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# Cost of Banking for LMI and Minority Communities

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**Abstract:** Bank accounts are critical for participation in the modern economy. However, these accounts frequently require maintenance fees and incur overdraft charges. We assess whether minimum account balances to avoid fees, account maintenance fee amounts, and non-sufficient funds charges are systematically different in LMI and majority-minority communities, and find that they are generally higher. For example, the minimum account balance to avoid fees in a non-interest checking account is about $50 higher in LMI Census tracts than in higher income tracts, and $75 higher in majority-minority tracts. Differences in bank fees between LMI, majority-minority, and other communities result from various factors, including bank lending income, bank operating costs, and bank size.

**Keywords:** Bank fees; deposit accounts; LMI; majority-minority

**JEL Classification Numbers:** G21, G50, L11, J15, R23, I30

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# 1 Introduction

Bank accounts facilitate participation in the modern economy and their use is an integral part of middle-class lifestyle in modern societies; for example, wages in most salaried jobs are typically paid through direct deposit to a bank account. However, fees relating to deposit accounts take a particular toll on low-income bank customers. Account maintenance fees are often charged to customers with low balances, making those with limited savings more susceptible to these fees. Low-income bank customers are also more likely to frequently overdraft their accounts, which can result in hefty charges (Pew Charitable Trusts, 2016).

This paper investigates whether disadvantaged communities face the double whammy of higher minimum account balances and higher bank account fees. We begin by assessing the relation between bank fees and the income of bank customers by comparing the fees and minimum account balances charged by banks in low- and moderate-income (LMI) Census tracts relative to banks in higher income areas. We find that banks in LMI tracts charge higher maintenance fees and require larger balances to avoid those fees. For example, banks in LMI neighborhoods require, on average, a balance about $50 higher to qualify for free checking and otherwise charge a $0.36 higher monthly maintenance fee, 5% higher than the minimums and fees in non-LMI areas.

We also investigate fees in majority-minority Census tracts. Majority-minority tracts face significantly higher fees and minimum account balances across the various types of bank accounts. The association of LMI tracts with higher fees and minimums attenuates somewhat after accounting for the majority-minority status of a tract, but retains statistical significance in most cases. Tracts which are *both* LMI and majority-minority see minimum balance and maintenance fees on basic checking accounts which are 9% higher on average than for similar accounts in higher income, majority-white tracts.

We consider potential drivers for such differences in bank account fees between LMI communities, majority-minority communities, and other communities, including other business opportunities for banks, operating costs, demographic characteristics, bank age, and bank size. In Census tracts where banks earn more lending income and where homeownership is higher, bank account

fees are lower on average. Similarly, in tracts where bank operating costs are higher, fees are higher. Meanwhile, we find that older and larger banks charge higher fees. Controlling for these factors substantially reduces the association between LMI and majority-minority tracts and bank account fees and generally makes the association between LMI and bank account fees not statistically significant, though the association between majority-minority tracts and higher fees cannot be fully explained.

Our results are generally consistent with Adams (2017), who finds that low-income and minority populations generally pay higher bank fees. Unlike Adams (2017), our analysis is squarely focused on the question of cost of banking for LMI and majority-minority populations and we consider several additional indicators of the cost of retail banking services, such as minimum deposit balances to avoid account maintenance fees. Our results are also consistent with the findings of Faber and Friedline (2020) that minimum account balances to avoid fees are substantially higher in majority-minority communities than in majority-white communities.

The rest of this article is divided as follows: Section 2 provides background and discusses the literature on the cost of banking for LMI and minority populations; Section 3 describes our data; Section 4 describes our statistical methodology and presents our empirical results; Section 5 concludes.

## 2 Background

Bank fee revenues have more than doubled in the past three decades, which has led them to grow as a share of banks' total revenues (Pew Charitable Trusts, 2016).[1] According to bank regulatory reports, service charges on deposit accounts accounted for 21% of the net income of US banks in 2015, the year of our study. Major fee types include account maintenance fees and overdraft and non-sufficient funds (NSF) fees.

[1] Previous research papers have argued that high retail banking fees may be, in part, an unintended consequence of legislation (Bernard, 2011; Sarin, 2019). Following the 2008 financial crisis, the Durbin Amendment of the 2010 Dodd-Frank Act required banks to cut fees charged on debit card processing. Banks were estimated to lose $6.6 billion in revenues from this act, which these papers argue caused many banks to introduce new monthly maintenance fees.

Account maintenance fees have significant impacts on the financial health of low-income and minority bank customers. LMI households are estimated to have paid $1.4 billion out of the $2.5 billion U.S. banks earned from checking and savings account maintenance fees in 2021 (Greene et al., 2021). Also, Faber and Friedline (2020) find that checking accounts have higher minimum account balances to avoid fees in majority-minority communities than in majority-white communities ($810 in majority-minority communities vs. $620 in majority-white communities).

U.S. banks with assets over $1 billion collected over $11.45 billion in overdraft and NSF fees in 2017 (Smith, 2018). Overdraft fees are high – the median overdraft fee was $35 as of 2016 (Pew Charitable Trusts, 2016) – and often not well understood by customers.[2,3] Overdraft and NSF fee revenue is concentrated in a small share of customers.[4] The most frequent overdrafters have low credit scores (sub-600) or lack credit scores completely, carry low account balances, and are more likely to use debit card transactions and ATM services. Overdraft fees are especially detrimental to low-income consumers. As of 2014, seven in ten consumers paying over $100 in overdraft fees belonged to households with less than $50,000 in annual income (Pew Charitable Trusts, 2016).

Banked households are defined by the Federal Deposit Insurance Corporation (FDIC) as those that have at least one checking or savings account at a bank or credit union; unbanked households as those that have no bank or credit union account; and underbanked households as those that use both traditional banking services and alternative financial services (AFS), such as payday lending (Federal Deposit Insurance Corporation, 2018).[5] According to a 2017 FDIC survey, 8.4 million US households (6.5%) are "unbanked" and an additional 24.2 million households (18.7%) are "un-

[2]The federal "opt-in" rule prohibits financial institutions from charging overdraft fees on ATM and one-time debit-card transactions without customer consent (Federal Reserve System, 2009). However, banks often fail to discuss alternatives with frequent overdrafters. Seven in ten overdrafters are not aware that they have the right to overdraft protection on debit cards for free (Pew Charitable Trusts, 2017).

[3]Alan et al. (2018) find that Turkish bank clients were more likely to overdraft when the fee was high, but not mentioned in the account promotional materials, than when the fee was low but mentioned in the account promotional materials.

[4]A 2017 study from the Consumer Financial Protection Bureau (CFPB) found that 79% of overdraft and NSF fees are paid by just 9% of account holders (Low et al., 2017). A survey discussed in Stango and Zinman (2009) finds that 68% of respondents paid no overdraft fees, while the 90th percentile of those who had some positive overdraft amount paid $43 per month on average.

[5]AFS is a broad term for a wide range of services, including check-cashing, payday loans, pawn shops, early-access wages, or high-fee prepaid cards.

derbanked." The lack of a relationship with a bank often results in low-income households keeping cash at home (Brobeck, 2020). According to the 2016 Federal Reserve Survey of Consumer Finances, households in the lowest quintile of the income distribution held only $900 in financial assets on average (which is less than the average minimum balance, $971, to have a free non-interest checking account according to 2015 RateWatch data) and only 31% of households in this quintile held a bank savings or money market deposit account (Brobeck, 2020).

Low-income consumers cite multiple reasons for not using traditional bank accounts including lack of sufficient savings to need an account, high fees and minimum balance requirements, and hidden fees levied by banks (Booz-Allen Hamilton and Shugoll Research, 1997; Berry, 2004; Pew Health Group, 2011; Sarin, 2019).[6] Our study aims to assess whether the bank account fees faced by LMI and minority communities are relatively higher than those faced by higher income and white households, and what factors may explain this difference.

# 3 Data

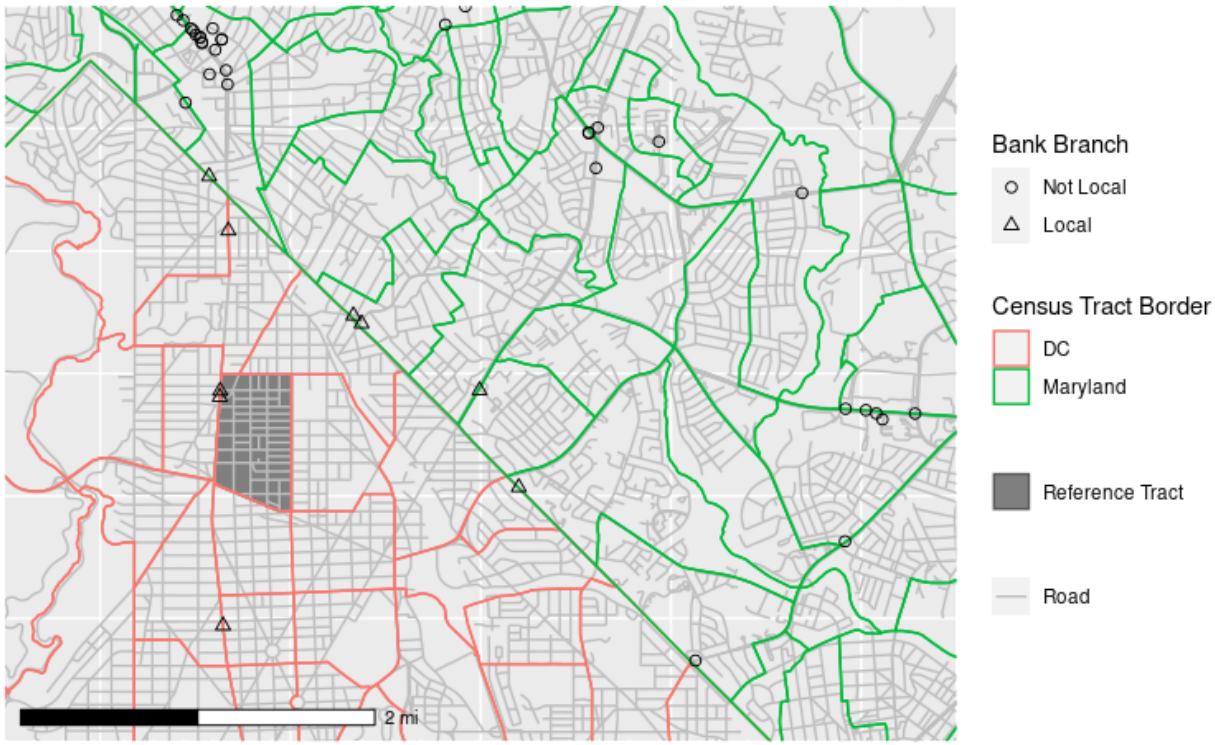
Data on retail banking fees are gathered from a 2015-16 survey by RateWatch. Our dataset includes 1,885 banks with a total of 70,404 branches, accounting for 77% of bank branches across the US in 2015. We focus our analysis on bank account maintenance fees, specifically on the minimum account balances to avoid account maintenance fees and the account maintenance fee amounts for non-interest checking deposit accounts, interest checking deposit accounts, and savings accounts. In addition, we consider other fees associated with bank accounts, specifically the returned check fees due to NSF and the daily maximum NSF charges.

The unit of analysis in the main regressions of our paper is the Census tract. To understand the bank fees experienced by the residents of a certain census tract, we average the account minimum

[6]Studies have also found that banks are significantly underrepresented in low-income, urban neighborhoods. Together with high fees, distance to bank branches causes households located in low-income areas to be more likely to use AFS providers instead of traditional banking services (Caskey, 1994; Goodstein and Rhine, 2017). AFS providers target their services towards low to middle-income borrowers (Barr, 2004), and low-income consumers see AFS providers as attractive for their ability to provide cash quickly.

balances and the fee amounts across the banks with branches either inside the reference tract or within 3 kilometers of the tract centroid.[7] Figure 1 visualizes this process for an example neighborhood. In this instance, the highlighted reference tract in Washington, DC is linked to the two branches inside its border and seven more branches within the 3 km radius, all indicated by the triangles. More distant branches denoted by the circles are considered outside this neighborhood's geographic market.

Figure 1: Defining Neighborhood Bank Branches




Note: Branch locations from FDIC Summary of Deposits. Shown is an example of how the extent of the local banking market is defined geographically for a given Census tract as any branches within 3 km of the tract centroid.

Table 1 presents descriptive statistics for the bank fee variables. Interest bearing checking

[7] In less dense areas where there are no bank branches within 3 km of a Census tract centroid, the closest branch to the tract centroid is considered that neighborhood's local banking option with its associated menu of fees and account minimums. If there is no branch within 15 km of a tract's centroid, it is dropped from the sample.

accounts – which pay interest without the withdrawal limitations associated with savings accounts – require higher account balances to avoid account maintenance fees, on average, than non-interest bearing checking accounts ($7,234 vs. $971). Meanwhile, savings accounts require, on average, the smallest balances to avoid account maintenance fees ($273). The average account maintenance fee amounts also line up similarly ($15.87 for interest bearing checking accounts, $7.67 for non-interest bearing checking accounts, and $4.37 for savings accounts). Maximum daily NSF fees average $167, and the average fee for a returned check due to NSF is $34. Minimum account balances to avoid account maintenance fees and fee amounts are positively correlated across the board.

Table 1: Account fees and minimum balance requirements by Census tract

| | N | Mean | Std Dev | Minimum | Maximum |
|---|---|---|---|---|---|
| No-Interest Checking Minimum | 60,423 | 971 | 637 | 0 | 15,000 |
| Interest Checking Minimum | 61,546 | 7,234 | 4,402 | 0 | 25,000 |
| Savings Minimum | 61,676 | 273 | 146 | 0 | 10,000 |
| No-Interest Checking Fee | 61,672 | 7.67 | 3.04 | 0 | 20 |
| Interest Checking Fee | 61,671 | 15.87 | 4.98 | 0 | 50 |
| Savings Fee | 61,657 | 4.37 | 1.41 | 0 | 25 |
| NSF Daily Max | 59,774 | 166.9 | 38.4 | 0 | 500 |
| NSF Returned Check | 62,321 | 33.60 | 2.70 | 10 | 45 |

Note: Bank fee data from RateWatch survey of U.S. banks from 2015/2016. Data is averaged by Census tract as described at the beginning of section 3. Minimum refers to the account balance required to avoid monthly maintenance fees. NSF stands for Non-sufficient funds.

We obtain the main explanatory variables of our study, whether a Census tract is LMI or majority-minority, from the 2015 Federal Financial Institutions Examination Council (FFIEC) Census File. LMI tracts have median family income below 80% of their metro area median family income. Majority-minority tracts have a minority share of the tract population above 50%. In addition, our analysis controls for multiple demographic factors obtained from the American Community Survey 2013-2017 five-year sample (ACS). Demographic variables include the percentage of the population above 65, the percentage of the population that attained a bachelor's degree, and

the percentage of home owner-occupiers. Tract classifications as urban, suburban, or rural come from the Department of Housing and Urban Development (HUD) Urbanization Perceptions Small Area Index (UPSAI). HUD used survey responses in the 2017 American Housing Survey where residents self-identified their tract as urban, suburban, or rural and statistically extrapolated these labels to all tracts using ACS data.

In addition, our analysis includes several controls at the bank level. We obtain operating costs and lending income for 2015 and total assets as of 2015Q4 from a bank's call report. We obtain the number of branches a bank has in a tract's market area and branch ages from the FDIC Summary of Deposits data. We construct tract level controls for these variables as follows: 1) in calculating the operating cost control, we first divide a bank's total operating cost by its number of branches;[8] then, the average operating cost for banks in a tract is calculated based on an average across the branches in a tract that follows the same procedure as our averaging of bank fees; 2) in calculating the lending income control, we first divide a bank's lending income by its total assets; then, the average lending income for banks in a tract is calculated based on an average across the branches in a tract that follows the same procedure as in 1); 3) the bank size control reflects the proportion of bank branches in a tract that belong to a bank with more than 500 U.S. branches; and 4) average branch age in a tract's market area is labelled newer if it is less than 15 years and labelled older if it is greater than 35 years.

To facilitate comparisons of effects, we standardized the following control variables to their z-score: lending income, percentage of owner-occupied housing, operating costs, percentage of the population over 65, and percentage of the population with a bachelor's degree.

Table 2 presents the descriptive statistics of the explanatory and control variables used in our analysis.

[8] We exclude from the sample the banks at the 1st and 99th percentile of operating costs per branch as a few firms had implausible values for this variable.

Table 2: Descriptive Statistics

| | N | Mean | Std Dev | Minimum | Maximum |
|---|---|---|---|---|---|
| LMI | 69,551 | 0.299 | 0.458 | 0 | 1 |
| Majority-Minority | 69,551 | 0.292 | 0.455 | 0 | 1 |
| Lending Income | 69,551 | 0.025 | 0.005 | 0 | 0.168 |
| Owner Occupied | 69,549 | 63.0 | 22.7 | 0 | 100 |
| Operating Costs | 69,551 | 4,166 | 2,730 | 356 | 38,934 |
| Rural | 69,551 | 0.204 | 0.403 | 0 | 1 |
| Urban | 69,551 | 0.310 | 0.462 | 0 | 1 |
| New Banks | 69,551 | 0.132 | 0.339 | 0 | 1 |
| Old Banks | 69,551 | 0.520 | 0.500 | 0 | 1 |
| Large Banks | 69,551 | 0.485 | 0.350 | 0 | 1 |
| % Over 65 | 69,551 | 15.5 | 7.7 | 0 | 91.0 |
| % BA | 69,551 | 29.9 | 19.0 | 0 | 96.4 |

Note: LMI and majority-minority tracts are from the 2015 FFIEC Census File. Demographic variables are from the ACS 2013-2017 five-year sample. Operating cost per branch (Dollar amounts in thousands) and lending income over assets are from CALL reports. Urban, suburban, or rural tracts come from the HUD Urbanization Perceptions Small Area Index. Number of branches and branch age are from FDIC Summary of Deposits data. Variable construction described in section 3.

# 4 Empirical Analysis

## 4.1 LMI communities, majority-minority communities, and bank account fees

We start by exploring how average account fees and minimum account balances in a Census tract relate to whether a tract is LMI. This is meant to describe the retail banking environment that characterizes LMI neighborhoods and assess whether systematic differences exist. Because LMI designations are specific to each metropolitan statistical areas (MSA), we include MSA fixed effects in all specifications.[9]

$$Y_{ic} = \beta_0 + \gamma_c + \beta_1 1(LMI)_{ic} + \varepsilon_{ic}. \tag{1}$$

[9]Census tracts outside metro areas are grouped together as a single unit in each state.

Here $Y$ is a fee or minimum variable, $i$ is a tract, and $c$ is a metro area. $1(LMI)_{ic}$ is an indicator equal to one if tract $i$ is considered low or moderate income in metro $c$, and zero if it is middle or upper income. Table 3 presents the results of these regressions.

Table 3: LMI tracts

| | No-Int Check Minimum | Int Check Minimum | Savings Minimum | No-Int Check Fee | Int Check Fee | Savings Fee | NSF Daily Max | NSF Ret Check Fee |
|---|---|---|---|---|---|---|---|---|
| LMI tract | 48.6*** | 291*** | 7.06*** | 0.36*** | 0.52*** | 0.071*** | -1.43*** | 0.15*** |
| | (4.10) | (28.4) | (0.94) | (0.018) | (0.031) | (0.0097) | (0.25) | (0.017) |
| Constant | 955*** | 7,142*** | 271*** | 7.55*** | 15.7*** | 4.34*** | 167*** | 33.6*** |
| | (2.79) | (18.0) | (0.74) | (0.012) | (0.020) | (0.0061) | (0.16) | (0.011) |
| Observations | 60,423 | 61,546 | 61,676 | 61,672 | 61,671 | 61,657 | 59,774 | 62,321 |
| R-squared | 0.302 | 0.362 | 0.183 | 0.435 | 0.404 | 0.276 | 0.334 | 0.374 |

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

Note: All specifications include metro area fixed effects.

Bank accounts are consistently more expensive in LMI communities, both in their maintenance fees and minimum account balances required to avoid those fees. For the most basic accounts, non-interest checking, the minimum balance required to not pay a maintenance fee was $49 higher on average in LMI census tracts compared to non-LMI census tracts, and the maintenance fee was $0.36 larger. For perspective, this implies that in the average LMI tract, failure to maintain a $1,000 minimum balance would result in annual maintenance fees of about $100, spelling the erosion of at least 10% of the account's value.

Returned check fees are also higher on average in LMI tracts. Among the variables that we consider, the one exception to LMI communities facing higher fees is the daily limit for NSF fees, which are somewhat smaller.

Following prior research that documented disparities in retail banking for minority customers, we also look at how the environment differs in majority-minority neighborhoods.

$$Y_{ic} = \beta_0 + \alpha_c + \beta_1 1(LMI)_{ic} + \beta_2 1(Majority\_minority)_{ic} + \varepsilon_{ic}. \quad (2)$$

Table 4 presents the results of these regressions.

Table 4: Minority tracts

| | No-Int Check Minimum | Int Check Minimum | Savings Minimum | No-Int Check Fee | Int Check Fee | Savings Fee | NSF Daily Max | NSF Ret Check Fee |
|---|---|---|---|---|---|---|---|---|
| LMI tract | 48.6*** | 291*** | 7.06*** | 0.36*** | 0.52*** | 0.071*** | -1.43*** | 0.15*** |
| | (4.10) | (28.4) | (0.94) | (0.018) | (0.031) | (0.0097) | (0.25) | (0.017) |
| Maj. Min. tract | 75.4*** | 514*** | 14.8*** | 0.57*** | 0.84*** | 0.079*** | -3.40*** | 0.20*** |
| | (3.78) | (31.2) | (1.39) | (0.019) | (0.035) | (0.010) | (0.27) | (0.017) |
| LMI tract | 20.6*** | 87.8*** | 0.80 | 0.15*** | 0.20*** | 0.048*** | 0.083 | 0.079*** |
| | (4.79) | (33.4) | (0.93) | (0.022) | (0.037) | (0.011) | (0.30) | (0.020) |
| Maj. Min. tract | 64.0*** | 466*** | 14.3*** | 0.49*** | 0.73*** | 0.053*** | -3.44*** | 0.16*** |
| | (4.47) | (36.8) | (1.48) | (0.023) | (0.041) | (0.012) | (0.32) | (0.021) |
| Constant | 944*** | 7,060*** | 269*** | 7.47*** | 15.6*** | 4.34*** | 168*** | 33.5*** |
| | (2.93) | (19.4) | (0.89) | (0.013) | (0.021) | (0.0066) | (0.17) | (0.011) |
| Observations | 60,423 | 61,546 | 61,676 | 61,672 | 61,671 | 61,657 | 59,774 | 62,321 |
| R-squared | 0.304 | 0.363 | 0.184 | 0.438 | 0.407 | 0.276 | 0.335 | 0.374 |

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

Note: The top panels show the results from univariate regressions. All specifications include metro area fixed effects.

The results in the second row describe average differences in majority-minority neighborhoods relative to other neighborhoods. majority-minority tracts have higher minimums and fees across all account types. No-interest checking minimum balances to avoid fees are on average $75 higher and account maintenance fees are $0.57 higher. These results are consistent with the findings of Faber and Friedline (2020) who, using a different bank survey, also find that banks in minority neighborhoods required higher minimum balances to avoid account maintenance fees.

The lower panel of Table 4 presents results when indicators for whether tracts are LMI or majority-minority are included simultaneously in the regressions. Coefficients on both indicators decrease relative to the univariate regressions, which is expected given that, as shown in Table 5, they have a correlation of about 0.5. For example, the coefficient on the LMI tract indicator for the

regression of the minimum account balance required to avoid a maintenance fee on a no-interest checking account goes down from $49 to $21. Still, the coefficients associated with LMI tracts remain positive and statistically significant in most regressions. The coefficients on the majority-minority indicators are positive (again with the exception of the daily limit on NSF fees) and of larger magnitude than the coefficients on the LMI indicators. This suggests that the factors underpinning higher bank fees are stronger in majority-minority Census tracts than in LMI tracts. Importantly though, these differences are additive for tracts that are both LMI and majority-minority. Banks in neighborhoods that are both LMI and majority-minority require a $85 higher minimum account balance on average to avoid maintenance fees on no-interest checking accounts than do banks in tracts that are both higher income and majority-white.

## 4.2 Explanations for higher bank fees in LMI and majority-minority communities

Retail banking services are more costly for lower income customers because they are more likely to fall below minimum balance requirements and have more frequent overdrafts. It does not directly follow though that retail banking services would in general be more expensive in lower income neighborhoods as we have documented above, and it is even less clear why this is also the case in minority neighborhoods. To try and shed some light on this we consider some possible explanations for these higher prices related to lack of competition, business models, and operating costs.

A bank's ability to earn revenue from sources besides retail fees may influence how high a bank sets those fees. For example, a bank more focused on prospective lending income may set lower fees to attract customers it can then sell other products. Per Table 5, the lending income of banks is somewhat negatively correlated with whether a tract is LMI or majority-minority. As another proxy for prospective lending income, we also include in our regressions the home ownership rate in a tract. More local owner occupied housing likely enhances a bank's ability to earn income from products such as mortgages instead of fees on its deposit accounts. The owner-occupied housing

rate in a Census tract is also negatively correlated with whether a tract is LMI or majority-minority.

Table 5: Correlation Table

| | LMI | Maj-Minority |
|---|---|---|
| LMI | 1.00 | 0.47 |
| Majority-Minority | 0.47 | 1.00 |
| Lending Income | -0.10 | -0.21 |
| % Owner Occupied | -0.55 | -0.45 |
| Operating Costs | 0.12 | 0.34 |
| Rural | -0.18 | -0.25 |
| Urban | 0.43 | 0.41 |
| New Banks | -0.14 | -0.08 |
| Old Banks | 0.17 | 0.08 |
| Large Banks | 0.13 | 0.24 |
| % Over 65 | -0.25 | -0.32 |
| % BA | -0.40 | -0.30 |

Bank operating costs are a plausible driver of fee levels, as banks with higher costs likely need to charge their customers higher fees to recoup costs. We find that operating costs are positively correlated with whether a tract is LMI or majority-minority. The density of a location may also affect bank fees, at least partly due to its effect on bank operating costs. Thus, we include dummy variables for whether a tract is rural or urban (suburban is the excluded category).

Bank age may have effects on bank fees if, for example, older banks have a more loyal customer base who will abide at least somewhat higher fees. On the flip side, newer banks may use lower fees or no-minimum checking accounts to entice new customers. To test this we include two dummy variables in the regressions for whether branches in a tract are relatively new on average or relatively old. LMI and majority-minority census tracts generally have older branches.

Bank size may also plausibly affect bank fees, due to economies of scale (which may make fees lower) and to market power (which may make fees higher). The proportion of large banks in a Census tract, which we define as having a branch network with at least 500 locations, correlates

positively with whether a tract is LMI or majority-minority.

The share of seniors or of individuals with a bachelor's degree may also plausibly affect bank fees. One possible mechanism is financial literacy. Research has shown that senior individuals and individuals with less schooling score lower in financial literacy tests (Bumcrot and Lusardi, 2013).[10] Lower financial literacy could may mean individuals are less aware of sometimes opaque fee and minimum structures and the availability of lower cost options at other branches or online.

Standard economic theory holds that, all else equal, more competition should be associated with lower prices for consumers of goods and services. We explored proxying for the competition a bank faces through two variables: 1) the average number of other banks in a census tract, and 2) the average number of AFS providers in a census tract.[11] When included in the fee and minimum regressions, we find these counts of banks and AFS outlets are actually associated with *higher* fees and minimums. This suggests that these metrics are not capturing lack of competition well or are more a proxy of some other cost driver like very high-density within the "urban" tract classification. We will omit these count variables from the regressions that we present below while noting that other variables we do include, which proxy for customer loyalty, financial sophistication, or openness to online banking, do relate to market power and lack of effective competition.

Table 6 presents the results of these regressions. The control variables we consider generally have regression coefficients in line with theoretical predictions. Higher lending income home ownership rates are generally associated with lower fees and minimums. Higher operating costs are generally associated with higher fees and minimums. Banks charge lower fees and require lower minimum balances in rural areas. Confirming our hypothesis, newer branches are associated with lower fees (older branches are not consistently associated with fee differences). Somewhat surprisingly, we find that a higher proportion of individuals with bachelor's degree is associated with higher fees. We find no consistent relation between the proportion of population over 65 and fees

[10] Williams (2016) finds that median age is negatively associated with bank overdraft fees, and that the effect of education on fees is not statistically significant.

[11] Melzer and Morgan (2015) find that banks and credit unions reduce overdraft limits and prices when payday lending is banned. They interpret this joint finding to imply that when payday lending is banned, banks and credit unions take less risk (i.e., allow less overdrafts) and this ends up resulting in lower overdraft prices.

Table 6: Cost explanations

| | No-Int Check Minimum | Int Check Minimum | Savings Minimum | No-Int Check Fee | Int Check Fee | Savings Fee | NSF Daily Max | NSF Ret Check Fee |
|---|---|---|---|---|---|---|---|---|
| LMI tract | 20.6*** | 87.8*** | 0.80 | 0.15*** | 0.20*** | 0.048*** | 0.083 | 0.079*** |
| | (4.79) | (33.4) | (0.93) | (0.022) | (0.037) | (0.011) | (0.30) | (0.020) |
| Maj. Min. tract | 64.0*** | 466*** | 14.3*** | 0.49*** | 0.73*** | 0.053*** | -3.44*** | 0.16*** |
| | (4.47) | (36.8) | (1.48) | (0.023) | (0.041) | (0.012) | (0.32) | (0.021) |
| LMI tract | -7.40 | -34.1 | -2.89** | 0.046** | 0.093** | 0.021 | 0.50 | 0.034 |
| | (5.66) | (38.3) | (1.13) | (0.023) | (0.041) | (0.015) | (0.36) | (0.024) |
| Maj. Min. tract | 12.8*** | 64.6* | 8.99*** | 0.11*** | 0.29*** | 0.0067 | -1.19*** | 0.013 |
| | (4.84) | (38.9) | (1.65) | (0.022) | (0.042) | (0.013) | (0.34) | (0.022) |
| % Over 65 | -5.91*** | 8.06 | 2.30*** | -0.020** | -0.0096 | -0.0021 | 0.033 | -0.014 |
| | (2.01) | (16.0) | (0.43) | (0.0091) | (0.016) | (0.0053) | (0.14) | (0.0089) |
| % BA | 1.19 | 63.8*** | 5.34*** | 0.063*** | 0.17*** | 0.036*** | 1.58*** | 0.044*** |
| | (2.30) | (16.3) | (0.48) | (0.0098) | (0.018) | (0.0059) | (0.15) | (0.0100) |
| Operating costs | 119*** | 844*** | 3.82*** | 0.80*** | 0.92*** | -0.054*** | -12.8*** | 0.20*** |
| | (4.80) | (39.9) | (0.91) | (0.023) | (0.035) | (0.011) | (0.40) | (0.016) |
| Lending income | -94.4*** | -1,182*** | 5.33* | -1.49*** | -2.00*** | -0.020 | 17.3*** | -0.15*** |
| | (10.4) | (57.2) | (2.89) | (0.047) | (0.070) | (0.030) | (0.71) | (0.055) |
| % Owner occupied | -7.10*** | -36.6** | -3.80*** | -0.026*** | -0.031* | -0.016*** | -0.18 | 0.057*** |
| | (2.24) | (16.0) | (0.51) | (0.0098) | (0.018) | (0.0059) | (0.15) | (0.011) |
| Rural | -44.3*** | -442*** | -12.9*** | -0.49*** | -0.60*** | -0.12*** | -2.09*** | -0.39*** |
| | (11.8) | (63.6) | (2.31) | (0.037) | (0.066) | (0.023) | (0.63) | (0.041) |
| Urban | 1.17 | -86.7*** | 4.49*** | -0.018 | -0.083*** | 0.023** | 0.56** | 0.075*** |
| | (4.34) | (29.5) | (1.01) | (0.018) | (0.031) | (0.011) | (0.28) | (0.019) |
| Newer | -91.2*** | -740*** | -21.8*** | -0.39*** | -1.08*** | -0.19*** | -4.27*** | -0.56*** |
| | (9.09) | (58.6) | (1.70) | (0.034) | (0.063) | (0.023) | (0.62) | (0.039) |
| Older | 14.3** | -35.5 | -6.32*** | -0.0037 | 0.020 | -0.026** | 0.20 | 0.0090 |
| | (5.58) | (32.9) | (1.54) | (0.019) | (0.035) | (0.012) | (0.31) | (0.020) |
| Big bank share | 268*** | 3,318*** | 99.6*** | 2.21*** | 3.56*** | 0.84*** | 22.3*** | 1.51*** |
| | (15.9) | (99.9) | (2.46) | (0.061) | (0.10) | (0.039) | (0.98) | (0.069) |
| Constant | 677*** | 4,236*** | 224*** | 5.00*** | 12.1*** | 3.98*** | 176*** | 32.6*** |
| | (8.98) | (47.7) | (2.48) | (0.030) | (0.053) | (0.019) | (0.48) | (0.031) |
| Observations | 60,421 | 61,544 | 61,674 | 61,670 | 61,669 | 61,655 | 59,772 | 62,319 |
| R-squared | 0.352 | 0.468 | 0.220 | 0.605 | 0.533 | 0.302 | 0.387 | 0.414 |

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

Note: The top panel reprints the results when no controls are included from Table 4 for ease of comparison. The variables % Over 65, % BA, Operating costs, Lending income, and % Owner occupied enter as z-scores meaning those coefficients capture a difference of one standard deviation in that variable across the distribution over all Census tracts. All specifications include metro area fixed effects.

or minimums. Lastly, we find a strong positive relationship with the presence of large banks. This suggests that larger banks with their higher market power can charge higher bank account fees and set higher minimum account balances to avoid fees.

With all the controls included LMI tracts are generally no longer associated with higher fees or minimums implying that standard economic explanations underpin the systematically less favorable retail banking environment observed in low- and moderate-income communities. The inclusion of the explanatory variables reduces the estimated coefficients of majority-minority tract indicators across the range of bank fee variables considered, but does not eliminate their statistical significance. For example, the minimum balance required to avoid maintenance fees for no-interest checking accounts in majority-minority tracts is still $13 higher on average than in other tracts even accounting for all controls.

## 4.3 Bank-level analysis

Because empirically most fee and minimum decisions are made at the bank rather than the branch level, we turn to analogous regressions at the firm level. This alternative setup provides a more direct lens into bank decision-making, as opposed to the focus on the impact on communities that is achieved through the Census tract level regressions.

Under this approach, bank fee and minimum account balance variables generally require no averaging, as most banks (95%) report the same fee and minimum account balances across their various branches. The few banks where some differences were reported tend to be large firms. In those cases, we average fee and minimum values across the bank's branch network with every link between a branch and a tract contributing equally. Other bank variables, such as lending income, bank age, and size, are also directly used for each bank.

To construct the demographic variables that may influence the fees and minimum account balances a bank sets, we take averages of the Census variables across all tracts deemed within a given bank's branch network market as detailed in section 3.

In assessing whether banks in LMI communities or in majority-minority communities set higher

minimum account balances to avoid fees or set higher fee amounts, we estimate two regression specifications: first one where the extent to which a bank's branches are located in LMI or majority-minority neighborhoods are the only explanatory variables and second one where the various control variables previously discussed for the Census-tract level regressions are included. All explanatory variables, with the exception of the big bank indicator, enter as z-scores. This means the coefficients capture a difference of one standard deviation in that variable across the distribution over all banks and that the constant gives the average of the dependent variables for a bank with the mean value of each variable. The mean LMI tract concentration is 24% with a standard deviation of 25% and the mean majority-minority tract concentration is 15% with a standard deviation of 25%. Table 7 presents the results of these regressions.

Banks more concentrated in LMI tracts require a higher minimum account balance to avoid maintenance fees on interest checking accounts, have higher daily NSF fee limits, and charge higher returned check fees. We find no statistically significant relation between a bank's concentration in LMI communities and other fee variables. Banks more concentrated in majority-minority tracts require higher account balances to avoid fees and charge higher fees across the various categories considered. For example, the minimum account balance to avoid a maintenance fee on a non-interest checking account set by banks rises on average about $100 for a bank one standard deviation more concentrated in majority-minority tracts.

Once the control variables are added to the regressions, the coefficients associated with banks being located in LMI tracts generally decrease, and statistical significance is only retained for the minimum balance to avoid maintenance fees on an interest checking account and the fee for a returned check due to NSF. The coefficients associated with banks being located in majority-minority tracts also decrease across all regressions but retain statistical significance in most cases. For example, the minimum account balance to avoid a maintenance fee on a non-interest checking account set by banks still rises on average about $60 for a bank one standard deviation more concentrated in majority-minority tracts, even once all controls are taken into account.

Table 7: Bank level

| | No-Int Check Minimum | Int Check Minimum | Savings Minimum | No-Int Check Fee | Int Check Fee | Savings Fee | NSF Daily Max | NSF Ret Check Fee |
|---|---|---|---|---|---|---|---|---|
| LMI tract | 37.3 | 279*** | 9.21 | -0.0044 | 0.078 | 0.013 | 4.82** | 0.76*** |
| | (28.4) | (94.6) | (5.81) | (0.12) | (0.14) | (0.090) | (2.34) | (0.15) |
| Maj. Min. tract | 97.4*** | 236*** | 52.2*** | 1.13*** | 1.13*** | 0.66*** | 7.09*** | 0.95*** |
| | (22.6) | (90.1) | (12.0) | (0.12) | (0.18) | (0.091) | (2.01) | (0.13) |
| LMI tract | -31.9 | 183** | -0.058 | -0.27* | 0.013 | -0.046 | 1.08 | 0.62*** |
| | (27.7) | (84.4) | (9.16) | (0.15) | (0.17) | (0.10) | (2.60) | (0.15) |
| Maj. Min. tract | 63.3** | 78.3 | 43.9*** | 0.99*** | 0.92*** | 0.52*** | 4.36** | 0.69*** |
| | (26.4) | (94.2) | (11.7) | (0.12) | (0.19) | (0.093) | (2.18) | (0.13) |
| % Over 65 | 9.22 | 60.1 | 4.11 | 0.075 | 0.31* | -0.097 | 2.95 | 0.48*** |
| | (25.1) | (93.7) | (5.88) | (0.14) | (0.18) | (0.093) | (2.54) | (0.13) |
| % BA | -76.9** | 287** | 1.04 | -0.12 | 0.83*** | 0.10 | 4.27* | 0.58*** |
| | (34.4) | (115) | (7.91) | (0.16) | (0.19) | (0.10) | (2.23) | (0.15) |
| Operating costs | 62.4* | 238* | 9.67 | 0.43** | 0.36* | -0.0052 | -4.15 | -0.13 |
| | (35.7) | (138) | (6.32) | (0.19) | (0.21) | (0.10) | (2.55) | (0.16) |
| Lending income | -104*** | -227** | -11.5 | -0.37*** | -0.18 | 0.079 | 3.41 | -0.32** |
| | (35.6) | (91.1) | (7.30) | (0.13) | (0.16) | (0.095) | (2.82) | (0.16) |
| % Owner occupied | -116*** | -16.7 | -23.6 | -0.50*** | -0.059 | 0.13 | -6.54** | -0.0016 |
| | (39.0) | (132) | (15.2) | (0.19) | (0.25) | (0.13) | (2.94) | (0.20) |
| Rural | 33.7 | -55.3 | -5.74 | 0.44*** | -0.16 | -0.31** | -0.93 | -0.80*** |
| | (27.1) | (96.9) | (10.7) | (0.16) | (0.20) | (0.13) | (3.23) | (0.19) |
| Urban | 36.0 | 174* | -9.12 | 0.23 | 0.17 | 0.051 | 2.06 | 0.11 |
| | (36.9) | (93.9) | (14.3) | (0.16) | (0.20) | (0.12) | (2.69) | (0.17) |
| Newer | -83.3** | -113 | -0.99 | -0.31** | -0.43** | 0.0024 | -2.65 | -0.082 |
| | (34.0) | (105) | (9.16) | (0.16) | (0.20) | (0.12) | (2.90) | (0.18) |
| Older | -96.1** | -125 | -19.8** | -0.34** | -0.45* | -0.28** | -7.96** | -0.98*** |
| | (40.1) | (108) | (8.06) | (0.17) | (0.24) | (0.13) | (3.33) | (0.20) |
| Big bank | 283** | 4,671*** | 113*** | 3.07*** | 5.81*** | 1.09* | 15.7 | 2.03** |
| | (143) | (1,430) | (31.3) | (0.79) | (1.61) | (0.60) | (14.5) | (0.94) |
| Constant | 361*** | 1,820*** | 143*** | 3.39*** | 8.89*** | 3.17*** | 154*** | 29.7*** |
| | (22.1) | (79.2) | (7.36) | (0.100) | (0.13) | (0.072) | (1.71) | (0.11) |
| Observations | 1,433 | 1,583 | 1,631 | 1,617 | 1,617 | 1,633 | 1,056 | 1,859 |
| R-squared | 0.038 | 0.064 | 0.031 | 0.102 | 0.098 | 0.065 | 0.059 | 0.158 |

Robust standard errors in parentheses
$^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

Note: The top panel shows results when no controls are included. All explanatory variables except the indicator for big bank enter as z-scores meaning those coefficients capture a difference of one standard deviation in that variable across the distribution over all banks.

# 5 Discussion

Our analysis finds strong evidence that banks in LMI communities and, particularly, banks in majority-minority communities require higher account balances to avoid maintenance fees and charge higher fees. These fee differences are compounded for communities that are both LMI and majority-minority. Banks' higher fees and minimums in LMI and majority-minority communities are partially explained by economic factors such as banks' alternative sources of income (such as interest income) and operating costs. Still, the economic disadvantages to LMI and majority-minority communities resulting from higher costs of retail banking are real, regardless of whether they are underpinned by reasonable business considerations of banks.

Reducing cost inequalities in access to financial services would increase the standard of living for LMI and majority-minority communities and reduce economic inequality.[12] Direct regulation of fees is an option, but if high fees are due to economic factors such regulation may have unintended consequences as is suggested by recent research. For example, Dlugosz et al. (2021) find that in states where federal regulation preempted state-based regulations that limited the fees charged by national banks, the unbanked population decreased.

Several other policy options are possible. Armstrong and Vickers (2012) and Sarin (2019) suggest that regulators could enhance welfare by making fees more salient; Sarin (2019) also adds that the cross-subsidization of products (e.g., low-income bank clients often cross-subsidize products for high-income bank clients) could be regulated. Initiatives such as FDIC's Model Safe Accounts Pilot have also showed possible approaches to offer low-cost banking services for unbanked, low-income individuals. But given the challenges to profitably providing inexpensive access to retail financial services in LMI communities, alternative approaches could also be considered, such as the provision of checking accounts to individuals through the U.S. Post Office (see for example Baradaran (2014)) or the Federal Reserve System (see for example Crawford et al. (2021)).

Future research should aim to confirm the findings of this paper using a longer sample period.

[12] See Beck et al. (2009) and Mookerjee and Kalipioni (2010) for discussions of the relation between access to financial services and income inequality. More specifically regarding access to bank accounts, Prina (2015) finds that free access to savings accounts increased financial well-being of Nepalese women.

Also, further understanding of some of the drivers of higher bank fees, such as bank size, likely merit additional investigation.

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