 127, 2343–2393.
- Dou, Y. (2020). The debt-contracting value of accounting numbers and financial covenant renegotiation. *Management Science*, 66, 1124–1148.
- Drexler, A., Fischer, G., & Schoar, A. (2014). Keeping it simple: Financial literacy and rules of thumb. *American Economic Journal: Applied Economics*, 6, 1–31.
- Du, K., Huddart, S., Xue, L., & Zhang, Y. (2020). Using a hidden Markov model to measure earnings quality. *Journal of Accounting and Economics*, 69, 1–27.
- Dyreng, S. D., Vashishtha, R., & Weber, J. (2017). Direct evidence on the informational properties of earnings in loan contracts. *Journal of Accounting Research*, 55, 371–406.
- Fafchamps, M., & Lund, S. (2003). Risk-sharing networks in rural Philippines. *Journal of Development Economics*, 71, 261–287.
- Farazi, S. (2014). Informal Firms and Financial Inclusion: Status and Determinants. Policy Research Working Paper 6778, World Bank, Washington, DC.
- Farr-Wharton, R., & Brunetto, Y. (2007). Women entrepreneurs, opportunity recognition and government-sponsored business networks: A social capital perspective. *Women in Management Review*, 22, 187–207.
- Fisman, R., & Love, I. (2003). Trade credit, financial intermediary development, and industry growth. *The Journal of Finance*, 58, 353–374.
- Francis, E., Blumenstock, J., & Robinson, J. (2017). Digital credit: A snapshot of the current landscape and open research questions. *CEGA White Paper*, (pp. 1739–76).

- Geertz, C. (1978). The bazaar economy: Information and search in peasant marketing. *American Economic Review*, 68, 28–32.
- Gelman, A., Carlin, J. B., Stern, H. S., & Rubin, D. B. (1995). *Bayesian Data Analysis*. Chapman and Hall/CRC.
- Ghatak, M. (1999). Group lending, local information and peer selection. *Journal of Development Economics*, 60, 27–50.
- Ghatak, M., & Guinnane, T. W. (1999). The economics of lending with joint liability: Theory and practice. *Journal of Development Economics*, 60, 195–228.
- Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial literacy, financial education, and economic outcomes. *Annual Review of Economics*, 5, 347–373.
- Heß, S., Jaimovich, D., & Schündeln, M. (2020). Development projects and economic networks: Lessons from rural Gambia. *Review of Economic Studies*, 88, 1347–1384.
- Hoff, K., & Stiglitz, J. E. (1990). Introduction: Imperfect information and rural credit markets: Puzzles and policy perspectives. *The World Bank Economic Review*, 4, 235–250.
- Honigsberg, C., Katz, S. P., Mutlu, S., & Sadka, G. (2021). State contract law and the use of accounting information in debt contracts. *Review of Accounting Studies*, 26, 124–171.
- Johnson, S., McMillan, J., & Woodruff, C. (2002). Courts and relational contracts. *Journal of Law, Economics, and Organization*, 18, 221–277.
- Karlan, D. S. (2007). Social connections and group banking. *Economic Journal*, 117, F52–F84.
- Klapper, L., Laeven, L., & Rajan, R. (2012). Trade credit contracts. *The Review of Financial Studies*, 25, 838–867.
- Krosnick, J., & Presser, S. (2010). Question and questionnaire design. In P. Marsden, & J. Wright (Eds.), *Handbook of Survey Research* chapter 9. (pp. 263–314). Bingley, UK: Emerald Group Publishing.
- La Porta, R., & Shleifer, A. (2014). Informality and development. *Journal of Economic Perspectives*, 28, 109–26.
- La Porta, R., Lopez-de Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, 58, 3–27.
- Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics*, 69, 505–527.
- Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, 35, 688–726.

- Libby, R. (1975). Accounting ratios and the prediction of failure: Some behavioral evidence. *Journal of Accounting Research*, 13, 150–161.
- Longhofer, S. D., & Santos, J. A. (2003). The paradox of priority. *Financial Management*, 32, 69–81.
- Louviere, J. J., & Woodworth, G. (1983). Design and analysis of simulated consumer choice or allocation experiments: An approach based on aggregate data. *Journal of Marketing Research*, 20, 350–367.
- Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: An overview. *Journal of Pension Economics & Finance*, 10, 497–508.
- Mazzocco, M., & Saini, S. (2012). Testing efficient risk sharing with heterogeneous risk preferences. *American Economic Review*, 102, 428–68.
- McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics* chapter 4. (pp. 105–142). New York: Academic Press.
- McFadden, D., & Train, K. (2000). Mixed MNL models for discrete response. *Journal of Applied Econometrics*, 15, 447–470.
- McMillan, J., & Woodruff, C. (1999). Interfirm relationships and informal credit in Vietnam. *Quarterly Journal of Economics*, 114, 1285–1320.
- Meager, R. (2019). Understanding the average impact of microcredit expansions: A Bayesian hierarchical analysis of seven randomized experiments. *American Economic Journal: Applied Economics*, 11, 57–91.
- Mian, S. L., & Smith, C. W. (1992). Accounts receivable management policy: Theory and evidence. *Journal of Finance*, 47, 169–200.
- Minnis, M. (2011). The value of financial statement verification in debt financing: Evidence from private US firms. *Journal of Accounting Research*, 49, 457–506.
- Neururer, T., Papadakis, G., & Riedl, E. J. (2016). Tests of investor learning models using earnings innovations and implied volatilities. *Review of Accounting Studies*, 21, 400–437.
- Nilsen, J. H. (2002). Trade credit and the bank lending channel. *Journal of Money, Credit and Banking*, 34, 226–253.
- OECD/ILO (2019). *Tackling Vulnerability in the Informal Economy*. Development Centre Studies, OECD Publishing, Paris.
- OECD/INFE (2015). *National strategies for financial education. OECD/INFE policy handbook*. Organisation for Economic Co-operation and Development, OECD Publishing Paris.
- Ohnsorge, F., & Yu, S. (2022). *The long shadow of informality: Challenges and policies*. World Bank Publications.

- Petersen, M. A., & Rajan, R. G. (1997). Trade credit: Theories and evidence. *The Review of Financial Studies*, 10, 661–691.
- Rajan, R. G., & Zingales, L. (1998). Financial Dependence and Growth. *American Economic Review*, 88, 559–586.
- Rao, V. R. et al. (2014). *Applied Conjoint Analysis*. Springer.
- Rossi, P. (2019). *bayesm: Bayesian Inference for Marketing/Micro-Econometrics*. R package version 3.1-4.
- Rossi, P. E., Allenby, G. M., & McCulloch, R. (2012). *Bayesian Statistics and Marketing*. John Wiley & Sons.
- Rossi, P. E., McCulloch, R. E., & Allenby, G. M. (1996). The value of purchase history data in target marketing. *Marketing Science*, 15, 321–340.
- Shanken, J., & Tamayo, A. (2012). Payout yield, risk, and mispricing: A Bayesian analysis. *Journal of Financial Economics*, 105, 131–152.
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *Journal of Finance*, 52, 737–783.
- Smith, S. C., & Timmermann, A. (2021). Break risk. *The Review of Financial Studies*, 34, 2045–2100.
- Tomy, R. E., & Wittenberg-Moerman, R. (2022). Community Membership and Reciprocity in Lending: Evidence from Informal Markets. Working paper.
- Townsend, R. M. (1994). Risk and insurance in village India. *Econometrica: Journal of the Econometric Society*, (pp. 539–591).
- Uchida, H., Udell, G. F., & Watanabe, W. (2013). Are trade creditors relationship lenders? *Japan and the World Economy*, 25, 24–38.
- Udry, C. (1990). Credit markets in northern Nigeria: Credit as insurance in a rural economy. *World Bank Economic Review*, 4, 251–269.
- Udry, C. (1994). Risk and insurance in a rural credit market: An empirical investigation in northern Nigeria. *Review of Economic Studies*, 61, 495–526.
- Udry, C. R., & Conley, T. G. (2005). Social networks in Ghana. In B. C. B (Ed.), *The Social Economics of Poverty: Identities, Groups, Communities and Networks* chapter 10. (pp. 232–255). London: Routledge.
- Welsh, D. H., Kaciak, E., & Shamah, R. (2018). Determinants of women entrepreneurs’ firm performance in a hostile environment. *Journal of Business Research*, 88, 481–491.
- Wiswall, M., & Zafar, B. (2018). Preference for the workplace, investment in human capital, and gender. *Quarterly Journal of Economics*, 133, 457–507.

- World Bank, T. (2019). *Global Economic Prospects, January 2019: Darkening Skies*. Washington, DC: World Bank.
- Zhou, F. S. (2021). Disclosure dynamics and investor learning. *Management Science*, 67, 3429–3446.

Appendix A. Example of a scenario shown to wholesalers

This figure shows an example of the scenarios presented to the wholesalers. Each wholesaler was presented with 24 such scenarios with two options per scenario and asked the following: “Of the two retailer portfolios below, who would you provide the specified amount of trade credit to? Assume that these retailers are identical in all other respects, and that the information is accurate and reliable.” The values of the attributes were randomly varied across the scenarios shown to each wholesaler and across wholesalers.

(1 of 24)

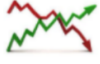
	Khasi	Bengali
 Retailer's Community		
 Retailer's Profits	 Profit same as typical retailer	 No profits information
 Relationship Length	6 to 10 years	Greater than 10 years
 Retailer's Sales	 No sales information	 Sales higher than typical retailer
 Trade Credit (%Sales)	11-20%	41-60%
	Select	Select

Figure A.1: Example of a scenario shown to wholesalers

Appendix B. Attributes and levels

Table B.1: List of attributes and levels in information sets

This table presents the list of attributes and levels that appear in the information sets presented to traders.

Attribute No.	Attribute Description	Level No.	Level Description
1	Sales	1	Sales higher than typical retailer
		2	Sales lower than typical retailer
		3	Sales equal to typical retailer
		4	No information on sales is available
2	Profit	1	Profit higher than typical retailer
		2	Profit lower than typical retailer
		3	Profit equal to typical retailer
		4	No information on profit is available
3	Relationship length	1	Greater than 10 years
		2	6–10 years
		3	2–5 years
		4	Less than one year
4	Community	1	Khasi
		2	Jaintia
		3	Marwari
		4	Bengali
		5	Bihari
		6	Nepali
		7	Punjabi
		8	Assamese
		9	Muslim
5	Trade credit amount	1	0–10%
		2	11–20%
		3	21–40%
		4	41–60%
		5	>60%

Table B.2: Frequency of attributes and levels in information sets

This table presents the number of times that the attributes and levels appear in the information sets presented to traders.

Attribute No.	Attribute Description	Level No.	Level Description	Frequency of appearing in information sets
1	Sales	1	Sales higher than typical retailer	1200
		2	Sales lower than typical retailer	1199
		3	Sales same as typical retailer	1201
		4	No information on sales	1200
2	Profit	1	Profit higher than typical retailer	1199
		2	Profit lower than typical retailer	1200
		3	Profit same as typical retailer	1201
		4	No information on profit	1200
3	Community	1	Khasi	533
		2	Jaintia	533
		3	Marwari	533
		4	Bengali	534
		5	Bihari	533
		6	Nepali	534
		7	Punjabi	533
		8	Assamese	534
		9	Muslim	533
4	Relationship length	1	Greater than 10 years	1200
		2	6-10 years	1201
		3	2-5 years	1199
		4	Less than one year	1200
5	Trade credit amount	1	0-10%	960
		2	11-20%	960
		3	21-40%	960
		4	41-60%	960
		5	>60%	960

Appendix C. Survey responses

This appendix provides a summary of traders' responses to survey questions.

Appendix C.1. Wholesalers' responses

Appendix C.1.1. Questions related to the willingness to provide credit

1. Will the provision of retailers' sales and profit information change your willingness to provide trade credit?

	No. of Responses	Percent of Responses
Yes	82	58%
No	57	40%
Do not know	2	1%
Total	141	100%

- (a) Why yes? (Select all that apply)

	No. of Responses	Percent of Responses
Because it will provide me with information about a retailer I do not know	57	70%
Because it will provide me with information I cannot get elsewhere	52	63%
Other ³⁴	20	24%
Total	82	

- (b) Why not? (Select all that apply)

	No. of Responses	Percent of Responses
Because I will learn nothing new from this information	38	67%
Other ³⁵	24	42%
Total	57	

Appendix C.1.2. Questions related to wholesalers' financial sophistication

2. Do you keep a record of your transactions?

	No. of Responses	Percent of Responses
Yes, most of the time	101	72%
Yes, sometimes	29	21%
No	11	8%
Total	141	

³⁴Other reasons include the following: I trust my retailer; it will allow me to sell more goods; it will allow me to build a relationship with my retailers; I generally provide goods only to members of my community or loyal customers so this information will allow me to expand.

³⁵Other reasons include the following: I give credit only to my regular customers or to retailers whom I know and trust; I give credit based on my sales; I give credit only to those who repay; there is too much debt outstanding from retailers at present.

3. What types of tools do you use to record transactions? (Select all that apply)

	No. of Responses	Percent of Responses
I use a software to record transactions	11	8%
I write most details in a book/on paper	122	94%
I remember most details and only write down a few transactions	2	2%
Other ³⁶	6	5%
Total	130	

4. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?

	No. of Responses	Percent of Responses
More than today	12	9%
Exactly the same	12	9%
Less than today	113	80%
Do not know	4	3%
Total	141	

5. Suppose you had ₹100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

	No. of Responses	Percent of Responses
Less than Rs. 100	0	0%
Rs 100	0	0%
Rs 102	4	3%
More than Rs 102	137	97%
Do not know	0	0%
Total	141	

Appendix C.1.3. Questions related to wholesalers' beliefs about the reliability of financial information

6. What concerns do you have about asking retailers about their sales and profits? (Select all that apply)

	No. of Responses	Percent of Responses
I have no use for this information	52	37%
I do not think the retailer will be truthful	38	27%
I have no concerns	50	35%
Other ³⁷	15	11%
Total	141	

³⁶Other tools include mobile phones, bank statements, or using an accountant.

7. What concerns do you have about using information on retailers' sales and profits in making credit decisions?

	No. of Responses	Percent of Responses
I have no use for this information	47	33%
I do not think the retailer will be truthful	46	33%
I have no concerns	44	31%
Other ³⁸	19	13%
Total	141	

8. What percentage of retailers do you think will report their sales and profits truthfully?

	No. of Responses	Percent of Responses
0%	49	35%
1–10%	56	40%
11–30%	17	12%
31–50%	10	7%
Greater than 50%	9	6%
Total	141	

9. What are the characteristics of retailers who will report more truthfully? (Select all that apply)

	No. of Responses	Percent of Responses
Retailers who visit my shop frequently	70	76%
Retailers with whom I have a long relationship	78	85%
Retailers from my community	13	14%
Other ³⁹	10	11%
Total	92	

10. What can you learn from retailers' financial information (sales and profits) that you cannot otherwise? (Select all that apply)

	No. of Responses	Percent of Responses
I will learn about how well the retailer's business is doing, which I cannot otherwise learn	52	37%
I will learn whether my goods are selling well in the market	98	70%
I will learn nothing new from retailers' financials	36	26%
Other ⁴⁰	3	2%
Total	141	

³⁷Other concerns include a lack of trust, discomfort with asking retailers about their sales and profits, and the wholesaler having never thought of asking for this information.

³⁸Other concerns include a lack of trust in the retailer, and only giving credit to known retailers.

³⁹Other responses include: Retailers who are my family or friends, retailers whom I trust, retailers who are honest, retailers who repay on time.

11. What other financial or nonfinancial information about the retailer would you like to know before offering trade credit? (Select all that apply)

	No. of Responses	Percent of Responses
Whether the retailer has a good reputation with other wholesalers	100	71%
The credit score of the retailer	62	44%
I do not want to know any other information	28	20%
Other ⁴¹	13	9%
Total	141	

Appendix C.2. Retailers' responses

Appendix C.2.1. Questions to assess retailers' willingness to provide financial information

1. Would you be willing to provide information on your sales and profits if it increases your chances of receiving trade credit?

	No. of Responses	Percent of Responses
Yes	110	29%
No	257	69%
Do not know	6	2%
Total	373	

- (a) Why yes? (Select all that apply)

	No. of Responses	Percent of Responses
Because it may get me more credit	58	53%
Because I may get credit for a longer time	51	46%
Because I may receive more goods to sell	73	66%
Total	110	

- (b) Why not? (Select all that apply)

	No. of Responses	Percent of Responses
Because I do not want to take credit	41	16%
Because I do not trust that my sales and profits will remain confidential	91	35%
Because I am not comfortable sharing such information	176	68%
Other ⁴²	27	11%
Total	257	

⁴⁰Other responses include: I will learn about the type of customers that are attracted to my goods and whether the market is doing well; I will feel happy knowing that my goods are selling.

⁴¹Other responses include: Personal information such as the location of retailers' shops, their phone numbers, and work experience; market trends; how frequently the retailer visits my shop and purchases goods.

2. What concerns do you have about providing information on your sales and profits to wholesalers? (Select all that apply)

	No. of Responses	Percent of Responses
I do not trust that my sales and profits will remain confidential	76	20%
I am not comfortable sharing such information	175	47%
Other ⁴³	20	5%
Total	373	

3. What do you think wholesalers can learn from your financial information (sales and profits) that they cannot otherwise? (Select all that apply)

	No. of Responses	Percent of Responses
Wholesalers can learn about how well my business is doing	76	20%
Wholesalers can learn whether their goods are selling in the market	163	44%
Wholesalers can learn nothing new from my financials	146	39%
Do not know	52	14%
Other ⁴⁴	21	6%
Total	373	

Appendix C.2.2. Questions related to financial sophistication of retailers

4. Do you keep a record of your transactions?

	No. of Responses	Percent of Responses
Yes, most of times	159	43%
Yes, sometimes	81	22%
No	133	36%
Total	373	

⁴²Other reasons include: Because my sales are very low; wholesalers do not care for this information; I will have to repay on time.

⁴³Other concerns include: I do not trust wholesalers; I take no or very little credit; this information will not allow me to get more credit; the wholesaler is related to me; the market is not doing well; I try to build a relationship with the wholesaler based on honesty; the wholesaler visits my shop often and has no use for this information.

⁴⁴Other responses include: I can build trust with wholesalers by providing financial information; wholesalers can learn nothing from my financial information because I take little or no credit.

5. What types of tools do you use to record transactions? (Select all that apply)

	No. of Responses	Percent of Responses
I use a software to record transactions	8	3%
I write most details in a book/ on paper	232	97%
I remember most details and only write down a few transactions	4	2%
Other ⁴⁵	1	0%
Total	240	

6. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?

	No. of Responses	Percent of Responses
More than today	26	7%
Exactly the same	60	16%
Less than today	254	68%
Do not know	33	9%
Total	373	

7. Suppose you had ₹100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

	No. of Responses	Percent of Responses
Less than ₹100	5	1%
₹100	6	2%
₹102	26	7%
More than ₹102	319	86%
Do not know	17	5%
Total	373	

Appendix C.2.3. Questions related to retailers' beliefs about the reliability of financial information

8. What percentage of other retailers do you think will report their sales and profits truthfully, if they had to provide this information to wholesalers?

	No. of Responses	Percent of Responses
0%	165	44%
1-10%	125	34%
11-30%	52	14%
31-50%	22	6%
Greater than 50%	9	2%
Total	373	

⁴⁵One retailer used a mobile phone to record transactions.

9. What are the characteristics of other retailers who will report more truthfully? (Select all that apply)

	No. of Responses	Percent of Responses
Retailers who visit wholesalers' shop frequently	124	60%
Retailers with whom wholesalers have a long relationship	165	79%
Retailers from the wholesalers' community	32	15%
Do not know	17	8%
Other ⁴⁶	19	9%
Total	208	

⁴⁶Other responses include: Retailers who repay on time; retailers who are honest; retailers who are regular customers.



Figure 1: Map showing location of study

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

Table 1: Sample distribution and response rates

This table shows the sample distribution by product category and response rates for wholesalers and retailers.

Product Category	Sample	Responses (Wholesalers)	Responses (Retailers)	Responses (Total)	Response Rate
	(1)	(2)	(3)	(4)	(5)
General Store	139	57	52	109	78%
Footwear	76	22	52	74	97%
Household Appliances	59	22	31	53	90%
Textile	237	59	155	214	90%
Tobacco	63	6	43	49	78%
Betel	56	9	40	49	88%
Total	630	175	373	548	87%

Table 2: Descriptive statistics for parameters from the choice model of information types

This table presents descriptive statistics of parameters from the estimation of a Bayesian hierarchical multinomial logit model of wholesalers' choices for each of the 141 wholesalers in our sample. The dependent variable is an indicator which equals one for the option the wholesaler chooses and zero otherwise.

		Mean	Median	Std
Sales	Sales higher than typical retailer	1.458	1.320	1.020
	Sales lower than typical retailer	-0.152	-0.181	0.447
	Sales equal to typical retailer	0.279	0.215	0.568
Profit	Profit higher than typical retailer	0.833	0.568	1.175
	Profit lower than typical retailer	-0.658	-0.706	0.605
	Profit equal to typical retailer	0.527	0.423	0.602
Community	Same community	1.047	1.200	1.113
Relationship length	Greater than 10 years	3.496	2.100	4.253
	6-10 years	2.567	1.360	3.185
	2-5 years	1.254	0.748	1.607

Table 3: Willingness to pay estimates from choice model of information types

This table presents estimates for WTP for the 141 wholesalers in our sample. WTP is the incremental amount of trade credit (as a percent of sales) that a wholesaler is willing to provide to a retailer with the stated level of an attribute, relative to the omitted category. We denote whether estimates are significantly different from zero by $*p < 0.1$; $**p < 0.05$; $***p < 0.01$; tests of significance are based on bootstrap standard errors.

		Mean	Std	z-statistic
Sales	Sales higher than typical retailer	11.311***	8.411	(16.247)
	Sales lower than typical retailer	-0.702***	2.586	(-3.181)
	Sales equal to typical retailer	1.991***	3.761	(6.396)
Profit	Profit higher than typical retailer	6.180***	9.083	(8.111)
	Profit lower than typical retailer	-2.897***	3.046	(-11.384)
	Profit equal to typical retailer	3.431***	4.069	(9.963)
Community	Same community	9.490***	9.935	(11.188)
Relationship length	Greater than 10 years	29.108***	33.043	(10.616)
	6-10 years	22.401***	27.565	(9.854)
	2-5 years	9.417***	12.287	(9.127)
Observations		6,768		
No. of respondents		141		

Table 4: Reliance on informal information

This table presents estimates for WTP for the 141 wholesalers in our sample. WTP is the incremental amount of trade credit (as a percent of sales) that a wholesaler is willing to provide to a retailer with the stated level of an attribute, relative to the omitted category. In [Panel A](#), we split the sample by the wholesaler's gender; in [Panel B](#), by whether the wholesaler would like to know retailers' reputations with other wholesalers before providing credit; and in [Panel C](#), by whether the wholesaler expects to learn new information from retailers' financials. We denote whether estimates are significantly different from zero by $^*p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$; and we denote differences in means by $^{\dagger}p < 0.1$; $^{\dagger\dagger}p < 0.05$; $^{\dagger\dagger\dagger}p < 0.01$. Tests of significance are based on bootstrap standard errors.

Panel A: Wholesalers' WTP, by their reliance on informal information

		Women		Men		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	11.219***	8.559	11.328***	8.420	0.109	(0.057)
	Sales lower than typical retailer	−0.478	3.127	−0.743***	2.487	−0.266	(−0.375)
	Sales equal to typical retailer	1.507*	3.767	2.080***	3.769	0.573	(0.688)
Profit	Profit higher than typical retailer	3.771***	6.795	6.626***	9.402	2.855 [†]	(1.701)
	Profit lower than typical retailer	−2.890***	3.217	−2.898***	3.028	−0.008	(−0.011)
	Profit equal to typical retailer	2.794***	3.807	3.549***	4.120	0.755	(0.862)
Community	Same community	13.193***	9.422	8.806***	9.914	−4.387 ^{††}	(−2.025)
Relationship length	Greater than 10 years	41.214***	35.734	26.870***	32.184	−14.344 [†]	(−1.781)
	6–10 years	32.274***	29.824	20.576***	26.864	−11.698 [†]	(−1.751)
	2–5 years	14.622***	11.821	8.455***	12.176	−6.166 ^{††}	(−2.343)
Observations		1,056		5,712			
No. of respondents		22		119			

Table 4: Reliance on informal information, continued

Panel B: Wholesalers' WTP, by their reliance on informal information

		Wants to know about reputation with other wholesalers		Does not want to know about reputation with other wholesalers		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	11.021***	7.993	12.019***	9.421	0.997	(0.596)
	Sales lower than typical retailer	−0.937***	2.503	−0.130	2.727	0.807	(1.608)
	Sales equal to typical retailer	2.141***	4.004	1.624***	3.106	−0.517	(−0.834)
Profit	Profit higher than typical retailer	6.048***	8.934	6.503***	9.544	0.455	(0.264)
	Profit lower than typical retailer	−2.833***	3.034	−3.052***	3.107	−0.219	(−0.389)
	Profit equal to typical retailer	3.457***	4.191	3.366***	3.803	−0.091	(−0.128)
Community	Same community	9.448***	10.192	9.594***	9.403	0.145	(0.082)
Relationship length	Greater than 10 years	33.478***	34.002	18.449***	28.211	−15.029†††	(−2.747)
	6–10 years	26.242***	28.415	13.033***	23.114	−13.209†††	(−2.878)
	2–5 years	10.965***	12.847	5.643***	9.965	−5.322†††	(−2.689)
Observations		4,800		1,968			
No. of respondents		100		41			

Table 4: Reliance on informal information, continued

Panel C: Wholesalers' WTP, by their reliance on informal information

		Learn new information from retailers' financials		Learn nothing new from retailers' financials		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	12.141***	8.897	9.062***	6.507	–3.080 ^{††}	(–2.352)
	Sales lower than typical retailer	–0.568**	2.881	–1.064***	1.499	–0.495	(–1.348)
	Sales equal to typical retailer	2.289***	4.134	1.182***	2.344	–1.108 ^{††}	(–2.024)
Profit	Profit higher than typical retailer	7.528***	9.649	2.528***	6.066	–5.000 ^{†††}	(–3.699)
	Profit lower than typical retailer	–2.824***	3.086	–3.093***	2.967	–0.269	(–0.500)
	Profit equal to typical retailer	4.021***	4.288	1.831***	2.889	–2.190 ^{†††}	(–3.466)
Community	Same community	8.584***	10.079	11.948***	9.216	3.364 [†]	(1.937)
Relationship length	Greater than 10 years	29.817***	34.015	27.185***	30.601	–2.632	(–0.450)
	6–10 years	23.006***	28.521	20.762***	25.075	–2.245	(–0.461)
	2–5 years	9.700***	12.185	8.651***	12.691	–1.049	(–0.445)
Observations		4,944		1,824			
No. of respondents		103		38			

Table 5: Willingness to pay estimates from choice model of information types, by financial sophistication of wholesaler

This table presents estimates for WTP for the 141 wholesalers in our sample. WTP is the incremental amount of trade credit (as a percentage of sales) that a wholesaler is willing to provide to a retailer with the stated level of an attribute, relative to the omitted category. We split the sample in [Panel A](#) based on whether the wholesaler understands the concept of inflation; in [Panel B](#) based on whether the wholesaler always maintains a record of transactions; and in [Panel C](#) by whether the wholesaler has a high school degree. We denote whether estimates are significantly different from zero by $^*p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$; and we denote differences in means by $^{\dagger}p < 0.1$; $^{\dagger\dagger}p < 0.05$; $^{\dagger\dagger\dagger}p < 0.01$. Tests of significance are based on bootstrap standard errors.

Panel A: Wholesalers' WTP, by their financial knowledge

		High financial knowledge		Low financial knowledge		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	11.024***	8.079	12.472***	9.714	1.448	(0.745)
	Sales lower than typical retailer	−0.669***	2.523	−0.834	2.876	−0.164	(−0.286)
	Sales equal to typical retailer	2.053***	3.787	1.740***	3.714	−0.312	(−0.413)
Profit	Profit higher than typical retailer	5.875***	9.034	7.412***	9.345	1.537	(0.804)
	Profit lower than typical retailer	−2.851***	3.129	−3.081***	2.729	−0.230	(−0.398)
	Profit equal to typical retailer	3.163***	4.068	4.511***	3.960	1.348	(1.623)
Community	Same community	9.919***	9.944	7.762***	9.890	−2.157	(−1.014)
Relationship length	Greater than 10 years	27.973***	33.076	33.689***	33.107	5.716	(0.833)
	6–10 years	21.652***	27.716	25.423***	27.229	3.771	(0.701)
	2–5 years	9.036***	12.518	10.957***	11.389	1.921	(0.823)
Observations		5,424		1,344			
No. of respondents		113		28			

Table 5: Willingness to pay estimates from choice model of information types, by financial sophistication of wholesaler, continued

Panel B: Wholesalers' WTP, by whether they maintain a record of transactions

		Maintains records		Does not maintain records		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	11.151***	8.758	11.716***	7.553	0.565	(0.389)
	Sales lower than typical retailer	−0.711***	2.636	−0.680*	2.490	0.031	(0.070)
	Sales equal to typical retailer	2.323***	4.098	1.152***	2.594	−1.171 ^{††}	(−2.001)
Profit	Profit higher than typical retailer	6.698***	9.666	4.874***	7.360	−1.824	(−1.236)
	Profit lower than typical retailer	−2.823***	3.148	−3.083***	2.803	−0.260	(−0.498)
	Profit equal to typical retailer	3.738***	4.373	2.655***	3.088	−1.083 [†]	(−1.662)
Community	Same community	9.565***	10.853	9.302***	7.232	−0.264	(−0.170)
Relationship length	Greater than 10 years	23.321***	29.490	43.721***	37.199	20.400 ^{†††}	(3.121)
	6–10 years	17.734***	24.951	34.187***	30.535	16.454 ^{†††}	(3.081)
	2–5 years	7.297***	10.967	14.772***	13.873	7.476 ^{†††}	(3.207)
Observations		4,848		1,920			
No. of respondents		101		40			

Table 5: Willingness to pay estimates from choice model of information types, by financial sophistication of wholesaler, continued

Panel C: Wholesalers' WTP, by their education level

		High school degree		No high school degree		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	11.149***	8.372	11.496***	8.516	0.347	(0.245)
	Sales lower than typical retailer	−0.649**	2.402	−0.762**	2.799	−0.112	(−0.260)
	Sales equal to typical retailer	1.972***	3.450	2.012***	4.113	0.041	(0.066)
Profit	Profit higher than typical retailer	5.989***	9.179	6.397***	9.038	0.408	(0.270)
	Profit lower than typical retailer	−2.442***	3.234	−3.414***	2.752	−0.972 [†]	(−1.864)
	Profit equal to typical retailer	3.249***	4.028	3.637***	4.136	0.388	(0.566)
Community	Same community	10.261***	10.611	8.615***	9.108	−1.647	(−0.997)
Relationship length	Greater than 10 years	23.550***	29.739	35.423***	35.618	11.873 ^{††}	(2.083)
	6–10 years	18.149***	25.292	27.233***	29.389	9.084 ^{††}	(2.039)
	2–5 years	7.780***	11.197	11.279***	13.259	3.499 [†]	(1.747)
Observations		3,600		3,168			
No. of respondents		75		66			

Table 6: Reliability of retailers' financial information

This table presents estimates for WTP for the 141 wholesalers in our sample. WTP is the incremental amount of trade credit (as a percent of sales) that a wholesaler is willing to provide to a retailer with the stated level of an attribute, relative to the omitted category. We split the sample in [Panel A](#) by whether the wholesaler is concerned about *asking* retailers about their sales and profits because she believes that retailers will not be truthful; in [Panel B](#) by whether the wholesaler is concerned about *using* retailers' sales and profits in making credit decisions because she believes that retailers will not be truthful; and in [Panel C](#) by whether the wholesaler believes that no retailers will report their financial information truthfully. We denote whether estimates are significantly different from zero by $^*p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$; and we denote differences in means by $^\dagger p < 0.1$; $^{\dagger\dagger}p < 0.05$; $^{\dagger\dagger\dagger}p < 0.01$. Tests of significance are based on bootstrap standard errors.

Panel A: Wholesalers' WTP, by whether they are concerned about asking retailers about their sales and profits

		Truthful reporting		No truthful reporting		Difference in means	
		(1)		(2)		(2) - (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	11.626***	8.811	10.459***	7.254	-1.167	(-0.793)
	Sales lower than typical retailer	-0.882***	2.247	-0.213	3.326	0.670	(1.142)
	Sales equal to typical retailer	1.925***	3.581	2.169***	4.259	0.244	(0.312)
Profit	Profit higher than typical retailer	5.529***	9.049	7.946***	9.060	2.418	(1.426)
	Profit lower than typical retailer	-3.048***	2.934	-2.486***	3.338	0.562	(0.909)
	Profit equal to typical retailer	3.202***	4.257	4.053***	3.483	0.851	(1.227)
Community	Same community	10.160***	10.309	7.676***	8.712	-2.484	(-1.486)
Relationship length	Greater than 10 years	29.112***	32.688	29.097***	34.433	-0.015	(-0.002)
	6-10 years	22.207***	27.194	22.928***	28.914	0.721	(0.132)
	2-5 years	9.281***	12.097	9.788***	12.947	0.507	(0.205)
Observations		4,944		1,824			
No. of respondents		103		38			

Table 6: Reliability of retailers' financial information, continued

Panel B: Wholesalers' WTP, by whether they are concerned about using retailers' sales and profits in credit decisions

		Truthful reporting		No truthful reporting		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	11.271***	8.198	11.395***	8.928	0.124	(0.081)
	Sales lower than typical retailer	−0.859***	2.486	−0.378	2.782	0.481	(1.004)
	Sales equal to typical retailer	1.732***	3.543	2.525***	4.167	0.794	(1.126)
Profit	Profit higher than typical retailer	5.934***	8.489	6.689***	10.284	0.755	(0.439)
	Profit lower than typical retailer	−2.910***	3.152	−2.869***	2.848	0.041	(0.081)
	Profit equal to typical retailer	3.388***	4.225	3.520***	3.768	0.132	(0.191)
Community	Same community	9.743***	9.647	8.969***	10.597	−0.774	(−0.419)
Relationship length	Greater than 10 years	29.744***	31.269	27.794***	36.766	−1.951	(−0.304)
	6–10 years	22.652***	25.960	21.883***	30.916	−0.769	(−0.151)
	2–5 years	9.579***	11.399	9.083***	14.073	−0.496	(−0.197)
Observations		4,560		2,208			
No. of respondents		95		46			

Table 6: Reliability of retailers' financial information, continued

Panel C: Wholesalers' WTP, by their beliefs about whether retailers will report truthfully

		Truthful reporting		No truthful reporting		Difference in means	
		(1)		(2)		(2) – (1)	
		Mean	Std	Mean	Std	Difference	z-statistic
Sales	Sales higher than typical retailer	10.491***	8.301	12.851***	8.485	2.359	(1.627)
	Sales lower than typical retailer	−0.788***	2.465	−0.540	2.819	0.248	(0.534)
	Sales equal to typical retailer	1.827***	3.727	2.298***	3.845	0.471	(0.710)
Profit	Profit higher than typical retailer	5.677***	9.005	7.124***	9.247	1.447	(0.891)
	Profit lower than typical retailer	−3.021***	2.850	−2.663***	3.402	0.359	(0.627)
	Profit equal to typical retailer	3.198***	4.117	3.869***	3.982	0.671	(0.934)
Community	Same community	10.004***	10.134	8.526***	9.578	−1.478	(−0.854)
Relationship length	Greater than 10 years	29.702***	32.232	27.993***	34.828	−1.708	(−0.281)
	6–10 years	22.407***	26.942	22.390***	28.983	−0.018	(−0.004)
	2–5 years	9.324***	11.794	9.592***	13.288	0.268	(0.119)
Observations		4,416		2,352			
No. of respondents		92		49			

Table 7: Retailers' willingness to provide financial information

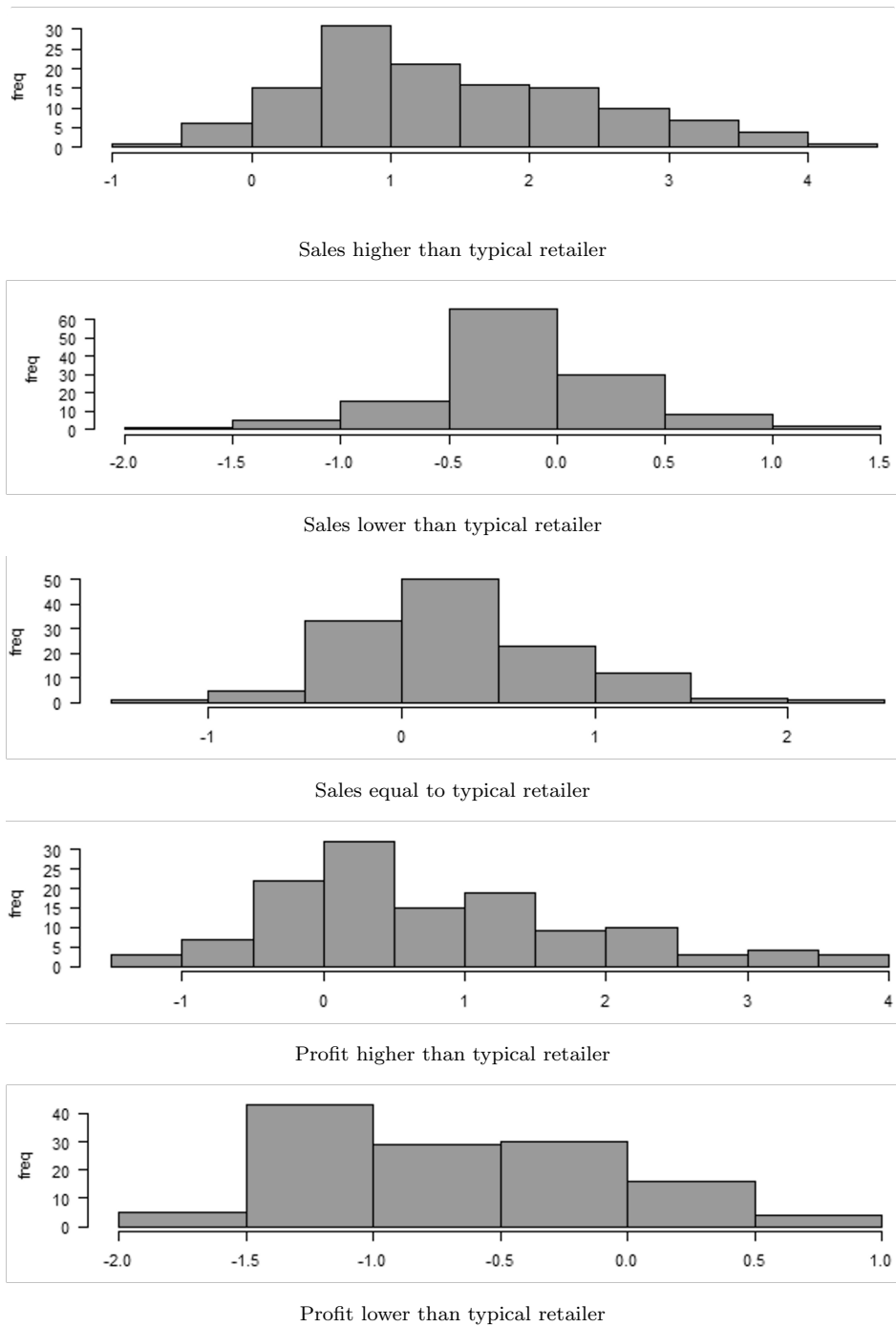
This table presents proportions of retailers with the specified characteristic by their willingness to provide financial information to wholesalers, for the 373 retailers in our sample. The following indicator variables equal 1 under the respective conditions: *High financial knowledge (Inflation)*, if the retailer understands the concept of inflation; *High financial knowledge (Compounding)*, if the retailer understands interest compounding; *Maintains records*, if the retailer always maintains a record of transactions; *High school degree*, if the retailer has a high school degree; *No truthful reporting (Retailers)*, if the retailer believes that no other retailers would report truthfully; *No trust*, if the retailer does not believe that her information would remain confidential or if she is not comfortable sharing financial information with wholesalers. Otherwise, they equal 0. The χ^2 -statistic presented is for a binomial test of the hypothesis that the proportion of retailers who are not willing to provide financial information is equal to the proportion of retailers who are. We denote differences in proportions by $^{\dagger}p < 0.1$; $^{\dagger\dagger}p < 0.05$; $^{\dagger\dagger\dagger}p < 0.01$.

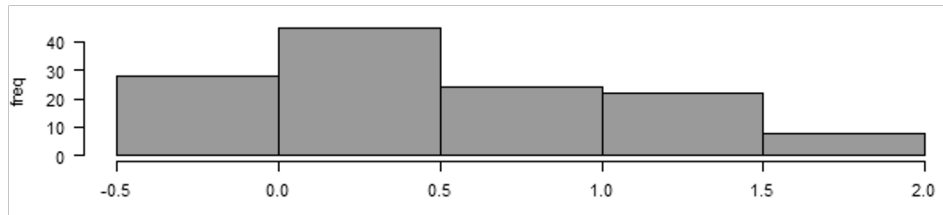
	Not willing to provide financial information	Willing to provide financial information	Difference in proportions	
	(1)	(2)	(2) - (1)	
	Mean	Mean	Difference	χ^2
High financial knowledge (Inflation)	0.681	0.682	0.001	0.001
High financial knowledge (Compounding)	0.837	0.900	0.064	2.526
Maintains records	0.624	0.691	0.067	1.533
High school degree	0.692	0.718	0.026	0.253
No truthful reporting (Retailers)	0.551	0.182	-0.369	42.931 ^{†††}
No trust	0.730	0.200	-0.530	89.097 ^{†††}

Internet Appendix

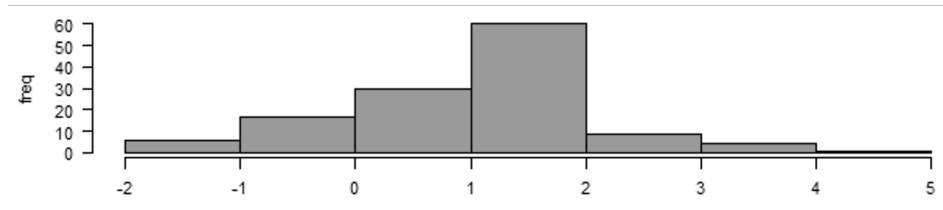
Figure IA1: Distribution of posterior means of β estimates

This figure presents the distribution of posterior means of the parameters from the estimation of a Bayesian hierarchical multinomial logit model of wholesalers' choices for each of the 141 wholesalers in our sample.

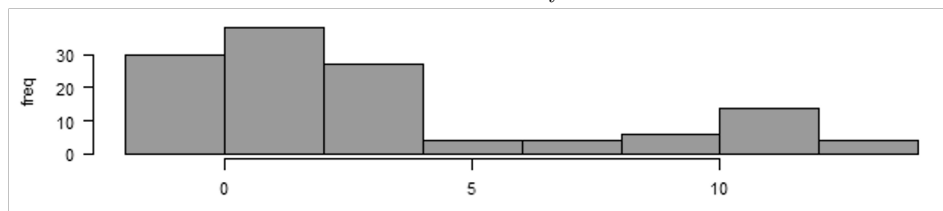




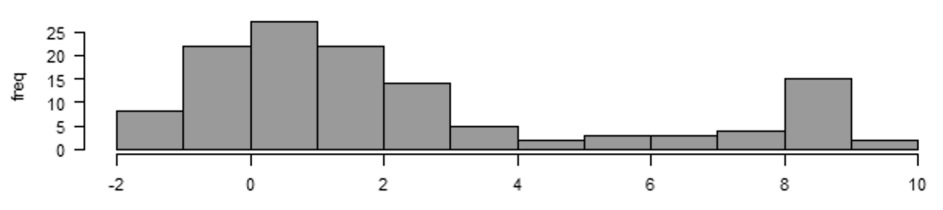
Profit equal to typical retailer



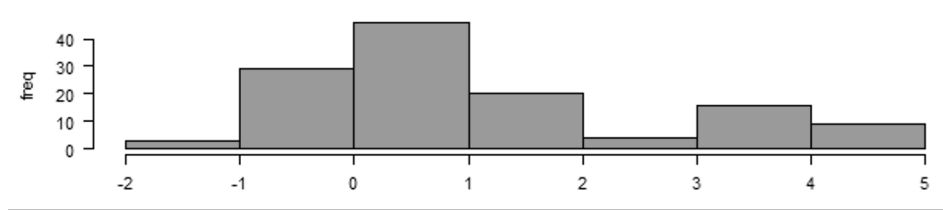
Same community



Relationship length: Greater than 10 years



Relationship length: 6-10 years



Relationship length: 2-5 years

Table IA1: Estimates from the choice model of information types

This table presents results from the estimation of wholesalers' choices for the 141 wholesalers in our sample. The dependent variable is an indicator which equals one for the option the wholesaler chooses and zero otherwise. Column (1) presents the coefficient estimates from a linear probability model whereas column (2) presents the coefficients from a conditional logit model. Column (3) presents marginal effects from the estimation of the conditional logit model. We present t -statistics (z -statistics) in parentheses below the estimates in column (1) (column (2)). Standard errors are clustered by wholesaler; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ denotes whether estimates are significantly different from zero.

		Linear probability model	Conditional logit	Marginal effects
		(1)	(2)	(3)
Sales	Sales higher than typical retailer	0.128*** (5.941)	0.533*** (5.920)	0.113***
	Sales lower than typical retailer	-0.007 (-0.435)	-0.031 (-0.444)	-0.007
	Sales equal to typical retailer	0.031* (1.753)	0.130* (1.773)	0.027*
Profit	Profit higher than typical retailer	0.080*** (3.853)	0.335*** (3.886)	0.071***
	Profit lower than typical retailer	-0.039** (-2.229)	-0.162** (-2.258)	-0.034**
	Profit equal to typical retailer	0.039** (2.341)	0.162** (2.358)	0.034**
Community	Same community	0.054** (2.273)	0.226** (2.284)	0.048**
Relationship length	Greater than 10 years	0.263*** (7.694)	1.078*** (7.430)	0.228***
	6-10 years	0.207*** (6.888)	0.844*** (6.723)	0.179***
	2-5 years	0.078*** (3.876)	0.327*** (3.824)	0.069***
Observations		6,768	6,768	6,768
Adjusted/Pseudo R ²		0.042	0.049	
Wald χ^2			147***	
Estimation Method		OLS	Logit	Logit
Wholesaler FE		Yes	Yes	Yes