

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

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Abstract

Traders operating in informal economies, characterized by low economic development and growth, rarely use financial information in their credit allocation decisions. However, using this information could improve the efficiency of lending decisions, thereby increasing access to credit and promoting economic growth. We use a combination of survey questions and a hypothetical choice experiment to study traders' preferences for financial information in a bazaar economy. 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. Based on estimates of wholesalers' willingness to pay for various types of retailer information and retailers' responses to survey questions, our findings suggest that the perceived lack of reliability of financial information, rather than financial illiteracy, drives the current sparse use of financial information.

...the 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 significant sector of the global economy, comprising 30% of GDP and 70% of employment in emerging markets.¹ Although research highlights the important role of borrowers’ financial information in efficient credit allocation, traders operating in these bazaars, and in informal economies in general, rarely use such information (Benjamin et al., 2014; Geertz, 1978; Tomy & Wittenberg-Moerman, 2022).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; 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.

The limited use of financial information in credit allocation in informal markets is an

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; La Porta & Shleifer, 2008; 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).

equilibrium outcome, which could be driven by many factors. 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). Thus, borrowers and lenders may lack the skills to produce or analyze financial information. Alternatively, even if financial information on borrowers were available, and lenders had the skills to evaluate it, in the absence of a credible verification mechanism, they may not trust this information and may instead prefer to rely on informal sources, such as social networks and group membership (Banerjee & Munshi, 2004; Banerjee et al., 2018; Fafchamps & Lund, 2003; Townsend, 1994; Udry, 1990, 1994). Borrowers may also not trust lenders and therefore be unwilling to share private information on their performance. In this paper, we explore the frictions that impede the use of financial information in credit allocation in informal markets by studying traders' preferences for financial and nonfinancial information.

The institutional setting of our study is the Jewduh bazaar, which is a regional center of trade in northeast India. Wholesalers and retailers are co-located in this bazaar and trade in a variety of products ranging from groceries and tobacco to textiles and household appliances. Similar to other bazaars, trade credit from wholesalers is the primary source of financing for retailers as they tend not to access credit from banks for various reasons. These reasons include a lack of trust in formal institutions, a lack of understanding of loan applications, and an inability to provide collateral.

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 information. We supplement these analyses by surveying retailers (the receivers of credit) to understand better their potential concerns with providing their financial information to wholesalers.³ The hypothetical choice method has been used in several fields, including economics and marketing, to evaluate the preferences of agents when outcomes are unobserved or markets

³We do not conduct a choice experiment with retailers because the experiment involves testing how the providers of credit evaluate various types of information in making credit decisions.

are incomplete (Allenby et al., 2019; Ameriks et al., 2020; Delavande & Zafar, 2019; Wiswall & Zafar, 2018; Louviere & Woodworth, 1983; Rao et al., 2014). 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 participation is driven by a lack of acceptable job opportunities, rather than an unwillingness to work. In marketing, such methods are used to evaluate consumer choice for new products. The novelty of our study lies in the application of this technique to the use of information to evaluate credit risk rather than the consumption of goods or job preferences.

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 instead may be driven by market constraints. For example, as discussed earlier, 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. At the same time, wholesalers might also not value or trust retailers' financial information, even if it were available, and might continue relying on informal mechanisms that often drive credit decisions in informal markets.

Our hypothetical choice experiment involves offering wholesalers a menu of choices and asking them to select their preferred option. The choices include information types that should help them evaluate retailer 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. Information types include retailers' financial information (sales and profits) and nonfinancial information (relationship length and community membership).

We include these nonfinancial information types 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 & Guinnane, 1999; Ghatak, 1999; Mazzocco & Saini, 2012; Townsend, 1994; Udry, 1990, 1994). We ask wholesalers to assume that all information presented to them in the experiment is accurate and reliable, and that retailers are similar in all other aspects except for the information we provide.

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). An advantage of using a hierarchical model is that 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. This figure is economically meaningful because the mean (median) amount of trade credit that wholesalers provide to retailers in this marketplace is 40% (22%).⁴ 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, reinforcing our inference that wholesalers find retailers’ financial information

⁴These figures are based on Tomy & Wittenberg-Moerman (2022) who survey traders in this marketplace.

useful. We find the same pattern of results for retailers' profit information. Importantly, although wholesalers would use financial information if 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, the usage of more formal financial information in credit allocation decisions does not imply that wholesalers would stop relying on informal information sources.

Next, we conduct more nuanced segmented analyses based on wholesalers' characteristics to better understand the factors that drive their preferences for financial information. 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. Although research finds that low financial literacy is an impediment to better business and personal finance decisions in developing countries (Cole et al., 2009, 2011, 2013; Drexler et al., 2014), our results show that low financial literacy is unlikely to be the primary driver of the limited use of financial information in credit allocation.

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, based on several measures of wholesalers' beliefs about the truthfulness of retailers' reports, we find that those who are more concerned about the reliability of financial information *are willing to pay as much* (i.e., provide as much trade credit) for retailers' financial information as other wholesalers. Because we asked wholesalers to assume that all information provided in the experiment is accurate and reliable, these findings suggest that

wholesalers would value retailers' financial information if reported truthfully.

Our results highlight that while interventions aimed at improving financial literacy among traders are unlikely to substantially increase the use of financial information in credit allocation decisions, mechanisms to improve reporting reliability are expected to be more fruitful. That is, designing a verification mechanism to improve the reliability of financial information is likely to lead to the more significant usage of financial information by wholesalers. By enhancing the efficiency of lending decisions, such a mechanism could consequently increase access to credit in informal markets.

We next address two important considerations that may undermine the usefulness of financial information. Wholesalers who tend to rely more on informal information sources may be reluctant to incorporate financial information when assessing retailers' creditworthiness even if this information is available and verifiable. We therefore study the responses of wholesalers who are more likely to rely on informal information. We conjecture that women are more likely to rely 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 (De Vita et al., 2014; Butler & Hansen, 1991; Welsh et al., 2018). We also expect that wholesalers who assess borrowers' credit-worthiness based on their reputation with other wholesalers use informal sources more extensively. 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. That is, wholesalers' tendency to rely on informal information does not imply that they would value financial information less in their credit decisions when presented with it, suggesting that financial and informal information are complements rather than substitutes.

A related concern is that wholesalers may have strong priors regarding the low usefulness of retailers' financials and may therefore ignore financial information. We examine the preferences of wholesalers who are reluctant to rely on retailers' financial information, that is, those who state in the survey that they would learn nothing new from such information.

Our analyses indicate that when presented with retailers' financial information, even such wholesalers value it in their decision-making.

We supplement our wholesaler-based analyses by evaluating 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 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 retailers with these concerns regarding information sharing and those concerned about the truthfulness of financial information are less willing to provide such information to wholesalers. 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—that a critical friction that prevents a more widespread use of financial information in credit allocation decisions in informal markets is a lack of trust in the financial reporting system.

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 & Guinnane, 1999](#); [Ghatak, 1999](#); [Karlan, 2007](#); [McMillan & Woodruff, 1999](#); [Townsend, 1994](#); [Udry, 1990, 1994](#)). Although this sector is economically important in emerging markets, 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](#)). Therefore an understanding of whether financial information can ease access to trade credit in the informal sector can contribute to improving trade and investment in this sector, aiding its long-term growth ([Buera et al., 2011](#); [Calderón & Liu, 2003](#); [Fisman & Love, 2003](#); [Levine, 1997](#); [Rajan & Zingales, 1998](#)).

Second, we highlight the importance of understanding lenders' and borrowers' preferences prior to designing credit market interventions. For example, studies evaluating the expanded

access to microcredit find that its effect on borrowers' health, income, consumption and the empowerment of women is not transformative (Banerjee et al., 2015b; Meager, 2019). One of the primary reasons for the modest effect of microfinance is that take-up rates are typically low, potentially due to large transaction costs (Banerjee et al., 2015a; Francis et al., 2017). Understanding borrowers' preferences could be helpful in designing interventions with higher take-up rates—for example, by identifying borrowers for whom transaction costs, such as costs of travel to a branch, or 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. Our findings also complement recent work in microfinance, which suggests that the introduction of microcredit institutions could crowd out both informal lending or risk-sharing relationships and social interactions unrelated to lending (Attanasio et al., 2015; Banerjee et al., 2018; Heß et al., 2020). Our findings suggest that more formal information sources, such as financial information, and informal information structures can coexist and mutually assist lenders in credit allocation decisions.

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

developing economies and how financial information can assist in credit allocation decisions in these economies.

2. Background and institutional setting

Our study is set in Iewduh, a marketplace located in northeast India. [Figure 1](#) shows the location of the market. We interviewed traders in this marketplace to learn about access to credit and found that retailers depend heavily on trade credit from wholesalers. Interestingly, in contrast to trade credit transactions in developed markets ([Barrot, 2016](#); [Costello, 2019](#); [Klapper et al., 2012](#); [Nilsen, 2002](#); [Petersen & Rajan, 1997](#); [Uchida et al., 2013](#)), wholesalers do not charge interest for delayed payment and do not offer early payment discounts. Thus trade credit terms vary primarily across the amount and repayment time. Wholesalers also do not offer a discount if retailers pay in cash versus buy on credit.⁵

Two primary factors drive the considerable reliance on trade credit. First, retailers tend not to access bank loans.⁶ Several factors prevent access to bank financing. These include 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 explicit interest payments. Second, retailers have limited access to microfinance because of the few microfinance institutions operating in the region.⁷

The extensive use of trade credit does not imply that retailers obtain a sufficient amount of credit or that it is efficiently allocated. 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

⁵See [Tomy & Wittenberg-Moerman \(2022\)](#) for additional details on Iewduh's institutional setting.

⁶Only 2.1% of retailers report that they used bank credit very frequently. By comparison, 80% of retailers in Iewhuh use trade credit very frequently.

⁷Only 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 purchase a desirable amount of goods. After getting to know a retailer better (after a number of transactions), wholesalers begin extending a small amount of credit. Only after the retailer establishes a reputation for paying back on time does the wholesaler increase the credit limit. This process of gradually learning about the retailer before dispensing credit suggests that credit access could be improved if wholesalers were provided with more financial information about retailers.

Furthermore, wholesalers have little recourse when retailers default. A majority of wholesalers tend 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. Wholesalers take action only in around 40 percent of defaults and their attempts are primarily limited to persuading a retailer to repay. Wholesalers almost never repossess goods or pressure retailers. This evidence suggests the need for efficient screening, which could be enhanced by collecting more financial information about retailers.

Although the need for financial information is apparent, informal markets are characterised by a low reliance on formal sources of information in credit decisions due to several factors. Such markets are typically located in economies with weak legal systems, which limits the role of formal accounting information in contracting (La Porta et al., 2000; Shleifer & Vishny, 1997). Weak legal enforcement is also associated with poor quality accounting information, which further reduces its relevance for contracting parties (Leuz et al., 2003). The lack of credible verification mechanisms also plays a role in the limited use of accounting information in informal markets. Lenders might be concerned that accounting information reported by borrowers is not trustworthy and thus might rely on social networks for assessing borrowers' creditworthiness. A lack of trust also implies that borrowers may not be willing to share private or sensitive information related to their operations because of concerns that it will not remain confidential, and may instead rely on group membership for accessing 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 evaluate accounting information and borrowers may not have the skills to produce it (Cole et al., 2009, 2011, 2013; Drexler et al., 2014).

Consistent with this, Tomy & Wittenberg-Moerman (2022), who survey traders in this bazaar, find that wholesalers collect formal information before providing credit only in about half of their transactions. Some wholesalers collect information on retailers' sales, but most of this information pertains to prices that retailers charge, which helps wholesalers assess demand for their products. Given the relative lack of financial information, wholesalers tend to rely on nonfinancial factors, such as community membership and the length of their relationship with retailers, to make credit decisions. Importantly, the limited reliance on financial data does not imply that wholesalers would not prefer more financial information or would not base their credit decisions on this information if it were available and could be relied upon. Utilizing financial information in credit decisions could benefit wholesalers by improving the efficiency of their credit allocation and allowing for greater sales. It could also benefit retailers by increasing their access to credit. However, the informal institutions that traders rely on may continue to dominate their credit decisions, significantly limiting the usefulness of financial data. Furthermore, traders may have strong priors regarding the low usefulness of financial information and therefore may be unwilling to use this information even if it is provided to them. In other words, wholesalers may be unwilling to accept this new way of assessing retailers' creditworthiness (Colgate & Lang, 2001). By examining the preferences of traders, we study the frictions that prevent the widespread use of financial information in credit allocation in informal markets.

3. Data collection and sampling

3.1. Data collection

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 (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. 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 when the products are not available, or markets are incomplete or do not exist. In this method, 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 and include a retailer’s financial information—sales and profits; and non-financial information—the community of the retailer, and the length of the trading relationship between the wholesaler and retailer. We include these two nonfinancial attributes because they are highly significant in explaining credit allocation in informal economies (Fafchamps & Lund, 2003; Ghatak & Guinnane, 1999; Ghatak, 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 (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. 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 wholesaler.

The information types included in the experiment are not exhaustive of all possible types of information that wholesalers could base their credit decisions on but are limited to avoid cognitive overload. At that same time, we select important facets of the information based on prior research. Importantly, we instruct respondents that the information sets presented are similar on all aspects, except for the attributes that we specify. We also ask wholesalers to assume that all information provided is accurate and reliable.

We presented each wholesaler with a series of 24 scenarios, where each scenario contained two different information sets (e.g., [Figure A.1](#)). The scenarios were presented electronically on a tablet to all respondents. We randomly varied the values of the attributes in the information sets that were presented to the wholesalers. 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.

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.

Although such methods have been used extensively in various fields, to our knowledge, our paper is the first to employ a choice-based method to assess preferences for information used in credit allocation. Importantly, implementing this method 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 matters. 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 a wholesaler values information on retailers’ sales in making credit decisions, it has to be that they provide more trade credit to a retailer with high sales than to a retailer 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. Specifically, 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%.

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 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 data was collected on tablets using survey software, allowing enumerators to record traders' responses easily.⁸ 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.

⁸To 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.

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 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

Assuming a linear formulation for the utility $u_i(X_j)$ and an extreme value distribution for the errors ϵ_{ij} allows for 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 $X = \{\text{retailer's sales; retailer's profit; relationship length; whether the retailer belongs to wholesaler's community; amount of trade credit}\}$.

We obtain individual β_i s for each wholesaler using Bayesian hierarchical models ([Gelman et al., 1995](#); [Rao et al., 2014](#); [Rossi et al., 2012](#); [Rossi, 2019](#)). 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 et al., 1996](#); [Rossi, 2019](#)). 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.⁹ A second alternative would be to separately estimate β_i for each wholesaler i , which, although possible to execute as we collect multiple observations from each wholesaler, 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 (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. Initial values of β_i s for each wholesaler 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 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.¹⁰

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. $\text{WTP}(\Delta)$ is the additional amount of trade credit that the wholesaler is willing to provide to a retailer

⁹Nonetheless, 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.

¹⁰We 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).

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 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 impossible in our setting because the choices are hypothetical and the products (e.g., information sets) do not exist for sale.¹¹ However, given our objective of assessing the preferences for various types of information, we do not directly ask traders for their WTP but infer it from their choices. 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

¹¹In 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.

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. Discussion of results

5.1. 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 for the 141 wholesalers in our sample.¹² 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 bootstrapped 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% 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. 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. In general, the mean (median) wholesaler provides 40% (22%) trade credit as a percentage of sales, making these estimates economically significant ([Tomy & Wittenberg-Moerman, 2022](#)). This pattern of results—that wholesalers’ are willing to provide more credit to retailers with higher sales and less credit to retailers with

¹²We present plots of the full distribution of parameter estimates in [Figure IA1](#) of the [Internet Appendix](#).

lower sales than the typical retailer in their product group—is consistent with them using retailers’ financial information in their credit decisions.

Furthermore, wholesalers are willing to provide 2% more trade credit to retailers whose sales is equal to that of a typical retailer than to retailers with no information on sales, further reinforcing our inference that wholesalers value retailers’ financial information while making credit allocation decisions. The WTP estimates for profits follow the same trend as for sales—wholesalers are willing to provide 6% and 3.4% more trade credit (as a percentage of sales) 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.

Table 3 also highlights the important role of non-financial 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.¹³ 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.

5.2. *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

¹³The 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.

information. However, in practice, wholesalers tend not to collect information on retailers' sales and profits prior to providing credit, and rely more on non-financial 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 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. We use several measures to assess 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.¹⁴ The results of this analyses are presented in Table 4. In Panel A of the table, we split our sample into two sub-samples based on whether the respondent understands the concept of inflation (column (1)), or does not (column (2)). We do not use responses

¹⁴We report traders' responses to survey questions in Appendix C. Question 4 and Question 5 in Appendix C.1 assess respondents' understanding of the concepts of inflation and interest compounding. These questions were developed by Lusardi & Mitchell (2011), who use them to evaluate financial literacy among various populations in developed and developing countries.

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 4](#), we split our sample into sub-samples 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, those who do, 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 the level of education ([Lusardi & Mitchell, 2011](#)). In [Table 4, 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 4, Panel C](#), find no variation in the willingness to pay for retailers' financial information across wholesalers with higher or lower levels of financial literacy (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.

5.3. 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.¹⁵ We also asked wholesalers about the percentage of retailers they thought would respond truthfully to questions related to their sales and profits.

Forty-nine of the 141 wholesalers (i.e., 35%) in our sample responded they believed that no retailers would report their sales and profits truthfully. Furthermore, the majority (75%) believed that *less than 10%* of retailers would report their sales and profits truthfully.¹⁶ 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.¹⁷

We evaluate whether wholesalers' willingness to provide additional credit based on re-

¹⁵Please see [Question 6](#) and [Question 7](#) in [Appendix C.1](#).

¹⁶Please see [Question 8](#) in [Appendix C.1](#).

¹⁷Please see [Question 9](#) in [Appendix C.1](#).

tailers' financial information varies systematically with their beliefs about the truthfulness of retailers' reports. The results of this analysis are presented in [Table 5](#). 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. Recall that in the experiment, we asked wholesalers to assume that all information provided is accurate and reliable. Therefore, the results in [Table 5, Panel A](#), suggest that wholesalers would value retailers' financial information if it were reported truthfully.

In [Panel B](#) of [Table 5](#), we split our sample by whether the wholesaler is concerned about *using* retailers' sales and profits in credit allocation decisions because she believes 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 that no retailers would report their financial information truthfully (column (2)), or if she believes that at least one retailer will report truthfully (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 5](#) suggest that wholesalers value retailers' financial informa-

tion 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 its greater usage in wholesalers' credit allocation decisions, potentially increasing the access to credit in such informal markets.

6. Supplemental analysis: Wholesalers' WTP

6.1. WTP by reliance on informal information

An important concern while evaluating the usefulness of financial information is that wholesalers may continue to rely on informal sources of information even if retailers' financial information is available and verifiable. Wholesalers who are accustomed to relying on informal sources of information may be reluctant to accept new ways of assessing retailers' creditworthiness (Colgate & Lang, 2001). To explore this concern, we study the preferences of wholesalers who are more likely to rely on informal information in their credit allocation decisions.

Our first measure of reliance on informal information is the gender of the wholesaler. The literature identifies several constraints faced by women entrepreneurs in developing countries. These include the social acceptance of women as business owners, a low level of education, and limited access to credit (De Vita et al., 2014). The literature also underscores how access to social networks is important for business success, and more so in countries with weak or unstable institutions (McMillan & Woodruff, 1999; Udry & Conley, 2005). Given the constraints faced by women entrepreneurs in developing countries, access to social networks is particularly relevant for the success and survival of women-owned businesses (Butler & Hansen, 1991; Welsh et al., 2018). Importantly, studies also highlight the relational aspect of business (i.e., the volume and quality of relations the business has with key stakeholders) as crucial for women (Farr-Wharton & Brunetto, 2007).

Based on these findings in the literature, we expect that women are more likely to rely on informal sources of information relative to men. Consistent with our expectations, in Panel

A of [Table 6](#) we find that, relative to men, women are willing to offer more credit to retailers from their community and to those with whom they have 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 preferences to know before offering trade credit whether the retailer has a good reputation with other wholesalers.¹⁸ Caring about retailers' reputation with other wholesalers implies a preference for informal information networks, as they could access information about retailers through word-of-mouth discussions with other wholesalers. [Panel B](#) of [Table 6](#) shows that, relative to other wholesalers, those with a preference for informal networks are willing to provide more trade credit for 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 value retailers' financial information.

Our findings in [Panel B](#) and [Panel C](#) of [Table 4](#) also suggest that, relative to other wholesalers, those with less education and those who do not maintain records tend to rely more on informal sources of information. These wholesalers are willing to offer more credit to retailers from their community and to those with whom they have a longer relationship. Recall that we do not find that less educated wholesalers value financial information less than more educated ones. This finding further reinforces our inference that even wholesalers with a stronger preference for informal information sources would use retailers' financial information.

¹⁸Please see [Question 11](#) in [Appendix C.1](#).

6.2. *WTP by wholesalers' reluctance to rely on financial information*

Another concern in evaluating the usefulness of financial information in credit allocation in informal markets is that wholesalers may have strong priors that retailers' financials add little value when assessing their creditworthiness. The lack of reliability of financial information could drive such priors. Furthermore, if wholesalers believe they can assess retailers' performance from informal information sources without access to their sales and profits, it can further reinforce their priors of the low usefulness of financial information. Wholesalers with such priors may ignore financial information even if it is provided to them.

To address this concern, we focus on 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 [Table 7](#), we compare the WTP estimates for these 38 wholesalers to the WTP estimates for all other wholesalers. Interestingly, the WTP estimates for 38 wholesalers who state that they expect to learn nothing new from retailers' financial information indicate that when presented with financial information, they do place weight on it in their decision making. However, 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.

7. 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.²⁰

¹⁹Please see [Question 1b](#) in [Appendix C.1](#).

²⁰Retailers' responses are summarized in [Appendix C.2](#).

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. In contrast, 29% stated that they would provide financial information, whereas 2% were unsure.²¹ 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.²² 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%).²³ 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.²⁴

We next evaluate whether retailers' willingness to provide information on sales and profits is related to their financial literacy. Our results for wholesalers indicate that financial literacy 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 measures, they are less so than wholesalers. For example, 65% of retailers maintain a record of their transactions.²⁵ 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

²¹Please see [Question 1](#) in [Appendix C.2](#).

²²Please see [Question 1b](#) in [Appendix C.2](#). 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.

²³Please see [Question 1a](#) in [Appendix C.2](#).

²⁴Please see [Question 3](#) in [Appendix C.2](#).

²⁵Please see [Question 4](#) in [Appendix C.2](#).

answers to these questions accounted for 77% and 97%, respectively.²⁶

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 8](#). 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. We ask retailers about the truthfulness of other retailers rather than about their truthfulness to elicit honest responses. Retailers who believe that other retailers do not report truthfully are less likely to believe in the reliability of financial information.

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.²⁷ Furthermore, we find that retailers who believe that no other retailers would report their sales and profits truthfully are significantly less willing than other retailers to provide their financial information to wholesalers ([Table 8](#)). These findings suggest that these retailers are concerned that their financial information may not be adequately accounted for by wholesalers who would not trust the numbers reported by retailers.

²⁶Please see [Question 6](#) and [Question 7](#) in [Appendix C.2](#) for retailers' responses.

²⁷Please see [Question 8](#) in [Appendix C.2](#).

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?*"²⁸ Twenty percent of all retailers responded that they did not believe their information would remain confidential; 47% stated that they were not comfortable sharing such information; 43% had no concerns; whereas 5% provided other reasons. We find that retailers who responded that they did not believe their information would remain confidential, or that they were not comfortable sharing such information, are less willing to provide their financial information to wholesalers (Table 8).

Overall, the results based on retailers' responses corroborate our inferences based on wholesalers' responses. Beliefs about the reliability of financial information and a lack of trust that information would not 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 the level of their financial literacy. These findings further reinforce our inferences that to increase the access to credit in informal markets, more emphasis should be put on mechanisms or certification processes that improve the reliability of financial information.

8. 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, it faces low growth and development issues. Financial development and access to credit are important determinants of economic growth. Therefore, by promoting efficient lending decisions, financial information could increase access to credit in the informal sector, thereby promoting its growth and development.

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

²⁸Please see Question 2 in Appendix C.2.

in credit allocation decisions. We find that wholesalers value retailers' financial information in their credit decisions, and are willing to offer greater amounts of trade credit to retailers with higher sales and profits.

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 or a tendency to rely on informal information sources. In contrast, wholesalers' concerns regarding the reliability of financial information prevent a greater usage of this information in assessing borrowers' creditworthiness.

In supplementary analyses, we 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 are less willing to provide financial information when concerned about the truthfulness of financial information reported to wholesalers and when they believe that information regarding their performance if reported, may not remain confidential. This evidence further supports our inference that the reliability of financial information and trust in reporting systems is the primary constraint to the more widespread use of financial information in trade credit allocation decisions.

Our study is subject to certain limitations. 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. Nonetheless, our work highlights the usefulness of trying to understand respondents' preferences and could inform future interventions or policy decisions that aim to improve access to credit in informal economies.

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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)

Attribute	Khasi	Bengali
Retailer's Community	(Icon: Group of people)	(Icon: Group of people)
Retailer's Profits	Profit same as typical retailer (Icon: Double-headed arrow)	No profits information (Icon: Empty circle)
Relationship Length	6 to 10 years (Icon: Handshake)	Greater than 10 years (Icon: Handshake)
Retailer's Sales	No sales information (Icon: Empty circle)	Sales higher than typical retailer (Icon: Green arrow pointing up)
Trade Credit (%Sales)	11-20% (Icon: Hand holding money)	41-60% (Icon: Hand holding money)

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 ²⁹	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 ³⁰	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	

²⁹Other 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.

³⁰Other 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 ³¹	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 ³²	15	11%
Total	141	

³¹Other 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 ³³	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 ³⁴	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 ³⁵	3	2%
Total	141	

³²Other 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.

³³Other concerns include a lack of trust in the retailer, and only giving credit to known retailers.

³⁴Other 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 ³⁶	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 ³⁷	27	11%
Total	257	

³⁵Other 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.

³⁶Other 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%
I have no concerns	159	43%
Other ³⁸	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 ³⁹	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	

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

³⁷Other reasons include: Because my sales are very low; wholesalers do not care for this information; I will have to repay on time.

³⁸Other 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.

³⁹Other 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.

	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 ⁴⁰	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	

⁴⁰One 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 ⁴¹	19	9%
Total	208	

⁴¹Other 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. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ denotes whether estimates are significantly different from zero; tests of significance are based on bootstrap standard errors.

		Mean	Std	<i>z</i> -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		141		

Table 4: 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 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](#) based on whether the wholesaler understands the concept of inflation; in [Panel B](#) based on whether the wholesaler always maintains a record of transactions; whereas in [Panel C](#) by whether the wholesaler has a high school degree. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ denotes whether estimates are significantly different from zero; $^\dagger p < 0.1$; $^\ddagger p < 0.05$; $^\ddagger\ddagger p < 0.01$ denotes differences in means; 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		113		28		141	

Table 4: 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		101		40		141	

Table 4: 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		75		66		141	

Table 5: 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. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ denotes whether estimates are significantly different from zero; † $p < 0.1$; †† $p < 0.05$; ††† $p < 0.01$ denotes differences in means; 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		103		38		141	

Table 5: 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		95		46		141	

Table 5: 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		92		49		141	

Table 6: 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; and in Panel B, by whether the wholesaler would like to know retailers' reputations with other wholesalers before providing credit. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ denotes whether estimates are significantly different from zero; $^\dagger p < 0.1$; $^\ddagger p < 0.05$; $^\dagger^\ddagger p < 0.01$ denotes differences in means; 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		22		119		141	

Table 6: 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		100		41		141	

Table 7: Wholesalers' WTP by their reluctance to rely on 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 by whether the wholesaler expects to learn new information from retailers' financials (column (1)), or not (column (2)). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ denotes whether estimates are significantly different from zero; † $p < 0.1$; †† $p < 0.05$; ††† $p < 0.01$ denotes differences in means; tests of significance are based on bootstrap standard errors.

		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		103		38		141	

Table 8: Retailers' willingness to provide financial information

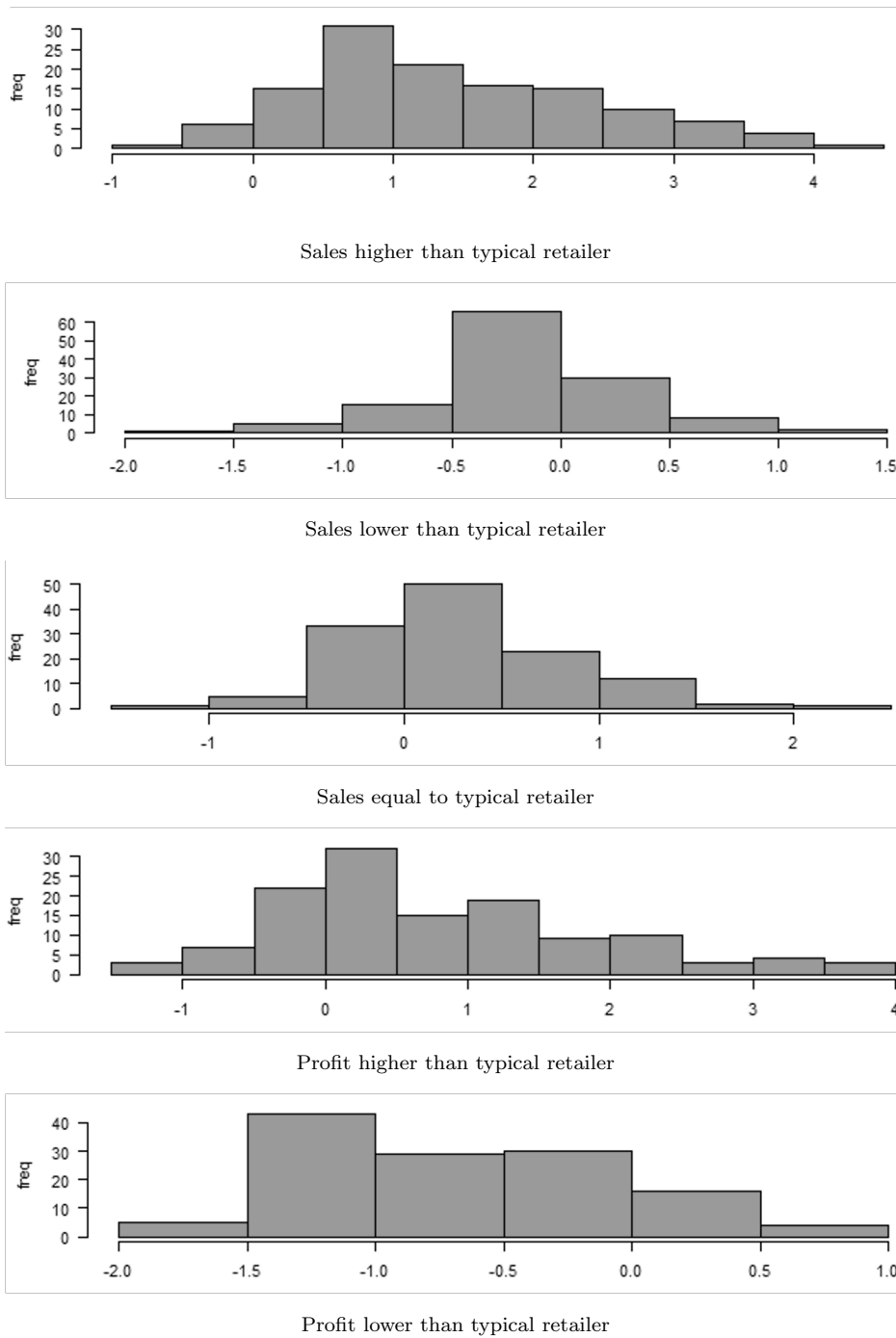
This table presents proportions of retailers with the specified characteristic by their willingness to provide financial information to wholesalers, for the 373 retailers in our sample. The indicator variables *High financial knowledge (Inflation)* equals 1 if the retailer understands the concept of inflation, *High financial knowledge (Compounding)* equals 1 if the retailer understands interest compounding, *Maintains records* equals 1 if the retailer always maintains a record of transactions, *High school degree* equals 1 if the retailer has a high school degree, *No truthful reporting (Retailers)* equals 1 if the retailer believes that no other retailers would report truthfully, *No trust* equals 1 if the retailer does not believe that her information would remain confidential or if she is not comfortable sharing financial information with wholesalers; and 0 otherwise. 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. $^{\dagger}p < 0.1$; $^{\dagger\dagger}p < 0.05$; $^{\dagger\dagger\dagger}p < 0.01$ denotes differences in proportions.

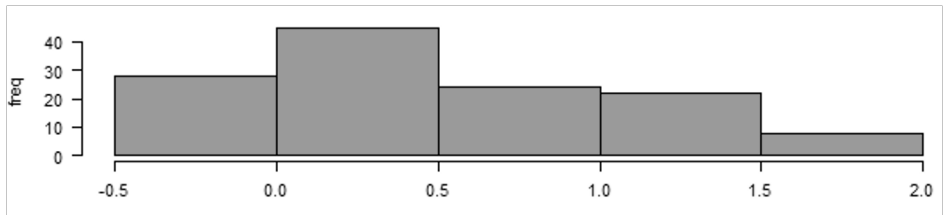
	Not willing to provide financial information	Willing to provide financial information	Difference in proportions	
	(1)	(2)	(2) - (1)	
	Mean	Mean	Difference	χ^2
High financial knowledge (Inflation)	0.681	0.682	0.001	0.001
High financial knowledge (Compounding)	0.837	0.900	0.064	2.526
Maintains records	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

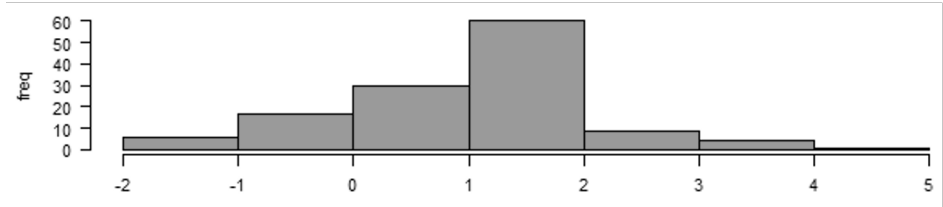
Figure IA1: Distribution of posterior means of β estimates

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.

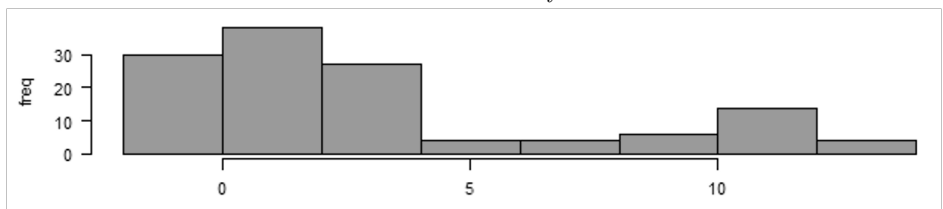




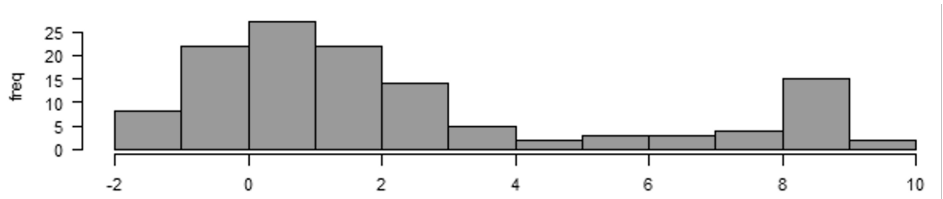
Profit equal to typical retailer



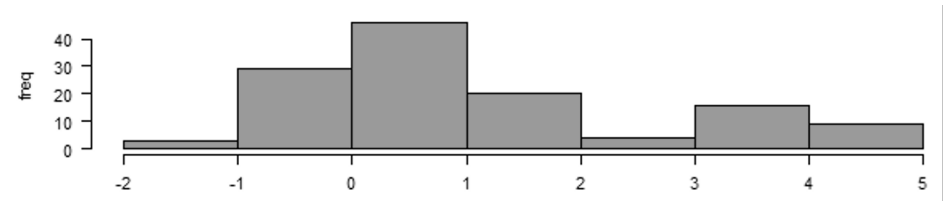
Same community



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