Bank Size and Household Financial Sentiment
Surprising Evidence from 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
University of Leeds
f.irresberger@leeds.ac.uk

Raluca A. Roman
Federal Reserve Bank of
Philadelphia
raluca.roman@phil.frb.org

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Abstract

We analyze comparative advantages/disadvantages of small and large banks in improving household financial sentiment. Matching University of Michigan Surveys of Consumers household sentiment data with local banking market data from 2000-2014, we find surprising results – large banks have significant comparative advantages in boosting such sentiment. The findings apply across demographic groups, market types, and time periods, and are robust to different measurements and econometric methods. We contribute to the literatures on bank specialness, benefits and costs of small and large banks, household sentiment, and real effects of banking. We conjecture about the drivers of the findings, and discuss policy implications.

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1. Introduction

Financial institutions and markets exist in large part to improve the economic and financial conditions of firms and households. In particular, banks are thought to play special roles in the economic and financial lives of firms and households by providing credit, deposit, and other financial services more efficiently than other institutions and markets. Some of the banking literature emphasizes banks' special abilities to gather private information and serve large publicly traded firms (e.g., James, 1987; Billett, Flannery, and Garfinkel, 2006). Other banking literature emphasizes the relative abilities of banks of different sizes to serve small businesses, which are generally more informationally opaque than large publicly traded firms. The latter studies generally find that small banks have comparative advantages over large banks in using relationship lending to alleviate small business financial constraints (e.g., Cole, Goldberg, and White, 2004; Berger, Miller, Petersen, Rajan, and Stein, 2005).

In contrast to this vast literature on the specialness and importance of banks in serving firms, there is a void in the literature on the abilities of banks of different sizes in serving the economic and financial needs of households. We take on this challenge with the first study on the comparative advantages of small and large banks in improving household sentiment regarding personal and national economic and financial conditions. For convenience, we henceforth simply summarize this as household financial sentiment.

This sentiment is important to study and may be even more economically consequential than small business financial perceptions studied in the literature. Consumer spending accounts for about 70% of U.S. Gross Domestic Product (GDP), [1] so household financial sentiment 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 problems 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 with access to safe, secure, and affordable financial services (FDIC, 2015). Many households lack sufficient banking services. The FDIC finds that about 90 million Americans or about 27% of U.S. households are unbanked or underbanked. [2] Other research

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[1] https://fred.stlouisfed.org/graph/?g=hh3.

[2] https://www.fdic.gov/news/news/speeches/spapr2617.pdf

summarized in our literature review below finds that household financial sentiment is a key predictor of macroeconomic outcomes, including GDP, consumption, and inflation.[3]

We employ individual household responses to the University of Michigan Surveys of Consumers from 2000-2014. The Surveys of Consumers conducts interviews with households in the coterminous U.S. (48 states plus the District of Columbia) each month via telephone and is designed to be representative of all U.S. households.[4] 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 household financial sentiment. These sentiment measures are strong proxies for actual economic and financial conditions and are shown in other research to be powerful predictors of economic agents' behavior.[5]

Our unique dataset matches the household survey responses with bank information for the households' counties from Call Reports and Summary of Deposits. These data allow us to test how banks of different sizes affect household financial sentiment.[6] We are the first, to our knowledge, to match the Michigan Surveys responses with banking and other economic data at the county level, and among the first to explore determinants of the survey responses.[7] Research using Michigan Surveys data typically employs responses consolidated at the national level as a macroeconomic explanatory variable. In contrast, we use individual household responses as dependent variables and employ county small bank market share as the key independent variable.

Based on small business finance research, we might expect small banks to have comparative advantages over large banks in improving household financial sentiment. Small banks are found to have comparative advantages in improving small business managerial perceptions of

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[3] There is research also showing that consumer sentiment may affect inflation-reported expectations, that is consumers' personal assessment of price increases (e.g., Giovane, Fabiani, and Sabbatini, 2009; Ehrmann, Pfajfar, and Santoro, 2017).

[4] 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/.

[5] The use of sentiment or perceptions to proxy for financial conditions is also used in the small business financial constraints literature (e.g., Berger, Bouwman, and Kim, 2017).

[6] 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 specific knowledge of the respondents or their counties.

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

financial constraints and other conditions through relationship lending. Households face similar informational opacity problems and constraints as small businesses.

We test whether small versus large banks have comparative advantages in serving households and boosting their financial sentiment. Our main dependent variable is the *Index of Consumer Sentiment* (*ICS*) created by the University of Michigan, compiled from households' responses to five questions about their perceptions of personal and national economic and financial conditions. We regress *ICS* on *Small Bank Share*, the ratio of small bank branches to total bank branches in the household's county. The *Small Bank Share* coefficient captures the comparative advantages/disadvantages of small banks relative to large banks in improving household financial sentiment. A positive coefficient on *Small Bank Share* would suggest small bank comparative advantages in improving household financial sentiment, and a negative coefficient would suggest large bank advantages.

Our results are quite surprising and intriguing. We find that higher small bank share statistically and economically significantly *negatively* affects household financial sentiment, consistent with potential comparative advantages for large banks when dealing with households. This finding holds across household demographic groups and is robust to many checks.

To mitigate potential omitted variable concerns, we specify strong controls for demand, including a broad set of respondent characteristics, county characteristics, and State × Year-Quarter fixed effects that account for changing economic conditions. We also control for measures of banking supply other than *Small Bank Share*, including other local bank characteristics and market characteristics. To ensure robustness of our results, we re-run our tests using alternative proxies for household financial sentiment, alternative proxies for small bank share and access, alternative estimation methods, and alternative controls. We also conduct cross-sectional analyses to address bank, household, local market structure, and economic conditions heterogeneity. Our main results hold in each of these checks. While our various tests and approaches help allay econometric concerns, we recognize that our analysis is limited by that lack of an exact link between the households in the survey and the banks they use. Rather, we are only able to draw conclusions about the market structure of banks that is presented to the households in their local markets.

Finally, our finding that small bank share is associated with lower household sentiment raises the question of what could be driving such a result. We present a number of such conjectures attempting to explain this in Section 6.

Our paper contributes to several strands of literature. First, we add another dimension to the literature on bank specialness by showing that large banks appear to be better able than small banks to improve household financial sentiment. In addition, we extend the literature on the comparative advantages of banks of different sizes from small businesses to households. We also expand the literature on the University of Michigan Surveys of Consumers, which normally uses the data aggregated at the national level, rather than individual household data as we do. Finally, we add to the literature on the real effects of the banking industry by showing that the mix of small and large banks affects households' financial sentiment, which is shown in prior research to be a key factor in consumer spending decisions.

As discussed in the conclusions, our findings have implications regarding two sets of policy levers to improve household financial sentiment and potentially improve the real economy. Policy makers can directly affect banking market structure through merger and acquisition approval policies, regulations affecting interstate branching, and legal requirements on banks that differ by bank size. The second set of levers involves reducing compliance costs for small banks that may impinge on their abilities to serve consumers.

The remainder of the paper is organized as follows. In Section 2, we review the related literature. Section 3 describes the data and variables used in our study. Section 4 presents our main results, while Section 5 presents robustness checks. In Section 6, we propose conjectures for further research that may explain our results. Section 7 concludes.

2. Literature Review

Our paper is related to several distinct literatures, which we group into five categories: 1) bank specialness; 2) small bank comparative advantages in relationship lending and consumer trust; 3) large bank comparative advantages in economies of scale and safety, 4) household sentiment and surveys of consumers, and 5) real effects of the banking industry.

2.1 Bank Specialness Literature

Banks are often considered to be "special" in their abilities to gather and use private information to screen and monitor borrowers. Banks are considered to have comparative advantages over others in these endeavors because of specialization in performing these functions, economies of scale in gathering and processing credit information, and relationships with borrowers that provide additional information from prior loan, deposit, and other accounts. Specialness is usually tested by evaluating the abnormal stock returns of publicly traded loan customers around the time of loan announcements, and the results in this literature are mixed (e.g., James, 1987; Billett, Flannery, and Garfinkel, 2006; Maskara and Mullineaux, 2011; Li and Ongena, 2015; Saheruddin, 2017). In contrast to this literature's focus on publicly traded corporations, we analyze for the first time the extent to which banks may be special in boosting household financial sentiment.

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. Large banks have comparative advantages in lending to less opaque, larger, and/or older firms with more hard, quantitative information available. In contrast, small banks specialize in soft, qualitative information technologies, such as relationship lending, and have comparative advantages in lending to more opaque, smaller, and younger firms. Small banks are considered superior at using soft information that is more easily 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; Boot and Thakor, 2000; Stein, 2002; Cole, Goldberg, and White, 2004; Berger, Miller, Petersen, Rajan, and Stein, 2005; Liberti and Mian, 2009; Canales and Nanda, 2012; 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., Petersen and Rajan, 2002;

Hannan, 2003; Brevoort and Hannan, 2006; DeYoung, Frame, Glennon, and Nigro, 2011).

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; Berger, Goulding, and Rice, 2014). In contrast, 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 (2017) 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

The *Chicago Booth / Kellogg School Financial Trust Index Survey* is based on an annual survey of a representative sample of about 1,000 American households. The 2015 results (Wave 24) gives trust by bank category and suggests that small banks may have comparative advantages in being trusted more by households than large banks (Mester, 2018). The 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

Early research on scale economies for U.S. banks in the 1980s and early 1990s typically finds scale diseconomies past moderate bank sizes, while research starting in the mid-1990s finds scale economies even at the sizes of the largest institutions (e.g., Berger and Mester, 1997). The change might be explained in part by movement to more advanced functional forms, such as the Fourier-flexible function, or nonparametric techniques. The early research more often employs the translog function, which essentially imposes a U-shape on the average cost curve, yielding economies of scale at smaller sizes and diseconomies at larger sizes. There may also be more actual scale economies in banking in later periods because of 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 continues to find scale economies at large bank

sizes (e.g., Wheelock and Wilson, 2012, Hughes and Mester, 2013). This literature is consistent with the idea that large banks could use their economies of scale to offer better pricing or services to households that would improve their sentiment.

2.3.2 Economies of Safety for Large Banks

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

First, large banks are more diversified than small banks, but this diversification does not 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 (e.g., Hughes and Mester, 2013). In addition, diversification may not always reduce credit risk as 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 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., 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 being more pronounced during financial crises (e.g., Berger, El Ghoul, Guedhami, and Roman, 2017). Finally, product diversification is found to have mixed effects on risk and performance (e.g., Laeven and Levine, 2007).

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.[8] Bank holding companies with over $100 billion in assets are subject to the stress tests starting in 2009 (aka Supervisory Capital Assessment Program

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[8] There is some recent movement at the Office of the Comptroller of the Currency (OCC) and Federal Reserve Bank of New York toward centralizing the supervision of large institutions, rather than keeping offices at the banks. See https://www.americanbanker.com/articles/new-occ-head-scraps-plan-to-move-big-bank-examiners-off-site.

(SCAP) and Comprehensive Capital Analysis and Review (CCAR)), and those with over $10 billion in assets have to undergo versions of the stress tests starting in 2014, the last year of our sample.[9] Some research suggests that the stress tests are successful in encouraging large U.S. banks to reduce their risks (Acharya, Berger, and Roman, 2018). In contrast, others find that banks may be managing financial performance to look more attractive to regulators and investors (Cornett, Minnick, Schorno, and Tehranian, forthcoming).

Finally, large banks may also be perceived as 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; Iyer and Puri, 2012; Osili and Paulson, 2014; Oliveira, Schiozer, and Barros, 2015).[10]

2.5 Literature on Household Sentiment and the Surveys of Consumers
Aggregate *ICS* is shown to be a significant predictor of economic outcomes in a variety of settings, such as marketing and consumption behavior (e.g., Carroll, Fuhrer, and Wilcox, 1994; Gaski and Etzel, 1986; Souleles, 2004), asset prices in financial markets (e.g., Lemmon and Portniaguina, 2006), and macroeconomic outcomes such as GDP and inflation (Batchelor and Dua, 1998).

While *ICS* is used in other studies as an independent variable on a national level, we are among the first to examine its determinants on an individual household level. The two studies that come closest are as follows. One explains the components of *ICS* using respondent heterogeneity (Lahiri and Zhao, 2016). However, their data are on a U.S. region level (West, North Central, Northeast, Central, etc.) and they do not make extensive use of the household characteristics.

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[9] Other recently passed legislation would increase the stress-test minimum size requirement to $250 billion in assets.
[10] The major rating agencies traditionally rate large bank holding companies (BHCs) with and without consideration of external government support or "uplift" in addition to the institutions' intrinsic strength. However, since the passage of the Dodd-Frank Act, this "uplift" has largely disappeared for the largest BHCs, with Moody's and Fitch specifically citing the Orderly Liquidation Authority (OLA) of the Dodd-Frank act as a basis for doing so (Moody's Investor Services, 2013, 2015; Fitch Ratings, 2014; Standard & Poor's Rating Services, 2015).

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 respondents were more likely to be optimistic over this time period.

There are also studies proposing deriving text-based measures of consumer sentiment, from newspapers and other media outlets (e.g., Baker and Wurgler, 2006; Tetlock, 2007; Barber and Odean, 2008). A recent approach employed by a number of authors is the use of internet search volume data to proxy for household-level and retail investor attention and sentiment. For example, Ginsberg, Mohebbi Patel, Brammer, Smolinski and Brilliant (2009) use the search volume from Google's search engine on influenza symptoms and detect nationwide epidemics. Da, Engelberg and Gao (2015) create an index of negative household sentiment with Google Trends data and relate this index to asset prices. The disadvantages of such measures are that we often do not know for sure which part of the population or which regions are driving the economic attitudes. One counterexample is Soo (2018), which constructs regional housing sentiment indices for major metropolitan areas based on local newspapers. However, such a text based measure is not able to capture sentiment in rural areas where such data are not available or cover extended time periods due to limited data availability over time. By using the granularity of county-level data, the household sentiment data we use from the *Michigan Surveys of Consumers* are able to cover very large parts of the United States' population and regions. In addition, they are well established, being available for a long-time horizon, and incorporate direct answers from households on a monthly basis.

2.5 Literature on Real Effects of the Banking Industry

Finally, we more broadly add to the literature on the effects of the banking industry on the real economy. This literature includes but is not limited to studies on bank geographic deregulation (e.g., Jayaratne and Strahan, 1996; Morgan, Rime, and Strahan, 2004; Huang, 2008; Levine, Levkov, and Rubinstein, 2008; Beck, Levine, and Levkov, 2010), other bank regulation such as capital standards (e.g., Allen, 2004), bank bailouts (e.g., Duchin and Sosyura, 2014; Berger and Roman, 2017), and shocks to bank deposits that affect the real economy (e.g., Gilje, Loutskina, and Strahan, 2016). See Berger, Molyneux, and Wilson (2019) for a survey of this research. We contribute to this research by showing that bank size structure also influences the real economy by

affecting households' sentiment, which is demonstrated elsewhere to affect spending and real economic outcomes.

3. Data

We next introduce our main dataset. Table 1 Panel A shows variable definitions and data sources. Our key dependent variables measuring household financial sentiment 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.[11] 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.

3.1 Michigan Consumer Sentiment Surveys

The *Index of Consumer Sentiment* (*ICS*) is based on the University of Michigan's *Surveys of Consumers*. The surveys started in 1946, and were annual until 1952, but increased frequency to quarterly, and eventually to monthly from 1978 to the present (Ludvigson, 2004). Each month, about 500 households in the conterminous U.S. are interviewed via telephone (of which about 300 are new respondents and attempted to be re-interviewed after six months)[12] on personal finances, general economic outlook, and individual characteristics such as age, education, gender, home ownership, and income (Curtin, 2013). The survey is designed to be representative of U.S. households.[13] The *ICS* is calculated from responses to the following five questions (abbreviations 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 <u>better off</u> or <u>worse off</u> financially than you were <u>a year ago</u>?" (*PAGO*)

2) "Now looking ahead — do you think that <u>a year from now</u> you (and your family living

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[11] 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.

[12] Official documentation about how telephone interviews are sampled and conducted is available at: https://data.sca.isr.umich.edu/fetchdoc.php?docid=57449.

[13] See surveys information document at: https://data.sca.isr.umich.edu/fetchdoc.php?docid=24774.

there) will be <u>better off</u> financially, or <u>worse off</u>, 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 <u>next twelve months</u> we'll have <u>good</u> times financially, or <u>bad</u> 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 <u>next five years</u> or so, or that we will have periods of widespread <u>un</u>employment 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 <u>good</u> or <u>bad</u> time for people to buy major household items?" (*DUR*)

Questions 1 and 5 correspond to perceptions about the present, while Questions 2 to 4 capture perceptions about the future.

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.[14] 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:[15]

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

By construction, higher values of *ICS* represent a more positive household sentiment.

As a robustness check, we alternatively use the *Index of Consumer Expectations* (*ICE*), constructed from the responses to Questions 2, 3, and 4. *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:

$$ICE = \frac{X_2 + X_3 + X_4}{4.1134} + 2.0. \tag{2}$$

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[14] Answers that are missing or "I don't know" are counted as neutral answers if respondent answers other questions.
[15] There was no constant added until 1972:M4 (except for 1972:M1). The constant was 2.7 from 1972:M4 until 1981:M11 and has been 2.0 from 1981:M12 to the present.

Analogous to *ICS*, higher values of *ICE* represent an overall more positive sentiment.

ICS and *ICE* are continuous variables used as dependent variables in OLS regressions. We later also use the responses to the five questions individually as proxies for household sentiment in OLS and ordered logit regressions. For these purposes, the scores for *PAGO*, *PEXP*, and *DUR* take the values of 3, 2, and 1, respectively, representing positive, neutral, and negative responses. 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*. [16] We extract *ICS*, *ICE*, and the five individual responses, as well as information on respondent age, education, gender, home ownership, and income. We include respondent characteristics as controls in all our analyses because they help control for demand forces and other research shows that responses to the surveys are different for different characteristics (e.g., Toussaint-Comeau and McGranaham, 2006).

All survey variables are converted to quarterly data to match our banking data. We restrict our sample to counties with at least two household responses in the same quarter. We have 61,320 respondent-county-quarter observations for 2000:Q1 to 2014:Q4. For each respondent, we have an anonymized Federal Information Processing Standards (FIPS) code representing the respective county of residence.

Table 1 Panel B provides an overview of the number of survey responses and shows mean values of respondent characteristics in a given (anonymized) U.S. state. The top ten states, as ranked by the number of survey responses, account for about 57.7% of the sample, which is consistent with the proportion of households covered by the top ten states in terms of population. In almost all states, a very high percentage of respondents' counties are located in MSAs (over 80%). Only at the lower end of the number of observations per state do we find more respondents

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[16] The respective data can be downloaded at https://data.sca.isr.umich.edu/sda-public/cgi-bin/hsda?harcsda+sca, while general information on the data is available at: https://data.sca.isr.umich.edu/sda-public/.

in rural counties. Interestingly, the average county-level share of small bank branches does not seem to correlate with the number of observations within a given state, i.e., within-state average small bank shares are largely independent of the number of observations coming from a given state. Similar findings hold for respondents' age, income, gender, education, and homeownership, where average values are not driven by over- or underrepresentation of households in certain areas in our sample.

Table 1 Panel C shows summary statistics for key variables over the full sample period. *ICS* and *ICE* statistics are difficult to interpret on an absolute basis because they are scaled variables. 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* indicates that a respondent is 65 or older. *College* denotes college graduates and *Male* indicates that the respondent is male. *Homeowner* designates homeowners, and *High Income* indicates those with incomes above the sample median. The summary statistics in Table 1 Panel B show that 25.1% of all respondents are senior citizens, 50.2% have a college degree, 45.4% are male, and 77.7% are homeowners. High-income earners make up 58.6% of our sample.

3.2 Bank Data

3.2.1 Key Independent Variable, Small Bank Share

Our main independent variable of interest is the share of small bank branches in the respondent's county. We define "small banks" as those with gross total assets (GTA[17]) below $1 billion in real 2014:Q4 dollars, corresponding to the usual research definition of "community banks" (e.g., DeYoung, Hunter, and Udell, 2004). 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 of small banks in the county divided by the total number of branches in the county. Notably, we do

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[17] 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.

not calculate *Small Bank Share* based on bank deposits in our main analysis because deposits likely reflect banking demand as much as supply. Banks provide the branches and customers largely decide how many deposits to put in them. We therefore strongly prefer using bank branches to measure bank supply. However, in a robustness test below, we calculate *Small Bank Share* in terms of deposits rather than branches, and the findings are robust to this change.

Table 1 Panel B shows *Small Bank Share* (based on the $1 billion GTA cutoff) has a mean of 35.9%, with a standard deviation of 17.3%. Using a higher cutoff for the definition of small banks naturally yields a higher average *Small Bank Share*, which is 49.6% 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 heat maps 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 – and Midwest states – which often exhibit small bank shares above 75%. Eastern states are more mixed. Not surprisingly, most of the counties with small bank shares above 75% 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, 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 concerns, as opposed to the *comparative* advantage measured by *Small Bank Share*. In additional tests, we also include *Large Bank Access*, defined analogously.

3.2.2 Other Banking Variables

As controls, we include proxies for CAMELS examination ratings, the financial outcome variables used for regulators to evaluate banks (e.g., Duchin and Sosyura, 2014). The acronym CAMELS comes from the six variables: *Capital Adequacy(C)* is the ratio of equity over GTA.[18] *Asset Quality(A)* is the fraction of nonperforming loans. *Management Quality(M)* is the ratio of overhead

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[18] 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).

costs to GTA, and *Earnings(E)* is return on assets. For *Liquidity(L)*, we use the bank's ratio of liquid assets over GTA. Finally, for *Sensitivity to Market Risk(S)*, we use the absolute difference between short and long-term liabilities divided by GTA. To obtain county-level values of the CAMELS proxies, we calculate weighted averages of each proxy across banks in a given county, based on the bank branches in local markets. Importantly, the CAMELS' proxies account for the possibility that household responses may reflect the financial health of the banking organizations in their markets. Local markets with stronger bank financials as reflected by higher capitalization, less non-performing loans, higher earnings, higher liquidity, and/or lower sensitivity to market risk may be associated with more positive household sentiment, and *vice versa* for markets with weaker bank financials.

We also employ as controls other bank characteristics for the county – proportion of banks owned by bank holding companies (*BHC*); proportion of foreign-owned banks (*Foreign Ownership*); ratio of noninterest income to total income (*Fee Income*); ratio of bank deposits to GTA (*Deposits Ratio*), and bank concentration based on branch deposits (*Herfindahl-Hirschman Index* or *HHI*). Banks that are owned by a BHC or have foreign ownership may be regarded as being stronger due to having additional sources of financing from the parents. However, these two types of banks may also induce lower consumer trust as they are less likely to be locally controlled and focused. Banks with higher fee income may be regarded as riskier due to more non-traditional banking orientation. A high *Deposits Ratio* may be an indicator of customer-friendly orientation of the banks, boosting household sentiment. Alternatively, more reliance on deposit funding for banks, all else equal, may be an indicator of difficulties in raising uninsured funds from the capital markets, suggesting that the banks could be financially unhealthy, hurting household sentiment. Finally, banks with higher local market concentration may exercise more market power over customers, yielding lower household sentiment.

For the county, we also include a dummy for whether it is located in a Metropolitan Statistical Area (MSA) or New England County Metropolitan Area (NECMA) (*Metro*), the county rate of unemployment, and the log of county local median household income. Rural areas with higher unemployment and lower household income are expected to be more negative in their sentiment, all else equal. We also include State × Year-Quarter fixed effects to control for many other economic and social factors that change in the local markets over time.

3.3 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. Empirical Results

4.1 Main Regression Analysis

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

$$
\begin{aligned}
\textit{Household Financial Sentiment}_{j,i,t} = {} & \beta \times \textit{Small Bank Share}_{i,t-4} + \gamma \times \textit{Respondent Characteristics}_{j,t} \\
& + \delta \times \left(\textit{Small Bank Share}_{i,t-4} \times \textit{Respondent Characteristics}_{j,t} \right) \\
& + \theta \times \textit{Bank CAMELS Proxies}_{i,t-4} \\
& + \varphi \times \textit{Other Bank \& County Chars}_{i,t-4} + \mu_{s,t} + \varepsilon_{i,t}.
\end{aligned}
\tag{1}
$$

The dependent variable measuring *Household Financial Sentiment*$_{j,i,t}$ for household j in county i at time t is *ICS,* with higher values indicating more positive sentiment. As discussed above, *Small Bank Share*$_{i,t-4}$, is our key independent variable. We control for respondent characteristics, bank CAMELS proxies, other bank and county characteristics. The interactions between *Small Bank Share* and respondent characteristics allow for different reactions from different demographic household groups to the size structure of the local banking market. All regressions include State × Year-Quarter dummies $\mu_{s,t}$ (one for every date t per state s) to account for within-state-time effects such as changing economic conditions. Heteroskedasticity-robust standard errors are clustered at the county level. All controls except for respondent characteristics are lagged by four quarters.

Table 2 shows our main regression results on the association between bank size and household financial sentiment. Column (1) includes *Small Bank Share* and all of the control variables, while columns (2) – (7) include interaction terms of *Small Bank Share* with respondent demographic characteristics to explore for which groups of households the different hypotheses

hold. Throughout all specifications in Table 2, we observe negative coefficients on *Small Bank Share*, suggesting that **large banks** have comparative advantages in boosting household financial sentiment. This main result holds for each of the regression models and is statistically significant at the one percent level. Results are also economically significant. In model (7), our most complete specification, the coefficient on *Small Bank Share* is -11.066. Moving *Small Bank Share* from zero to 100 percent, with all of the respondent characteristics set to zero, decreases *ICS* by 11.066 from 87.293 to 76.228. The interactions of *Small Bank Share* and each respondent characteristic are insignificantly different from zero except for *Homeowner* and *Male*. Thus, the estimated large bank comparative advantages do not significantly differ for seniors, college degree holders, or high-income households relative to their opposites. However, for homeowners and males, the negative effect of *Small Bank Share* on household financial sentiment is only about half as strong.

Turning to the controls, all of the (uninteracted) respondent characteristics are statistically significant in specifications (2) - (7), and coefficient signs are generally in line with those found in Toussaint-Comeau and McGranaham (2006). Seniors and homeowners, on average, respond more negatively to the survey, while responses of male, college educated, or affluent households are more positive.

In terms of the bank and county characteristics, most bank CAMELS proxies, such as capitalization or liquidity, and other bank controls are not statistically significant. We next focus on the coefficient signs of statistically significant control variables. Most of these are consistent with intuition, but a small number of them are difficult to explain and may reflect the effects of multiple forces that are difficult to discern. *Asset Quality*, the proportion of bank non-performing loans surprisingly appears to increase rather than decrease household sentiment. This may reflect that banks that provide more loans and services to potentially underserved but riskier groups of customers are more satisfied. *Management Quality,* the proportion of bank overhead costs is negatively related to household sentiment and suggests that households may value bank operating efficiency*,* which may translate into better banking services to them. *BHC Indicator* and *Foreign Ownership* are both associated with more negative sentiment, consistent with the possibility that BHC and foreign ownership may reflect lower consumer trust in banks that may be less locally focused. *Deposits Ratio*, the ratio of bank deposits to total assets in a county also suggests a more negative sentiment. As suggested above, high *Deposits Ratio* could reflect financially unhealthy

banks with difficulties raising uninsured funds from capital markets, harming household sentiment. The negative, statistically significant *Herfindahl-Hirschman Index* coefficient may reflect dissatisfaction with the exploitation of market power that may come with higher market concentration. *Metro* shows a positive association with household sentiment, possibly reflecting more household choices in more competitive metropolitan banking markets. Finally, not surprisingly, unemployment rates representing worse local economic conditions tend to depress household financial sentiment. However, controlling for unemployment, median household income is not significant.

4.2 Nonlinear effects

We next investigate the possibility that the relation between *Small Bank Share* and household sentiment may be nonlinear or even nonmonotonic, i.e., it may be negative up to a certain size threshold and then turn positive. It could be the case, for example, that respondents highly value the presence of large banks only up to a point, and then prefer more small bank presence beyond that point. To explore this conjecture, Table 3 shows results from regressions that additionally include quadratic terms of *Small Bank Share* and its interactions with the respondent characteristics to test for nonlinear effects of bank size on household financial sentiment.

Column (1) shows results using the simplest specification without the interactions with the respondent characteristics. The linear term of Small Bank Share exhibits a negative coefficient, while the quadratic term is positive and statistically significant from zero, consistent with a U-shaped relation. Given that the sign of the quadratic term is positive, we do not have a local maximum but only a local minimum. However, *ICS* attains its global maximum (i.e., most positive sentiment) within the range of possible *Small Bank Share* values [0,1] when there are only large banks in a county, i.e., *Small Bank Share* equals zero. To better assess the relations, we calculate the inflection points of the quadratic functions in each case and compare them to the distribution of the data. In the simplest model in column (1) of Table 3, we find that while the relation is U-shaped, ICS attains its global maximum (i.e., most positive sentiment) within the range of possible Small Bank Share values [0,1] when there are only large banks in a county, i.e., a Small Bank Share equal to zero. Moreover, the inflection point is 0.535 (or 53.5%),[19] the 85th percentile of the

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[19] The inflection point is calculated from setting the marginal effect of *Small Bank Share* variables to zero, i.e., solving for z in $(-29.530 + 2*27.576*z) = 0$.

Small Bank Share distribution, suggesting that for the overwhelming majority of the observations, the marginal effects of *Small Bank Share* are negative. Results are similar using the other specifications in columns (2)-(7), where we show the findings for setting all of the respondent characteristics equal to the sample mean.[20] Because the findings for *Small Bank Share* are overwhelmingly negative, we continue the remainder of our analyses with the linear term only.

For brevity, in all analyses that follow except when noted otherwise, we show only the full specification from column (7) in Table 2.

4.3 Decomposition Analysis of the Index of Consumer Sentiment

In Table 4, we evaluate comparative advantages of banks of different sizes 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 using OLS in columns (1)-(5) and ordered logit in columns (6)-(10). We examine whether the coefficients in our OLS models are positive or negative and test them for equality to zero. For the ordered logit regression, we evaluate whether the odds ratios are above or below one, i.e., whether the odds are increased or decreased, and test them for equality to one (i.e., no effect). OLS models include State × Year-Quarter fixed effects, while ordered logit estimations employ state fixed effects and year-quarter fixed effects to avoid incidental parameters problem and inconsistent estimates associated with nonlinear models with short time series and a large number of fixed effects.[21] For brevity, we show only the most complete specification from Table 2 with all controls and interaction terms. Using both estimation methods, we find that for all demographic groups, 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 five years (*BUS5*). However, the findings for current conditions differ, with statistically insignificant effects on the change in personal finances since last year (*PAGO)* and national conditions for buying durables (*DUR*). Thus, our main finding of more negative financial sentiment for households from higher county presence of small banks

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[20] Results are largely consistent when setting all the respondent characteristics to either zero or one.
[21] See Neyman and Scott (1948) and Greene (2004) for discussions of these issues.

appears to be driven primarily by pessimism about the future.

5. Robustness Tests and Cross-Sectional Analyses

5.1 Robustness Tests

In Table 5 Panel A, columns (1) - (3), we redefine *Small Bank Share* using alternative cutoffs of $3 billion, $5 billion, and $10 billion in GTA instead of $1 billion. Results continue to show that large banks rather than small banks may have a comparative advantage in boosting households' financial sentiment, and that our results are not sensitive to nuances in the definition of small banks.[22]

In column (4), we weight bank variables based on the proportions of bank deposits in a county instead of by the number of branches. Column (5) shows results including CAMELS proxies separately for small and large banks to account for the possibility that differences in bank financial characteristics rather than size are driving our results. In both cases, our key coefficients remain negative and statistically significant at the 1% level.

Panel A column (6) repeats our main tests but excludes observations of households that were recontacted six months after the first interview to order to mitigate any bias that may stem from including similar household characteristics and counties twice. By survey design, such observations can make up roughly 30-40% of monthly survey responses and therefore, the number of observations in column (6) is reduced significantly. Despite the smaller number of observations, our main results continue to hold and are statistically significant at the 1% level.

In column (7), we replace the *Index of Consumer Sentiment (ICS)* with the alternative sentiment measure *Index of Consumer Expectations (ICE)*. Results are again consistent with our main findings. Across all specifications, we continue to find that large banks rather than small banks appear to have comparative advantages in dealing with households with all of the different characteristics.

5.2 Subsample Evidence

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[22] In unreported results, we also run the tests with the share of large bank branches instead of the share of small bank branches in a given county based on the four cutoffs and results are very similar except that the signs are reversed, showing that large banks may have comparative advantages in improving household financial sentiment. We also run, but do not show specifications in which we add a variable for the presence of credit unions and account for two-way clustering at the county and time level (e.g., Thompson, 2011).

We next provide evidence on how bank size comparative advantages differ for counties with different banking market characteristics. In Table 5 Panel B, we split our sample above and below median values for market concentration (HHI), the degree of regulation at the state level, and county household income, and compare crisis versus normal times in column. The comparative advantages of large banks are fairly widespread, but there are some exceptions and minor differences. The negative influence of *Small Bank Share* is only significant in markets with high *HHI*, and it is more pronounced in states with high *Bank Deregulation Index*, counties with low *County Median Income*, and during financial crises. These findings are perhaps not surprising. They suggest that household sentiment may be more sensitive to banking conditions under more undesirable circumstances – more market power and regulation for the banks, and lower income and financial problems for households.

5.3 Small and Large Bank Access

In Table 6, we replace the *Small Bank Share* variables with *Small Bank Access* and also add *Large Bank Access*. *Small Bank Access* is the ratio of small bank branches to county population measured in thousands, and *Large Bank Access* is defined analogously. We use the same four GTA cutoffs of $1 billion, $3 billion, $5 billion, and the $10 billion as above. The effects of these variables on the *ICS* measure capture the *absolute* abilities of small and large banks to improve household financial sentiment, as opposed to the comparative advantages/disadvantages of small banks relative to large banks. Small banks may be particularly bad at alleviating households' financial concerns, large banks may be particularly good, or both. The results in Table 6 suggest that most of the comparative disadvantages for small banks are due to absolute disadvantages for small banks, as we observe negative and statistically highly significant coefficients for *Small Bank Access* in all four specifications. Two exceptions are seniors and college graduates, for which large banks appear to have some absolute advantages.

6. Conjectures regarding small and large bank comparative advantages

Our results that large rather than small banks may have comparative advantages in improving household financial sentiment raises the question of what could be driving this relation. We note that it is a net relation – small banks may have some advantages and large banks may have other advantages, and what we observe is that the advantages of the large banks seem to be greater. In

this section, we conjecture advantages for both small and large banks that might be behind the results.

6.1 Small Bank Advantages

We first discuss two conjectures through which small banks may have comparative advantages over large banks in improving household financial sentiment: relationship and trust. Under the relationship conjecture, 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 in Section 2.2.1 above in which small banks are found to have comparative advantages in providing credit to small businesses and alleviating their financial constraints. Similarly, households may benefit from banking credit and deposit relationships.

Under the trust conjecture, small banks may have comparative advantages in serving households because households may have greater trust in small banks than in large banks. This can be in effect at least in part because small banks are more often controlled locally. As discussed in Section 2.2.2 above, the *Chicago Booth / Kellogg School Financial Trust Index Survey* indicates that consumers trust local banks more than national banks, suggesting that trust may be a significant advantage for small banks.

6.2 Large Bank Advantages

Then, we also offer two conjectures under which large banks have comparative advantages relative to small banks in improving household sentiment: economies of scale and safety. Under the economies of scale conjecture, large banks have lower unit costs which allow them to offer more favorable deposit and loan prices. As in Section 2.3.1 above, the economies of scale literature finds that such economies exist during our sample period and are substantial. Such economies may allow large banks to offer more favorable prices and/or service quality to their household customers.

Under the safety conjecture, large banks may be better able to provide households safety for their savings and assurances of continuity of other services. As discussed above in Section 2.3.2, large banks may provide better safety because of superior diversification, more prudential regulation and supervision, and/or greater access to implicit government bailout guarantees.

6.3 Net Effects of These Advantages

Our empirical results suggest that the combination of the economies of scale and safety advantages of large banks outweigh on average the combination of the relationship and trust advantages of small banks. Interestingly, these four advantages of small and large banks may alternatively be interpreted along two different dimensions. The trust and safety conjectures can be regarded as reflecting "confidence" in small and large banks, respectively, while relationship and economies of scale conjectures can be regarded as ways of alleviating household financial constraints. Thought of in this way, some combination of the abilities of large banks to win the confidence of households and/or alleviate household financial constraints empirically dominates the confidence and ability to alleviate constraints of small banks.

Importantly, each of the conjectures may apply more strongly for different households. For example, banking relationships may be relatively important for some households, while for other households, safety ensuring continuity of services may be more pertinent. Each conjecture may also hold more for some subgroups of the population.

Unfortunately, without additional data, we are not able to test these conjectures. While we are able to link the households with their local banking markets, we do not have specific links between the households and the individual banks with which they do business. Thus, we cannot test, for example, the differences in loan and deposit prices and quantities, loan approvals and rejections, or lengths of relationship in actual household-bank interactions. We leave the testing of the conjectures for future research.

8. Conclusions

We formulate and test hypotheses about whether small versus large banks have comparative advantages in boosting household financial sentiment, which is shown in other research to be economically consequential. Our analysis is the first to use individual household data from the University of Michigan Surveys of Consumers and match household survey responses with data on banks in their local markets.

The evidence strongly suggests that large banks have comparative advantages relative to small banks in boosting household sentiment regarding their personal finances and the nationwide economy. The findings apply across all demographic groups, market types, and time periods

considered and are robust to many different measurements and econometric methods. We conjecture that small banks may have advantages in terms of relationships and trust, while large banks may have advantages in terms of economies of scale and safety, and our results are consistent with large banks' advantages empirically dominating. Unfortunately, dataset limitations prevent us from investigating the individual conjectures.

Our main findings that large rather than small banks have advantages in dealing with households may seem surprising in that they appear to conflict with the 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 trust in small banks more highly, while households may place greater values on the benefits associated with the economies of scale and safety of large banks.

Our paper contributes to the literatures on bank specialness, the comparative advantages and disadvantages and social benefits and costs of small and large banks, household sentiment, and the real effects of the banking industry. We add to the research using the University of Michigan Surveys of Consumers, which usually focuses on household sentiment at the national level. We investigate the determinants of financial sentiment at the household level.

The results in our paper suggest that both government regulators and researchers may take into account these previously unknown social benefits of large banks in improving household financial sentiment. Given the importance of this sentiment to the real economy established elsewhere, the paper has implications regarding two sets of policy levers. The first set involves ways that policy makers can affect banking market structure. Bank mergers and acquisitions (M&As) require federal regulatory approval, giving regulators a vote in consolidation decisions that affect local small bank market shares. Under the Riegle-Neal Act, states can also choose their restrictions on interstate branching (Rice and Strahan, 2010). In addition, under the Dodd-Frank Act and other post-crisis legislation, many regulations become effective at certain size thresholds, potentially deterring M&As that would otherwise reduce small bank market shares.

However, this first set of policy levers that allows for more bank consolidation and reduced small bank market shares may have both positive and negative impacts on the real economy. While

household sentiment may be improved, the increased consolidation may have negative effects on small businesses because small banks are shown in other research to be better at reducing small business financial constraints through relationship lending.

The second set of policy levers concern reducing regulatory compliance costs on both small and large banks that draw resources away from serving consumers. For small banks, in particular, some of the relatively fixed reporting requirements impose costs that cannot be spread over very many assets, possibly making these banks less efficient at serving consumers. Policies that lower these compliance costs may improve household financial sentiment but could also result in social costs in terms of greater risk in the banking system.

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Figure 1: 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)
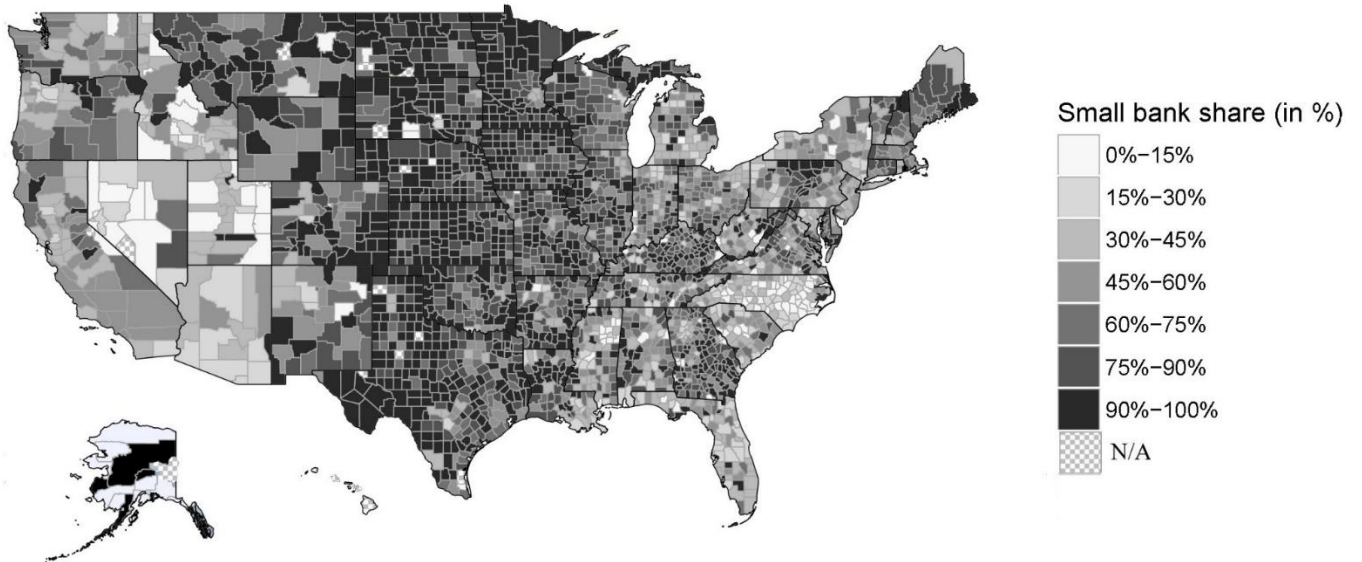
Panel B: Small Bank Share by U.S. Counties (2014)
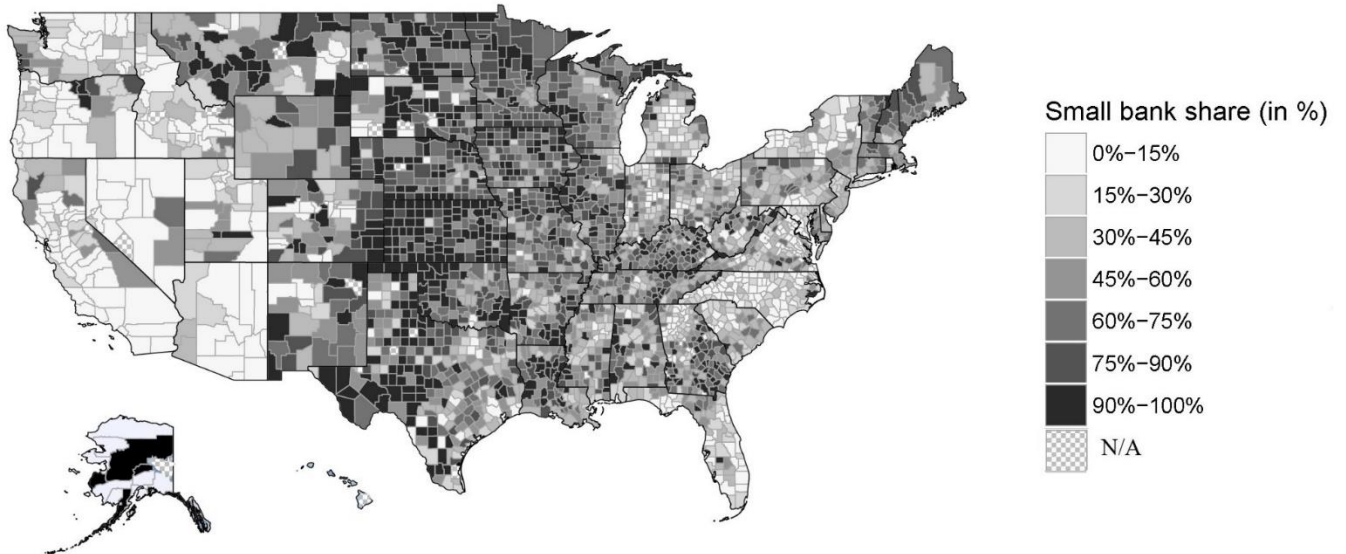
Table 1: Variable Definitions and Summary Statistics

Panel A: Variable Definitions

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

Group	Definition	Source
Dependent Variables		
Household Sentiment:		
Index of Consumer Sentiment (ICS)	The county-level aggregate Index of Consumer Sentiment from University of Michigan Surveys of Consumers computed using a formula based on responses to the five survey questions.	*UMichigan Surveys of Consumers*
Index of Consumer Expectations (ICE)	The county-level aggregate Index of Consumer Expectations from University of Michigan Surveys of Consumers computed using a formula based on responses to three of the survey questions.	*UMichigan Surveys of Consumers*
Finances vs. 1 Year Ago (PAGO)	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.	*UMichigan Surveys of Consumers*
Finances Expected 1 Year Ahead (PEXP)	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.	*UMichigan Surveys of Consumers*
National Conditions over Next Year (BUS12)	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.	*UMichigan Surveys of Consumers*
National Conditions over Next 5 Years (BUS5)	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.	*UMichigan Surveys of Consumers*
Conditions for Purchase of Durables (DUR)	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.	*UMichigan Surveys of Consumers*
Key Explanatory Variables		
Small Bank Share (Main Measure):		
Small Bank Share	The proportion of small bank branches to total bank branches in the county of the household using the $1 Billion ($3Bn, $5Bn, or $10Bn) GTA cutoff measured in real 2014:Q4 dollars.	*Call Reports, SoD*
Control Variables		
Respondent Characteristics:		
Senior	Binary variable equal to one if age of respondent is 65 or over.	*UMichigan Surveys of Consumers*
Male	Binary variable equal to one if sex of respondent is male.	*UMichigan Surveys of Consumers*
College	Binary variable equal to one if education of respondent is college degree or more.	*UMichigan Surveys of Consumers*
Homeowner	Binary variable equal to one if respondent is homeowner.	*UMichigan Surveys of Consumers*
High Income	Binary variable equal to one if household income of respondent is greater or equal to the median.	*UMichigan Surveys of Consumers*
Bank Condition Variables (CAMELS Proxies):		
Capital Ratio (C)	The average equity ratio, the total equity to gross total assets (GTA) of banks in the county of the household.	*Call Reports, SoD*
Asset Quality (A)	Proxy: nonperforming loans to total loans of banks in the county of the household.	*Call Reports, SoD*
Management Quality (M)	Proxy: overhead costs ratio of banks in the county of the household.	*Call Reports, SoD*
Earnings (E)	Proxy: return on assets (ROA) of banks in the county of the household.	*Call Reports, SoD*
Liquidity (L)	Proxy: the ratio of liquid assets to GTA of banks in the county of the household.	*Call Reports, SoD*
Sensitivity to Market Risk (S)	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.	*Call Reports, SoD*
Group	**Definition**	**Source**
Control Variables (cont.):		
Other Bank & County Characteristics:		
BHC Indicator	Proportion of banks that are BHC or part of a BHC in the county of the household.	*Call Reports, SoD*
Foreign Ownership	Proportion of banks that are foreign owned in the county of the household.	*Call Reports, SoD*
Fee Income	Non-interest to total income of banks in the county of the household.	*Call Reports, SoD*

Deposits Ratio	Deposits ratio to GTA in the county of the household.	*Call Reports, SoD*
Herfindahl-Hirschman Index	The Herfindahl-Hirschman Index (HHI) based upon branch deposits in the county of the household.	*Call Reports, SoD*
Metro	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.	*Call Reports, SoD*
Unemployment Rate	The rate of unemployment at the county level.	*US Census Bureau*
Log(Median Household Income)	The natural logarithm of the median household income at the county level.	*Bureau of Economic Analysis*

Other Variables Used in Robustness Tests:		
Small Bank Access	The ratio of small bank branches to total population in the county of the household scaled by 1,000,000 using the $1 Billion ($3Bn, $5Bn, or $10Bn) GTA cutoff measured in real 2014: Q4 dollars.	*Call Reports, SoD, US Census*
Large Bank Access	The ratio of large bank branches to total population in the county of the household scaled by 1000 using the $1 Billion ($3Bn, $5Bn, or $10Bn) GTA cutoff measured in real 2014:Q4 dollars.	*Call Reports, SoD, US Census*
Additional Variables Used in Cross-Sectional Tests:		
Bank Deregulation Index	Bank competition proxied by the index of interstate bank branching deregulation at the state level, based on Rice and Strahan (2010), plus the additional restriction for reciprocity between states, and subsequent updates from individual state statutes. It ranges from zero (deregulated) to five (highly regulated) based on the regulation changes in a state.	*Rice and Strahan (2010)*
Financial Crises	An indicator equal to 1 in all financial crises periods as per Berger and Bouwman (2013) and 0 otherwise.	*Berger and Bouwman (2013)*

Panel B: Distribution of Survey Responses by State (anonymous)

This panel reports the number of survey responses by U.S. state (anonymized) from 2000 to 2014 covering 48 U.S. states plus the District of Columbia. It shows mean values of county-level small bank share, respondent characteristics, and percentage of counties within a state that are considered MSAs (Metro).

State Rank	No. Obs	Small Bank Share (%)	Metro Areas (%)	Respondent Characteristics				
				Age	Income (USD)	Male (%)	College (%)	Homeowner (%)
1	8,499	31.3	99.1	50.8	82,795	44.7	52.0	68.6
2	4,590	28.8	99.4	55.3	70,036	44.3	48.1	83.0
3	4,430	29.5	96.7	51.5	87,001	46.3	57.0	67.5
4	4,057	33.2	98.2	49.8	76,744	44.9	49.8	77.5
5	3,541	43.3	94.3	52.5	71,411	44.3	45.2	79.6
6	3,078	39.0	97.4	51.1	85,801	45.3	53.3	80.7
7	2,969	27.2	91.2	52.1	67,926	45.2	43.1	78.5
8	2,957	27.4	93.2	52.5	68,610	45.8	45.3	80.8
9	2,172	36.4	100.0	51.3	100,117	46.5	53.0	77.9
10	2,024	58.7	99.3	52.5	90,643	45.0	58.2	76.8
11	1,802	35.7	96.0	50.8	76,216	46.5	51.6	78.2
12	1,726	17.5	89.5	51.7	71,141	45.0	51.6	82.4
13	1,565	23.0	99.2	54.1	69,343	48.3	46.0	81.2
14	1,534	31.1	99.6	51.7	93,722	43.5	53.4	80.1
15	1,484	50.3	91.5	51.2	75,271	47.9	55.2	83.2
16	1,474	26.4	95.9	49.9	84,594	44.0	52.4	77.0
17	1,402	58.0	88.8	52.6	68,718	43.7	43.6	79.5
18	1,392	25.2	97.3	51.6	97,038	45.8	62.8	81.6
19	1,305	41.6	96.0	51.1	70,007	42.6	45.3	79.7
20	1,287	29.6	91.5	51.7	68,834	44.9	42.1	81.9
21	1,186	45.1	98.6	51.0	85,007	48.7	57.5	80.0
22	1,102	56.9	98.5	53.4	91,314	44.8	53.8	81.6
23	1,059	30.8	95.1	52.4	62,238	44.3	47.0	81.2
24	987	26.0	91.8	53.7	71,884	46.0	49.9	77.1
25	837	30.7	96.2	52.6	69,024	48.2	48.2	83.2
26	746	28.9	90.6	53.0	65,857	43.0	44.6	83.1
27	651	41.6	95.7	51.2	74,897	41.1	41.2	80.2
28	630	49.9	85.2	53.1	66,755	46.6	42.5	78.7
29	570	28.5	98.9	49.5	68,859	49.0	48.6	80.5
30	563	29.9	89.3	52.0	67,677	47.6	42.1	78.4
31	555	61.1	83.8	52.3	68,895	42.2	46.8	82.9
32	504	57.4	92.5	52.9	76,490	49.3	52.4	83.9
33	504	20.7	98.4	53.1	75,347	47.1	43.0	76.5
34	345	51.2	89.6	52.2	76,538	43.1	48.0	81.7
35	330	60.2	80.0	53.6	58,368	46.0	48.5	80.5
36	290	32.2	90.3	51.6	63,199	48.1	49.2	82.1
37	289	48.6	87.9	52.7	62,555	40.5	45.4	76.9
38	280	27.3	92.9	53.7	68,028	45.3	49.6	81.7
39	275	51.7	88.0	49.8	63,269	52.5	48.5	69.5
40	239	40.4	100.0	50.8	82,041	49.8	44.8	85.8
41	231	29.4	100.0	50.2	72,563	42.7	53.5	72.5
42	215	23.1	100.0	48.2	97,294	40.5	69.8	57.7
43	206	30.7	69.9	52.7	62,251	47.9	42.4	82.3
44	179	31.1	84.9	55.8	53,030	50.6	43.2	85.8
45	129	56.3	51.9	52.0	66,319	42.1	42.1	82.5
46	100	55.0	71.0	52.1	66,308	57.6	48.9	78.3
47	87	39.6	65.5	52.1	75,816	46.8	58.2	87.3
48	68	65.4	70.6	54.1	55,030	61.4	45.6	73.2
49	16	49.6	25.0	52.7	99,719	50.0	56.2	81.2

Panel C: Summary Statistics – Full Sample (2000-2014)

This panel reports summary statistics of key dependent and independent 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, p50(median), p75, and max).

Group:	**Main Statistics**			**Quantiles**					*Source*
Statistics:	**N**	**Mean**	**Stdv.**	**Min**	**p25**	**p50**	**p75**	**Max**	
Dependent Variables									
Household Sentiment:									
Index of Consumer Sentiment (ICS)	61,294	83.316	39.456	2.000	46.000	91.000	120.000	150.000	*UMichigan Surveys of Consumers*
Index of Consumer Expectations (ICE)	61,294	76.476	47.009	2.000	26.000	75.000	124.000	148.000	*UMichigan Surveys of Consumers*
Finances vs. 1 Year Ago (PAGO)	61,178	2.005	0.847	1.000	1.000	2.000	3.000	3.000	*UMichigan Surveys of Consumers*
Finances Expected 1 Year Ahead (PEXP)	59,817	2.207	0.656	1.000	2.000	2.000	3.000	3.000	*UMichigan Surveys of Consumers*
National Conditions over Next Year (BUS12)	56,048	2.833	1.914	1.000	1.000	2.000	5.000	5.000	*UMichigan Surveys of Consumers*
National Conditions over Next 5 Years (BUS5)	58,726	2.899	1.783	1.000	1.000	3.000	5.000	5.000	*UMichigan Surveys of Consumers*
Conditions for Purchase of Durables (DUR)	58,246	2.452	0.864	1.000	2.000	3.000	3.000	3.000	*UMichigan Surveys of Consumers*
Key Explanatory Variables									
Small Bank Share									
Small Bank Share ($1 Billion Cutoff)-	61,294	0.359	0.173	0.000	0.226	0.346	0.462	1.000	*Call Reports, SoD*
Small Bank Share ($3 Billion Cutoff)	61,294	0.429	0.179	0.000	0.295	0.421	0.540	1.000	*Call Reports, SoD*
Small Bank Share ($5 Billion Cutoff)	61,294	0.458	0.182	0.000	0.323	0.451	0.580	1.000	*Call Reports, SoD*
Small Bank Share ($10 Billion Cutoff)	61,294	0.496	0.187	0.000	0.351	0.492	0.619	1.000	*Call Reports, SoD*
Control Variables									
Respondent Characteristics:									
Senior	61,294	0.251	0.434	0.000	0.000	0.000	1.000	1.000	*UMichigan Surveys of Consumers*
Male	61,294	0.454	0.498	0.000	0.000	0.000	1.000	1.000	*UMichigan Surveys of Consumers*
College	61,294	0.502	0.500	0.000	0.000	1.000	1.000	1.000	*UMichigan Surveys of Consumers*
Homeowner	61,294	0.777	0.416	0.000	1.000	1.000	1.000	1.000	*UMichigan Surveys of Consumers*
High Income	61,294	0.586	0.493	0.000	0.000	1.000	1.000	1.000	*UMichigan Surveys of Consumers*
Bank Condition Variables (CAMELS Proxies):									
Capital Ratio (C)	61,294	0.091	0.014	0.062	0.080	0.085	0.102	0.305	*Call Reports, SoD*
Asset Quality (A)	61,294	0.012	0.014	0.000	0.001	0.003	0.025	0.058	*Call Reports, SoD*
Management Quality (M)	61,294	0.011	0.004	-0.052	0.009	0.011	0.013	0.032	*Call Reports, SoD*
Earnings (E)	61,294	0.010	0.005	-0.107	0.007	0.011	0.013	0.094	*Call Reports, SoD*
Liquidity (L)	61,294	0.057	0.024	0.011	0.039	0.051	0.069	0.220	*Call Reports, SoD*
Sensitivity to Market Risk (S)	61,294	0.162	0.084	0.000	0.098	0.176	0.222	0.663	*Call Reports, SoD*
Other Bank & County Characteristics:									
BHC Indicator	61,294	0.478	0.199	0.000	0.335	0.475	0.623	1.000	*Call Reports, SoD*
Foreign Ownership	61,294	0.057	0.073	0.000	0.000	0.027	0.102	0.604	*Call Reports, SoD*
Fee Income	61,294	0.322	0.834	-98.374	0.277	0.330	0.389	9.504	*Call Reports, SoD*
Deposits Ratio	61,294	0.665	0.052	0.293	0.632	0.662	0.697	0.917	*Call Reports, SoD*
Herfindahl-Hirschman Index	61,294	0.155	0.087	0.042	0.101	0.133	0.181	0.900	*Call Reports, SoD*
Metro	61,294	0.955	0.207	0.000	1.000	1.000	1.000	1.000	*Call Reports, SoD*
Unemployment Rate	61,294	6.232	2.520	1.100	4.400	5.700	7.600	29.700	*US Census Bureau*
Log(Median Household Income)	61,294	10.815	0.243	9.993	10.643	10.792	10.963	11.691	*Bureau of Economic Analysis*
Other Variables used in Robustness Tests									
Alternative Bank Share/Access Variables:									
Small Bank Access ($1 Billion Cutoff)	61,294	0.110	0.081	0.000	0.060	0.091	0.141	1.481	*Call Reports, SoD, US Census*
Small Bank Access ($3 Billion Cutoff)	61,294	0.132	0.087	0.000	0.073	0.111	0.169	1.481	*Call Reports, SoD, US Census*
Small Bank Access ($5 Billion Cutoff)	61,294	0.140	0.089	0.000	0.079	0.120	0.181	1.481	*Call Reports, SoD, US Census*
Small Bank Access ($10 Billion Cutoff)	61,294	0.152	0.093	0.000	0.087	0.130	0.197	1.481	*Call Reports, SoD, US Census)*
Large Bank Access ($1 Billion Cutoff)	61,294	0.185	0.068	0.000	0.135	0.182	0.232	0.716	*Call Reports, SoD, US Census*
Large Bank Access ($3 Billion Cutoff)	61,294	0.164	0.064	0.000	0.117	0.162	0.205	0.645	*Call Reports, SoD, US Census*
Large Bank Access ($5 Billion Cutoff)	61,294	0.155	0.062	0.000	0.108	0.153	0.196	0.645	*Call Reports, SoD, US Census*
Large Bank Access ($10 Billion Cutoff)	61,294	0.143	0.062	0.000	0.098	0.142	0.184	0.645	*Call Reports, SoD, US Census*
Additional Cross-Sectional Tests:									
Bank Deregulation Index	61,294	2.433	1.325	0.000	1.000	3.000	4.000	4.000	*Rice and Strahan (2010)*
Financial Crises	61,294	0.329	0.470	0.000	0.000	0.000	1.000	1.000	*Berger and Bouwman (2013)*

Table 2: Comparative Advantages of Small and Large Banks in Boosting Household Financial Sentiment - Main Results This table reports regression estimates for analyzing small and large bank comparative advantages in boosting household financial sentiment. 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 are BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, an indicator of metropolitan presence, county unemployment rate, and county median household income. All models include State × Year-Quarter fixed effects. Variable definitions are given 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.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable:				*Index of Consumer Sentiment (ICS)*			
Independent Variables:							
Small Bank Share	-5.751***	-6.538***	-7.420***	-4.625**	-10.080***	-5.756***	-11.066***
	(-3.001)	(-3.286)	(-3.628)	(-2.202)	(-3.710)	(-2.745)	(-3.687)
Interactions with Respondent Characteristics							
Small Bank Share × Senior		3.134					2.425
		(1.372)					(1.039)
Small Bank Share × Male			3.758*				3.901**
			(1.906)				(1.982)
Small Bank Share × College				-2.550			-2.748
				(-1.252)			(-1.285)
Small Bank Share × Homeowner					5.348**		5.550**
					(2.205)		(2.199)
Small Bank Share × High Income						0.010	-0.564
						(0.005)	(-0.265)
Respondent Characteristics							
Senior	-7.624***	-8.722***	-7.621***	-7.634***	-7.602***	-7.624***	-8.459***
	(-16.339)	(-8.787)	(-16.311)	(-16.411)	(-16.336)	(-16.348)	(-8.345)
Male	7.757***	7.759***	6.412***	7.757***	7.754***	7.757***	6.358***
	(21.665)	(21.672)	(7.768)	(21.657)	(21.643)	(21.662)	(7.717)
College	2.837***	2.844***	2.841***	3.751***	2.843***	2.837***	3.834***
	(6.908)	(6.930)	(6.915)	(4.326)	(6.921)	(6.908)	(4.253)
Homeowner	-3.516***	-3.505***	-3.520***	-3.517***	-5.422***	-3.516***	-5.490***
	(-6.970)	(-6.928)	(-6.958)	(-6.975)	(-5.422)	(-6.971)	(-5.291)
High Income	6.502***	6.507***	6.501***	6.497***	6.505***	6.499***	6.705***
	(16.707)	(16.731)	(16.708)	(16.672)	(16.699)	(7.937)	(7.526)
Bank & County Characteristics							
Capital Ratio (C)	-37.286	-37.618	-37.065	-38.307	-38.012	-37.282	-39.390
	(-1.058)	(-1.064)	(-1.050)	(-1.084)	(-1.077)	(-1.059)	(-1.109)
Asset Quality (A)	184.662***	186.229***	183.840***	185.263***	185.498***	184.664***	186.463***
	(2.817)	(2.840)	(2.807)	(2.823)	(2.831)	(2.817)	(2.841)
Management Quality (M)	-322.347**	-321.878**	-324.243**	-322.598**	-319.062**	-322.353**	-320.464**
	(-2.251)	(-2.246)	(-2.262)	(-2.248)	(-2.228)	(-2.251)	(-2.232)
Earnings (E)	-40.511	-39.806	-39.997	-41.852	-40.675	-40.511	-41.015
	(-0.643)	(-0.631)	(-0.635)	(-0.664)	(-0.645)	(-0.643)	(-0.650)
Liquidity (L)	10.783	10.813	11.672	10.459	10.381	10.784	10.914
	(0.530)	(0.532)	(0.574)	(0.515)	(0.511)	(0.530)	(0.538)
Sensitivity to Market Risk (S)	-8.651	-8.847	-8.469	-8.569	-8.630	-8.651	-8.498
	(-1.083)	(-1.107)	(-1.060)	(-1.071)	(-1.077)	(-1.083)	(-1.058)
BHC Indicator	-4.495**	-4.501**	-4.480**	-4.503**	-4.599**	-4.495**	-4.598**
	(-2.387)	(-2.389)	(-2.377)	(-2.392)	(-2.433)	(-2.387)	(-2.430)
Foreign Ownership	-14.844***	-14.837***	-14.812***	-14.881***	-14.871***	-14.844***	-14.865***
	(-2.895)	(-2.892)	(-2.891)	(-2.901)	(-2.896)	(-2.896)	(-2.893)
Deposits Ratio	-18.123**	-18.141**	-17.867**	-18.071**	-18.294**	-18.123**	-18.000**
	(-2.330)	(-2.329)	(-2.299)	(-2.320)	(-2.348)	(-2.330)	(-2.305)
Fee Income	-0.049	-0.051	-0.049	-0.048	-0.051	-0.049	-0.052
	(-1.025)	(-1.074)	(-1.027)	(-1.008)	(-1.081)	(-1.026)	(-1.116)
Herfindahl-Hirschman Index	-6.468**	-6.491**	-6.458**	-6.587**	-6.558**	-6.468**	-6.707***
	(-2.512)	(-2.521)	(-2.510)	(-2.556)	(-2.541)	(-2.510)	(-2.598)
Metro	2.018**	2.040**	2.043**	2.065**	2.058**	2.018**	2.164**
	(2.191)	(2.214)	(2.218)	(2.233)	(2.238)	(2.186)	(2.341)
Unemployment Rate	-0.848***	-0.848***	-0.849***	-0.843***	-0.851***	-0.848***	-0.847***
	(-4.654)	(-4.653)	(-4.658)	(-4.626)	(-4.668)	(-4.651)	(-4.637)
Log(Median Household Income)	-2.048	-2.046	-2.076	-2.053	-2.117	-2.048	-2.151
	(-1.535)	(-1.534)	(-1.558)	(-1.539)	(-1.586)	(-1.536)	(-1.612)
State × Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES
Clusters by County	YES	YES	YES	YES	YES	YES	YES
Observations	61,294	61,294	61,294	61,294	61,294	61,294	61,294
Adjusted R-squared	0.127	0.127	0.127	0.127	0.127	0.127	0.127

Table 3: Testing for Nonlinear Effects This table reports regression estimates for analyzing small and large bank comparative advantages in boosting household financial sentiment using linear and quadratic terms. The dependent variable is the household's *Index of Consumer Sentiment (ICS)* from University of Michigan Surveys of Consumers. The key explanatory variable is the linear and quadratic of *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 are BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, an indicator of metropolitan presence, county unemployment rate, and county median household income. All models include State × Year-Quarter fixed effects. Variable definitions are given 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.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable:				*Index of Consumer Sentiment*			
Independent Variables:							
Small Bank Share	-29.530***	-33.896***	-27.777***	-21.779***	-46.232***	-28.811***	-40.839***
	(-5.312)	(-5.661)	(-4.354)	(-3.231)	(-5.147)	(-4.221)	(-3.976)
(Small Bank Share)^2	27.576***	31.822***	23.417***	19.465***	43.099***	26.427***	35.205***
	(4.770)	(5.123)	(3.502)	(2.694)	(4.269)	(3.557)	(3.103)
Interactions with Respondent Characteristics							
Small Bank Share × Senior		16.214*					11.584
		(1.875)					(1.332)
(Small Bank Share × Senior)^2		-15.778					-10.728
		(-1.571)					(-1.063)
Small Bank Share × Male			-3.986				-3.503
			(-0.592)				(-0.526)
(Small Bank Share × Male)^2			9.469				9.106
			(1.237)				(1.193)
Small Bank Share × College				-16.137**			-17.162**
				(-2.078)			(-2.188)
(Small Bank Share × College)^2				17.266**			18.107**
				(1.974)			(2.060)
Small Bank Share × Homeowner					20.767**		22.346**
					(2.296)		(2.383)
(Small Bank Share × Homeowner)^2					-19.268*		-21.274*
					(-1.836)		(-1.955)
Small Bank Share × High Income						-1.441	0.033
						(-0.200)	(0.004)
(Small Bank Share × High Income)^2						2.287	-0.230
						(0.274)	(-0.026)
Inflection Point (Respondent Characteristics = Mean)	0.535	0.535	0.534	0.531	0.535	0.534	0.529
Percent of Observation with Predicted Sign	85%	85%	85%	85%	85%	85%	85%
Respondent Characteristics	YES	YES	YES	YES	YES	YES	YES
Bank CAMELS Proxies	YES	YES	YES	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES	YES	YES	YES
State × Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES
Clusters by County	YES	YES	YES	YES	YES	YES	YES
Observations	61,294	61,294	61,294	61,294	61,294	61,294	61,294
Adjusted R-squared	0.128	0.128	0.128	0.128	0.128	0.127	0.128

Table 4: Index of Consumer Sentiment (ICS) Decomposition This table reports regression estimates for analyzing small and large bank comparative advantages in boosting household financial sentiment using a decomposition of the *Index of Consumer Sentiment (ICS)* into its subcomponent survey questions: *PAGO, PEXP, BUS12, BUS5,* and *DUR.* Columns (1)-(5) show estimates using an OLS model with State × Year-Quarter fixed effects, and columns (6)-(10) show results using an ordered logit model with State fixed effects and Year-Quarter dummies and report odds ratios. 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 are BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, an indicator of metropolitan presence, county unemployment rate, and county median household income. Variable definitions are given 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.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Estimation:			OLS					Ordered Logit		
Dependent Variable:	*PAGO*	*PEXP*	*BUS12*	*BUS5*	*DUR*	*PAGO*	*PEXP*	*BUS12*	*BUS5*	*DUR*
Independent Variables:										
Small Bank Share	-0.065	-0.190***	-0.389**	-0.748***	0.057	0.817	0.603***	0.572***	0.419***	1.188
	(-1.035)	(-3.941)	(-2.526)	(-5.223)	(0.858)	(-1.429)	(-3.682)	(-3.534)	(-5.677)	(1.078)
Interactions with Respondent Characteristics										
Small Bank Share × Senior	-0.004	-0.013	0.220*	0.213*	0.014	0.954	0.962	1.265*	1.201	0.963
	(-0.094)	(-0.332)	(1.888)	(1.899)	(0.274)	(-0.468)	(-0.330)	(1.908)	(1.602)	(-0.290)
Small Bank Share × Male	0.036	0.060*	0.198**	0.254***	-0.055	1.058	1.187*	1.266**	1.379***	0.931
	(0.891)	(1.811)	(2.066)	(2.626)	(-1.118)	(0.596)	(1.717)	(2.327)	(3.132)	(-0.572)
Small Bank Share × College	0.001	-0.019	-0.171	0.012	-0.084*	1.045	0.955	0.856	1.028	0.813*
	(0.018)	(-0.506)	(-1.537)	(0.111)	(-1.868)	(0.459)	(-0.407)	(-1.333)	(0.235)	(-1.783)
Small Bank Share × Homeowner	0.035	0.055	0.300**	0.332***	-0.027	1.158	1.138	1.356**	1.463***	0.932
	(0.655)	(1.361)	(2.272)	(2.646)	(-0.477)	(1.188)	(1.024)	(2.197)	(2.828)	(-0.484)
Small Bank Share × High Income	-0.025	0.036	-0.140	0.094	-0.031	0.939	1.178	0.919	1.079	0.873
	(-0.584)	(0.971)	(-1.251)	(0.896)	(-0.625)	(-0.655)	(1.478)	(-0.719)	(0.684)	(-1.066)
Respondent Characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank CAMELS Proxies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
State × Year-Quarter FE	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO
State FE	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
Year-Quarter FE	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
Clusters by County	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	61,178	59,817	56,048	58,726	58,246	61,178	59,817	56,048	58,726	58,246
Adjusted/Pseudo R-squared	0.129	0.121	0.130	0.0944	0.0924	0.0414	0.0449	0.0430	0.0199	0.0311

Table 5: Robustness Tests & Cross-Sectional Evidence This table reports regression estimates for analyzing small and large bank comparative advantages in boosting household financial sentiment using several robustness tests. Panel A shows results of various robustness tests: Columns (1)-(3) show regression in which the calculation of our main explanatory variable *Small Bank Share* is based on different GTA cutoff levels of $3bn, $5bn, and $10bn, respectively. In column (4), we employ deposit-weighted average instead of branch-weighted averages of bank characteristics, including *Small Bank Share*, to obtain county-level values. In column (5), we calculate the county-level values of CAMELS proxies separately for small and large banks (using the $1 billion GTA cutoff definition) and include them as control variables. The model in (6) excludes all survey observations from recontacted households while (7) is the baseline model from Table 2 but employs the Index of Consumer Expectations (ICE) as dependent variable. Panel B columns (1) to (4) report regression estimates when considering counties with Herfindahl-Hirschman Index or bank deregulation index being below versus above the median values, respectively. Columns (5) and (6) consider counties with county median income below versus above the median values. Columns (7) and (8) split the sample into crisis versus normal times. 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 are BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, an indicator of metropolitan presence, county unemployment rate, and county median household income. All models include State × Year-Quarter fixed effects. Variable definitions are given 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: Robustness Tests

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
							Index of Consumer Expectations (ICE)
Dependent Variable:				*Index of Consumer Sentiment (ICS)*			
Alternative Specification:	$3Bn Cutoff	$5Bn Cutoff	$10Bn Cutoff	Deposit-weighted Bank Variables	Small & Large Bank CAMELS	Excluding Recontacted Households	Alternative Dependent Variable
Independent Variables:							
Small Bank Share	-11.996***	-11.354***	-13.758***	-6.287**	-10.710***	-12.493***	-18.213***
	(-4.261)	(-4.064)	(-4.974)	(-2.406)	(-3.434)	(-3.562)	(-4.972)
Interactions with Respondent Characteristics							
Small Bank Share × Senior	4.177*	3.210	3.068	0.917	3.572	3.738	3.890
	(1.907)	(1.499)	(1.477)	(0.420)	(1.484)	(1.330)	(1.354)
Small Bank Share × Male	3.577*	3.025	2.870	4.618***	3.401*	4.419**	7.006***
	(1.860)	(1.610)	(1.586)	(2.586)	(1.660)	(2.066)	(2.904)
Small Bank Share × College	-2.256	-2.590	-1.187	-2.181	-3.240	-1.228	-2.646
	(-1.090)	(-1.258)	(-0.595)	(-1.032)	(-1.465)	(-0.504)	(-0.947)
Small Bank Share × Homeowner	5.206**	4.732**	5.368**	3.313	4.969*	7.717***	8.748***
	(2.205)	(2.074)	(2.412)	(1.447)	(1.888)	(2.714)	(2.838)
Small Bank Share × High Income	-1.005	-0.930	-1.877	0.403	0.179	-2.744	0.484
	(-0.494)	(-0.458)	(-0.942)	(0.211)	(0.081)	(-1.085)	(0.180)
Respondent Characteristics	YES	YES	YES	YES	YES	YES	YES
Bank CAMELS Proxies	YES	YES	YES	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES	YES	YES	YES
State × Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES
Clusters by County	YES	YES	YES	YES	YES	YES	YES
Observations	61,294	61,294	61,294	59,919	60,224	37,165	61,294
Adjusted R-squared	0.127	0.127	0.128	0.128	0.127	0.128	0.088

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Panel B: Cross-Sectional Evidence

Subsample:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:				*Index of Consumer Sentiment (ICS)*				
Subsample:	*HHI Index*		*Bank Deregulation Index*		*County Median Income*		*Financial Crises*	
Group:	≤ median	> median	≤ median	> median	≤ median	> median	Crisis	Normal Times
Independent Variables:								
Small Bank Share	-6.084	-14.405***	-8.277**	-19.369***	-12.335***	-9.532*	-13.272***	-10.271***
	(-1.364)	(-3.468)	(-2.207)	(-3.669)	(-3.269)	(-1.866)	(-2.906)	(-2.673)
Small Bank Share × Senior	3.382	3.110	3.769	3.508	-0.439	6.258	-0.235	2.849
	(0.926)	(0.980)	(1.367)	(0.760)	(-0.140)	(1.602)	(-0.056)	(0.973)
Small Bank Share × Male	-0.284	6.442**	3.131	5.700	5.470*	2.611	6.674*	3.379
	(-0.094)	(2.436)	(1.295)	(1.496)	(1.924)	(0.897)	(1.905)	(1.408)
Small Bank Share × College	-2.389	-1.054	-1.898	-0.078	-0.637	-3.571	-1.385	-2.079
	(-0.737)	(-0.356)	(-0.734)	(-0.019)	(-0.209)	(-1.074)	(-0.395)	(-0.752)
Small Bank Share × Homeowner	8.382**	2.888	2.929	10.250*	6.219*	1.494	0.197	6.126**
	(2.348)	(0.800)	(1.001)	(1.891)	(1.831)	(0.383)	(0.048)	(1.971)
Small Bank Share × High Income	-0.497	-0.328	0.274	-1.743	-0.448	0.072	5.586	-1.253
	(-0.166)	(-0.107)	(0.113)	(-0.415)	(-0.155)	(0.022)	(1.634)	(-0.479)
Respondent Characteristics	YES	YES	YES	YES	YES	YES	YES	YES
Bank CAMELS Proxies	YES	YES	YES	YES	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES	YES	YES	YES	YES
State × Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Clusters by County	YES	YES	YES	YES	YES	YES	YES	YES
Observations	30,639	30,655	42,917	18,377	30,654	30,640	20,165	41,129
Adjusted R-squared	0.133	0.123	0.134	0.110	0.131	0.125	0.198	0.095

Table 6: Small & Large Bank Access This table reports robustness tests when the key explanatory variable is *Small/Large Bank Access*, the ratio of small/large bank branches to total population in the county of the household scaled by 1,000 (in billions) and using the $1, $3, $5, and $10 GTA cutoffs measured in real 2014:Q4 dollars. 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 are BHC status, foreign ownership, fee income, deposits ratio, Herfindahl-Hirschman Index, an indicator of metropolitan presence, county unemployment rate, and county median household income. All models include State × Year-Quarter fixed effects. Variable definitions are given 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.

	(1)	(2)	(3)	(4)
GTA Cutoff ($):	$1Bn	$3Bn	$5Bn	$10Bn
Dependent Variable:	*Index of Consumer Sentiment (ICS)*			
Independent Variables:				
Small Bank Access	-29.034***	-28.778***	-27.445***	-29.291***
	(-4.351)	(-4.682)	(-4.562)	(-5.028)
Small Bank Access × Senior	8.098	10.017**	9.193*	9.660**
	(1.537)	(2.016)	(1.886)	(1.997)
Small Bank Access × Male	9.505**	8.246**	7.249*	6.664*
	(2.179)	(1.985)	(1.790)	(1.687)
Small Bank Access × College	10.665**	12.247***	12.404***	13.908***
	(2.158)	(2.615)	(2.694)	(3.081)
Small Bank Access × Homeowner	6.882	6.218	5.126	5.450
	(1.125)	(1.099)	(0.930)	(1.015)
Small Bank Access × High Income	-1.242	-1.497	-1.125	-1.421
	(-0.269)	(-0.345)	(-0.265)	(-0.342)
Large Bank Access	-8.705	-5.222	-6.472	-0.297
	(-1.141)	(-0.636)	(-0.772)	(-0.034)
Large Bank Access × Senior	14.008**	10.847	13.073*	11.992
	(2.058)	(1.466)	(1.728)	(1.569)
Large Bank Access × Male	-4.209	-5.017	-3.946	-3.612
	(-0.797)	(-0.891)	(-0.687)	(-0.611)
Large Bank Access × College	24.534***	24.836***	26.010***	22.562***
	(4.143)	(3.844)	(3.902)	(3.319)
Large Bank Access × Homeowner	-10.517	-12.744*	-12.286	-14.756*
	(-1.491)	(-1.674)	(-1.585)	(-1.862)
Large Bank Access × High Income	4.702	6.653	6.718	8.723
	(0.805)	(1.047)	(1.019)	(1.272)
Respondent Characteristics	YES	YES	YES	YES
Bank CAMELS Proxies	YES	YES	YES	YES
Other Bank & County Characteristics	YES	YES	YES	YES
State × Year-Quarter FE	YES	YES	YES	YES
Clusters by County	YES	YES	YES	YES
Observations	61,294	61,294	61,294	61,294
Adjusted R-squared	0.128	0.128	0.128	0.128