

Do Small Banks Alleviate Households' Financial Constraints? – Surprising Evidence from the University of Michigan Surveys of Consumers*

Allen N. Berger
University of South Carolina
Wharton Financial
Institutions Center
European Banking Center
aberger@moore.sc.edu

Felix Irresberger
Cardiff University
irresbergerf@cardiff.ac.uk

Raluca A. Roman
Federal Reserve Bank
of Kansas City
raluca.roman@kc.frb.org

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Abstract

This paper is the first to analyze small bank comparative advantages/disadvantages in relieving household financial constraints. We match data on perceptions of household financial constraints from the University of Michigan Surveys of Consumers with local market banking data. The evidence suggests that small banks have significant *comparative disadvantages* relative to large banks in alleviating household financial constraints. Findings are robust to instrumental variables and other econometric methods, demographic groups, and market types. Better pricing and superior safety of large banks appear to more than offset better relationships with and greater trust in small banks. Research and policy implications are discussed.

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1. Introduction

A key function of financial institutions and markets is alleviating the financial constraints of economic agents. Most academic research on financial constraints focuses on businesses, particularly small businesses. The key issue is the inability of these firms to obtain funds to finance positive net present value projects, and how financial markets and institutions may be best able to relieve these constraints. In contrast, we are the first to analyze household financial constraints and the comparative advantages of banks of different sizes in alleviating these constraints.

The household financial constraints data are from responses to the University of Michigan Surveys of Consumers from 2000-2014.¹ The Surveys of Consumers is a rotating panel survey that gives each household in the coterminous U.S. (48 states plus the District of Columbia) an equal probability of being selected, and interviews are conducted each month by telephone.² The households are asked about their personal finances, outlooks for the economy, and perspectives on buying conditions for durables. Their answers are analyzed in different combinations to capture the households' perceptions of their financial constraints. Thus, while we are not able to observe actual household financial constraints, we capture their perceptions of financial constraints, which we believe is a strong proxy for actual constraints and is shown in other research to have powerful effects in predicting household behavior.³

The survey responses are matched with information on banks in the households' counties from Call Reports and Summary of Deposits, allowing us to test how banks of different sizes are able to alleviate households' financial constraints. We are the first to analyze how household financial constraints may be alleviated, and we are also the first, to our knowledge, to match the responses to the Michigan Surveys with

¹ Our initial data sample of county-level bank and other county characteristics are available for each county in the U.S. The sample was then sent to the University of Michigan where it was matched to the individual responses in a given county and subsequently anonymized. Therefore, to preserve respondent-level confidentiality, all conclusions in this paper cannot be derived from specifics' knowledge of the respondent or its county.

² Information on the Surveys of Consumers as well as the aggregate index data can be found on the University of Michigan's website at: <https://data.sca.isr.umich.edu/>.

³ The use of perceptions to proxy for financial constraints is also used in the small business financial constraints literature (e.g., Berger, Bouwman, and Kim, forthcoming).

financial data on the county level, and among the first to explore determinants of the survey responses.⁴ Prior research using the Michigan data typically employs responses summarized on the national level as a macroeconomic explanatory variable. In contrast, we use responses at the household level as dependent variables and employ county-level banking data to form the key independent variables.

Household financial constraints are important to study and may be even more economically consequential than small business financial constraints. Consumer spending accounts for more than two-thirds of U.S. GDP,⁵ so access to finance for households has important macroeconomic implications. In addition, many small businesses rely on owners, family, and friends for critical funding (e.g., Berger and Udell, 1998), so household financial constraints may also adversely affect financially constrained small businesses. Moreover, public confidence in the financial system stems largely from how effectively banks and other intermediaries provide households access to safe, secure, and affordable financial services (FDIC, 2015). Finally, households may be generally more financially constrained than small businesses because of greater informational opacity problems. Banks may generally have less hard, quantitative information available to them about households than small businesses on which to base financing decisions (e.g., Stein, 2002). Banks and other suppliers of external finance may also have less soft information on households than small businesses because of fewer long-term lending relationships.

Based on small business finance research, it might be expected that small banks would have comparative advantages over large banks in relieving household financial constraints. Small banks are found to have comparative advantages in relieving small business financial constraints through relationship lending and households face many of the same informational opacity problems and financial constraints as small businesses.⁶ Thus, small banks may be better able to use relationship lending to alleviate household

⁴ One of the few exceptions is a report by Toussaint-Comeau and McGranahan (2006), which explains survey responses with demographic data from respondents.

⁵ See, e.g., <http://data.worldbank.org/indicator/NE.CON.PETC.ZS?locations=US>.

⁶ For reviews of the relationship lending literature, see Boot (2000), Degryse, Kim, and Ongena (2009), Berger (2015), and Kysucky and Norden (2016).

financial constraints (the *Relationship Channel*). In addition, households may trust small banks more than large banks (the *Trust Channel*).

However, it is alternatively possible that small banks have comparative disadvantages in dealing with households. Large banks may have economies of scale that allow them to offer superior deposit and loan rates (the *Economies of Scale Channel*). Large banks may also be better able to relieve household concerns about bank safety and continuity of services because they are generally better diversified, subject to more prudential regulation and supervision, and have greater access to implicit government guarantees than small banks (the *Safety Channel*).

We formulate and test between alternative hypotheses representing these opposing views. Our main dependent variable in the hypothesis tests is the *Index of Consumer Sentiment (ICS)* created by the University of Michigan, which is compiled from households' responses to five questions about perceptions of financial constraints. We regress *ICS* on *Small Bank Share*, the proportion of small bank branches to total bank branches in the household's county, controlling for a broad set of respondent characteristics, bank and county characteristics, year-quarter and county fixed effects. The *Small Bank Share* coefficient captures the comparative advantages/disadvantages of small banks relative to large banks in alleviating household financial constraints. The *ICS* is an inverse indicator of financial constraints, so a positive coefficient on *Small Bank Share* would suggest small bank comparative advantages in alleviating these constraints and a negative coefficient would suggest disadvantages.

Our results are quite surprising. We provide statistically and economically significant evidence that higher small bank share *negatively* affects consumer sentiment, and this finding is consistent across household groups. We also investigate the channels through which this may occur. The results suggest that both of the hypothesized channels through which large banks may have comparative advantages in alleviating household financial constraints are likely operative. We find that large banks offer more favorable prices to consumers on relatively safe deposit and loan products than small banks, consistent with

the *Economies of Scale Channel*, and small banks offer more favorable prices on relatively risky products, consistent with the *Safety Channel*. The data on the quantities of these products are similarly consistent with these channels. Together, these channels appear to more than offset any possible relationship advantages of small banks (the *Relationship Channel*) or greater trust in small banks (the *Trust Channel*).

To ensure robustness, we re-run our tests using alternative proxies for household financial constraints, alternative proxies for small bank share, alternative estimation methods, and a battery of cross-sectional analyses to address bank, household, local market, and time heterogeneity. We also address potential endogeneity issues using an instrumental variable (IV) analysis. In each of these checks, we find that our main results hold. In additional analyses, we examine the impact of small bank share on the components of *ICS* to identify the sources of the negative effects of small banks. We find that our results are primarily driven by pessimism about the future.

Our paper contributes to several strands of literature. First, we extend the literature on financial constraints, which focuses on small businesses. Second, we add to the literature on the comparative advantages and disadvantages and social benefits and costs of small banks versus large banks. Finally, we expand the literature on the University of Michigan Surveys of Consumers – which normally uses the data at the national level as a macroeconomic determinant – by examining its determinants for individual households using county-level financial institutions data. As discussed in the conclusion, our findings may also have important policy implications.

The remainder of the paper is organized as follows. In the next section, we review the related literature. Section 3 discusses our channels and hypotheses, and Section 4 describes the data. Section 5 presents our main results, while Section 6 presents robustness checks. In Section 7, we investigate the channels that may explain our results in Sections 5 and 6. Section 8 concludes.

2. Literature Review

Our paper is related to several distinct literatures, which we group into four categories: 1) financial

constraints; 2) small bank comparative advantages in dealing with small businesses; 3) large bank comparative advantages in economies of scale and safety, and 4) household sentiment and surveys.

2.1 Financial Constraints Literature

A large literature focuses on financial constraints and the role of financial institutions and markets to alleviate them (e.g., Fazzari, Hubbard, and Petersen, 1988; Whited, 1992; Kashyap, Lamont, and Stein, 1994; Gilchrist and Himmelberg, 1995; Kaplan and Zingales, 1997; Almeida, Campello, and Weisbach, 2004; Whited and Wu, 2006; Campello, Graham, and Harvey, 2010; Hadlock and Pierce, 2010). Most of this research focuses on firms, particularly small businesses. Small businesses may often be unable to fully engage in positive net present value activities due to informational opacity problems, making it infeasible for financial market participants and institutions to evaluate these firms' opportunities (e.g., Fazzari, Hubbard, and Petersen, 1988; Campello, Graham, and Harvey, 2010). Banks are often considered to be “special” in their abilities to screen and monitor borrowers to gather information and alleviate these constraints because of specialization, economies of scale, and relationships (e.g., Campbell and Kracaw, 1980; Diamond, 1984; James, 1987; Billett, Flannery, and Garfinkel, 2006). In contrast to the extant literature on firms, we analyze for the first time the determinants of household financial constraints and how they are affected by the local banking market environment.

2.2 Small Bank Comparative Advantages: Relationship Lending and Consumer Trust

2.2.1 Relationship Lending

The banking literature discusses comparative advantages of small and large banks in alleviating firm financial constraints using different lending technologies. The conventional wisdom is that large banks specialize in hard, quantitative information technologies – such as financial statement lending, credit scoring, and fixed-asset lending technologies. This specialization gives large banks comparative advantages in lending to less opaque, larger, and and/or older firms with certified audited financial statements and public debt and equity. In contrast, while small banks specialize in soft, qualitative information

technologies, like relationship lending, and have comparative advantages in lending to more opaque, smaller, and younger firms. Small banks are considered to be better at using soft information, since this information is easier to be transmitted within a less complex organization with fewer managerial layers (e.g., Berger and Udell, 2002; Stein, 2002; Liberti and Mian, 2009).

A significant amount of empirical research supports this conventional wisdom (e.g., Petersen and Rajan, 1994; Berger and Udell, 1995; Berlin and Mester, 1999; Haynes, Ou, and Berney, 1999; Boot and Thakor, 2000; Berger and Udell, 2002; Stein, 2002; Cole, Goldberg, and White, 2004; Scott, 2004; Berger, Miller, Petersen, Rajan, and Stein, 2005; Liberti and Mian, 2009; Canales and Nanda, 2012; Berger, Cerqueiro, and Penas, 2015; Kysucky and Norden, 2016). Notwithstanding this conventional view, other research suggests that technological progress in hard information technologies such as credit scoring and fixed-asset lending helped large U.S. banks overcome any comparative advantage of small banks for at least some small business borrowers. This led to an increase in lending distances over time and made it easier for the large banks to serve small, opaque firms using hard information (e.g., Frame, Srinivasan, and Woosley, 2001; Petersen and Rajan, 2002; Hannan, 2003; Frame, Padhi, and Woosley, 2004; Berger, Frame, and Miller, 2005; Berger and Udell, 2006; Brevoort and Hannan, 2006; Berger and Black, 2011; DeYoung, Frame, Glennon, and Nigro, 2011; Van Ewijk and Arnold, 2014).

Some papers also suggest that the importance of small banks' comparative advantage in relationship lending may have diminished over time and business customers may now value more the relative convenience of the different types of banks (e.g., Berger, Rosen, and Udell, 2007; Durguner, 2012; Berger, Goulding, and Rice, 2014). In contrast, the results of two recent studies suggest that small businesses have significantly better outcomes when there is a greater local presence of small banks. Berger, Cerqueiro, and Penas (2015) find that greater small bank presence leads to significantly more lending to recent start-ups and slightly lower firm failure rates during normal times. Berger, Bouwman, and Kim (forthcoming) use small business managerial perceptions of financial constraints and find that small banks still have comparative advantages in alleviating these constraints.

2.2.2 Consumer Trust

Evidence from the *Chicago Booth / Kellogg School Financial Trust Index Survey* suggests that small banks may also have comparative advantages in being trusted more by households than large banks. Figure 1, which uses that survey, shows that about twice as many people trust local banks (typically small), than trust national banks (typically large). This margin is also relatively constant over time. Trust is defined as the expectation that the institution will perform actions beneficial or at least not detrimental to others.

2.3 Large Bank Comparative Advantages: Economies of Scale and Safety

2.3.1 Economies of Scale for Large Banks

The literature on bank scale economies from the late 1980s to early 1990s starts the modern approach of specifying multiple banking products. The researchers specify the translog functional form, which essentially forces the multi-product average cost curve to display either a perfectly flat shape, a U shape, or an inverse U shape. That is, unless all of the second-order log terms are estimated to be zero, there must be at least marginal scale economies at smaller bank sizes and at least marginal scale diseconomies at larger bank sizes or vice versa (see Berger, Hunter, and Timme, 1993, for a summary). These early studies using data from the 1990s and earlier find moderate scale economies for small banks and moderate scale diseconomies for large banks, with the inflection point varying between less than \$1 billion to up to \$10 billion in bank assets, depending on the sizes of banks included in the samples (e.g., Hunter and Timme, 1986, 1991; Berger, Hanweck, and Humphrey, 1987; Ferrier and Lovell, 1990; Hunter, Timme, and Yang, 1990; Noulas, Ray, and Miller, 1990; Berger and Humphrey, 1991; Bauer, Berger, and Humphrey, 1993).

Later research using data from this same period specifies the more general Fourier-flexible functional form – which includes the translog as a special case and does not force any shape on the average cost curve – finds scale economies at bank sizes up to between about \$0.5 billion and \$5 billion, and essentially no scale economies or diseconomies for larger sizes (e.g., McAllister and McManus, 1993; Mitchell and Onvural, 1996). Further research using the Fourier-flexible functional form, but applying it to

data from 1990-1995 finds scale economies even at the sizes of the largest institutions (e.g., Berger and Mester, 1997). The change might be explained by technological progress in information and lending technologies, as well as geographic and other deregulation that allows banks to operate more efficiently at larger scales. More recent research using later banking data similarly find scale economies at large bank sizes (e.g., Feng and Serlitis, 2010; Wheelock and Wilson, 2012, 2016; Dijkstra, 2013; Hughes and Mester, 2013, 2015). This literature is consistent with the *Economies of Scale Channel*, under which large banks use their economies of scale to offer superior deposit and loan rates to households.

2.3.1 Safety of Large Banks

Large banks may be better able to relieve household concerns about bank safety and continuity of services than small banks due to: 1) better diversification, 2) more prudential regulation and supervision, and 3) greater access to implicit government bailout guarantees. We provide evidence on each of these in turn.

First, large banks are more diversified than small banks, but this diversification does not always necessarily result in lower risk because large banks tend to hold less capital, and so may offset any reductions in credit risk with increases in leverage risk. In addition, diversification may not always reduce credit risk because it may involve more investment into riskier assets. Finally, banks that engage in a broader set of activities may be more subject to managerial agency problems. There is significant empirical research on three types of diversification of large U.S. banks – geographic diversification into multiple states, geographic diversification into different countries, and product diversification into nontraditional commercial bank activities, such as investment banking and off-balance sheet activities. The literature is mixed on the effects of geographic diversification into multiple states on bank risk, with some finding essentially no overall effect (e.g., Hughes, Mester, and Moon, 1996; Demsetz and Strahan, 1997), but others finding reduced risk (e.g., Deng and Elyasiani, 2008; Goetz, Laeven, and Levine, 2016). International diversification by U.S. banks is found to increase bank risk, with the magnitude of the being more pronounced during financial crises (e.g., Berger, El Ghoul, Guedhami, and Roman, forthcoming). Finally,

product diversification is found to have mixed effects on risk and performance (e.g., Stiroh and Rumble, 2006; Laeven and Levine, 2007; LePetit, Nys, Rous, and Tarazi, 2008).

Second, large banks are subject to more prudential regulation and supervision than small banks. While most U.S. banks are annually examined, federal supervisors typically keep offices in and continuously examine the largest banks. Banks with over \$100 billion in assets are subject to the stress tests starting in 2009 (aka Supervisory Capital Assessment Program (SCAP) and Comprehensive Capital Analysis and Review (CCAR)), and those with over \$10 in assets have to undergo versions of the stress tests starting in 2014, the last year of our sample. Banking organizations above \$10 billion in assets are also subject examined by the Consumer Financial Protection Bureau under the Dodd-Frank Act of 2010.

Finally, large banks may also be perceived as being more likely to receive government bailouts, especially the very largest banks that are sometimes considered to be too-big-to-fail (TBTF). Supporting this, nine very large financial institutions were essentially “forced” to take the initial Troubled Asset Relief Program (TARP) bailouts in October 2008, before all the other banks were able to apply for these funds. Some literature finds positive stock and bond effects for the TBTF banks (e.g., O'Hara and Shaw, 1990; Santos, 2014; Gandhi and Lustig, 2015). These banks may also be less subject to deposit withdrawals and bank runs, and may even benefit from inflows of deposits during financial crises (e.g., Martinez-Peria and Schmukler, 2001; Osili and Paulson, 2014; Iyer and Puri, 2012; Iyer, Puri, and Ryan, 2013; Brown, Guin and Morkoetter, 2016; Oliveira, Schiozer, and Barros, 2015).

2.4 Literature on Household Sentiment and the Surveys of Consumers

The aggregate form of the *ICS* is shown to be a significant predictor of economic outcomes in a variety of settings such as marketing and consumption behavior (e.g., Gaski and Etzel, 1986; Souleles, 2004), asset prices in financial markets (e.g., Lemmon and Portniaguina, 2006), and macroeconomic effects such as inflation and gross domestic product (Batchelor and Dua, 1998).

While the *ICS* is used in other studies as an independent variable on a national level, to our

knowledge, we are among the first to examine its determinants on an individual household level. The two studies that come closest are as follows. One study explains the components of *ICS* using respondent heterogeneity (Lahiri and Zhao, 2016). However their data is on a U.S. region level (West, North Central, Northeast, Central,) and they do not make extensive use of the household characteristics. Another study provides an overview of *ICS* for different subgroups of the population (Toussaint-Comeau and McGranaham, 2006). They find that from 1978 to 2003, elderly respondents were more pessimistic in their survey answers than younger people, while male, college educated, and high income earning respondents were more likely than others to be optimistic over this time period.

3. Hypothesis Development

We next examine channels through which small banks may have comparative advantages/ disadvantages in alleviating household financial constraints and develop two competing hypotheses from these channels.

Small banks may have comparative advantages in alleviating household financial constraints through two channels, the *Relationship Channel* and the *Trust Channel*. Under the *Relationship Channel*, small banks may be better able than large banks to build soft information-based relationships with households that result in more lending and other financial services to these households. This follows directly from the literature documented above in which small banks are found to have comparative advantages in lending to small business financial constraints. Under the *Trust Channel*, small banks have comparative advantages in serving households because the households may have greater trust in small banks, as suggested by the *Chicago Booth / Kellogg School Financial Trust Index Survey* discussed above. This may occur at least in part because small banks are more often controlled locally, rather than in distant cities. Our first hypothesis is based on these two channels:

Hypothesis H1: *Small banks have comparative advantages over large banks in alleviating household financial constraints.*

We also offer two channels under which small banks have comparative disadvantages. Under the

Economies of Scale Channel, large banks have lower unit costs which allow them to offer more favorable deposit and loan prices. As discussed above, the economies of scale literature finds that such economies exist during our sample period and are substantial. Under the *Safety Channel*, small banks may be less able to provide households safety for their savings and assurances of continuity of other services. As discussed above, large banks may provide better safety because of superior diversification, more prudential regulation and supervision, and/or greater access to implicit government bailout guarantees. Based on these two channels, we form our second hypothesis:

Hypothesis H2: *Small banks have comparative disadvantages relative to large banks in alleviating household financial constraints.*

Each hypothesis may apply for different households. For example, banking relationships may be relatively important for some households, so **Hypothesis H1** likely holds for them. For other households, continuity of services may be more pertinent, in which case **Hypothesis H2** is more likely to hold. It is also likely that each hypothesis holds more for subgroups of the population, consistent with findings in the literature. Our empirical analysis addresses which of the two hypotheses empirically dominates the other overall, and also examines which dominates for different respondent groups by age, education, gender, home ownership, and income. Additional analyses test whether the comparative advantages or comparative disadvantages differ by bank condition, time, and local market characteristics.

4. Data

In this section, we introduce our dataset. Variable definitions and corresponding data sources are shown in Table 1 Panel A. Our key endogenous variables measuring household perceptions of financial constraints are collected monthly from the University of Michigan Surveys of Consumers from 2000:M1 to 2014:M12. We obtain commercial bank balance sheet and income data from quarterly Call Reports from 2000:Q1 to

2014:Q4.⁷ We normalize all financial variables using the seasonally-adjusted GDP deflator to be in real 2014:Q4 dollars. We convert these data to the county level based on the FDIC's Summary of Deposits (SoD) database. Further, we collect county-level characteristics from the U.S. Census Bureau and the U.S. Treasury. Finally, the RateWatch database provides bank deposit and loan rates used in later analyses.

4.1 Michigan Consumer Sentiment Surveys

The *Index of Consumer Sentiment (ICS)* is based on the University of Michigan's *Surveys of Consumers*. The survey started in 1946, and was annual until 1952, but increased its frequency to quarterly, and eventually to monthly from 1978 to the present (Ludvigson, 2004). Each month, a sample of about 500 households in the conterminous U.S. are interviewed via telephone (out of which about 300 are new respondents and attempted to be re-interviewed after six months) on personal finances, general economic outlook, and individual characteristics such as age, education, gender, home ownership, and income.⁸ The *ICS* is calculated from responses to the following five questions (abbreviations are given in parentheses):

- 1) "We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?" (*PAGO*)
- 2) "Now looking ahead — do you think that a year from now you (and your family living there) will be better off financially, or worse off, or just about the same as now?" (*PEXP*)
- 3) "Now turning to business conditions in the country as a whole — do you think that during the next twelve months we'll have good times financially, or bad times, or what?" (*BUS12*)
- 4) "Looking ahead, which would you say is more likely — that in the country as a whole we'll have continuous good times during the next five years or so, or that we will have periods of widespread

⁷ We exclude firm-quarter observations that do not refer to commercial banks (RSSD9331 different from 1), have missing or incomplete financial data for assets or equity, or have missing data for our key variables.

⁸ A detailed overview of the sample design is given by Curtin (2013).

unemployment or depression, or what?"(*BUS5*)

- 5) "About the big things people buy for their homes — such as furniture, a refrigerator, stove, television, and things like that. Generally speaking, do you think now is a good or bad time for people to buy major household items?" (*DUR*)

For each question, a positive, neutral, or negative answer is recorded, and their relative scores ($X1...X5$) are coded as 200, 100, and 0, respectively.⁹ The *ICS* for each household in a given month is calculated by summing the five relative scores, dividing by the 1966 base period total of 6.7558, and adding a constant of 2.0 to correct for sample design changes from the 1950s:¹⁰

$$ICS = \frac{X_1 + X_2 + X_3 + X_4 + X_5}{6.7558} + 2.0. \quad (1)$$

Lower values of *ICS* represent greater perceptions of household financial constraints.

As a robustness check, we alternatively use the *Index of Consumer Expectations (ICE)*, constructed from the responses to survey questions 2, 3, and 4 listed above. *ICE* is calculated by summing the relative scores for the three questions ($X2$, $X3$, and $X4$), dividing by the 1966 base period total of 4.1134, and adding a constant of 2.0 to correct for sample design changes from the 1950s:

$$ICE = \frac{X_2 + X_3 + X_4}{4.1134} + 2.0. \quad (2)$$

Analogous to *ICS*, lower values of *ICE* represent greater perceptions of household financial constraints.

ICS and *ICE* are continuous variables used as dependent variables in OLS regressions. We also use the responses to the five questions individually as proxies for perceived household financial constraints in ordered logit, ordered probit, and OLS models in Section 5.4. For these purposes, the scores for *PAGO*, *PEXP*, and *DUR* take the values of 3, 2, and 1, representing positive, neutral, and negative responses,

⁹ Answers that are missing or "I don't know" are counted as neutral answers if respondent answers other questions.

¹⁰ There was no constant added until 1972:M4 (except for 1972:M1). The constant was 2.7 from 1972:M4 until 1981:M11, and the constant has been 2.0 from 1981:M12 to the present.

respectively. Scores for *BUS12* and *BUS5* take integer values from 5 to 1, with 5 being the most positive, 3 being neutral, and 1 being the most negative.

We employ data from all survey respondents with respondent identifier and anonymized county location information from the University of Michigan from 2000:M1 to 2014:M12. The start of the sample corresponds with the first month with the county location of the respondents. For each month, we match respondent identifiers with data downloaded from the *Surveys of Consumers – Survey Documentation and Analysis (SDA) Archive*.¹¹ We extract *ICS*, *ICE*, and the five individual responses, as well as information on respondent age, education, gender, home ownership, and income. These are converted to quarterly data to match our banking data described below. In total, we have 81,140 respondent-county-quarter observations for the time period from 2000:Q1 to 2014:Q4. For each respondent, we have a FIPS code representing the respective county of residence (anonymized).

Table 1 Panel B shows summary statistics of these dependent variables from the Michigan Surveys. The summary statistics on *ICS* and *ICE* are difficult to interpret on an absolute basis because they are scaled variables, but we show how the values of *ICS* vary over time later. The statistics on the individual components are more straightforward to interpret. *PAGO*, *PEXP*, and *DUR*, which range from 3 to 1 all have means exceeding 2, although only slightly so for *PAGO*, suggesting some optimism on net. However, *BUS12* and *BUS5*, which range from 5 to 1, both have means below 3, suggesting net negative sentiment for future national conditions.

We use several dummies for respondent characteristics to test whether the findings differ by demographic group. *Senior* equals one if a respondent's age is 65 or older. *College* is one for college graduates and *Male* equals one if the respondent is male. *Homeowner* is one for homeowners. Finally, *High Income* is one for those with incomes above the median income of our sample.

The summary statistics in Table 1 Panel B show that 23.7 percent of all respondents are senior

¹¹ The respective data can be downloaded at <https://data.sca.isr.umich.edu/sda-public/>.

citizens, 46.9 percent have a college degree, 45.4 percent are male, and 79.1 percent are homeowners. Finally, high-income earners make up 56.0 percent of our sample. While some of these characteristics may differ somewhat from U.S. national averages, our full specification takes into account how these characteristics alter the effects of *Small Bank Share* on household financial constraints.

4.2 Bank Data

4.2.1 Key Independent Variable, *Small Bank Share*

Our main independent variable of interest is the share of small bank branches in a the county of the respondent. We define “small banks” as those with gross total assets (GTA¹²) below \$1 billion in real 2014:Q4 dollars, which corresponds to the usual research definition of “community banks” (e.g., DeYoung, Hunter, and Udell, 2004; Berger and Bouwman, 2013). In additional checks, we use alternative cutoffs of \$3 billion, \$5 billion, and \$10 billion. To calculate *Small Bank Share*, we count the number of branches owned by small banks in the county divided by the total number of bank branches in the county.

Table 1 Panel B shows *Small Bank Share* (based on the \$1 billion GTA cutoff) has a mean of 39.5%, with a standard deviation of 21.7%. Using a higher cutoff for the definition of small banks naturally yields a higher average *Small Bank Share*, which is 53.5% using the \$10 billion cutoff. Figure 2 shows an overview of the geographical distribution of the small bank share (using the \$1 billion GTA cutoff) for all U.S. counties in 2000 and 2014. The heatmaps show striking differences in small bank share across U.S. counties. In 2000, we observe stark contrasts between Western U.S. states – where few counties have high shares of small bank branches – with Midwest states – which often exhibit small bank shares above 70%. Eastern states are more mixed. Not surprisingly, most of the counties with small bank shares above 70% are located in rural areas. We further observe that the footprints of small banks have changed immensely over time. The density of small banks within U.S. counties was much lower in 2014 than in 2000, likely

¹² Gross total assets (GTA) equals total assets plus the allowance for loan and lease losses and the allocated transfer risk reserve (a reserve for certain foreign loans). Total assets on Call Reports deduct these two reserves, which are held to cover potential credit losses. We add these reserves back to measure the full value of the assets financed.

the result of ongoing consolidation. For example, most Midwest counties exhibited *Small Bank Share* above 75% in 2000, but many were below 50% by 2014.

As an alternative to *Small Bank Share*, we calculate a proxy for access to small banks in a county. *Small Bank Access* is the ratio of small bank branches over the county's total population (in 1000s). The effect of this variable measures the absolute ability of small banks to alleviate household financial constraints, as opposed to the comparative advantage measured by *Small Bank Share*. In our robustness tests, we also include *Large Bank Access*, defined analogously.

4.2.2 Other Banking Variables

As controls, we include proxies for CAMELS examination ratings, the set of financial outcome variables used for regulators to evaluate banks (e.g., Duchin and Sosyura, 2014; Berger and Roman, 2015, forthcoming, and Berger, Makaew, and Roman, 2016). *Capital Adequacy* is the ratio of equity over GTA.¹³ *Asset Quality* is the fraction of non-performing loans. *Management Quality* is the ratio of overhead costs to GTA, and *Earnings* is proxied by bank's return on assets. For *Liquidity*, we use the bank's liquidity creation scaled by its GTA.¹⁴ Finally, for *Sensitivity to Market Risk*, we include the absolute difference between short-term and long-term liabilities divided by GTA. To obtain county-level values of the CAMELS variables, we calculate weighted averages of each proxy across banks in a given county, based on the proportions of bank deposits in the local markets in which they operate.

We also employ as controls other bank characteristics for the county –average bank age (*Bank Age*); proportion of banks owned by bank holding companies (*BHC*); bank concentration based on branch deposits (*Herfindahl-Hirschman Index* or *HHI*); ratio of bank deposits to GTA (*Deposits Ratio*); ratio of

¹³ To avoid distortions for the Equity to GTA ratio, for all observations with equity less than 1% of GTA, we replace equity with 1% of GTA (as in Berger and Bouwman, 2009).

¹⁴ We use the Berger and Bouwman (2009)'s preferred measure of bank liquidity creation, a direct measure of bank illiquidity, given that when a bank creates liquidity, it provides liquidity to the public, and makes itself more illiquid or less liquid in the process. Bank liquidity creation data are available at: <https://sites.google.com/a/tamu.edu/bouwman/data>.

non-interest income to total income (*Fee Income*); and a dummy for whether only a few banks are present in a county, which equals one if the number of banks is below the 10th sample percentile (*FewBanks*).

For the county, we also include a dummy equal to one if a county is located in a Metropolitan Statistical Area (MSA) or New England County Metropolitan Area (NECMA) (*Metro*), as well as county fixed effects. We also include year-quarter fixed effects to control for many factors that change over time.

4.3 Combining the Data Sets

We first collect our data sample of bank and county characteristics and aggregate these at the county level for each quarter. This panel is then matched by the University of Michigan with the survey respondent data as follows. For each month, a respondent identifier is assigned to the county of residence and the respective quarter within a given year. All original county identifiers are replaced with fictional county codes to protect the respondents' personal information. Using the given respondent identifiers, we match our bank and county characteristics to the *Surveys of Consumers* dataset, obtained from the SDA archive.

4.4 A First Look at the Relations between Small Bank Share and Household Financial Constraints

Figure 3 Panel A shows that the mean values over time of *ICS* for counties with high and low values of *Small Bank Share*, above the 80th percentile and below the 20th percentile, respectively. Not surprisingly, mean *ICS* reaches its lowest levels for both *Small Bank Share* groups during and after the recent financial crisis. More important for our purposes, for the vast majority of the time, counties with high *Small Bank Share* tend to exhibit lower values of *ICS*. These raw data suggest that a greater presence of small banks may be associated with more household financial constraints, consistent with **Hypothesis H2**, given the *ICS* is an inverse indicator of financial constraints. The data also show generally larger spreads between *ICS* values of low and high *Small Bank Share* groups during and after the recent financial crisis than beforehand, suggesting a greater comparative advantage for large banks in more recent periods. Similar patterns appear in Figure 3 Panel B based on *ICE* the alternative inverse indicator of financial constraints.

While these figures are suggestive, they are not conclusive because they are based on aggregated data, and exclude control variables. In the next section, we use regression methods to address these deficiencies.

5. Empirical Results

5.1 Main Regression Analysis

We describe regression results from estimating models of the following form:

$$\begin{aligned} \textit{Household Financial Constraints}_{j,i,t} = & \beta * \textit{Small Bank Share}_{i,t} + \gamma * \textit{Respondent Characteristics}_{j,t} + \\ & + \delta * (\textit{Small Bank Share}_{i,t} * \textit{Respondent Characteristics}_{j,t}) + \\ & + \theta * \textit{Controls}_{i,t} + \mu_t + \nu_i + \varepsilon_{i,t}. \end{aligned} \quad (1)$$

The dependent variable measuring *Household Financial Constraints* is *ICS*, an inverse indicator of these constraints. All regressions include year-quarter dummies μ_t (one for every date) and county-fixed effects ν_i . Heteroscedasticity-robust standard errors are clustered at the county-level.

Our main regression results are shown in Table 2. The coefficient estimates in columns (1) – (4) of Panel A include different sets of controls to test the validity of our two main hypotheses. Columns (5) – (10) report regressions including interaction terms of *Small Bank Share* and respondent demographic characteristics to explore for which groups of households the different hypotheses hold. Throughout all specifications in Table 2, **Hypothesis H2** empirically dominates **Hypothesis H1**, i.e., the negative coefficients on *Small Bank Share* suggests that small banks do not tend to alleviate household financial constraints. This main result holds for each of the regression models, and is statistically significant at the 1 percent level. The specification in column (1) includes *Small Bank Share* and controls only for county and year-quarter fixed effects, and yields a regression coefficient of -8.379. When we add CAMELS proxies in column (2), other bank and county controls in column (3), and respondent characteristics in column (4), and we observe that the coefficient estimates remain statistically different from zero. Results are also economically significant. In model (10), our most complete specification, we see that moving the *Small*

Bank Share from the zero to 100 percent, with all of the respondent characteristics set to zero, decreases *ICS* by about 10.421 (from 86.855 to 76.434).

Next, we observe that the interactions of *Small Bank Share* and each respondent characteristic are insignificantly different from zero except for *Homeowner*. Thus, the estimated small bank comparative disadvantages do not significantly differ for seniors, college degree holders, male respondents, or high-income households relative to their opposites. However, for homeowners, the negative effect of *Small Bank Share* on alleviating household financial constraints is only about half as strong.

The results suggest that **Hypothesis H2** is widely supported, but less so for homeowners. For homeowners, either the relationships with and/or trust in small banks may be more important than for other respondents or the favorable pricing and/or greater safety of large banks may be less important.

Turning to the control variables, all of the (uninteracted) respondent characteristics are statistically significant throughout specifications (4) – (10), and are generally consistent with Toussaint-Comeau and McGranaham (2006). Most CAMELS proxies and other bank controls are not statistically significant. An exception is *Asset Quality*, with a negative sign in most of the models, suggesting that the impairment of the loan portfolio in a given county is associated with more consumer financial constraints, which may reflect that bank impairment results in fewer consumer loans that would otherwise relieve financial constraints. *Metro* is consistently statistically significant, suggesting that more active banking markets in metropolitan counties relative to rural areas may reduce household financial constraints.

5.2 Instrumental Variable (IV) Regressions

We next address the potential endogeneity of our key independent variable, *Small Bank Share*. It is possible, for example, that large banks may avoid entering counties with poor economic outlooks, increasing *Small Bank Share*, causing a spurious negative relation between *ICS* and *Small Bank Share*. To mitigate any potential bias, we employ an instrumental variable (IV) approach.

Since in our complete specification, we include *Small Bank Share* alone and interacted with five demographic characteristics, we have six potentially endogenous variables and need an instrument for each term. We employ all six instruments in each regression.

Specifically, for *Small Bank Share*, we use as an instrument *Church / Population*, the number of churches over population (in thousands) in the county in 1980. For the *Small Bank Share* interaction terms, we use *Church / Population* interacted with each of the five demographic characteristics¹⁵. This instrumentation strategy assumes that *Church / Population* is correlated with *Small Bank Share* (instrument relevance), but does not directly affect *ICS* (exclusion restriction). *Church / Population* seems to meet these conditions. *Church / Population* represents stronger community ties through religious activities. Karlan (2005) shows that such activities influence the development of social capital. Small bank owners might feel less pressure to sell their businesses to larger banking organizations in counties with high *Church / Population*. The instrument is measured in 1980 to reduce the possibility that it directly influences *ICS*. It seems unlikely that access to churches directly affects time-varying household attitudes more than 20 years later. In addition, *Small Bank Share* changed significantly after 1980 because of geographic deregulation in the 1980s and 1990s that resulted in bank consolidation. We argue that this consolidation is likely to have been affected by the social capital associated with this instrument.

Since our main regressions have six potentially endogenous independent variables, we run six first-stage regressions. These results are reported in Table 3 columns (1)-(6). Control variable coefficients are suppressed for brevity. We regress *Small Bank Share* on all the exogenous variables (except for county fixed effects¹⁶) used in our main regression plus the six instruments (*Church / Population* and *Church / Population* interacted with the five demographic characteristics) (IV 1st stage column (1)), and do the same using *Small Bank Share x Senior* (IV 1st stage column (2)), *Small Bank Share x College* (IV 1st stage column

¹⁵ It is not correct to view *Small Bank Share* as the endogenous right-hand-side variable, create a predicted value of *Small Bank Share* in the first stage and then interact it with the five respondent demographic dummies in the second stage. Wooldridge (2002, p. 236) and Angrist and Pischke (2009, pp. 190-192) call this the “forbidden regression.”

¹⁶ We exclude county fixed effects in our first stage regressions as the instrument would be absorbed by them.

(3)), *Small Bank Share x Male* (IV 1st stage column (4)), *Small Bank Share x Homeowner* (IV 1st stage column (5)), and *Small Bank Share x High Income* (IV 1st stage column (6)). Importantly, when *Small Bank Share* is the endogenous variable (IV 1st stage column (1)), the coefficient on the corresponding instrument (*Church / Population*) is positive and highly significant. Similarly, when *Small Bank Share x Senior* is the endogenous variable (IV 1st stage column (2)), the coefficient on the corresponding instrument (*Church / Population x Senior*) is positive and highly significant. We obtain similar results on the diagonal terms for the other endogenous variables in first-stage regressions (3)-(6).

We conduct two tests to check the suitability of our instruments. First, to ensure that our IV model is well identified i.e., that the excluded instruments are "relevant", correlated with the endogenous regressors, we conduct the Kleibergen-Paap under-identification test which evaluates the matrix rank condition. We find that the Kleibergen-Paap rk LM rejects the null hypothesis (rk LM = 34.197 with a p-value less than 0.001), suggesting that our model is well identified. Second, using instruments that are weakly correlated with the endogenous explanatory variable can lead to large inconsistencies in the coefficient estimates. To verify that this is not a problem and examine the relevance of our IV, we conduct an *F*-test of the excluded exogenous variables in the first stage regression, in which the null hypothesis is that the instruments do not explain the variation in the *Small Bank Share* and *Small Bank Share* interacted with the five demographic characteristics. We reject this null hypothesis (Kleibergen-Paap rk Wald *F* = 13.208 with a p-value less than 0.001¹⁷), suggesting that we do not have a weak instrument problem.

Next, we run the second-stage regression in which we regress *ICS* on the predicted values of the six endogenous variables from the first stage and all the control variables and fixed effects from our main specification. This is reported in Table 3 column (7). We again find that the effect of *Small Bank Share* on *ICS* is negative and statistically significant. However the results differ from OLS in two important respects. First, the IV coefficient is larger than the OLS coefficient, a common finding in the literature (e.g., Levitt,

¹⁷ We obtain similar results when using alternative *F*-test statistics such as the Cragg-Donald Wald *F* statistic or individual equations first-stage *F* statistics, all having a p-value less than 0.001.

1996; Berger and Bouwman, 2009). Second, we continue to find that the comparative disadvantages of small banks extend to all demographic groups in the IV results, except that here the demographic characteristic that cuts of the effect in half is *College* rather than *Homeowner*. Thus, our main results holds up in our instrumental variable analysis.

5.3 Decomposition Analysis of the Index of Consumer Sentiment

In Table 4, we evaluate small bank comparative advantages/disadvantages using the five different components of *ICS*. As noted above, *PAGO*, *PEXP*, and *DUR* take the values 3, 2, and 1, and *BUS12* and *BUS5* take the values 5, 4, 3, 2, and 1 in descending order from the most positive to the most negative. Because these are discrete dependent variables, we run the regressions four ways – OLS in Panel A, Ordered Logit model in Panel B, Ordered Probit model in Panel C, and a Heckman (1979) correction model to account for the selection bias as some individual questions were not answered by the households (which are treated as neutral in the calculation of *ICS*). We examine whether the coefficients in Panels A and D are positive or negative and test them for equality to zero, whereas we evaluate whether the odds ratios in Panels B and C are above or below one and test them for equality to one. For brevity, we show only the most complete specification from with all the controls and interactions.

Using all of the estimation methods, we find for all demographic groups that households in counties with greater *Small Bank Share* report worse expected future conditions, i.e., worse personal finances next year (*PEXP*), worse national conditions in the next 12 months (*BUS12*), and worse national conditions in the next 5 years (*BUS5*). However, the findings for current conditions differ, with a statistically insignificant effect on the change in personal finances since last year (*PAGO*) and a statistically significant favorable effect on national conditions for buying durables (*DUR*), although this last effect is generally smaller in magnitude than the effects on future conditions. Thus, our main finding of greater perceptions of financial constraints for households from higher county presence of small banks is driven primarily by pessimism about the future.

5.4 Small Bank Comparative Advantages/Disadvantages and Government Bailouts of Banks

During the recent financial crisis, many banks received government bailouts in the form of funds from the Troubled Assets Relief Program (TARP) of the U.S. Treasury (e.g., Duchin and Sosyura, 2012), and the discount window (DW) and Term Auction Facilities (TAF) of the Federal Reserve (e.g., Berger, Black, Bouwman, and Dlugosz, forthcoming). These bailouts may be associated with important local differences in bank health, economic conditions, and household financial constraints. We therefore investigate the extent to which the bailouts may be associated with differences in small bank comparative advantages/disadvantages in relieving household financial constraints.

Using data from Berger and Roman (2015), we determine which banks received TARP support and split the sample into counties with branches of banks that received TARP funds and those with no TARP bank branches. We then rerun our most complete *ICS* specification using data from the Post-TARP time period (2009:Q1-2014:Q4) for each of the two subsamples. Similarly, we use data from Berger, Black, Bouwman, and Dlugosz (forthcoming) to split our sample into counties with and without branches of DW banks as well as those with and without branches of TAF banks and run the same regressions for 2007:Q4-2014:Q4, the period after which the DW and TAF data became available.

Table 5 shows the results. For all three bailout programs and for every demographic category, the comparative disadvantages of small banks are much larger, and in some cases, are only statistically significant in the counties with branches of bailed-out banks. This may occur because of differences between small banks and large banks that were bailed out or because of differences in the economic conditions in counties with bailed-out banks. Below, we investigate the related issue of the effects of economic conditions on small bank comparative advantages/disadvantages.

5.5 Cross-Sectional Evidence

We provide cross-sectional evidence on how small business comparative advantages/disadvantages differ for counties with different bank characteristics in Table 6 Panel A and different economic, financial, and

social market conditions in Table 6 Panel B. The bank characteristics include capital ratio, profitability (ROA), market concentration (HHI), and age, and the economic, financial, and social conditions include metropolitan versus rural markets, state GDP per capita, financial crises versus normal times, and state interracial marriage bias index and rate of interracial adherence.

The first four columns in Table 6 Panel A suggest that bank condition is not a strong determinant of small banks disadvantages – the results are almost equally strong for counties with high and low capital banks and high and low profitability banks. However, bank age does appear to make a difference. The disadvantages of small banks in alleviating household financial constraints are greater where banks are younger, suggesting that *de novo* small banks are particularly poor at serving households. The results are also much stronger in counties that are more competitive, as measured by low HHIs, which suggests that comparative advantages show themselves more when banks compete more intensively.

Table 6 Panel B shows that small bank comparative disadvantages are essentially only present in metropolitan markets, which may be related to the greater banking competition in such markets. The results are also relatively strong in states with high GDP per capita and during non-crisis time periods, suggesting that small banks may be relatively adept at serving households during financial crises.¹⁸ Finally, the results for *Interracial Marriage Bias Index* and *Rate of Interracial Adherence* suggest that the comparative advantages of large banks are somewhat greater in states with more accepting social conditions, which likely signal a more open and competitive environment.

Overall, the results in Table 6 suggest that the comparative disadvantages for small banks in alleviating household financial constraints hold relatively broadly, but they are clearly stronger in more competitive and open environments, and those in which economic and financial conditions are stronger.

¹⁸ This is consistent with the finding in Berger, Bouwman, and Kim (forthcoming) that small banks appear to have comparative advantages in providing liquidity insurance to small business customers of large banks experiencing liquidity shocks during financial crises.

6. Robustness

Table 7 shows alternative ways to measure small bank comparative advantages/disadvantages in alleviating household financial constraints to examine the robustness of our main findings.

6.1 *Alternative Sentiment Proxy: Index of Consumer Expectations (ICE)*

In Table 7 Panel A, column (1) we replace the *Index of Consumer Sentiment (ICS)* with the *Index of Consumer Expectations (ICE)*, the alternative measure of household financial constraints introduced in Section 4. The finding is consistent with our main results – small banks have comparative disadvantages that are approximately halved for homeowner respondents with an additional finding that the effects are also smaller for male respondents.

6.2 *Alternative Econometric Specifications*

In Table 7 Panel A column (2), we show the results from two-way clustering, adjusting standard errors for clustering at the county and year-quarter level (e.g., Thompson, 2011). In Table 7 Panel A column (3), we estimate standard errors that allow for common serially correlated disturbances (Driscoll-Kraay, 1998). In both cases, the key coefficients remain statistically significant.

6.3 *Alternative Definitions of Small Bank Presence*

6.3.1 *Different Cutoffs for Small Bank Share Definition*

In Table 7 columns (4) - (7), we redefine *Small Bank Share* using alternative cutoffs of \$3 billion, \$5 billion, and \$10 billion in GTA instead of \$1 billion in our main analysis. The results become slightly stronger using the higher cutoffs, suggesting that the comparative advantages in alleviating household financial constraints may be somewhat more concentrated in the larger bank size classes.

6.3.2 *Small and Large Bank Access*

In Table 7 Panel B, we replace the *Small Bank Share* variables with several alternative measures of *Small*

Bank Access and *Large Bank Access*. *Small Bank Access* is the ratio of small bank branches to county population measured in thousands. *Large Bank Access* is defined analogously. We use the four cutoffs between small and large banks of \$1 billion, \$3 billion, \$5 billion, and the \$10 billion in GTA for both access measures. The effects of these variables on *ICS* measure the absolute abilities of small and large banks to alleviate household financial constraints, as opposed to the comparative advantages/disadvantages of small banks measured by *Small Bank Share*. Small banks may be particularly bad at alleviating household constraints, large banks may be particularly good, or both, and our measures of *Small Bank Access* and *Large Bank Access* get at this issue. The results in Table 7 Panel B suggest that the answer is both. Greater access to small banks appears to worsen household financial constraints and greater access to large banks appears to alleviate these constraints, and these effects are stronger when the cutoffs are higher.

7. Channels Analysis

The empirical analysis of the comparative advantages/disadvantages of small banks in Sections 5 and 6 clearly favor **Hypothesis H2** –the disadvantages dominate. We next try to determine which or if both of the two channels underlying this hypothesis – the *Economies of Scale Channel* and the *Safety Channel* – are consistent with some additional data on bank prices and quantities.

In Table 8 Panel A, we compare the means of consumer deposit rates for small and large banks. The data suggest that large banks pay statistically significantly better deposit rates to their customers for \$100,000 certificates of deposit (CDs) with 3, 6, and 12-month maturity, which provides evidence for the *Economies of Scale Channel*. However, for \$100,000 CDs with 24, 36, 48, and 60-month maturity, \$100,000 Savings Accounts, and \$250,000 CDs of all maturities, for which bank safety may be more of a consideration, small banks pay statistically significantly higher deposit rates. These results support the *Safety Channel* – small banks may need to offset their safety disadvantages with better deposit rates. The results in Panel B on consumer deposit quantities further support this conclusion. They suggest that households strongly prefer large banks for their uninsured deposits of \$250,000 and above.

Table 8 Panel C shows consistent results on consumer loan rates. Large banks give statistically significantly lower loan rates to their household customers for a large variety of important household loans including mortgages, auto loans, and credit cards, supporting the *Economies of Scale Channel*. However, for home equity lines of credit, particularly those with longer terms, safety may be more of an issue because these lines only have value to the extent that the bank providing commitments remains solvent. The data suggest that small banks charge statistically significantly lower rates of these lines, consistent with the arguments behind the *Safety Channel*. The results in Panel D on household loan quantities further corroborate the loan rate evidence. In most cases, it appears that households choose large banks, either because of their better rates or greater safety.

Thus, the evidence on consumer deposit and loan prices and quantities support both the *Economies of Scale* and *Safety Channels* as underlying our main results that are consistent with **Hypothesis H2**.

8. Conclusions

We formulate and test hypotheses about whether small banks have comparative advantages versus disadvantages in alleviating households' financial constraints, and also investigate the channels behind the hypothesis that is supported by the data. Our analysis is the first, to our knowledge, to use individual household data from the University of Michigan Surveys of Consumers. We match household survey responses from 2000-2014 with data on banks in their local markets.

The evidence strongly suggests that small banks have comparative disadvantages relative to large banks in relieving household financial constraints. The findings apply across all demographic groups, market types, and time periods considered, and are robust to many different measurements and econometric methods. Further analysis supports both the *Economies of Scale* and *Safety Channels* as underlying the findings, suggesting that households prefer the superior pricing for relatively safe deposit and loan products by large banks and the superior safety of these banks for relatively risky products.

These findings may seem surprising in that they appear to conflict with results in the literature that

small banks have comparative advantages in alleviating small business financial constraints. The difference between the small business and household results likely stems from emphases on different banking features – small businesses may value the relationships with and/or trust in small banks more highly, while households may place greater values on the better pricing and/or safety of large banks.

Our paper contributes to the research literature on financial constraints and the literature on the comparative advantages and disadvantages and social benefits and costs of small and large banks. We also expand the literature on the University of Michigan Surveys of Consumers from its usual use at the aggregate level to the individual household level, and by matching these data with banking data.

Our findings may also have important policy implications. A number of government policies affect the market shares of small versus large banks and the abilities of these banks to serve their customers. These include banking consolidation policy issues such as: 1) the geographic deregulation and merger and acquisition (M&A) approvals; 2) the generally more stringent regulation and supervision of large banks relative to small banks; and 3) the frequent calls for the very largest banks to be dismantled.

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Figure 1: Chicago Booth/Kellogg School Financial Trust Index [2009-2015]

This figure shows the percentage of people trusting various types of banks as per the *Chicago/Booth / Kellogg School Trust Index* – Wave 24 available at <http://www.financialtrustindex.org/>.

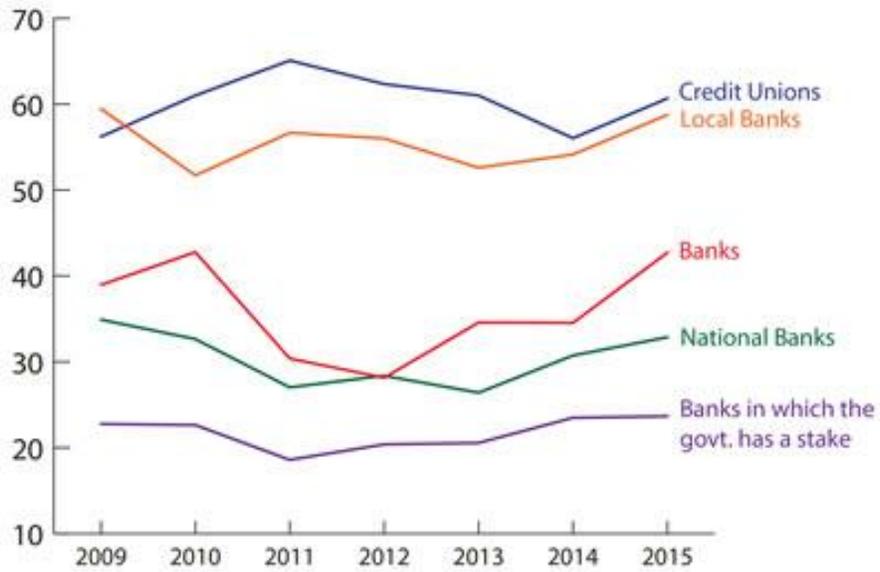
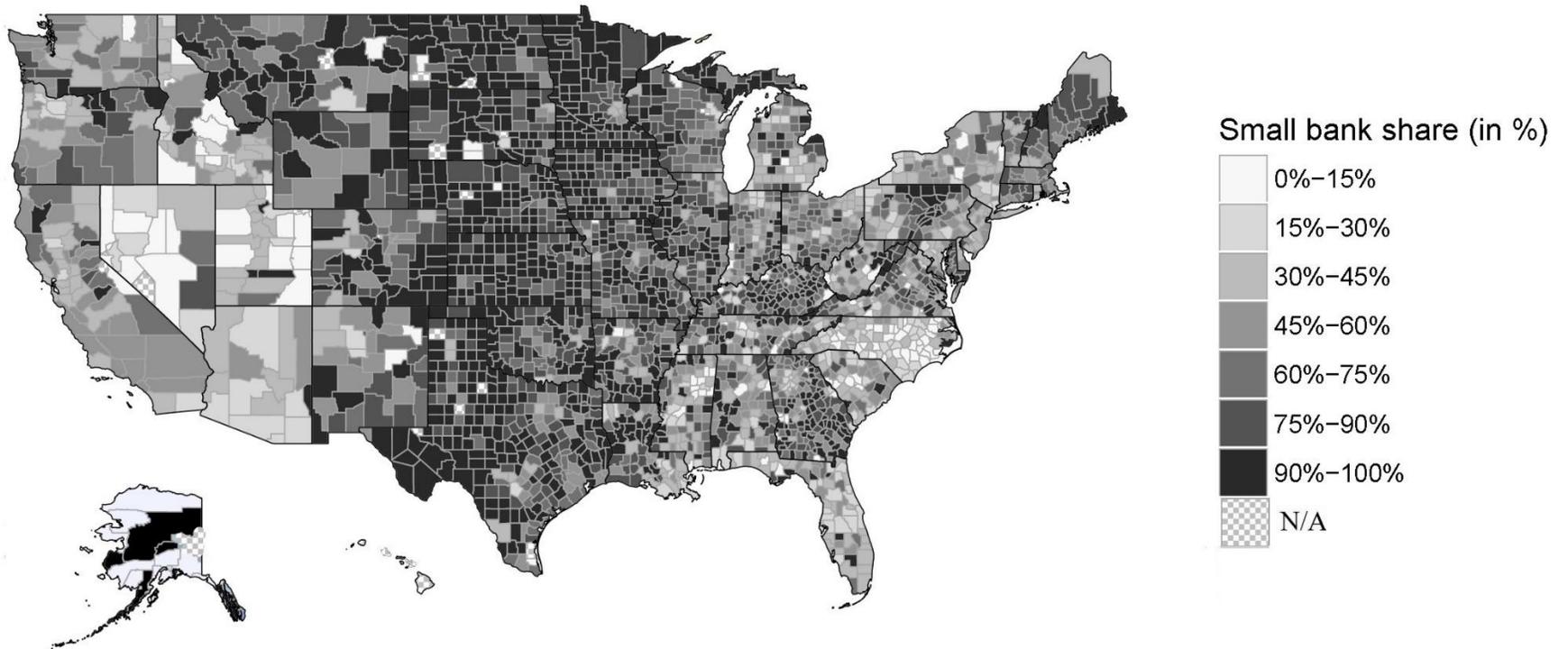


Figure 2: Small Banks in the United States (2000 and 2014)

This figure shows the distribution of the small banks (*Small Bank Share*) across the counties in the U.S. in 2000 and 2014.

Panel A: Small Bank Share by U.S. Counties (2000)

Panel B: Small Bank Share by U.S. Counties (2014)

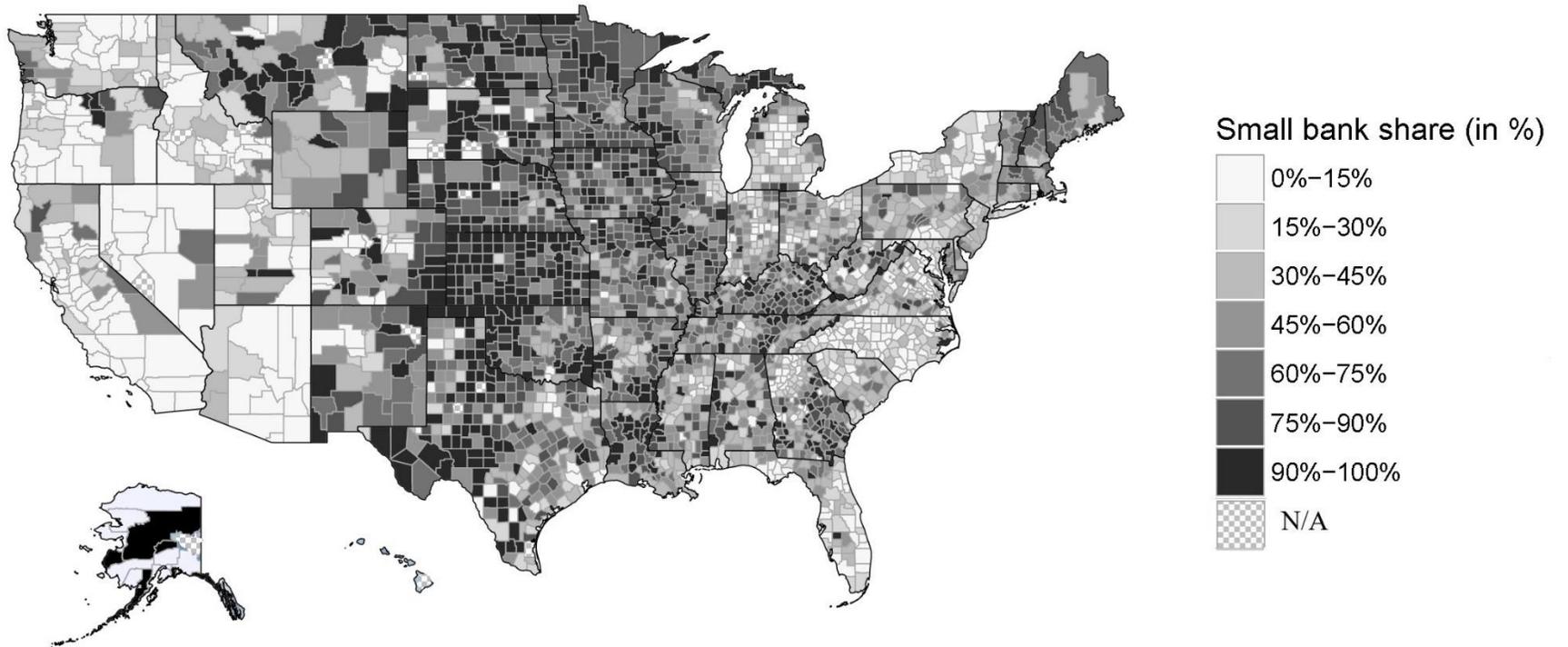


Figure 3: Index of Consumer Sentiment [ICS] and Index of Consumer Expectations [ICE] for Low and High Small Bank Share

This figure shows the average University of Michigan *Index of Consumer Sentiment (ICS)* and *Index of Consumer Expectations (ICE)* for small and large small bank share counties (20th/80th percentile) in the U.S. from 2000:Q1 to 2014:Q4.

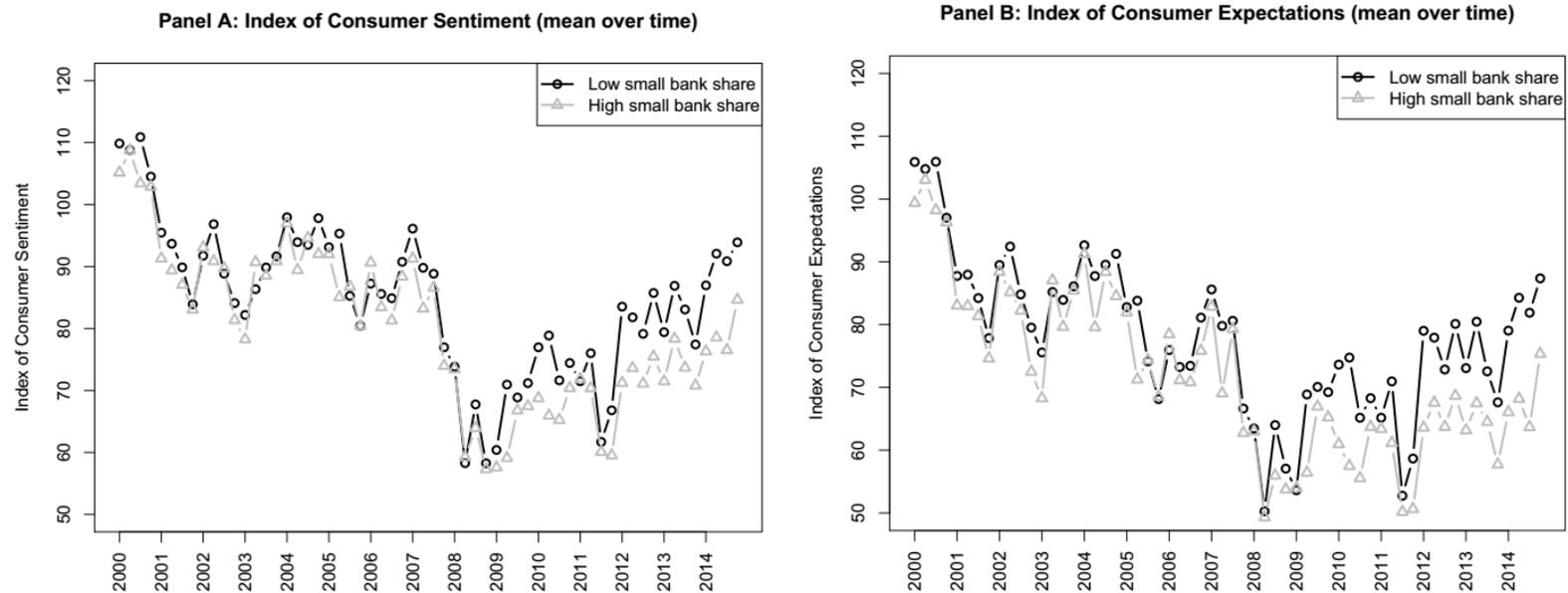


Table 1: Variable Definitions and Summary Statistics*Panel A: Variable Definitions*

This panel provides definitions for all variables used in our analysis.

<i>Group</i>	<i>Definition</i>	<i>Source</i>
<i>Dependent Variables</i>		
<i>Household Sentiment:</i>		
<i>Index of Consumer Sentiment [ICS]</i>	The county-level aggregate Index of Consumer Sentiment [ICS] from University of Michigan Survey of Consumers computed constructed using a formula based on responses to the five survey questions.	<i>UMichigan Survey of Consumers</i>
<i>Index of Consumer Expectations [ICE]</i>	The county-level aggregate Index of Consumer Expectations [ICE] from University of Michigan Survey of Consumers computed constructed using a formula based on responses to three of the survey questions.	<i>UMichigan Survey of Consumers</i>
<i>Finances vs. 1 Year Ago [PAGO]</i>	The survey responses to the following question at the county level: "We are interested in how people are getting along financially these days. Would you say that you [and your family living there] are better off or worse off financially than you were a year ago?" Possible answers: Better, Same, Worse, Don't know. Responses are transformed into a discrete variable that takes on the integer values 3, 2, or 1, with 3 being positive, 2 being neutral and 1 being negative, respectively.	<i>UMichigan Survey of Consumers</i>
<i>Finances Expected 1 Year Ahead [PEXP]</i>	The survey responses to the following question at the county level: "Now looking ahead - do you think that a year from now you [and your family living there] will be better off financially, or worse off, or just about the same as now?" Possible answers: Better, Same, Worse, Don't know. Responses are transformed into a discrete variable that takes on the integer values 3, 2, or 1, with 3 being positive, 2 being neutral and 1 being negative, respectively.	<i>UMichigan Survey of Consumers</i>
<i>National Conditions over Next Year [BUS12]</i>	The survey responses to the following question at the county level: "Now turning to business conditions in the country as a whole - do you think that during the next twelve months we'll have good times financially, or bad times, or what?" Possible answers: Good times, Uncertain, Bad times, Don't know. Responses are transformed into a discrete variable that takes on integer values from 5 to 1, with 5 being the most positive, 3 being neutral, and 1 being the most negative response.	<i>UMichigan Survey of Consumers</i>
<i>National Conditions over Next 5 Years [BUS5]</i>	The survey responses to the following question at the county level: "Looking ahead, which would you say is more likely - that in the country as a whole we'll have continuous good times during the next five years or so, or that we will have periods of widespread unemployment or depression, or what?" Possible answers: Good times; Uncertain; Bad times; Don't know. Responses are transformed into a discrete variable that takes on integer values from 5 to 1, with 5 being the most positive, 3 being neutral, and 1 being the most negative response.	<i>UMichigan Survey of Consumers</i>
<i>Conditions for Purchase of Durables [DUR]</i>	The survey responses to the following question at the county level: "About the big things people buy for their homes - such as furniture, a refrigerator, stove, television, and things like that. Generally speaking, do you think now is a good or bad time for people to buy major household items?" Possible answers: Good, Uncertain; Bad, Don't know. Responses are transformed into a discrete variable that takes on the integer values 3, 2, or 1, with 3 being positive, 2 being neutral and 1 being negative, respectively.	<i>UMichigan Survey of Consumers</i>
<i>Key Explanatory Variables</i>		
<i>Small Bank Share (Main Measure):</i>		
<i>Small Bank Share [\$1 Billion Cutoff]</i>	The proportion of small bank branches to total bank branches in the county of the household using the \$1 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD</i>
<i>Small Bank Share (Other Measures)</i>		
<i>Small Bank Share [\$3 Billion Cutoff]</i>	The proportion of small bank branches to total bank branches in the county of the household using the \$3 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD</i>
<i>Small Bank Share [\$5 Billion Cutoff]</i>	The proportion of small bank branches to total bank branches in the county of the household using the \$5 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD</i>
<i>Small Bank Share [\$10 Billion Cutoff]</i>	The proportion of small bank branches to total bank branches in the county of the household using the \$10 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD</i>
<i>Control Variables</i>		
<i>Respondent Characteristics:</i>		
<i>Senior</i>	Binary variable equal to one if age of respondent is 65 or over.	<i>UMichigan Survey of Consumers</i>
<i>Male</i>	Binary variable equal to one if sex of respondent is male.	<i>UMichigan Survey of Consumers</i>
<i>College</i>	Binary variable equal to one if education of respondent is college degree or more.	<i>UMichigan Survey of Consumers</i>
<i>Homeowner</i>	Binary variable equal to one if respondent is homeowner.	<i>UMichigan Survey of Consumers</i>
<i>High Income</i>	Binary variable equal to one if household income of respondent is greater or equal to the median.	<i>UMichigan Survey of Consumers</i>

Group	Definition	Source
Bank Condition Variables [CAMELS Proxies]:		
<i>Capital Ratio [C]</i>	The average equity ratio [total equity to gross total assets [GTA] of banks in the county of the household.	<i>Call Reports, SoD</i>
<i>Asset Quality [A]</i>	Proxy: nonperforming loans to total loans of banks in the county of the household.	<i>Call Reports, SoD</i>
<i>Management Quality [M]</i>	Proxy: overhead costs ratio of banks in the county of the household.	<i>Call Reports, SoD</i>
<i>Earnings [E]</i>	Proxy: return on assets [ROA] of banks in the county of the household.	<i>Call Reports, SoD</i>
<i>Liquidity [L]</i>	Proxy: the average liquidity creation ratio [ratio of Berger and Bouwman [2009] cat fat measure to GTA] of banks in the county of the household.	<i>Call Reports, SoD</i>
<i>Sensitivity to Market Risk [S]</i>	Proxy: the ratio of the absolute difference [gap] between short-term assets and short-term liabilities to GTA of banks in the county of the household.	<i>Call Reports, SoD</i>
Other Bank & County Characteristics:		
<i>Bank Age</i>	The average bank age in the county of the household.	<i>Call Reports, SoD</i>
<i>BHC</i>	Proportion of banks that are BHC or part of a BHC in the county of the household.	<i>Call Reports, SoD</i>
<i>Foreign Ownership</i>	Proportion of banks that are foreign owned in the county of the household.	<i>Call Reports, SoD</i>
<i>Fee Income</i>	Non-interest to total income of banks in the county of the household.	<i>Call Reports, SoD</i>
<i>Deposits Ratio</i>	Deposits ratio to GTA in the county of the household.	<i>Call Reports, SoD</i>
<i>Herfindahl-Hirschman Index</i>	The Herfindahl-Hirschman Index [HHI] based upon branch deposits in the county of the household.	<i>Call Reports, SoD</i>
<i>Metro</i>	Binary variable equal to one if the household is located in a metropolitan statistical area [MSA] or New England county metropolitan area [NECMA], and zero otherwise.	<i>Call Reports, SoD</i>
<i>FewBanks</i>	Binary variable equal to one if the number of banks in the county of the household is below the 10th sample percentile for a particular date, and zero otherwise.	<i>Call Reports, SoD</i>
Other Variables used in Additional Analyses		
Other Variables used in Robustness Tests:		
<i>Church / Population</i>	The county-level number of church per 1,000 population in 1990.	<i>ARDA</i>
<i>TARP</i>	Proportion of banks that received TARP capital in the county of the household.	<i>U.S. Treasury</i>
<i>Post-TARP</i>	An indicator equal to 1 in 2009:Q1-2014:Q4 and 0 otherwise.	<i>U.S. Treasury</i>
<i>Discount Window [DW]</i>	Proportion of banks that received DW funding in the county of the household.	<i>Berger, Black, Bouwman, Dlugosz [2016]</i>
<i>Term Auction Facility [TAF]</i>	Proportion of banks that received TAF funding in the county of the household.	<i>Berger, Black, Bouwman, Dlugosz [2016]</i>
<i>Post-DWTAF</i>	An indicator equal to 1 in 2007:Q4-2014:Q4 and 0 otherwise.	<i>Berger, Black, Bouwman, Dlugosz [2016]</i>
<i>ln[GDP/capita]</i>	The natural logarithm of the GDP per capita in the county of the household.	<i>FRED</i>
<i>Interracial Marriage Bias Index</i>	The racial bias index reported in Levine, Levkov, and Rubinstein [2013], which measures the difference between actual and predicted interracial marriage rates at the county-level.	<i>U.S. Census</i>
<i>Rate of Interracial Adherence</i>	The rate of interracial adherence at the county level.	<i>U.S. Census</i>
<i>Financial Crises</i>	An indicator equal to 1 in all financial crises periods as per Berger and Bouwman [2013] and 0 otherwise.	<i>Berger and Bouwman [2013]</i>
<i>Small Bank Access [\$1 Billion Cutoff]</i>	The ratio of small bank branches to total population in the county of the household scaled by 1,000,000 using the \$1 Billion GTA cutoff measured in real 2014: Q4 dollars.	<i>Call Reports, SoD, US Census</i>
<i>Small Bank Access [\$3 Billion Cutoff]</i>	The ratio of small bank branches to total population in the county of the household scaled by 1,000,000 using the \$3 Billion GTA cutoff measured in real 2014: Q4 dollars.	<i>Call Reports, SoD, US Census</i>
<i>Small Bank Access [\$5 Billion Cutoff]</i>	The ratio of small bank branches to total population in the county of the household scaled by 1,000,000 using the \$5 Billion GTA cutoff measured in real 2014: Q4 dollars.	<i>Call Reports, SoD, US Census</i>
<i>Small Bank Access [\$10 Billion Cutoff]</i>	The ratio of small bank branches to total population in the county of the household scaled by 1,000,000 using the \$10 Billion GTA cutoff measured in real 2014: Q4 dollars.	<i>Call Reports, SoD, US Census</i>
<i>Large Bank Access [\$1 Billion Cutoff]</i>	The ratio of large bank branches to total population in the county of the household scaled by 1000 using the \$1 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD, US Census</i>
<i>Large Bank Access [\$3 Billion Cutoff]</i>	The ratio of large bank branches to total population in the county of the household scaled by 1000 using the \$3 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD, US Census</i>
<i>Large Bank Access [\$5 Billion Cutoff]</i>	The ratio of large bank branches to total population in the county of the household scaled by 1000 using the \$5 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD, US Census</i>
<i>Large Bank Access [\$10 Billion Cutoff]</i>	The ratio of large bank branches to total population in the county of the household scaled by 1000 using the \$10 Billion GTA cutoff measured in real 2014:Q4 dollars.	<i>Call Reports, SoD, US Census</i>
Other Variables used in Channel Tests:		
Consumer Deposit Rates		
<i>03MCD100K</i>	Deposit rate on 3 Month CD of \$100,000.	<i>RateWatch</i>
<i>06MCD100K</i>	Deposit rate on 6 Month CD of \$100,000.	<i>RateWatch</i>
<i>12MCD100K</i>	Deposit rate on 12 Month CD of \$100,000.	<i>RateWatch</i>
<i>24MCD100K</i>	Deposit rate on 24 Month CD of \$100,000.	<i>RateWatch</i>
<i>36MCD100K</i>	Deposit rate on 36 Month CD of \$100,000.	<i>RateWatch</i>
<i>48MCD100K</i>	Deposit rate on 48 Month CD of \$100,000.	<i>RateWatch</i>
<i>60MCD100K</i>	Deposit rate on 60 Month CD of \$100,000.	<i>RateWatch</i>
<i>SAV100K</i>	Deposit rate on savings account of \$100,000.	<i>RateWatch</i>
<i>03MCD250K</i>	Deposit rate on 3 Month CD of \$250,000.	<i>RateWatch</i>
<i>06MCD250K</i>	Deposit rate on 6 Month CD of \$250,000.	<i>RateWatch</i>
<i>12MCD250K</i>	Deposit rate on 12 Month CD of \$250,000.	<i>RateWatch</i>
<i>24MCD250K</i>	Deposit rate on 24 Month CD of \$250,000.	<i>RateWatch</i>
<i>36MCD250K</i>	Deposit rate on 36 Month CD of \$250,000.	<i>RateWatch</i>
<i>48MCD250K</i>	Deposit rate on 48 Month CD of \$250,000.	<i>RateWatch</i>

Panel B: Summary Statistics – Full Sample [2000-2014]

This panel reports summary statistics of the variables for our analysis for the period 2000:Q1-2014:Q4. All variables using dollar amounts are expressed in real 2014:Q4 dollars using the implicit GDP price deflator. It contains number of observations, means, standard deviations and several quartiles [min, p25, median, p75, and max] on all the regression variables used to examine the relationship between share of or access to small banks and the sentiment of the consumers in the markets that these banks serve.

<i>Group Statistics</i>	<i>Main Statistics</i>			<i>Quantiles</i>					<i>Source</i>
	<i>N</i>	<i>Mean</i>	<i>S.d.</i>	<i>Min</i>	<i>p25</i>	<i>Median</i>	<i>p75</i>	<i>Max</i>	
<i>Dependent Variables</i>									
<i>Household Sentiment:</i>									
<i>Index of Consumer Sentiment [ICS]</i>	81,140	82.735	39.599	2.000	46.410	76.010	120.420	150.020	<i>UMichigan Survey of Consumers</i>
<i>Index of Consumer Expectations [ICE]</i>	81,140	75.498	46.886	2.000	26.310	74.930	123.550	147.860	<i>UMichigan Survey of Consumers</i>
<i>Finances vs. 1 Year Ago [PAGO]</i>	80,986	2.005	0.846	1.000	1.000	2.000	3.000	3.000	<i>UMichigan Survey of Consumers</i>
<i>Finances Expected 1 Year Ahead [PEXP]</i>	79,197	2.194	0.653	1.000	2.000	2.000	3.000	3.000	<i>UMichigan Survey of Consumers</i>
<i>National Conditions over Next Year [BUS12]</i>	74,272	2.817	1.915	1.000	1.000	1.000	5.000	5.000	<i>UMichigan Survey of Consumers</i>
<i>National Conditions over Next 5 Years [BUS5]</i>	77,693	2.864	1.788	1.000	1.000	2.000	5.000	5.000	<i>UMichigan Survey of Consumers</i>
<i>Conditions for Purchase of Durables [DUR]</i>	77,161	2.448	0.867	1.000	1.000	3.000	3.000	3.000	<i>UMichigan Survey of Consumers</i>
<i>Key Explanatory Variables</i>									
<i>Small Bank Share (Main Measure):</i>									
<i>Small Bank Share [\$1 Billion Cutoff]</i>	81,140	0.395	0.217	0.000	0.230	0.364	0.516	1.000	<i>Call Reports, SoD</i>
<i>Small Bank Share (Other Measures):</i>									
<i>Small Bank Share [\$3 Billion Cutoff]</i>	81,140	0.468	0.219	0.000	0.303	0.444	0.603	1.000	<i>Call Reports, SoD</i>
<i>Small Bank Share [\$5 Billion Cutoff]</i>	81,140	0.498	0.218	0.000	0.332	0.475	0.636	1.000	<i>Call Reports, SoD</i>
<i>Small Bank Share [\$10 Billion Cutoff]</i>	81,140	0.535	0.217	0.000	0.366	0.521	0.679	1.000	<i>Call Reports, SoD</i>
<i>Control Variables</i>									
<i>Respondent Characteristics:</i>									
<i>Respondent Senior</i>	81,140	0.237	0.426	0.000	0.000	0.000	0.000	1.000	<i>UMichigan Survey of Consumers</i>
<i>Respondent Male</i>	81,140	0.454	0.498	0.000	0.000	0.000	1.000	1.000	<i>UMichigan Survey of Consumers</i>
<i>Respondent College</i>	81,140	0.469	0.499	0.000	0.000	0.000	1.000	1.000	<i>UMichigan Survey of Consumers</i>
<i>Respondent Homeowner</i>	81,140	0.791	0.406	0.000	1.000	1.000	1.000	1.000	<i>UMichigan Survey of Consumers</i>
<i>Respondent High Income</i>	81,140	0.560	0.496	0.000	0.000	1.000	1.000	1.000	<i>UMichigan Survey of Consumers</i>
<i>Bank Condition Variables [CAMELS Proxies]:</i>									
<i>Capital Ratio [C]</i>	81,140	0.101	0.029	0.009	0.085	0.096	0.110	0.533	<i>Call Reports, SoD</i>
<i>Asset Quality [A]</i>	81,140	0.021	0.024	0.000	0.006	0.012	0.028	0.527	<i>Call Reports, SoD</i>
<i>Management Quality [M]</i>	81,140	0.012	0.006	-0.055	0.009	0.011	0.014	0.391	<i>Call Reports, SoD</i>
<i>Earnings [E]</i>	81,140	0.008	0.014	-0.366	0.006	0.010	0.013	0.385	<i>Call Reports, SoD</i>
<i>Liquidity [L]</i>	81,140	0.404	0.424	-0.511	0.308	0.397	0.482	33.289	<i>Call Reports, SoD</i>
<i>Sensitivity to Market Risk [S]</i>	81,140	0.112	0.092	0.000	0.037	0.088	0.174	0.916	<i>Call Reports, SoD</i>
<i>Other Bank & County Characteristics:</i>									
<i>Bank Age</i>	81,140	27.499	32.671	0.000	2.001	10.254	48.686	159.653	<i>Call Reports, SoD</i>
<i>BHC</i>	81,140	0.210	0.227	0.000	0.035	0.117	0.327	1.000	<i>Call Reports, SoD</i>
<i>Foreign Ownership</i>	81,140	0.015	0.051	0.000	0.000	0.000	0.000	0.858	<i>Call Reports, SoD</i>
<i>Fee Income</i>	81,140	0.204	0.316	-13.420	0.103	0.169	0.297	60.235	<i>Call Reports, SoD</i>
<i>Deposits Ratio</i>	81,140	0.763	0.102	0.003	0.697	0.783	0.840	0.966	<i>Call Reports, SoD</i>
<i>Herfindahl-Hirschman Index</i>	81,140	0.173	0.103	0.044	0.109	0.145	0.200	1.000	<i>Call Reports, SoD</i>
<i>Metro</i>	81,140	0.850	0.357	0.000	1.000	1.000	1.000	1.000	<i>Call Reports, SoD</i>
<i>FewBanks</i>	81,140	0.001	0.029	0.000	0.000	0.000	0.000	1.000	<i>Call Reports, SoD</i>

Group Statistics	Main Statistics			Quantiles					Source
	N	Mean	S.d.	Min	p25	Median	p75	Max	
Other Variables used in Additional Analyses									
Other Variables used in Robustness Tests:									
Church / Population	81,134	0.952	0.699	0.320	0.513	0.676	1.140	9.371	ARDA
TARP	81,140	0.141	0.228	0.000	0.000	0.016	0.189	1.000	U.S. Treasury
Post-TARP	81,140	0.400	0.490	0.000	0.000	0.000	1.000	1.000	U.S. Treasury
Discount Window [DW]	81,140	0.158	0.225	0.000	0.001	0.043	0.244	1.000	Berger, Black, Bouwman, Dlugosz [2016]
Term Auction Facility [TAF]	81,140	0.121	0.221	0.000	0.000	0.000	0.129	1.000	Berger, Black, Bouwman, Dlugosz [2016]
Post-DWTAF	81,140	0.486	0.500	0.000	0.000	0.000	1.000	1.000	Berger, Black, Bouwman, Dlugosz [2016]
ln[GDPcapita]	81,140	10.745	0.160	10.274	10.643	10.728	10.857	12.061	FRED
Interracial Marriage Bias Index	81,134	0.272	0.080	0.070	0.250	0.280	0.320	0.460	U.S. Census
Rate of Interracial Adherence	81,134	504.950	129.906	68.550	411.114	498.763	580.798	1547.310	U.S. Census
Financial Crises	81,140	0.334	0.472	0.000	0.000	0.000	1.000	1.000	Berger and Bouwman [2013]
Small Bank Access [\$1 Billion Cutoff]	81,140	0.143	0.141	0.000	0.062	0.102	0.178	2.463	Call Reports, SoD, US Census
Small Bank Access [\$3 Billion Cutoff]	81,140	0.167	0.147	0.000	0.077	0.127	0.208	2.463	Call Reports, SoD, US Census
Small Bank Access [\$5 Billion Cutoff]	81,140	0.176	0.148	0.000	0.084	0.137	0.220	2.463	Call Reports, SoD, US Census
Small Bank Access [\$10 Billion Cutoff]	81,140	0.188	0.150	0.000	0.092	0.149	0.236	2.463	Call Reports, SoD, US Census
Large Bank Access [\$1 Billion Cutoff]	81,140	0.183	0.077	0.000	0.132	0.182	0.233	1.629	Call Reports, SoD, US Census
Large Bank Access [\$3 Billion Cutoff]	81,140	0.159	0.071	0.000	0.110	0.160	0.205	1.629	Call Reports, SoD, US Census
Large Bank Access [\$5 Billion Cutoff]	81,140	0.149	0.070	0.000	0.101	0.149	0.195	1.629	Call Reports, SoD, US Census
Large Bank Access [\$10 Billion Cutoff]	81,140	0.137	0.068	0.000	0.091	0.138	0.180	1.629	Call Reports, SoD, US Census
Other Variables used in Additional Analyses									
Other Variables used in Channel Tests:									
Consumer Deposit Rates									
03MCD100K	264,687	0.939	1.322	0.001	0.150	0.300	1.050	70.000	RateWatch
06MCD100K	313,429	1.132	1.410	0.001	0.250	0.500	1.340	30.616	RateWatch
12MCD100K	320,078	1.377	1.483	0.001	0.400	0.750	1.730	48.000	RateWatch
24MCD100K	271,622	1.378	1.240	0.010	0.580	0.950	1.722	27.000	RateWatch
36MCD100K	235,414	1.460	1.113	0.010	0.750	1.100	1.800	37.000	RateWatch
48MCD100K	197,936	1.580	1.035	0.010	0.927	1.277	1.982	41.710	RateWatch
60MCD100K	203,592	1.850	1.083	0.010	1.139	1.550	2.255	12.935	RateWatch
SAV100K	179,759	0.193	0.233	0.001	0.058	0.148	0.250	5.372	RateWatch
03MCD250K	144,431	0.212	0.168	0.001	0.100	0.170	0.250	5.950	RateWatch
06MCD250K	175,698	0.329	0.240	0.001	0.192	0.288	0.415	6.125	RateWatch
12MCD250K	177,420	0.489	0.295	0.001	0.300	0.450	0.650	6.250	RateWatch
24MCD250K	168,793	0.718	0.350	0.010	0.488	0.690	0.950	6.770	RateWatch
36MCD250K	158,206	0.933	0.407	0.010	0.650	0.900	1.190	6.350	RateWatch
48MCD250K	136,308	1.118	0.454	0.010	0.800	1.096	1.392	6.350	RateWatch
60MCD250K	137,777	1.347	0.507	0.010	1.000	1.300	1.688	6.500	RateWatch
Deposit Quantities									
Insured Deposits / GTA	466,022	0.626	0.357	-0.075	0.514	0.750	0.870	1.271	Call Reports
Uninsured Deposits / GTA	466,022	0.322	0.326	-0.185	0.108	0.181	0.350	1.302	Call Reports
Consumer Loan Rates									
Mortgages									
1 Year ARM @ 175K - Rate	56,517	5.432	1.568	0.000	4.375	5.500	6.500	41.250	RateWatch
3 Year ARM @ 175K - Rate	66,122	5.490	1.565	0.000	4.500	5.583	6.500	31.250	RateWatch
5 Year ARM @ 175K - Rate	65,638	5.463	1.599	0.000	4.375	5.583	6.500	17.656	RateWatch
15 Yr Fxd Mtg @ 175K - Rate	135,735	5.426	1.497	0.000	4.375	5.542	6.375	44.000	RateWatch
30 Yr Fxd Mtg @ 175K - Rate	112,954	5.827	1.338	-2.292	4.792	6.000	6.625	46.750	RateWatch
Auto Loans									
Auto New - 36 Mo Term	304,358	6.020	1.945	0.000	4.750	6.240	7.350	24.900	RateWatch
Auto New - 48 Mo Term	305,218	6.125	1.925	0.000	4.950	6.250	7.495	18.000	RateWatch

Group	Main Statistics			Quartiles					Source
	Statistics	N	Mean	S.d.	Min	p25	Median	p75	
Auto Loans [cont.]									
Auto New - 60 Mo Term	304,778	6.238	1.923	0.000	5.000	6.455	7.500	18.000	RateWatch
Auto Used 2 Yrs - 36 Mo Term	275,476	6.430	2.129	-7.900	5.000	6.623	7.917	36.600	RateWatch
Auto Used 2 Yrs - 48 Mo Term	270,094	6.478	2.097	-4.500	5.083	6.677	7.950	60.000	RateWatch
Auto Used 2 Yrs - 60 Mo Term	215,679	6.239	2.081	-1.833	4.850	6.417	7.680	33.000	RateWatch
Auto Used 4 Yrs - 36 Mo Term	224,484	6.775	2.286	0.000	5.250	7.000	8.350	40.000	RateWatch
Auto Used 4 Yrs - 48 Mo Term	191,111	6.575	2.233	0.000	5.000	6.750	8.065	85.000	RateWatch
Auto Used 4 Yrs - 60 Mo Term	121,741	5.986	2.205	-4.800	4.310	6.016	7.500	90.000	RateWatch
Credit Cards									
Credit Cards - Annual Fee	31,814	3.992	10.521	0.000	0.000	0.000	0.000	200.000	RateWatch
Credit Cards - Cash Adv Fee	55,715	2.464	2.465	0.000	0.000	3.000	3.500	40.000	RateWatch
Credit Cards - Intro Rate	25,401	1.588	2.397	0.000	0.000	0.000	2.990	15.900	RateWatch
Credit Cards - MasterCard	26,939	12.674	3.898	0.000	10.900	12.990	14.900	25.240	RateWatch
Credit Cards - Visa	62,040	12.398	2.898	0.000	10.240	12.650	13.990	25.240	RateWatch
Credit Cards - Gold	35,683	11.388	2.776	0.000	9.900	11.250	12.900	43.875	RateWatch
Credit Cards - Platinum	40,237	9.707	1.873	0.000	8.790	9.900	10.150	24.900	RateWatch
Home Equity Loans									
H.E. Loan Up to 80% LTV @ 20K - 60 Mo Term	221,825	6.684	1.806	0.000	5.750	6.750	7.750	44.850	RateWatch
H.E. Loan Up to 80% LTV @ 20K - 120 Mo Term	178,928	6.798	2.124	-7.580	5.990	7.000	8.000	48.000	RateWatch
H.E. Loan Up to 80% LTV @ 20K - 180 Mo Term	133,606	7.256	1.805	0.000	6.350	7.250	8.240	80.000	RateWatch
H.E. Loan 81-90% LTV @ 20K - 60 Mo Term	133,625	7.167	1.895	0.000	6.250	7.250	8.250	60.000	RateWatch
H.E. Loan 81-90% LTV @ 20K - 120 Mo Term	108,728	7.297	2.307	0.000	6.500	7.500	8.550	100.000	RateWatch
H.E. Loan 81-90% LTV @ 20K - 180 Mo Term	81,445	7.740	2.403	-9.740	6.950	7.865	8.803	95.000	RateWatch
H.E. Loan 91-100% LTV @ 20K - 60 Mo Term	65,538	8.032	2.188	0.000	7.083	8.240	9.308	42.083	RateWatch
H.E. Loan 91-100% LTV @ 20K - 120 Mo Term	56,444	8.117	2.582	0.000	7.410	8.500	9.550	42.083	RateWatch
H.E. Loan 91-100% LTV @ 20K - 180 Mo Term	44,344	8.515	2.716	0.000	7.750	8.750	9.773	100.000	RateWatch
Consumer Loan Quantities									
Residential Real Estate Loans / GTA	466,022	0.173	0.112	0.000	0.091	0.159	0.235	0.987	Call Reports
Residential Credit Card Loans / GTA	466,022	0.004	0.044	0.000	0.000	0.000	0.000	0.993	Call Reports
Other Consumer Loans / GTA	466,022	0.052	0.059	0.000	0.016	0.037	0.068	0.997	Call Reports
Residential Real Estate Unused Commitments / GTA	466,022	0.013	0.022	0.000	0.000	0.003	0.017	0.948	Call Reports
Residential Credit Card Unused Commitments / GTA	466,022	0.635	22.756	0.000	0.000	0.000	0.000	2478.114	Call Reports

Table 4: Small Bank Comparative Advantages/Disadvantages in Relieving Household Financial Constraints – Index of Consumer Sentiment (ICS)

Decomposition This table reports regression estimates for analyzing small bank comparative advantage/disadvantages in relieving household financial constraints using a decomposition of the *Index of Consumer Sentiment (ICS)* into its subcomponent survey questions: *PAGO*, *PEXP*, *BUS12*, *BUS5*, and *DUR*, described in detail in Appendix A. Panel A shows estimates using an OLS model. Panel B shows estimates using an ordered logit models which reports odds ratios. Panel C shows estimates using an ordered probit models which reports odds ratios. Panel D shows estimates using a Heckman selection corrected model (as in Luca and Perotti (2011)). The dependent variable is the household's *Index of Consumer Sentiment ((ICS))* from University of Michigan Surveys of Consumers. The key explanatory variable is *Small Bank Share*, the ratio of small bank branches to total bank branches in the county of the household using the \$1 Billion GTA cutoff measured in real 2014:Q4 dollars. Respondent characteristics are senior status, college degree, male, homeowner, and high income. Bank characteristics at the county level include CAMELS proxies, capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity to market risk; Other bank and county characteristics, bank age, BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, indicator for few banks presence in the county, and metropolitan presence. All models include year-quarter fixed effects and county fixed effects. The details of definitions and measurements of all variables are reported in Table 1. Heteroskedasticity-robust *t*-statistics clustered at the county level are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: ICS Index Decomposition – Main (OLS)

Dependent Variable	(1) PAGO	(2) PEXP	(3) BUS12	(4) BUS5	(5) DUR
Independent Variables					
<i>Small Bank Share</i>	-0.055 (-1.359)	-0.183*** (-5.726)	-0.389*** (-3.771)	-0.437*** (-4.573)	0.132*** (3.183)
Interactions with Respondent Characteristics					
<i>Small Bank Share x Senior</i>	0.020 (0.599)	0.034 (1.302)	0.072 (0.806)	0.012 (0.152)	-0.025 (-0.677)
<i>Small Bank Share x College</i>	0.028 (0.900)	0.020 (0.827)	0.066 (0.869)	0.110 (1.493)	-0.084*** (-2.623)
<i>Small Bank Share x Male</i>	-0.022 (-0.751)	0.024 (1.038)	0.237*** (3.444)	0.279*** (4.262)	-0.034 (-1.049)
<i>Small Bank Share x Homeowner</i>	0.049 (1.283)	0.051* (1.714)	0.157 (1.601)	0.184** (2.081)	-0.051 (-1.244)
<i>Small Bank Share x High Income</i>	-0.014 (-0.453)	0.008 (0.327)	-0.010 (-0.128)	0.043 (0.633)	-0.013 (-0.392)
Respondent Characteristics	YES	YES	YES	YES	YES
CAMELS Proxies	YES	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES
County FE	NO	NO	NO	NO	NO
No. Observations	80,986	79,197	74,272	77,693	77,161
R-squared	0.083	0.080	0.085	0.055	0.052
No. Clusters	2705	2701	2683	2689	2694

Panel B: ICS Index Decomposition – Alternative Specification (Ordered Logit)

Dependent Variable	(1)	(2)	(3)	(4)	(5)
Independent Variables	PAGO	PEXP	BUS12	BUS5	DUR
<i>Small Bank Share</i>	0.888 (-1.230)	0.559*** (-5.820)	0.666*** (-3.582)	0.607*** (-4.597)	1.394*** (3.082)
Interactions with Respondent Characteristics					
<i>Small Bank Share x Senior</i>	1.025 (0.332)	1.152* (1.778)	1.076 (0.756)	1.030 (0.349)	0.916 (-0.945)
<i>Small Bank Share x College</i>	1.074 (0.977)	1.059 (0.780)	1.052 (0.617)	1.119 (1.398)	0.808** (-2.560)
<i>Small Bank Share x Male</i>	0.946 (-0.811)	1.068 (0.908)	1.300*** (3.502)	1.396*** (4.724)	0.941 (-0.714)
<i>Small Bank Share x Homeowner</i>	1.109 (1.156)	1.179* (1.763)	1.154 (1.336)	1.229** (2.103)	0.871 (-1.286)
<i>Small Bank Share x High Income</i>	0.972 (-0.399)	1.033 (0.440)	1.010 (0.127)	1.044 (0.584)	0.966 (-0.392)
<i>Cut 1</i>	0.297*** (-8.942)	0.055*** (-19.365)	0.256*** (-8.809)	0.306*** (-7.325)	0.287*** (-8.765)
<i>Cut 2</i>	1.045 (0.326)	0.865 (-0.963)	0.282*** (-8.174)	0.453*** (-4.917)	0.368*** (-6.999)
<i>Cut 3</i>			0.350*** (-6.783)	0.631*** (-2.843)	
<i>Cut 4</i>			0.370*** (-6.422)	0.842 (-1.059)	
Respondent Characteristics	YES	YES	YES	YES	YES
CAMELS Proxies	YES	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES
County FE	NO	NO	NO	NO	NO
No. Observations	80,986	79,197	74,272	77,693	77,161
Pseudo R-squared	0.0386	0.0441	0.0432	0.0214	0.0325
No. Clusters	2705	2701	2683	2689	2694

Panel C: ICS Index Decomposition – Alternative Specification (Ordered Probit)

Dependent Variable	(1)	(2)	(3)	(4)	(5)
Independent Variables	PAGO	PEXP	BUS12	BUS5	DUR
<i>Small Bank Share</i>	0.926 (-1.320)	0.716*** (-5.671)	0.781*** (-3.561)	0.742*** (-4.566)	1.220*** (3.095)
Interactions with Respondent Characteristics					
<i>Small Bank Share x Senior</i>	1.025 (0.541)	1.066 (1.386)	1.051 (0.825)	1.017 (0.330)	0.950 (-0.919)
<i>Small Bank Share x College</i>	1.042 (0.924)	1.038 (0.874)	1.038 (0.727)	1.076 (1.478)	0.881** (-2.541)
<i>Small Bank Share x Male</i>	0.969 (-0.764)	1.044 (1.006)	1.173*** (3.449)	1.219*** (4.567)	0.961 (-0.785)
<i>Small Bank Share x Homeowner</i>	1.069 (1.235)	1.098* (1.702)	1.091 (1.329)	1.132** (2.090)	0.924 (-1.238)
<i>Small Bank Share x High Income</i>	0.982 (-0.420)	1.015 (0.343)	1.003 (0.059)	1.025 (0.546)	0.983 (-0.322)
<i>Cut 1</i>	0.476***	0.184***	0.427***	0.487***	0.457***

	(-8.997)	(-19.251)	(-9.028)	(-7.274)	(-9.338)
<i>Cut 2</i>	1.030	0.936	0.452***	0.620***	0.530***
	(0.359)	(-0.744)	(-8.387)	(-4.838)	(-7.547)
<i>Cut 3</i>			0.517***	0.762***	
			(-6.985)	(-2.743)	
<i>Cut 4</i>			0.535***	0.910	
			(-6.623)	(-0.955)	
<i>Respondent Characteristics</i>	YES	YES	YES	YES	YES
<i>CAMELS Proxies</i>	YES	YES	YES	YES	YES
<i>Other Bank & County Characteristics</i>	YES	YES	YES	YES	YES
<i>Year-Quarter FE</i>	YES	YES	YES	YES	YES
<i>County FE</i>	NO	NO	NO	NO	NO
No. Observations	80,986	79,197	74,272	77,693	77,161
Pseudo R-squared	0.0390	0.0428	0.0433	0.0213	0.0335
No. Clusters	2705	2701	2683	2689	2694

Panel D: ICS Index Decomposition – Heckman Selection Corrected Model (as in Luca and Perotti (2011))

Dependent Variable	(1) PAGO	(2) PEXP	(3) BUS12	(4) BUS5	(5) DUR
Independent Variables					
<i>Small Bank Share</i>	-0.076 (-1.481)	-0.327*** (-6.415)	-0.242*** (-4.256)	-0.290*** (-5.457)	0.195*** (3.303)
<i>Interactions with Respondent Characteristics</i>					
<i>Small Bank Share x Senior</i>	0.025 (0.600)	0.065 (1.509)	0.051 (1.046)	0.021 (0.477)	-0.049 (-0.974)
<i>Small Bank Share x College</i>	0.040 (1.015)	0.036 (0.911)	0.038 (0.868)	0.076* (1.865)	-0.124*** (-2.691)
<i>Small Bank Share x Male</i>	-0.032 (-0.857)	0.042 (1.120)	0.161*** (3.850)	0.196*** (5.098)	-0.040 (-0.911)
<i>Small Bank Share x Homeowner</i>	0.066 (1.333)	0.093* (1.864)	0.083 (1.494)	0.120** (2.314)	-0.078 (-1.345)
<i>Small Bank Share x High Income</i>	-0.018 (-0.444)	0.013 (0.328)	-0.001 (-0.028)	0.016 (0.388)	-0.017 (-0.361)
<i>Cut 1</i>	-0.742*** (-10.077)	-1.632*** (-21.723)	-0.879*** (-10.594)	-0.680*** (-8.736)	-0.821*** (-9.408)
<i>Cut 2</i>	0.029 (0.397)	-0.029 (-0.385)	-0.822*** (-9.904)	-0.442*** (-5.698)	-0.674*** (-7.722)
<i>Cut 3</i>			-0.693*** (-8.356)	-0.245*** (-3.161)	
<i>Cut 4</i>			-0.660*** (-7.951)	-0.069 (-0.894)	
<i>Respondent Characteristics</i>	YES	YES	YES	YES	YES
<i>CAMELS Proxies</i>	YES	YES	YES	YES	YES
<i>Other Bank & County Characteristics</i>	YES	YES	YES	YES	YES
<i>Year-Quarter FE</i>	YES	YES	YES	YES	YES
<i>County FE</i>	NO	NO	NO	NO	NO
No. Observations	81,156	81,347	74,695	78,133	81,499

Table 5: Small Bank Comparative Advantages/Disadvantages in Relieving Household Financial Constraints – Influence of Government Bailouts

This table reports regression estimates for analyzing small bank comparative advantage/disadvantages in relieving household financial constraints using several different subsamples for bank government bailouts. Columns (1)-(2) report regression estimates when considering counties with no TARP banks versus counties with TARP banks in the Post-TARP Period (2009:Q1-2014:Q4). Columns (3)-(4) report regression estimates when considering counties with no Discount Window (DW) banks versus counties with DW banks in the Post-DWTAF Period (2007:Q4-2014:Q4). Columns (5)-(6) report regression estimates when considering counties with no Term Auction facility (TAF) banks versus counties with TAF banks in the Post-DWTAF Period (2007:Q4-2014:Q4). The dependent variable is the household's *Index of Consumer Sentiment ((ICS))* from University of Michigan Surveys of Consumers. The key explanatory variable is *Small Bank Share*, the ratio of small bank branches to total bank branches in the county of the household using the \$1 Billion GTA cutoff measured in real 2014:Q4 dollars. Respondent characteristics are senior status, college degree, male, homeowner, and high income. Bank characteristics at the county level include CAMELS proxies, capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity to market risk; Other bank and county characteristics, bank age, BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, indicator for few banks presence in the county, and metropolitan presence. All models include year-quarter fixed effects and county fixed effects. The details of definitions and measurements of all variables are reported in Table 1. Heteroskedasticity-robust *t*-statistics clustered at the county level are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Index of Consumer Sentiment (ICS)</i>		<i>Index of Consumer Sentiment (ICS)</i>		<i>Index of Consumer Sentiment (ICS)</i>	
Group	<i>TARP = 0</i>	<i>TARP = 1</i>	<i>Discount Window (DW) = 0</i>	<i>Discount Window (DW) = 1</i>	<i>Term Auction Facility (TAF) = 0</i>	<i>Term Auction Facility (TAF) = 1</i>
<i>Small Bank Share</i>	-9.754 (-1.632)	-25.018*** (-3.955)	-8.715 (-1.242)	-25.478*** (-5.543)	-15.199*** (-2.798)	-26.986*** (-4.859)
Interactions with Characteristics						
<i>Small Bank Share x Senior</i>	1.846 (0.415)	14.435*** (3.831)	3.413 (0.672)	11.459*** (3.449)	3.170 (0.901)	17.346*** (4.195)
<i>Small Bank Share x College</i>	-2.730 (-0.640)	-1.363 (-0.425)	2.784 (0.680)	-1.750 (-0.626)	0.644 (0.214)	-4.399 (-1.318)
<i>Small Bank Share x Male</i>	4.432 (0.974)	-0.598 (-0.156)	-1.256 (-0.295)	4.875 (1.321)	3.053 (0.940)	1.166 (0.231)
<i>Small Bank Share x Homeowner</i>	7.902 (1.409)	10.040** (2.122)	8.260 (1.462)	9.979** (2.441)	7.043* (1.779)	13.867*** (2.948)
<i>Small Bank Share x High Income</i>	-1.384 (-0.344)	0.076 (0.022)	-2.135 (-0.470)	-0.584 (-0.233)	-1.387 (-0.469)	1.174 (0.347)
Respondent Characteristics	YES	YES	YES	YES	YES	YES
CAMELS Proxies	YES	YES	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES	YES
No. Observations	10,872	21,591	8,438	30,978	20,336	19,080
Adjusted R-squared	0.085	0.083	0.076	0.091	0.089	0.087
No. Clusters	1276	1190	1113	1383	1485	1172

Table 6: Small Bank Comparative Advantages/Disadvantages in Relieving Household Financial Constraints – Cross-Sectional Evidence

This table reports regression estimates for analyzing small bank comparative advantage/disadvantages in relieving household financial constraints using several different subsamples. Panel A reports subsamples by bank characteristics. Columns (1)-(2) report regression estimates when considering counties with low bank capitalization (\leq median) versus those with high bank capitalization ($>$ median). Columns (3)-(4) report regression estimates when considering counties with low bank *ROA* (\leq median) versus those with high bank *ROA* ($>$ median). Columns (5)-(6) report regression estimates when considering unconcentrated counties with low bank HHI (\leq median) versus concentrated counties with high bank HHI ($>$ median). Columns (7)-(8) report regression estimates when considering counties with de novo banks (≤ 2 Years) versus those with mature banks (> 2 Years). Columns (9)-(10) report regression estimates when considering counties with de novo banks (≤ 3 Years) versus those with mature banks (> 3 Years). Panel B reports subsample by market and time characteristics. Columns (1)-(2) report regression estimates when considering metropolitan versus rural counties. Columns (3)-(4) report regression estimates when considering counties with low GDP per capita (\leq median) versus those with high GDP per capita ($>$ median). Columns (5)-(6) report regression estimates when considering financial crises versus normal times. Columns (7)-(8) report regression estimates when considering counties with low *Interracial Marriage Bias Index* (\leq median) versus those with high *Interracial Marriage Bias Index* ($>$ median). Columns (9)-(10) report regression estimates when considering counties with low *Rate of Interracial Adherence* (\leq median) versus those with high *Rate of Interracial Adherence* ($>$ median). The dependent variable is the household's *Index of Consumer Sentiment* (*ICS*) from University of Michigan Surveys of Consumers. The key explanatory variable is *Small Bank Share*, the ratio of small bank branches to total bank branches in the county of the household using the \$1 Billion GTA cutoff measured in real 2014:Q4 dollars. Respondent characteristics are senior status, college degree, male, homeowner, and high income. Bank characteristics at the county level include CAMELS proxies, capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity to market risk; Other bank and county characteristics, bank age, BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, indicator for few banks presence in the county, and metropolitan presence. All models include year-quarter fixed effects and county fixed effects. The details of definitions and measurements of all variables are reported in Table 1. Heteroskedasticity-robust *t*-statistics clustered at the county level are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: Bank Characteristics

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Index of Consumer Sentiment (ICS)		Index of Consumer Sentiment (ICS)		Index of Consumer Sentiment (ICS)		Index of Consumer Sentiment (ICS)		Index of Consumer Sentiment (ICS)	
Criteria	Capital Ratio		ROA		Bank HHI		Bank Age (De Novo Banks)		Bank Age (De Novo Banks)	
Group	\leq Median	$>$ Median	\leq Median	$>$ Median	\leq Median	$>$ Median	≤ 2 Years	> 2 Years	≤ 3 Years	> 3 Years
<i>Small Bank Share</i>	-8.769*** (-3.117)	-11.815*** (-4.234)	-11.704*** (-2.996)	-8.150*** (-2.616)	-18.096*** (-5.333)	-5.911 (-1.555)	-18.712*** (-3.716)	-9.833*** (-3.192)	-17.588*** (-3.971)	-9.801*** (-3.068)
<i>Small Bank Share x Senior</i>	0.298 (0.111)	1.433 (0.563)	1.803 (0.615)	0.687 (0.337)	2.131 (0.863)	0.648 (0.277)	4.717 (1.091)	-0.226 (-0.104)	4.757 (1.227)	-0.469 (-0.220)
<i>Small Bank Share x College</i>	0.991 (0.439)	1.494 (0.684)	-2.810 (-1.241)	3.939* (1.849)	-1.459 (-0.590)	1.729 (0.808)	-1.444 (-0.467)	0.974 (0.472)	0.079 (0.026)	0.440 (0.204)
<i>Small Bank Share x Male</i>	3.509* (1.771)	2.146 (0.845)	0.962 (0.381)	3.960* (1.872)	4.889* (1.706)	2.308 (1.237)	4.087 (1.007)	3.208 (1.615)	4.310 (1.194)	3.096 (1.505)
<i>Small Bank Share x Homeowner</i>	3.911 (1.172)	5.552** (2.450)	6.942** (2.333)	2.409 (0.771)	7.204** (2.386)	3.472 (1.195)	7.252* (1.889)	5.850** (2.475)	5.894 (1.480)	6.425*** (2.747)
<i>Small Bank Share x High Income</i>	-0.817 (-0.326)	-0.881 (-0.490)	0.054 (0.021)	-3.424* (-1.667)	1.997 (0.837)	-1.939 (-0.964)	0.726 (0.194)	-0.846 (-0.423)	-1.024 (-0.326)	-0.210 (-0.110)
<i>Respondent Controls</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>CAMELS Proxies</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>Other Bank Controls</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>Year-Quarter FE</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>County FE</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. Observations	40,716	40,424	40,493	40,647	40,656	40,484	25,145	55,995	29,071	52,069
Adjusted R-squared	0.151	0.116	0.130	0.122	0.134	0.142	0.130	0.140	0.131	0.140
No. Clusters	1599	1774	1625	1795	481	1761	608	1922	684	1921

Panel B: Market and Time Characteristics

Dependent Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
	Index of Consumer Sentiment [ICS]		Index of Consumer Sentiment [ICS]		Index of Consumer Sentiment [ICS]		Index of Consumer Sentiment [ICS]		Index of Consumer Sentiment [ICS]	
Criteria	Metro		ln(GDP/ capita)		Financial Crisis		Interracial Marriage Bias Index		Rate of Interracial Adherence	
Group	Metro=1	Metro =0	≤ Median	> Median	Crisis = 1	Crisis = 0	≤ Median	> Median	≤ Median	> Median
<i>Small Bank Share</i>	-13.657*** (-6.171)	0.671 (0.107)	-6.358* (-1.937)	-15.198*** (-3.717)	-5.005 (-1.484)	-13.692*** (-5.310)	-13.302*** (-3.976)	-8.375** (-2.498)	-5.787* (-1.797)	-16.097*** (-5.498)
<i>Small Bank Share x Senior</i>	2.894 (1.269)	-5.017 (-1.268)	-0.036 (-0.014)	2.188 (0.593)	0.094 (0.030)	1.393 (0.631)	0.910 (0.293)	1.869 (0.842)	2.361 (0.928)	2.101 (0.838)
<i>Small Bank Share x College</i>	-2.004 (-1.189)	3.274 (0.866)	1.848 (0.880)	0.058 (0.025)	2.792 (0.917)	0.635 (0.343)	-0.857 (-0.281)	1.942 (1.012)	-1.256 (-0.527)	2.496 (1.190)
<i>Small Bank Share x Male</i>	3.244 (1.546)	3.396 (0.969)	2.024 (1.028)	4.346 (1.532)	5.473* (1.759)	2.440 (1.181)	0.106 (0.038)	4.391** (2.128)	3.883* (1.839)	1.990 (0.692)
<i>Small Bank Share x Homeowner</i>	7.322*** (3.196)	2.306 (0.388)	5.207* (1.942)	4.861 (1.558)	-1.184 (-0.342)	7.872*** (3.478)	7.371** (2.531)	4.212 (1.600)	1.274 (0.443)	8.608*** (2.666)
<i>Small Bank Share x High Income</i>	0.746 (0.368)	-2.406 (-0.635)	-0.591 (-0.260)	-0.082 (-0.039)	0.062 (0.021)	0.380 (0.215)	0.540 (0.200)	-1.364 (-0.721)	-0.848 (-0.354)	-1.149 (-0.604)
<i>Respondent Controls</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>CAMELS Proxies</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>Other Bank Controls</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>Year-Quarter FE</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>County FE</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. Observations	68,998	12,142	40,779	40,361	27,100	54,040	34,684	46,456	40,571	40,569
Adjusted R-squared	0.131	0.165	0.149	0.128	0.209	0.109	0.130	0.144	0.135	0.139
No. Clusters	781	1170	1556	800	1623	1805	544	1391	921	1017

Table 7: Small Bank Comparative Advantages/Disadvantages in Relieving Household Financial Constraints – Robustness Tests

This table reports regression estimates for analyzing small bank comparative advantage/disadvantages in relieving household financial constraints using several robustness tests. Panel A reports robustness tests when the key explanatory variable is *Small Bank Share*, the ratio of small bank branches to total bank branches in the county of the household. Column (1) reports regression estimates when considering the dependent variable to be the county-level *Index of Consumer Expectations[ICE]* from University of Michigan Survey of Consumers. Columns (2)-(3) reports regression estimates when using alternative model specifications: a model with errors clustered by county and time and respectively a model with errors consistent to common autocorrelated disturbances (Driscoll-Kraay). Columns (4)-(6) reports regression estimates when using several alternative cutoffs of small banks size: \$3, \$5, and \$10 Billion GTA in real 2014:Q4 dollars. Panel B reports robustness tests when the key explanatory variable is *Small/Large Bank Share*, the ratio of small/large bank branches to total population in the county of the household scaled by 1000 using the \$1, \$3, \$5, and respectively \$10 Billion GTA cutoffs measured in real 2014:Q4 dollars. The dependent variable is the household's *Index of Consumer Sentiment ((ICS))* from University of Michigan Surveys of Consumers. Respondent characteristics are senior status, college degree, male, homeowner, and high income. Bank characteristics at the county level include CAMELS proxies, capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity to market risk; Other bank and county characteristics, bank age, BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, indicator for few banks presence in the county, and metropolitan presence. All models include year-quarter fixed effects and county fixed effects. The details of definitions and measurements of all variables are reported in Table 1. Heteroskedasticity-robust *t*-statistics clustered at the county level are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: Small Bank Share – Robustness Tests

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Index of Consumer Expectations (ICE)</i>	<i>Index of Consumer Sentiment (ICS)</i>		<i>Index of Consumer Sentiment (ICS)</i>		
Test	Alternative Measure of Financial Constraints	Alternative Model Specifications		Alternative Small Bank Share		
Measure/Test	ICE	Two-Way Error Clustering	Errors Consistent to Autocorrelated Disturbances (Driscoll-Kraay)	\$3 Billion GTA Cutoff	\$5 Billion GTA Cutoff	\$10 Billion GTA Cutoff
Independent Variables						
<i>Small Bank Share</i>	-15.787*** (-5.462)	-10.421*** (-3.919)	-10.421*** (-3.242)	-12.714*** (-5.710)	-13.349*** (-6.155)	-14.552*** (-6.187)
<i>Small Bank Share x Senior</i>	2.148 (0.994)	0.970 (0.463)	0.970 (0.537)	1.819 (1.039)	1.519 (0.905)	1.490 (0.878)
<i>Small Bank Share x College</i>	2.512 (1.131)	0.804 (0.427)	0.804 (0.494)	0.708 (0.496)	0.717 (0.496)	0.991 (0.704)
<i>Small Bank Share x Male</i>	5.858*** (3.366)	2.843 (1.593)	2.843** (2.110)	2.154 (1.309)	1.486 (0.896)	1.785 (1.171)
<i>Small Bank Share x Homeowner</i>	7.469*** (2.844)	5.228** (2.170)	5.228** (2.060)	3.796** (2.089)	3.121* (1.738)	3.812** (2.149)
<i>Small Bank Share x High Income</i>	-0.436 (-0.247)	-0.861 (-0.495)	-0.861 (-0.619)	-0.226 (-0.150)	-0.371 (-0.249)	-0.049 (-0.032)
Respondent Controls	YES	YES	YES	YES	YES	YES
CAMELS	YES	YES	YES	YES	YES	YES
Other Bank Controls	YES	YES	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES	YES
No. Observations	81,140	80,990	80,990	81,140	81,140	81,140
Adjusted R-squared	0.098	0.137	0.137	0.137	0.137	0.137
No. Clusters Counties	1932	1932	1932	1932	1932	1932
No. Clusters Year-Quarter		60	60			

Table 8: Small Banks and Household Sentiment – Potential Channels

This table reports univariate analyses for analyzing channels for the effects of the small bank comparative advantage/disadvantages in relieving household financial constraints. Panel A reports consumer deposit rates. Panel B reports deposit quantities. Panel C reports consumer loan rates. Panel D reports consumer loan quantities. The details of definitions and measurements of all the other variables are reported in Table 1. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: Consumer Deposit Rates

<i>Group</i>	<i>Small Banks</i>		<i>Large Banks</i>		<i>Difference in Means (Large-Small)</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	N	Mean	N	Mean	Difference	<i>t</i> -Stat
100K Deposits						
<i>03MCD100K</i>	117,368	0.8405	147,319	1.0170	0.1765***	35.2
<i>06MCD100K</i>	131,979	1.1025	181,450	1.1529	0.0504***	10.2
<i>12MCD100K</i>	133,964	1.3650	186,114	1.3857	0.0207***	4.0
<i>24MCD100K</i>	113,860	1.4060	157,762	1.3574	-0.0486***	-10.4
<i>36MCD100K</i>	98,619	1.5033	136,795	1.4290	-0.0741***	-16.6
<i>48MCD100K</i>	81,478	1.6379	116,458	1.5388	-0.0991***	-21.9
<i>60MCD100K</i>	82,120	1.8850	121,472	1.8257	-0.0593***	-12.7
<i>SAV100K</i>	71,442	0.2131	108,317	0.1800	-0.0331***	-30.5
250K Deposits						
<i>03MCD250K</i>	65,420	0.2380	79,011	0.1896	-0.0484***	-55.0
<i>06MCD250K</i>	72,195	0.3636	103,503	0.3047	-0.0588***	-51.9
<i>12MCD250K</i>	72,489	0.5419	104,931	0.4527	-0.0892***	-64.6
<i>24MCD250K</i>	69,051	0.7862	99,742	0.6713	-0.1149***	-68.2
<i>36MCD250K</i>	64,869	1.0170	93,337	0.8750	-0.1419***	-70.3
<i>48MCD250K</i>	55,320	1.2127	80,988	1.0534	-0.1592***	-65.7
<i>60MCD250K</i>	55,206	1.4332	82,571	1.2898	-0.1434***	-53.4

Panel B: Deposit Quantities

<i>Group</i>	<i>Small Banks</i>		<i>Large Banks</i>		<i>Difference in Means (Large-Small)</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	N	Mean	N	Mean	Difference	<i>t</i> -Stat
<i>Insured Deposits / GTA</i>	431,993	0.6373	34,029	0.4779	-0.1594***	-97.9
<i>Uninsured Deposits / GTA</i>	431,993	0.3184	34,029	0.3616	0.0432***	29.4

Panel C: Consumer Loan Rates

Group	Small Banks		Large Banks		Difference in Means (Large-Small)	
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	N	Mean	N	Mean	Difference	t-Stat
Mortgages						
1 Year ARM @ 175K - Rate	17,464	5.7430	39,053	5.2927	-0.4503***	-31.2
3 Year ARM @ 175K - Rate	20,069	5.9506	46,053	5.2891	-0.6615***	-51.0
5 Year ARM @ 175K - Rate	17,304	6.0738	48,334	5.2438	-0.8301***	-60.7
15 Yr Fxd Mtg @ 175K - Rate	37,941	5.6743	97,794	5.3298	-0.3445***	-36.8
30 Yr Fxd Mtg @ 175K - Rate	27,562	5.8727	85,392	5.8119	-0.0608***	-6.5
Auto Loans						
Auto New - 36 Mo Term	99,546	6.6974	204,812	5.6914	-1.0059***	-150.0
Auto New - 48 Mo Term	99,693	6.8000	205,525	5.7974	-1.0025***	-150.0
Auto New - 60 Mo Term	99,159	6.9141	205,619	5.9114	-1.0026***	-150.0
Auto Used 2 Yrs - 36 Mo Term	87,976	7.2779	187,500	6.0322	-1.2457***	-160.0
Auto Used 2 Yrs - 48 Mo Term	84,971	7.3187	185,123	6.0917	-1.2270***	-160.0
Auto Used 2 Yrs - 60 Mo Term	55,667	7.1053	160,012	5.9369	-1.1684***	-130.0
Auto Used 4 Yrs - 36 Mo Term	70,990	7.8033	153,494	6.2994	-1.5038***	-170.0
Auto Used 4 Yrs - 48 Mo Term	52,999	7.6119	138,112	6.1769	-1.4350***	-140.0
Auto Used 4 Yrs - 60 Mo Term	20,842	7.1023	100,899	5.7555	-1.3468***	-80.3
Credit Cards						
Credit Cards - Annual Fee	4,922	6.6522	26,892	3.5051	-3.1471***	-16.8
Credit Cards - Cash Adv Fee	8,061	2.7212	47,654	2.4210	-0.3001***	-10.6
Credit Cards - Intro Rate	3,348	1.8031	22,053	1.5556	-0.2476***	-4.9
Credit Cards - MasterCard	4,329	13.0926	22,610	12.5937	-0.4990***	-7.3
Credit Cards - Visa	8,219	12.7194	53,821	12.3491	-0.3703***	-9.8
Credit Cards - Gold	4,803	12.1544	30,880	11.2691	-0.8853***	-17.8
Credit Cards - Platinum	3,671	10.1306	36,566	9.6647	-0.4658***	-12.5
Home Equity Loans						
H.E. Loan Up to 80% LTV @ 20K - 60 Mo Term	61,860	6.8602	159,965	6.6153	-0.2449***	-27.4
H.E. Loan Up to 80% LTV @ 20K - 120 Mo Term	35,653	6.5079	143,275	6.8697	0.3618***	22.7
H.E. Loan Up to 80% LTV @ 20K - 180 Mo Term	19,427	7.2371	114,179	7.2596	0.0225***	1.3
H.E. Loan 81-90% LTV @ 20K - 60 Mo Term	31,461	7.0865	102,164	7.1914	0.1049***	7.9
H.E. Loan 81-90% LTV @ 20K - 120 Mo Term	17,645	6.5543	91,083	7.4409	0.8866***	35.5
H.E. Loan 81-90% LTV @ 20K - 180 Mo Term	9,202	7.1281	72,243	7.8175	0.6894***	16.8
H.E. Loan 91-100% LTV @ 20K - 60 Mo Term	9,313	7.5438	56,225	8.1126	0.5688***	17.2
H.E. Loan 91-100% LTV @ 20K - 120 Mo Term	5,483	6.3536	50,961	8.3069	1.9532***	33.8
H.E. Loan 91-100% LTV @ 20K - 180 Mo Term	3,216	6.7420	41,128	8.6531	1.9111***	20.6

Panel D: Consumer Loan Quantities

Group	Small Banks		Large Banks		Difference in Means (Large-Small)	
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	N	Mean	N	Mean	Difference	t-Stat
Residential Real Estate Loans / GTA	431,993	0.1761	34,029	0.1725	0.0036***	5.2
Consumer Credit Card Loans / GTA	431,993	0.0025	34,029	0.0248	0.0223***	33.9
Other Consumer Loans / GTA	431,993	0.0519	34,029	0.0464	-0.0055***	-12.4
Residential Real Estate Unused Commitments / GTA	431,993	0.0113	34,029	0.0291	0.0178***	87.2
Consumer Credit Card Unused Commitments / GTA	431,993	0.6602	34,029	0.3095	-0.3507***	-8.9