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## Trust in banks, financial inclusion and the mediating role of borrower discouragement

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## ABSTRACT

The link between bank trust and financial inclusion remains less explored despite the recent emphasis on financial inclusion in the midst of significant declines in bank trust across the globe. From an emerging country perspective, we examine the bank trust – financial inclusion nexus and the mediating role of borrower discouragement, using data extracted from a comprehensive individual/household level survey in Ghana. After addressing endogeneity, we find that, overall, financial inclusion among those who have trust in banks is 34.3 percentage points higher, compared to those with no trust. This finding is consistent across three different methods of addressing endogeneity. Higher levels of financial inclusion associated with bank trust are more evident among males and urban-located residents. Further analysis revealed that the link between bank trust and financial inclusion is mediated by the discouraged borrower syndrome. It is recommended that financial institutions make conscious efforts to foster client trust which has the capability to reduce borrower discouragement and improve financial inclusion.

## CRediT author statement

Isaac Koomson: Conceptualization, Methodology, Data curation and analysis, Resources, Writing-Original draft preparation, Reviewing and Editing. Paul Koomson: Conceptualization, Methodology, Resources, Writing-Original draft preparation, Reviewing and Editing. Abdallah Abdul-Mumuni: Conceptualization; Methodology, Writing-Original draft preparation.

## 1. Introduction

Trust between consumers and financial institutions is an important driver of financial sector development, fosters general economic growth, and it plays a role in other areas of public policy (Ahamed et al., 2021; Kebede et al., 2021; Mhlanga, 2021; Sawadogo & Semedo, 2021; Tram, Lai, & Nguyen, 2021; Q. Xu et al., 2019). According to Fungáčová et al. (2019), bank trust is a core determinant of financial system effectiveness. The 2017 Global Findex report indicates that about 1.7 billion adults around the world do not have bank accounts. Out of this figure, 13% mentioned distrust in the financial system as the primary disincentive against holding bank

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accounts (Demirgüç-Kunt et al., 2018). This suggests that in situations where bank trust is weak or non-existent, consumers may desist from (or hesitate in) taking up the financial products offered by financial institutions even if such products would be beneficial to them and society. Without trust, it would be rather challenging for banks to attract depositors or find individuals and households willing to borrow money to finance their businesses (Guiso et al., 2004; X. Xu, 2020). Thus, trust is a fundamental ingredient that serves as a critical lubricant for the financial market. Despite its potential to influence an individual's decision to engage with financial institutions, trust for banks remains a sparsely researched topic in the financial inclusion literature. According to Feir et al. (2020), the study of what drives bank trust is a burgeoning field of research. This makes it imperative to examine the bank trust-financial inclusion nexus.

Few studies have focused on the detrimental influence of the Global Financial Crisis on trust in banks and found that lack of trust is likely to result in borrower discouragement (Ampudia & Palligkinis, 2018; Fungáčová et al., 2019; Knell & Stix, 2015; X. Xu, 2020). Other papers have also focused on the link between trust and financial inclusion but have mainly focused on social or generalised trust (Guiso et al., 2004; X. Xu, 2020). Guiso et al. (2004) show that in areas where social trust is high, people are more likely to use cheques, have higher access to institutional credit, and make less use of informal credit.

What is seemingly missing in the literature are studies that focus on the impact of bank trust on financial inclusion. So far, few studies can be found in this area. First, Galiani et al. (2020) investigated the impact of trust on savings using an experimental design and found that bank trust increased savings but not account usage. Galiani et al. (2020) did not use an overall index of financial inclusion to capture the multidimensional nature of the construct. Second, Ampudia and Palligkinis (2018) and Park (2020) have shown that bank trust increases the probability of account ownership and willingness to save with a bank. Third, Xu (2020) also explored the potential link between trust and financial inclusion by using confidence in banks as an indicator and found that confidence in banks has a positive association with overall financial inclusion. Since Xu (2020) focused mainly on social or generalised trust, the endogeneity associated with bank trust was not addressed. Despite evidence of gender and locational gaps in the progress towards universal financial inclusion, these studies did not decompose findings for gender and location (Demirgüç-Kunt et al., 2018). Potential channels from bank trust to financial inclusion were also not explored.

Based on the gaps identified, we contribute to the literature by answering the research question: Can the promotion of bank trust policies decrease borrower discouragement and thus help achieve universal financial inclusion? We follow this line of inquiry by examining the link between bank trust and financial inclusion in Ghana using a multidimensional financial inclusion index obtained from 14 binary indicators across three dimensions of financial inclusion. Apart from the use of quasi-experimental approaches to resolving endogeneity, subsampled analyses are also done to examine the location- and gender-specific dimensions of the relationship between bank trust and financial inclusion. Another contribution to the literature is how we empirically explore the potential role of borrower discouragement in serving as an important channel through which bank trust could influence financial inclusion. This study provides policymakers with insights into how bank trust contributes to financial inclusion from different dimensions.

We focus on Ghana as a case study in this paper because it is one of the emerging economies that have made a remarkable achievement in universal financial access (UFA) (Koomson et al., 2020a) and a cosigner of the Maya Declaration with the intent of alleviating poverty through financial inclusion (AFI, 2015). Between 2011 and 2017, Ghana experienced a 29% improvement in financial inclusion, resulting in an overall financial inclusion rate of 58%, but there were gender and locational gaps (Demirgüç-Kunt et al., 2018). Among the male population, 62% own a transaction account while account ownership among the female population is 54% (Demirgüç-Kunt et al., 2018). Financial inclusion is comparatively lower among rural-located residents (Koomson et al., 2020a, 2020b). Within the urban population, the proportion of males who own a transaction is 54%, while the proportion for females is 46%. In the rural areas, account ownership among males and females is 61% and 39%, respectively (GSS, 2014). Apart from women having lesser access to credit (Peprah & Koomson, 2014, 2015), a study by Koomson et al. (2016) has also shown that rural loan applicants are more likely than their urban counterparts to be refused. The low rate of financial inclusion in Ghana has prompted policymakers to set an ambitious target of achieving a financial inclusion rate of 85% by 2023 (Ministry of Finance, 2018). This notwithstanding, the recent banking sector crisis in Ghana has the potential to impede the progress made in achieving universal financial inclusion. Already, there exists a low level of financial inclusion and wide disparities in account ownership across gender, income quintile, age and location (Akudugu, 2013). A detailed description of the financial sector crisis in Ghana and its implications on financial inclusion is provided in Section 3.

The rest of the article is structured as follows. Section 2 focuses on the conceptual links between trust and financial inclusion, while Section 3 touches on the banking sector crises in Ghana. Section 4 describes the data source, variable definition and management. Empirical specification and methods are discussed in Section 5 and Section 6 is dedicated to the presentation of results. Section 7 concludes and provides recommendations.

## 2. The link between trust and financial inclusion

The link between trust and financial inclusion can be explained either from the dimension of social or generalised trust or from that of trust in financial institutions (i.e., institutional trust). From the social trust dimension, there exist previous studies that provide both conceptual and empirical evidence on the trust-financial inclusion nexus. Regarding trust in financial institutions, the evidence in the literature remains largely conceptual or anecdotal with two studies providing the empirical evidence. In the paragraphs that follow, we first review literature from the social trust dimension and follow up with the aspect of trust in banks by explaining their channels.

## 2.1. Social or generalised trust and financial inclusion

Evidence from the extant literature suggests that social trust is one of the important drivers of financial inclusion and remains a fundamental ingredient required for the smooth functioning of the financial market (Ghosh, 2021; Guiso et al., 2004; Iyer, 2015; Sanderson et al., 2018; X. Xu, 2020). Social trust is conceptualised as respondents' self-reported general perception of trustworthiness of most people or the need for caution when dealing with others (X. Xu, 2020). Guiso et al. (2004) show that in areas where social trust is high, people tend to use formal credit than informal credit. Xu (2020) found that different dimensions of financial inclusion are enhanced by social trust when individual attributes and heterogeneities in financial institutions and markets are controlled for. Xu (2020) also found that trust moderates fragile formal institutions and poor educational levels which tend to hinder financial inclusion. Trust had a more positive impact on account ownership than account use in India (Ghosh, 2021). In Zimbabwe, Sanderson et al. (2018) have shown that trust is positively and significantly related to financial inclusion.

With low utilization of financial services like mobile money services, trust is a dominant influencer of a household's participation in the financial sector (Iyer, 2015). Ghosh (2021) found that trust is typically low among individuals with a mobile phone, and that moderates their account ownership. On the other hand, higher levels of trust among individuals with mobile phone leads to increased account ownership (Ghosh, 2021, p. 6). A study by Shankar (2013) found that microfinance institutions can break down some barriers that prevent people from becoming financially included but they are limited in reaching out to the excluded population. These barriers include “psychological and cultural barriers which stem from mistrust in banks, either due to negative experiences or negative perceptions,” and can lead to self-exclusion from formal financial services (Shankar, 2013, pp. 63–64). Entrepreneurs' negative attitudes regarding formal loans and perceptions of societal norms make formal loans less appealing, particularly among females who believe financial institutions consider them as risky customers (Naegels et al., 2021). One can also argue against the positive association between social trust and financial inclusion. This is because when people trust their neighbours and can borrow from them, they are less likely to access bank loans since monies borrowed from friends and relatives usually come with zero interest.

In related literature, social trust can direct the attention of potential borrowers to the informal credit markets when bank trust is low. These informal markets, whose operation primarily relies on social trust/capital (Osei-Assibey, 2015) include microfinance institutions, savings and loans associations, money lenders, and ‘Susu’ operators who charge exorbitant interests rates on loans due to less regulatory oversight of their activities, operational inefficiencies, and the high risk associated with their lending schemes (Osei-Assibey, 2015; Reiter & Peprah, 2015). In particular, ‘Susu’ operators' contract does not involve legal documentation, but they leverage social trust and a piece of card/booklet used for recording daily transactions (Osei-Assibey, 2015).

In emerging countries, the majority of individuals cite friends and relatives as their main source of funds in times of idiosyncratic shocks (Demirgüç-Kunt et al., 2018). In Ghana, the second-largest source of business capital apart from banks (68.8%) is friends/relatives (17%) (GSS, 2018). With low levels of account ownership, higher levels of social trust, with minimum theft cases, may result in monies being kept at home rather than being saved with banks.

## 2.2. Trust in banks and financial inclusion

Trust or mistrust in banks arising from various reasons can influence financial inclusion through several channels. In this subsection, we discuss at least two of these channels—the discouraged borrower syndrome and use of financial products. In the analysis section, we test the mediating role of borrower discouragement.

### 2.2.1. Borrower discouragement

The discouraged borrower syndrome is considered a potential setback to policies aimed at achieving universal financial access for individuals, households and owners of small businesses in particular. The phenomenon of borrower discouragement has relevance for financial inclusion and its related impact on economic growth. Rostamkalaei (2017, p. 2) identifies a twofold relevance for acknowledging discouraged borrowers, namely: “(i) financiers may lose potential customers and (ii) a good but discouraged borrower relies on internal financing, which may limit investment and, subsequently, growth.” Shankar (2013) distinguishes between voluntary and non-voluntary financial exclusion. As the name suggests, voluntary financial exclusion refers to segments of the population who can access formal financial credit but choose not to access those services for fear of being denied the credit or the potential implications of taking credit. Kon and Storey (2003, p. 47) describe such individuals or enterprises as discouraged borrowers. Discouraged borrower refers to “a good firm, requiring finance, that chooses not to apply to the bank because it feels its application will be rejected”. Other studies have shown that borrower discouragement is more common among female entrepreneurs than male entrepreneurs (Chakravarty & Xiang, 2013; Moro et al., 2017).

Kon and Storey (2003) identified high costs of borrowing from formal financial institutions as a major cause of the discouraged borrower syndrome among small-scale enterprises. The often prohibitive application costs may be financial (cost of applying for the loan and interest on the loan), in-kind (like the opportunity cost of time spent in looking for and evaluating financial products, completing application forms, waiting in banking halls, travelling to and from the bank), or psychic (uneasiness in disclosing personal details, concerns while waiting for banks' decision and feedback, including possible rejection of an application) (Kon & Storey, 2003; Koomson et al., 2020a). Naegels et al. (2021) added potential borrowers' negative perceptions about interests and payback procedures as a potential cause. Banks' tendency to request collateral as a condition for lending to small enterprises discourages such borrowers who fear losing their assets or being harassed by lenders if they default (2003; Naegels et al., 2021).

Thus, the discouraged borrower syndrome can serve as an important mediator between bank trust and financial inclusion. Existing studies have shown that bank trust reduces borrower discouragement and inspires the decision to file for loan (Ampudia & Palligkinis,

2018; Tang et al., 2017). Mol-Gómez-Vázquez et al. (2022) provide empirical evidence to demonstrate that the more stable a country's financial system, the less likely it is for SMEs to exhibit the discouraged borrower syndrome when accessing financial products.

Further deductions from this evidence can be drawn to cover multidimensional financial inclusion. When bank trust reduces borrower discouragement and inspires one to access credit, the banks often require the applicant to own an account into which the monies will be paid when successful. Ownership of the bank account also serves as a first step to the use of other bank products such as internet banking, automated teller machines, chequebooks among others which further deepens the level of financial inclusion.

### 2.2.2. Use of financial products

Previous studies have indicated that access to formal financial institutions and ownership of financial products do not necessarily result in the use of final products (Iyer, 2015; Kon & Storey, 2003). In India, increased access to financial services through the opening of bank accounts did not translate into increased use of financial services for savings and investments, as most of the accounts remained dormant. Farmers and other vulnerable people in the rural areas still preferred to borrow from local money lenders even at higher interest rates (Iyer, 2015).

On the contrary, use of financial products and services is mainly driven by trust in financial institutions (Park, 2020). Available evidence suggests a positive relationship between an individual's trust for their financial institution and their general trust in institutions, including trust in supervisory institutions like central banks to ensure banks operate within the rules, as important drivers of individuals' use of financial products (Oehler & Wendt, 2018; van der Crujjsen et al., 2020). The degree of financial inclusion that helps minimize income inequality is more likely in countries with strong institutional quality (Sawadogo & Semedo, 2021).

Mol-Gómez-Vázquez et al.'s (2022) analysis of data from the European Union showed that introducing stricter regulations to improve banking system stability does not negatively impact SMEs' access to finance. Ahamed et al. (2021) found that the performance of banks in developing countries is enhanced by financial inclusion. The association is stronger in countries with stringent financial regulations and fewer limits on banking activities, which allows banks to profit from investing low-cost capital from deposits in high-return investments. However, disproportionately focusing on credit inclusion is likely to compromise financial sector stability when competition induces risky lending without sufficient regard to borrowers' ability to repay (Feghali et al., 2021). Ghosh (2021) found that having a high level of trust in the Indian financial system, particularly state-owned banks, was linked to account ownership and use. Baidoo and Akoto (2019) found a positive relationship between trust in banks and the likelihood that an individual will save at financial institutions.

## 3. Financial sector crisis, trust and financial inclusion in Ghana

In recent years, Ghana's financial sector has faced diverse and successive scandals that could have adversely impacted the public's trust and confidence in the sector. The crises resulted from poor business practices which resulted in weak capital positions in Ghana's banking sector (Oxford Business Group, 2020). Since 2015, the Bank of Ghana (BoG) or the central bank has been addressing the sector's manifold challenges – poor corporate governance practices, weak risk management practices, liquidity challenges and regulatory breaches (BoG, 2020).

Among the major financial sector scandals involved Ponzi schemes that attracted many customers with their unsustainable high interests for low-risk investments that led to their collapse (Ofori, 2020). In 2015, the BoG suspended the operations of DKM Diamond Microfinance Limited for several breaches of the Banking Act (Ofori, 2020). Menzgold Ghana Limited persisted in retaining the gold it sold to customers and trade it on their behalf in return for an average of seven to ten percent monthly returns to customers. The BoG indicated that Menzgold was engaging in unauthorized deposit-taking and warned the public against doing business with a potential Ponzi scheme, but the operations persisted until the BoG shut down the company in 2018 to safeguard customers' funds. Yet, many customers' funds remained locked up. Similar actions were taken against other non-compliant microfinance companies—Little Drops Financial Services, Care for Humanity, Jaster Motors and Investment Limited, God is Love Fun Club and Perfect Edge Group—that were operating similar schemes as Menzgold, leading to the loss of investors' funds (Daily Guide, 2019; Ofori, 2020).

The ensuing public discourse (often with political undertones) on the happenings in the financial sector centred on the lax regulatory regime that allowed would-be players to obtain licenses with falsified information. The public was concerned with the widespread reports about rising bad loans, bank executives' misappropriating customers' deposits and unable to honour depositors' withdrawal requests and the sucking up of investors' funds by Ponzi schemes (BoG, 2020; Daily Guide, 2019; Ofori, 2020). Among other things, Ofori (2020) indicates that these happenings in the financial sector and the associated loss of customers' funds led to a loss of trust and confidence in the financial sector, with the tendency to reduce the use of current and future financial services.

This loss of trust in the financial sector led to panic withdrawals and it is partly accountable for the slowdown in the growth of total deposits in the country. The average growth rate of deposits in the banking sector between 2014 and 2016 was 20% (Pricewater Coopers, 2019). However, this percentage reduced an average of 6% in the subsequent years until 2018 (Pricewaterhouse Coopers, 2019). “The significant decline in the growth of deposits reflects the general uncertainty on the future outcome of banks” (Pricewaterhouse Coopers, 2019, p. 45). Low savings reduces the total amount of capital available in the economy that can be lent to businesses and this, in turn, reduces the potential for economic growth (BoG, 2020; Ofori, 2020).

In response, the BoG set out with regulatory and reformatory actions not only to safeguard investors' capital but to ultimately maintain or restore public confidence/trust in the financial sector (BoG, 2020). Hence, “The Bank of Ghana continued to allay the concerns of the public through media communications on the soundness of the banking sector” (Pricewaterhouse Coopers, 2019, p. 45). In the mainstream banking and deposit-taking sectors, the publicly-owned GCB Bank, in 2017, took over two private banks – UT Bank Limited and Capital Bank Limited—whose licenses were revoked by the BoG due to the affected banks' capital impairment and

governance challenges (GCB Bank, 2017). For similar reasons, the Bank of Ghana, in 2018, merged the operations of five private banks—the Royal Bank, Construction Bank, Sovereign Bank, Unibank and The Beige Bank—into its newly-created Consolidated Bank Ghana Limited (Goldstreet Business, 2018).

Again, in 2019, 23 savings and loans companies and finance houses lost their licenses for becoming insolvent (BoG, 2019). The BoG also revoked the licenses of over 300 microfinance and microcredit companies partly due to insolvency (Business News, 2019). Before that, 70 microfinance and money lending companies had had their operations truncated in 2016 following their inability to meet the conditions for the issuance of final licenses upon the expiration of their provisional licenses (MyJoyOnline, 2016). The Securities and Exchange Commission Ghana also revoked the licenses of 53 fund management companies for largely failing “to return client funds which remain locked up ...” and failing to “perform their functions efficiently, honestly and fairly ...” (Securities and Exchange Commission and Ghana, 2019).

In 2019, the banking sector saw a rebound, recording a 38.3% growth rate in deposits (Pricewaterhouse Coopers, 2020). This new growth rate represents a significantly higher yearly deposits average growth rate of 11.3% between 2015 and 2018 (Pricewaterhouse Coopers, 2020). Among other things, Pricewaterhouse Coopers (2020). attributes the 2019 growth rate in deposits to a

... shift in customer preference to commercial banks in response to the series of revocation of licenses for savings and loans companies, microfinance companies and fund managers executed by their regulators ... The growth in deposits indicates renewed confidence in the banking sector (Pricewaterhouse Coopers, 2020, p. 61).

Considering the loss of bank trust emanating from Ghana’s financial sector crisis, and the reformatory actions of the BoG to cleanse the sector in its quest to restore trust/confidence, it is worthwhile to investigate the link between bank trust and financial inclusion using Ghana as a case study. This will provide an empirical basis for stakeholders to either support or oppose the actions taken by the central bank.

From the expositions above, we summarise and present the link between bank trust, borrower discouragement and financial inclusion in Fig. 1. Based on the relationships deduced from the narratives and the conceptual framework, we test the following hypotheses:

- H1. There is a positive association between bank trust and financial inclusion.
- H2. Male-female difference exists in the positive relationship between bank trust and financial inclusion.
- H3. There are rural-urban heterogeneities in the positive association between bank trust and financial inclusion.
- H4. Borrower discouragement serves as an important pathway through which bank trust positively affects financial inclusion.

#### 4. Data and variables

The secondary data for this study was extracted from the seventh round of the Ghana Living Standards Survey (GLSS7) which was conducted by the Ghana Statistical Service (GSS) in 2016/17 over a 12-month period. The period for data collected also coincided with the financial sector crisis in Ghana. The survey employed a two-stage probability sampling method and collected data on demography, entrepreneurship, personal financial variables and assets, ownership and use of finance products, education, health, water and sanitation, disability, migration, agriculture, non-farm enterprises, governance, and others. The GLSS7 targeted 15,000 households in

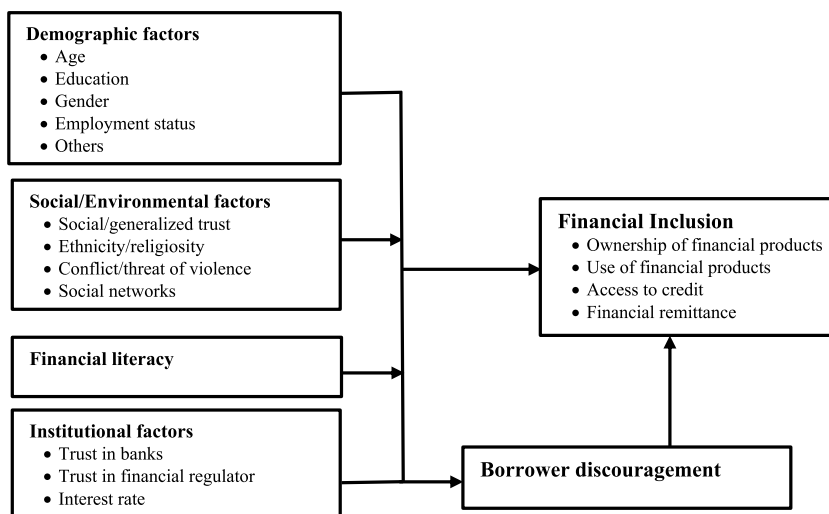


Fig. 1. Conceptual link between bank trust, borrower discouragement and financial inclusion.

Source: Authors’ construct



214 districts across Ghana's then 10 (now 16) administrative regions. With a response rate of 93.4%, the final sample comprised 59,864 individuals from 14,009 households (GSS, 2018). After extracting a single file containing all the variables of interest based on our minimum age inclusion criterion, the sample size reduced to 35,127 individuals aged 15 years and above. The lower bound age of 15 years was chosen because it is the age at which individuals are allowed to own an account in many countries including Ghana. Existing financial inclusion surveys, such as the Global Findex, use this age threshold (Demirgüç-Kunt et al., 2018) and the InterMedia Financial Inclusion Insights (FII) surveys (InterMedia, 2017). Due to missing data, regressions with the most observations had 20,105 individuals.

#### 4.1. Financial inclusion

Financial inclusion is defined as the provision of useful and affordable financial products and services (including payments, savings, credit, and insurance) that satisfy the needs of people and businesses in a responsible and sustainable manner (World Bank, 2018). In recent studies, financial inclusion is considered a multidimensional construct that comprises ownership and use of financial products (including mobile money account); risk management (insurance), savings accounts, access to credit and receipt of remittance (Aslan et al., 2017; Demirgüç-Kunt et al., 2018; Koomson et al., 2020a; Koomson & Ibrahim, 2018; Lee et al., 2020). Given its critical role in the 18% increase in financial inclusion globally, it has become imperative to consider mobile money as an indicator of financial inclusion available (Bukari & Koomson, 2020; Demirgüç-Kunt et al., 2018). For sub-Saharan Africa, in particular, the proportion of the population who own a mobile money account is 21% (Demirgüç-Kunt et al., 2018). Tram, Lai, & Nguyen, 2021 introduced what they described as a composite financial inclusion index by adding “mobile money”-related indicators to the dimensions of penetration, availability, and use of financial services, which are often used to determine financial inclusion. Consistent with existing studies (Aslan et al., 2017; Koomson et al., 2020a; Peprah et al., 2020; X. Xu, 2020), we employ multiple correspondence analysis to generate a financial inclusion index from 14 binary indicators across three dimensions—ownership of financial products, use of financial products, and access to credit. The summary statistics for the indicators used are reported in Table A1.

##### 4.1.1. Multiple correspondence analysis (MCA)

We apply MCA to produce a financial inclusion index since our 14 indicators of financial inclusion are all binary (Aslan et al., 2017; Koomson et al., 2020a; Peprah et al., 2020). Again, MCA is applied because it is a generalised version of principal components analysis which is specifically meant for categorical rather than continuous variables (Abdi & Valentin, 2007, pp. 651–657; Stata, 2015). Similar to previous studies, and as depicted in Table A2, we produced our index from dimensions 1 and 2 because these dimensions explain 71.29% of the variations in the financial inclusion index (Aslan et al., 2017; Koomson et al., 2020a; Peprah et al., 2020). In other words, dimensions 1 and 2 capture 71.29% of the characteristics of all 14 indicators combined. As a note, the percentages of the principal inertias do not produce a cumulative percentage of 100% because they are lower-bound estimates in the Burt method with adjustments (Stata, 2015). The financial inclusion index is a continuous variable for which a unit increase reflects an improvement in financial inclusion. Apart from the overall/broad financial inclusion index that cuts across all three dimensions, we also followed the approach used by Xu (2020) to include three narrow indexes of the construct for robustness checks purposes. The first narrow index uses only indicators of account ownership, while the second uses only indicators that depict usage of financial products (or account use). The third narrow measure is a binary variable for access to credit.

#### 4.2. Trust in banks

Trust in banks is measured as a binary variable from a question in the GLSS7 which asked respondents whether they trust in the efficiency of banks. Responses to this question are “1 = Very efficient”; “2 = Efficient”; “3 = Inefficient”; and “4 = Very inefficient”. Respondents had the option to either refuse to answer or to simply respond “Don't know”. Those who selected option 1 or 2 were categorised as having trust in banks and were coded 1, while either of the third or fourth responses were also coded 0 to depict lack of trust for banks. This conceptualization is similar to that used by Xu (2020) and Galiani et al. (2020). The description and summary statistics of all variables included in the analyses are presented in Table A3.

### 5. Empirical specification and methods

We estimate the link between trust in banks and financial inclusion using ordinary least squares (OLS) since financial inclusion is a continuous variable. Akin to the study on social trust (X. Xu, 2020), we suspect endogeneity to be inherent in the relationship between bank trust and financial inclusion. The endogeneity could emanate from reverse causality or from omitted variables. In terms of reverse causality, we argue that while an increase in trust for banks can influence financial inclusion, some people also develop trust/mistrust for banks based on previous engagements or experience with banks. For omitted variables, our model could be missing unobserved variables that capture systematic differences in geographic and supply-side structures which can jointly influence financial inclusion and trust for banks.

To solve the endogeneity issue, we employ the average level of bank trust in respondents' neighbourhood [but outside their household] as an instrument in a two-stage least squares (2SLS) or instrumental variables (IV) procedure. This is synonymous with the often-used ‘leave-out-mean’ trust in banks among neighbours in a cluster which excludes each respondent's household in the computation so as to avoid in-built correlation (Hossain et al., 2019; Lenze & Klasen, 2017). We argue that the instrument is valid because a person's trust for banks can be influenced by that of their neighbours. On the contrary, the average level of trust for banks

among a respondent’s neighbours is not expected to directly influence the respondent’s decision to own or use a financial product unless it indirectly does so by first influencing their trust for banks. Hossain et al. (2019) consider leave-out-mean instruments as similar to treatment variables despite their continuous nature. Based on the clarifications above, we specify our first and second stage equations below:

First stage

$$Trust_i = \alpha ABT_i + \lambda_n X_{n,i} + \delta_R + v_i \tag{1}$$

Second stage

$$FI_i = \beta_1 \widehat{Trust}_i + \gamma_n X_{n,i} + \mu_R + \varepsilon_i \tag{2}$$

where *FI* is the financial inclusion index; *Trust* represents bank trust which is captured as 1 for trust and 0 otherwise; *ABT* is the average bank trust in respondents’ neighbourhood [but outside their household]; and *X* is a set of control variables established as drivers of financial inclusion in previous studies. These variables include social trust, age, household size, mobile phone ownership, gender, education, marital and employment statuses, location, and financial transaction cost (Guiso et al., 2004; Iyer, 2015; Sanderson et al., 2018; X. Xu, 2020).  $\delta$  and  $\mu$  capture regional fixed effects;  $\lambda$  and  $\gamma$  are coefficients to be determined, while  $\gamma$  and  $\varepsilon$  are random error terms. Apart from the main models, we also estimate subsampled models for males and females and for rural and urban locations.

To ensure robustness in findings, we apply the Lewbel (2012) 2SLS and propensity score matching (PSM) (Kofinti et al., 2022; Koomson & Danquah, 2021; Martey et al., 2022; Rosenbaum & Rubin, 1983) techniques which are both quasi-experimental methods used in addressing endogeneity. These methods are detailed in Section 6.2 where they are applied.

## 6. Results

### 6.1. Baseline results

The estimated relationship between bank trust and financial inclusion is presented in Table 1. The complete version of the results with all variables is presented in Table A4. Results from the full sample (main results) are reported in Column 1, while estimates for the male and female subsamples are presented in Columns 2 and 3, respectively. Rural- and urban-specific estimates can be found in Columns 4 and 5. In Column 1, we observe that, overall, financial inclusion among those who have trust in banks is 19.1 percentage points higher, compared to those without trust. We see from Columns 2 and 3 that while financial inclusion is 23.0 percentage points higher among men who have trust in banks, it is 14.4 percentage points higher among women. In Columns 4 and 5, bank trust is associated with 8.5 percentage points higher level of financial inclusion among rural residents, while the outcome is 26.4 percentage points among their urban counterparts. In general, these findings suggest that promoting trust in banks is likely to be associated with increased financial inclusion. Our findings are in line with that of (X. Xu, 2020) and Galiani et al. (2020) who found that confidence and trust in banks are positively associated with financial inclusion. Our findings also lend empirical support to existing studies that have conceptually linked bank trust to financial inclusion (Demirgüç-Kunt et al., 2018; Fungáčová et al., 2019).

Despite the results above, OLS estimates are biased in the presence of endogeneity associated with the variable of interest. This is addressed by estimating 2SLS regressions in which the average level of bank trust in respondent’s neighbourhood is used as an instrument and the results are presented in Table 2. Expectedly, there is a positive association between the average level of bank trust among respondent’s neighbours and respondent’s own trust for banks (see first stage estimates in Columns 1 to 5). Since all the F-statistics are greater than the threshold of 10, we can infer that our instrument is not weakly associated with bank trust (Stock & Yogo, 2002). We can also deduce that the endogeneity associated with bank trust results in a downward bias in our baseline results. This is because the baseline estimates are of smaller magnitude, compared to the 2SLS results reported in Table 2. In Column 1, we see that financial inclusion among those who have trust in banks is 34.3 percentage points higher, compared to those without trust.

In essence, our finding supports H1 because bank trust is positively associated with financial inclusion at 1% alpha level. This

**Table 1**  
Trust in banks and financial inclusion (Baseline results).

Variables	(1)	(2)	(3)	(4)	(5)
	Full	Gender Male	Female	Location Rural	Urban
Trust in banks	0.191*** (0.042)	0.230*** (0.061)	0.144** (0.058)	0.085* (0.044)	0.264*** (0.067)
Female	Yes	No	No	Yes	Yes
Rural	Yes	Yes	Yes	No	No
All other control variables	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes
Chow test: p-value on equality of effects (2)=(3): 136.15*** (4)=(5): 835.31***					
Observations	20,105	10,274	9831	10,257	9848
R-squared	0.0289	0.0233	0.0367	0.0461	0.0290

Robust standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

**Table 2**  
Trust in banks and financial inclusion (2SLS results).

Variables	(1)	(2)	(3)	(4)	(5)
		Gender		Location	
	Full	Male	Female	Rural	Urban
Trust in banks	0.343*** (0.062)	0.382*** (0.081)	0.299*** (0.094)	0.138** (0.059)	0.475*** (0.100)
All control variables	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes
<i>First-stage</i>					
Neighbours who trust in banks	0.853*** (0.011)	0.855*** (0.016)	0.850*** (0.016)	0.846*** (0.018)	0.855*** (0.015)
F-statistic	5597.69	2932.22	2671.58	2218.70	3325.55
Chow test: p-value on equality of effects (2)=(3): 130.71*** (4)=(5): 851.68***					
Observations	19,953	10,168	9785	10,175	9778
R-squared	0.028	0.022	0.035	0.046	0.027

Robust standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

positive association between bank trust and financial inclusion can largely be attributed to the Bank of Ghana's regulatory and reformatory actions in response to the 2017 banking sector crises which are gradually restoring public trust/confidence in the financial sector. Based on this, we can infer that the promotion of policies that enhance bank trust can complement those set out in the NFIDS to achieve an 83% financial inclusion in Ghana by 2023 as targeted by Ministry of Finance (2018). Positive bank trust policies can also go a long way to aid in the achievement of the World Bank's universal financial inclusion target. This finding aligns with findings from studies that show that countries with strong institutional quality experience higher financial inclusion. (Feghali et al., 2021; Mol-Gómez-Vázquez et al., 2022; Sawadogo & Semedo, 2021).

Regarding the gender and locational dimensions, we see from Columns 2 and 3 that while financial inclusion is 38.2 percentage points higher among men who have trust in banks, it is 29.9 percentage points higher among women. In Columns 4 and 5, bank trust is associated with 13.8 percentage points higher level of financial inclusion among rural residents, while the outcome is 47.5 percentage points among their urban counterparts. Comparatively, bank trust is associated with higher levels of financial inclusion among males and urban residents than it is among females and rural residents. This is likely the case because males and urban residents have already been documented as having higher levels of financial inclusion (GSS, 2018; Koomson et al., 2020a; Koomson et al., 2020b) so an increase in the level of trust is expected to impact positively on financial inclusion in general but to change existing gaps.

Our study is also different from that of Galiani et al. (2020) and Xu (2020) because we provide gender and location-specific dimensions of the associations between bank trust and financial inclusion. The Chow tests of equality (in Tables 1 and 2) have significant p-values which indicate that the estimated relationship between bank trust and financial differ statistically between male-female and rural-urban subsampled models, enabling coefficients to be compared. The results confirm H2 (Male-female difference exists in the positive relationship between bank trust and financial inclusion) and H3 (There are rural-urban heterogeneities in the positive association between bank trust and financial inclusion). This finding contrasts with Ghosh's (2021) report that trust did not appear to have a substantial impact on financial inclusion in rural areas.

**Table 3**  
Trust in banks and financial inclusion (Lewbel 2SLS).

Variables	(1)	(2)
	Internal instruments only	Internal & external instruments
Trust in banks	0.400*** (0.093)	0.349*** (0.061)
All control variables	Yes	Yes
Regional fixed effects	Yes	Yes
<i>First-stage</i>		
Neighbours who trust in banks		0.783*** (0.016)
F-statistic		384.01
J p-value	0.1374	
Observations	20,105	19,953
R-squared	0.027	0.027

Robust standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.



## 6.2. Robustness/sensitivity analysis

In this section, we discuss a number of sensitivity checks that are performed on our main results. The first two are done using different quasi-experimental methods, while the third is done using narrow measures of financial inclusion. First, we employ the Lewbel (2012) 2SLS procedure which uses heteroskedasticity in the data to produce internal instruments which are used to address endogeneity in a 2SLS process. Apart from using internal instruments, the Lewbel method also allows for a combination of both externally- and internally-generated instruments. These methods have been applied as robustness checks on standard 2SLS estimates when instruments have either been found strong or weak (Awaworyi Churchill et al., 2020; Koomson & Danquah, 2021).

In Column 1 of Table 3, we report results from the Lewbel 2SLS method that used internal instruments only, and it shows that financial inclusion among those who have trust in banks is 40.0 percentage points higher, compared to those without trust. Column 2 presents estimates which combined the average level of bank trust in a respondent's neighbourhood instrument with internally generated instruments. This also shows that financial inclusion is 34.9 percentage points higher among those who have trust in banks. A closer look at the estimates from the Lewbel (2012) method shows that they are consistent with standard 2SLS results and are also bigger than the baseline results although all methods applied point to the same direction of association between bank trust and financial inclusion.

Second, we analyse and present PSM results in Table 4. Similar to Rosenbaum and Rubin's (1983) approach, we use bank trust as a treatment variable to obtain its average treatment effect on financial inclusion. The counter-factual question answered is: What would have been the level of financial inclusion of a respondent in the treatment group (i.e., those who trust in banks), compared to its hypothetical outcome if the same person was to have been in the control group (i.e., those without trust)? To ensure consistency in derived estimates, the PSM results are obtained using a battery of matching techniques—nearest neighbour (1 and 5), radius, kernel and local linear regression matching methods. Across the five matching techniques, the average treatment effect on the treated (ATT) shows that the higher levels of financial inclusion among those who have trust in banks range from 9.9 to 18.8 percentage points. This also confirms the potential impact of bank trust in enhancing financial inclusion. Results from the Lewbel and PSM methods indicate that the positive relationship between bank trust and financial inclusion is consistent when different approaches to addressing endogeneity are applied.

Third, we use three narrow measures of financial inclusion to test for the robustness of our broader construct and present findings in Table 5. In Columns 1 and 2, respectively, we observe that ownership and use of various forms of accounts among those who have trust in banks are 25.5 and 43.3 percentage points higher, compared to those without trust. In Column 3, access to credit among those who have trust in banks is 1.5 percentage points higher. These findings align with our baseline estimates which confirms that our findings exhibit robustness when both broad and narrow approaches are used to conceptualise financial inclusion. Unlike Galiani et al. (2020), we find a significant association between bank trust and financial inclusion mainly because we used a multi-dimensional approach to conceptualise financial inclusion.

## 6.3. Potential Channel/mechanism

Among the channels through which bank trust can influence financial inclusion, we empirically examine the potential role of the discouraged borrower syndrome due to data availability. Consistent with previous studies (Alesina & Zhuravskaya, 2011; Awaworyi Churchill & Smyth, 2020; Koomson & Danquah, 2021; Koomson et al., 2023), we follow a two-step approach, using the full sample. Our measure of borrower discouragement is drawn from the GLSS7 question that asked respondents: “what was the main reason for not trying to obtain a loan?”. To produce a binary variable, responses such as “interest rate too high”; “demand for collateral” and “cannot obtain the amount needed” were coded as 1 to depict discouraged borrowers, while a “no need” response was coded 0 to indicate otherwise. In the first step, we test whether bank trust is significantly associated with borrower discouragement. In Table 6, we see that

**Table 4**  
PSM results with different matching methods.

Matching methods	Financial inclusion
	ATT
1 – Nearest Neighbour (one-to-one)	0.116*** (0.045)
5 – Nearest Neighbour	0.107** (0.043)
Radius	0.180*** (0.046)
Kernel	0.152*** (0.038)
Local linear regression	0.099*** (0.038)
Observations	20,105

Bootstrapped standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.  
Number of Bootstrap replications for all estimates is 50.

**Table 5**  
Trust in banks and financial inclusion (Narrowed measures).

Variables	(1)	(2)	(3)
	Account ownership index	Account use index	Access to formal credit
Trust in banks	0.255*** (0.041)	0.433*** (0.073)	0.015* (0.008)
All control variables	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes
Observations	20,105	10,274	9831
R-squared	0.153	0.174	0.045

Robust standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

**Table 6**  
Bank trust and borrower discouragement.

Variables	Borrower discouragement
Trust in banks	-0.064*** (0.016)
All control variables	Yes
Regional fixed effects	Yes
<i>First-stage</i>	
Neighbours who trust in banks	0.011*** (0.853)
F-statistic	5597.69
Observations	19,953
R-squared	0.061

Robust standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.  
Potential Channel/mechanism.

those who have trust in banks are 6.4 percentage points less likely to be discouraged. This relationship is consistent with findings from previous studies (Ampudia & Palligkinis, 2018; Tang et al., 2017).

In the second stage, we include the borrower discouragement variable as a covariate in the financial inclusion model and present results in Table 7. Borrower discouragement can only be considered a mediator if its inclusion in the model reduces the size of the coefficient of bank trust or makes it statistically insignificant. It is worthy to note that the sample size for the borrower discouragement model in Table 6 is smaller (i.e., 19,953), compared to the earlier ones (Tables 2–5), so we re-estimate the model which excludes the discouraged borrower variable by restricting the sample to the 19,953 respondents. This is done to ensure that all models for comparison are estimated using consistent sample sizes. Without the borrower discouragement variable in the financial inclusion model (see Column 1 of Table 7), financial inclusion is 34.3 percentage points higher among those who have trust in banks. In Column 2, we observe that financial inclusion is 32.9 percentage points higher among those who have trust in banks, while it is 22.5 percentage

**Table 7**  
Trust in banks and financial inclusion (potential channel analysis).

Variables	(1)	(2)
	Without mediator [For comparison] Financial inclusion	With mediator: Borrower discouragement Financial inclusion
Trust in banks	0.343*** (0.062)	0.329*** (0.062)
Borrower discouragement		-0.225*** (0.021)
All control variables	Yes	Yes
Regional fixed effects	Yes	Yes
<i>First-stage</i>		
Neighbours who trust in banks	0.852*** (0.011)	0.853*** (0.011)
F-statistic	5597.69	5598.03
Observations	19,953	19,953
R-squared	0.028	0.034

Robust standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1.

points lower among those who are discouraged.

In Column 2 of Table 7, we see that the inclusion of the discouraged borrower variable as a covariate in the financial inclusion model reduces the magnitude of the coefficient of bank trust (compared to the one in Column 1). The implication is that the discouraged borrower syndrome serves as an important channel through which bank trust influences financial inclusion. The intuition, in support of H4, is that trust in banks reduces borrower discouragement which, in turn, enhances financial inclusion.

## 7. Conclusion and recommendation

In this paper, we examine the effect of bank trust on financial inclusion in Ghana and the potential mediating role of borrower discouragement while accounting for the potential endogeneity of bank trust. Using MCA, we obtained a multidimensional financial inclusion index and measured bank trust as a binary variable. We used the average level of bank trust in respondents' neighbourhood as an instrument in a two-stage least squares instrumental variable approach and also employed other quasi-experimental methods to ensure consistency in findings.

We found that any policy designed to increase trust of household members in financial institutions could encourage them to engage the services of financial institutions more and improve financial inclusion in the country. From a gender perspective, our findings show that the higher levels of financial inclusion associated with bank trust are more evident for males and rural residents. Our findings provide ample support to financial sector regulations and policies of central banks that seek to promote trust in the financial sector. An example of such policies is that of the Bank Ghana which led to the revocation of licenses, mergers and taking over of non-performing banks, with the potential to restore trust and enhance financial inclusion as demonstrated in the considerable rise in deposits growth rate for 2019, compared to the preceding years. Our findings also reveal that the discouraged borrower syndrome mediates the relationship between bank trust and financial inclusion. In essence, promoting bank trust has the potential to reduce borrower discouragement which will eventually motivate people to engage with financial institutions not only to own financial products but to also use their services.

Based on the aforementioned findings, it is recommended that an effective and sustainable mechanism be put in place by the central bank to oversee and regulate the activities of financial institutions in the country in order to enable them to build a high level of trust among bank customers. Also, financial institutions should make conscious efforts to individually foster their clients' trust so as to reduce borrower discouragement which has been found to reduce financial inclusion.

While this study produced insightful findings, it was limited by the use of cross-sectional data, so we encourage future researchers to employ longitudinal data to examine the dynamics of the outcomes over time. Again, we only explored the mediating role of borrower discouragement due to data constraints, but future studies can be conducted to explore other channels that are relevant to the subject.

## Appendix

**Table A1**  
Indicators used in generating the FI index

Financial Inclusion indicators	Units	Mean	Std. Dev.
Dim 1: Ownership of financial products			
money account	binary	0.138	0.344
Current or cheques account	binary	0.064	0.245
Investment account	binary	0.006	0.077
Savings account	binary	0.248	0.432
Susu account	binary	0.003	0.052
Fixed deposit account	binary	0.002	0.042
E-zwich account	binary	0.005	0.072
Insurance policy	binary	0.248	0.432
Dim 2: Use of financial products			
Transact using cheque book	binary	0.206	0.404
Transact using ATM	binary	0.121	0.326
Transact using E-zwich card	binary	0.010	0.097
Transact using E-banking	binary	0.012	0.108
Transact using any other financial product	binary	0.054	0.227
Dim 3: Access to credit	binary	0.046	0.209
Financial inclusion index	continuous	0.020	0.842

Source: Authors' computation using GLSS7 data Std Dev: Standard Deviation Dim: Dimension

Susu: A form of mutual savings scheme widely used in Ghana Z-zwich: National Switch and Smart card payment system in Ghana that offers deposit-taking financial institutions (i.e., universal banks, rural banks and savings and loans) a platform to interoperate. ATM: Automated teller machine E-banking: Electronic banking.

**Table A2**  
Multiple correspondence analysis: Burt/adjusted inertias

Dimension	Principal inertia	Percent	Cumulative percent
Dim 1	0.017	63.46	63.46
Dim 2	0.002	7.84	71.29
Dim 3	0.001	3.49	74.78
Dim 4	6.18E-06	0.02	74.8

Source: Computed using the GLSS7 Dim: Dimension

**Table A3**  
Summary statistics

Variable	Description	Mean	Std. Dev.
Financial inclusion index	Continuous variable for financial inclusion produced generated MCA	0.028	1.237
Trust in banks	Binary variable equals 1 if respondent has trust in banks	0.905	0.293
Social trust	Binary variable equals 1 if respondent trusts neighbours	0.835	0.371
Age	Age of the household head	32.946	15.412
Age squared	Squared of respondent's age	1322.953	1273.012
Household size	Number of persons in respondent's household	5.242	3.138
Mobile phone ownership	Binary variable equals 1 if respondent owns a mobile phone	0.738	0.440
Female	Binary variable equals 1 if respondent is female	0.489	0.500
Educational status	Binary variable equals 1 if respondent is educated	0.997	0.055
Married	Binary variable equals 1 if respondent is married	0.373	0.484
Rural	Binary variable equals 1 if respondent resides in a rural area	0.510	0.500
Unemployed	Binary variable equals 1 if respondent is unemployed	0.074	0.262
Retired/inactive	Binary variable equals 1 if respondent is retired/inactive	0.099	0.298
Employee	Binary variable equals 1 if respondent is an employee	0.276	0.447
Self-employed	Binary variable equals 1 if respondent is employed	0.550	0.497
Financial transactions cost pc	Financial transactions cost per capita within respondent's household	0.168	6.222
Neighbours who trust in banks	Average number of people who trust banks respondent's neighbourhood	0.906	0.234
Discouraged borrowers	Binary variable equals 1 if respondent is a discouraged borrower	0.252	0.434

pc: per capita.

**Table A4**  
Trust in banks and financial inclusion (Baseline results)

Variables	(1)	(2)	(3)	(4)	(5)
	Full	Male	Female	Rural	Urban
Trust in banks	0.191*** (0.042)	0.230*** (0.061)	0.144** (0.058)	0.085* (0.044)	0.264*** (0.067)
Social trust	-0.131*** (0.026)	-0.072* (0.037)	-0.189*** (0.037)	-0.124*** (0.038)	-0.141*** (0.036)
Age	0.028*** (0.003)	0.015*** (0.004)	0.040*** (0.004)	0.030*** (0.003)	0.027*** (0.005)
Age squared	-0.002*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)
Household size	-0.007*** (0.003)	-0.010*** (0.004)	-0.005 (0.004)	-0.002 (0.003)	-0.011** (0.005)
Mobile phone ownership	0.044*** (0.016)	0.062*** (0.020)	0.033 (0.025)	0.080*** (0.020)	-0.039 (0.028)
Female (0/1)	0.090*** (0.017)			0.076*** (0.021)	0.100*** (0.027)
Educational status (0/1)	-0.001 (0.128)	-0.317 (0.330)	0.166 (0.101)	-0.074 (0.219)	0.114* (0.060)
Married (0/1)	0.091*** (0.025)	0.123*** (0.037)	0.087** (0.034)	0.161*** (0.031)	0.027 (0.038)
Rural (0/1)	0.048** (0.019)	0.054** (0.026)	0.040 (0.027)		
Employment status (Base = unemployed)					
Retired/inactive	-0.006 (0.041)	0.034 (0.052)	-0.058 (0.063)	-0.061 (0.044)	0.072 (0.069)
Employee	0.001 (0.039)	0.019 (0.052)	-0.012 (0.059)	-0.056 (0.045)	0.075 (0.063)
Self-employed	0.142*** (0.036)	0.153*** (0.048)	0.126** (0.054)	0.083** (0.037)	0.214*** (0.063)
log(financial trans cost pc)	-0.001 (0.002)	0.001 (0.001)	-0.008*** (0.002)	0.005 (0.009)	-0.001 (0.002)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	20,105	10,274	9831	10,257	9848
R-squared	0.029	0.023	0.037	0.046	0.029

Robust standard errors in parentheses \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1 pc: per capita.

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