The Paycheck Protection Program: Minority vs. Non-Minority Bank Response

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ABSTRACT

We are the first to empirically analyze whether the "Guidance on Accessing Capital for Minority, Underserved, Veteran and Women-Owned Business Concerns" (Guidance) program was successful. The program was implemented to promote the Paycheck Protection Program (PPP) loans provided by Minority Depository Institutions (MDIs) in the second round compared to the first round of PPP. Using both loan-level data from the Small Business Administration (SBA) and balance-sheet-level data from the Federal Deposit Insurance Corporation (FDIC), we obtain compelling empirical evidence indicating that MDIs issued relatively more PPP loans (scaled by institution assets) than non-MDIs in the second round. This finding is evidence that the goal of dedicated access for MDIs under the Guidance program was successful. It also enhances the understanding of the PPP lending program and the impact of the Federal Reserve PPP Liquidity Facility (PPPLF) in terms of the role played by MDIs.

KEYWORDS

Covid-19, PPP, MDI, non-MDI, Banking, Bank Loans

INTRODUCTION

To help mitigate the adverse economic impact of the pandemic caused by COVID-19, on March 27, 2020, the Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law.[1] The CARES Act established a $349 billion Paycheck Protection Program (referred to here as PPP1.0) administrated by the Small Business Administration (SBA). The Department of the Treasury (Treasury) supported the program, designed to provide financial support to small businesses to keep their workforce employed during the COVID-19 crisis. More specifically, the objective of the PPP was to provide small businesses with the funds needed to help pay for up to eight weeks of payroll costs (including employee fringe benefits). In addition, the funds available could be used to pay for interest charges on mortgages, rent, and utilities.[2] These funds would enable the businesses to retain employees rather than lay them off. To the extent the firms could reopen by the end of the eight weeks, they would avoid the disruption in terms of the cost and the time it would take to reemploy the same or different employees. Otherwise, small businesses that are financially viable may not have sufficient funds on their own to retain their employees and be ready to return to normal operation if conditions warranted. Such firms

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[1] U.S. Congress. " H.R.748 - CARES Act." Accessed March 10, 2022. https://www.congress.gov/bill/116th-congress/house-bill/748
[2] Department of the Treasury. "SMALL BUSINESS PAYCHECK PROTECTION PROGRAM." Accessed March 10, 2022. https://home.treasury.gov/system/files/136/PPP%20--%20Overview.pdf

essentially have liquidity, not solvency problems. Small businesses could start applying for loans on April 3, 2020. Initially, the last day to apply for and receive a loan was June 30, 2020, according to the interim final rule published in the Federal Register by SBA on April 15, 2020.[3]

Subsequently, on April 24, 2020, the Paycheck Protection Program and Health Care Enhancement Act was signed into law. It provided an additional $310 billion to the PPP.[4] Shortly after that, on June 5, 2020, the Paycheck Protection Program Flexibility Act was signed into law.[5] This Act amended the PPP to give borrowers more flexibility regarding how and when loan funds could be spent while retaining the possibility of full forgiveness. Finally, on July 4, 2020, the Paycheck Protection Program Extension was signed into law, which extended the application deadline for PPP through August 8, 2020.[6]

In yearend 2020, the Consolidated Appropriations Act was signed into law; it included an additional $284.5 billion in funding for a new (second) round of PPP (referred to here as PPP2.0).[7] Then, on January 6, 2021, the SBA issued "Guidance on Accessing Capital for Minority, Underserved, Veteran and Women-Owned Business Concerns" to ensure increased access to PPP for these groups of businesses.[8] When the PPP reopened on January 11, 2021, the SBA announced that the program would initially process First Draw PPP loan applications from participating Community Financial Institutions (CFIs). Participating CFIs include a variety of entities, such as Minority Depository Institutions (MDIs), Community Development Financial Institutions (CDFIs), Certified Development Companies (CDCs), and so-called Microloan Intermediaries (MIs). CFIs would get dedicated access starting January 11, 2021.[9] On March 11, 2021, the American Rescue Plan provided $7.25 billion in additional funding to PPP2.0. Although an interim final rule by the SBA and the Treasury, issued on January 6, 2021, stated the last day to apply for and receive a PPP2.0 loan was March 31, 2021,[10] on March 30, 2021, the PPP Extension Act of 2021 was signed into law, further extending the PPP application deadline, in this case, until May 31, 2021.[11]

An important issue that, as far as we know, has not been addressed is the extent to which MDIs participated in the PPPs compared to other depository institutions, especially given the SBA's announcement on providing these institutions with dedicated access to PPP loan applications. According to the SBA, as of May 31, 2021, there were 11.8 million approved PPP loans with an aggregate value (in current dollars) of $800 billion, with 5,467 PPP lenders participating in the program. This

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[3] Small Business Administration. "Business Loan Program Temporary Changes; Paycheck Protection Program." Accessed March 10, 2022. https://www.federalregister.gov/documents/2020/04/15/2020-07673/business-loan-program-temporary-changes-paycheck-protection-program

[4] U.S. Congress. "H.R.266 - Paycheck Protection Program and Health Care Enhancement Act." Accessed March 10, 2022. https://www.congress.gov/bill/116th-congress/house-bill/266

[5] U.S. Congress. "H.R. 7010 - Paycheck Protection Program Flexibility Act of 2020." Accessed March 10, 2022. https://www.congress.gov/bill/116th-congress/house-bill/7010

[6] U.S. Congress. "S.4116 - A bill to extend the authority for commitments for the paycheck protection program and separate amounts authorized for other loans under section 7(a) of the Small Business Act, and for other purposes." Accessed March 10, 2022. https://www.congress.gov/bill/116th-congress/senate-bill/4116

[7] U.S. Congress. "H.R.133 - Consolidated Appropriations Act, 2021." Accessed March 10, 2022. https://www.congress.gov/bill/116th-congress/house-bill/133

[8] Small Business Administration. "Guidance on Accessing Capital for Minority, Underserved, Veteran and Women-Owned Business Concerns." Accessed March 10, 2022. https://www.sba.gov/document/policy-guidance-guidance-accessing-capital-minority-underserved-veteran-women-owned-business-concerns

[9] Small Business Administration. "SBA Re-Opens PPP to Community Financial Institutions First." Accessed March 10. https://www.sba.gov/article/2021/jan/11/sba-re-opens-ppp-community-financial-institutions-first

[10] Small Business Administration and the Department of Treasury. "Business Loan Program Temporary Changes; Paycheck Protection Program as Amended by Economic Aid Act." Accessed March 10. https://home.treasury.gov/system/files/136/PPP-IFR-Paycheck-Protection-Program-as-Amended-by-Economic-Aid-Act.pdf

[11] U.S. Congress. "H.R.1799 - PPP Extension Act of 2021." Accessed March 10. https://www.congress.gov/bill/117th-congress/house-bill/1799

announcement is significant because MDIs are typically located in and support minority-populated and low-income communities.

Banks owned or controlled by minorities are referred to as MDIs. In general, MDIs are majority-owned/controlled by Blacks/African Americans, Asians or Pacific Islander Americans, Hispanic Americans, and Native Americans or Alaskan Native Americans. The first minority bank established in the US, the Freedmen's Savings Bank and Trust Company (an African American bank), was approved to operate by US Congressional legislation signed into law by President Lincoln on March 3, 1865. Although MDIs have been around for a long time, they are not the focus of most bank-oriented research. A likely reason for this is that, as of the end of 2021, there were 4,839 FDIC-insured institutions[12], but only 143 (2.96%) of these were MDIs.

Although MDIs play a relatively minor role in terms of numbers and total assets in the banking industry, that role does matter. The FDIC (2017, p. 30) considers MDIs to play an important role in the economy by providing valuable banking services to a diverse group of people who otherwise might have limited access to financial services typically available at banks. Also, MDIs are regarded by the FDIC as maintaining offices in underserved communities, compared to non-MDI institutions, which often have a higher concentration of low- or moderate-income (LMI) residents and minorities. Thus, PPP loans potentially allowed MDIs to play an important role in supporting minority-owned businesses in underserved and lower-income communities during the pandemic. In particular, MDIs could contribute by providing more and perhaps lower-cost credit to minority borrowers.

Those businesses with relatively limited financial resources were arguably at risk for compromised performance or outright failure without the government's support and were most adversely influenced by the pandemic.[13] Compared with around 15 percent of less affected races and ethnicities, minorities own a fourth of small businesses in the most COVID-19-affected sectors (Dua, et al., 2020). Most troubling is that minority-owned small businesses have been disproportionately impacted by the pandemic, facing higher closures and sharper declines in cash balances than nonminority-owned small businesses. Black-owned businesses closed at more than twice the rate of White-owned firms and experienced, on average, declines in cash balances nine times as steep as nonminority firms in some cases. Black-owned businesses faced the most significant impact of any racial group, although Latinx- and Asian-owned businesses also experienced disproportionately larger rates of closures and declines in cash balances (Misera, 2020).

One of the reasons minority-owned businesses were particularly at risk during the pandemic was their lower financial resilience. For example, many were in financially precarious positions even before the COVID-19 lockdowns (Dua, et al., 2020). In lacking timely financial support, minority-owned small businesses closed at much higher rates than White-owned businesses (Fairlie, 2020). Furthermore, research indicates that minority-owned businesses received fewer loans at the beginning of the pandemic than White-owned businesses through the PPP (Atkins, et al., 2022; Fairlie and Fossen, 2022). Some researchers have suggested a potential solution to resolve this disparity: the SBA should allow certified CDFIs to disburse SBA PPP loans (Hangen and Swack, 2020). When the PPP reopened on January 11, 2021, the SBA announced that CDFIs would get dedicated access. Fortunately, later studies have proven this type of solution effective (Howell, et al., 2020; Atkins, et al., 2022).

In this study, we investigate whether the guidelines of PPP2.0 promote PPP loans by MDIs compared to non-MDIs. Specifically, after accounting for suitable control variables, we estimate whether the ratio of PPP loans to the total assets of each PPP lender bank is greater for MDIs (captured

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[12] Federal Depository Insurance Corporation. "Quarterly Banking Profile Fourth Quarter 2021." Accessed March 21, 2022. https://www.fdic.gov/analysis/quarterly-banking-profile/qbp/2021dec/qbp.pdf#page=1

[13] Our focus is on the degree to which MDIs participated in PPPs compared to non-MDIs. It is beyond our paper's scope to assess whether the program itself generates more social benefits than costs. However, it is reported by the Pandemic Oversight that, as of October 2022, 10.5 million out of 11.47 million PPP loans have been forgiven. Accessed January 21, 2023. https://www.pandemicoversight.gov/data-interactive-tools/interactive-dashboards/paycheck-protection-program

by a dummy variable for such institutions for both PPP1.0 and PPP2.0 [separately]) than for non-MDIs. MDIs' PPP loan-to-asset ratio is significantly higher than non-MDIs for PPP2.0. Yet, there is no evidence of a clear difference between MDIs and non-MDIs in PPP1.0. We attribute this difference to the SBA's announcement on providing MDIs with dedicated access to PPP loan applications under PPP2.0.

Interestingly, using data on the PPP program, a recent study by Atkins, et al. (2022) argues and appears to provide evidence that Black-owned businesses received approximately 50% smaller loans than observationally similar White-owned businesses. The authors further find that this effect is marginally smaller in areas where banking competition was greater and disappeared over time as changes to the PPP program were implemented to permit entry into the PPP program by fintech and other nontraditional lenders. Finally, Atkins, et al. 2022 take the position that their results are consistent with prior research that reveals lending discrimination by commercial banks against Black borrowers.

Our study provides new insights into the role of MDIs in the PPP program in both its forms, PPP1.0 (the 2020 version) and PPP2.0 (the 2021 version). Although finding no clear evidence of lending discrimination *per se*, we provide evidence that enhances the understanding of the PPP lending program and the role and impact of the Federal Reserve PPP Liquidity Facility (PPPLF) from the perspective of MDIs.

LITERATURE REVIEW AND HYPOTHESES

After the launch of PPP in April 2020, the media quickly reported that minority-owned businesses were experiencing difficulties securing/accessing PPP loans (Zhou, 2020). Indeed, previous studies found that minority-owned businesses received fewer PPP loans than others (Hangen and Swack, 2020). Also, the PPP loan amounts per employee were negatively related to the minority share of the population (Fairlie and Fossen, 2022). Black-owned businesses, moreover, received loans that were approximately 50% lower in amount than observationally similar loans to White-owned businesses (Atkins, et al., 2022). And a minority-owned business with 5 to 9 employees received, on average, a 21% smaller PPP loan than its White-owned business counterpart (Demko and Sant' Anna, 2021). In Florida, Black-owned restaurants were 25% less likely to receive PPP loans (Chernenko and Scharfstein, 2022). Such evidence seemingly raised concerns about whether minority-owned businesses did or would face discrimination while seeking PPP loans. However, Humphries, et al. (2020) show that smaller firms generally were less aware of the program (i.e., suffered consequences of asymmetric information), met longer processing times, and were less likely to have their applications approved than larger businesses. They attribute this skewness to the "first-come, first-served" design of PPP.

Based on these findings, some researchers suggested that the SBA allows certified CDFIs to disburse SBA PPP loans (Hangen and Swack, 2020). Interestingly, later evidence indicates that fintech and nontraditional lenders helped extend PPP loans to Black- and Hispanic-owned businesses (Howell, et al., 2020; Atkins, et al, 2022). In responding to the finding that minority-owned firms were facing difficulties accessing the PPP funds, the SBA announced that CFIs (including MDIs) would receive dedicated access when the PPP reopened, as PPP2.0, on January 11, 2021.

Given earlier studies, and especially the findings by Humphries, et al. (2020), we hypothesize that the PPP loans approved by SBA through MDIs are less than that of non-MDIs during PPP1.0, which corresponds to the year 2020. Therefore, we state our first hypothesis as follows:

H1: *MDIs have a lower PPP1.0 loan-to-asset ratio than non-MDIs in 2020.*

The SBA's particular guidance on PPP2.0 suggests that the government prioritized certain financial institutions, including MDIs, during the PPP2.0 period. Accordingly, we expect that the PPP loans

approved by the SBA through MDIs will be higher than non-MDIs in 2021. We formally state this in the form of the following hypothesis:

H2: MDIs have a higher ratio of PPP2.0 loans to assets than non-MDIs in 2021.

The remainder of the study proceeds as follows. The next Section describes the data used in the empirical analysis. The following Section introduces the specific models (inclusive of various control variables) used in assessing the PPP loans by MDIs compared to non-MDIs and discusses the research questions addressed in this study. The subsequent Section reports and discusses the empirical results. The Section after that reports and discusses robustness test results. Finally, the final Section provides conclusions and offers suggestions for future research.

DATA

To test our hypotheses, we collected data from several sources. Data on individual PPP loans comes from the SBA.[14] With available information on the name and location of PPP lenders, we identify 4,154 banks that participated in the PPP program at some point during 2020 and 3,977 banks that participated in the program at some point during 2021. The PPP loan-level data provides information on loan size, which is necessary to create the outcome variable in our main specifications. We also create an alternative related variable using data collected from the *Call Reports* for our robustness test regressions. As noted above, we also include several bank-level control variables in our estimations.

All bank-level financial data are collected from publicly available *Call Reports*. Starting from the second quarter of 2020, the *Call Reports* separate the information on loans through the PPP program. Based on the PPP data from the *Call Reports*, we identified 4,206 banks that were PPP lenders as of September 31, 2020, and 4,184 banks that were PPP lenders as of June 30, 2021. Also, based on the PPP data from the *Call Reports*, we determine the aggregate amount of PPP loans pledged to the Federal Reserve PPP Liquidity Facility (PPPLF) by each bank. The PPPLF was authorized by the Board of Governors of the Federal Reserve System on April 8, 2020, under Section 13(3) of the Federal Reserve Act (12 USC 343(3)). Under the PPPLF, the Federal Reserve Banks could extend non-recourse loans to eligible lenders, with the extensions of credit secured by SBA-guaranteed P.P.P. loans that the lenders have either originated or purchased.[15] Based on the data from *Call Reports*, 537 banks borrowed through the PPPLF as of September 31, 2020; subsequently, 220 banks borrowed through the program as of June 30, 2021.

METHODOLOGY AND MODEL

We effectively follow Anbil, et al. (2021) to identify our control variables. To analyze the effect of the policy on PPP loans by MDIs, we separately estimate the following OLS cross-sectional specification in two different years, 2020 and 2021, where the subscript *i* denotes bank i, as follows:

$$\frac{PPP\ loans}{assets}_i = \beta_0 + \beta_1 MDI_i + \sum_2^{10} \beta_j\ Bank\ Control_i + \varepsilon_i$$

Consistent with Anbil, et al. (2021). The dependent variable is each PPP-lender bank's total approved PPP loan amount divided by its respective assets. The variable of interest is $\{MDI\}_i$, which

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[14] https://data.sba.gov/dataset/ppp-foia. Accessed March 27, 2022.
[15] Federal Reserve Board. "Report to Congress Pursuant to Section 13(3) of the Federal Reserve Ace: Paycheck Protection Program Lending Facility." Accessed March 24, 2022. https://www.federalreserve.gov/publications/files/paycheck-protection-program-lending-facility-4-16-20.pdf

is a dummy variable equal to 1 if institution i is an MDI and equal to 0 otherwise. A significantly positive coefficient on this dummy variable indicates that the ratio of PPP loans to assets of MDIs is higher than for non-MDIs. We also include a set of bank-specific control variables in the model specification.

Li and Strahan (2021) find that the PPP supply decreases in bank size and increases in commitment lending and core deposits. We, therefore, include bank size measured by the log of total assets; two commitment lending variables measured by the ratio of undrawn lines of credit for C&I loans relative to the sum of undrawn lines of credit plus drawn C&I loans and small business loans as a proportion of total business loans; and the ratio of core deposits to assets. Since Li, et al. (2020) demonstrate a relationship between bank liquidity and lending, we include the ratio of liquid assets to total assets and the ratio of large time deposits to assets as control variables measuring a bank's liquidity. Davidson and Simpson (2016) found a positive link between the amount of Federal Home Loan Bank (FHLB) and small business loans, motivating us to include a binary dummy variable indicating whether a bank had outstanding loans from the FHLBs. Anbil, et al. (2021) find that banks with higher deposit funding costs are more likely to use the PPPLF, and the PPPLF facilitates the PPP loans, so we include a deposit funding cost measure and a dummy variable indicating whether a bank is a PPPLF borrower. Based on Gambacorta and Mistrulli's (2004) finding that a bank's capital influences a bank's lending, we include the Tier 1 capital ratio as another control variable. Lastly, we include an interaction term between the variables MDI and PPPLF borrower to capture the potential differential effect of MDIs on PPP lending due to their usage of PPPLF.

The resulting control variables included in our regressions are as follows: the log of total assets; the ratio of undrawn lines of credit for C&I loans relative to the sum of undrawn lines of credit plus drawn C&I loans; small business C&I loans as a proportion of total C&I loans; the ratio of liquid assets to total assets; the ratio of core deposits to assets; the ratio of large time deposits to assets; a binary dummy variable indicating whether banks had outstanding loans from the FHLBs; funding costs; the Tier 1 capital ratio of the bank; a dummy variable indicating whether a bank is a PPPLF borrower; and an interaction term between the variables MDI and PPPLF borrower.

For the first round of PPP loans, the PPP1.0, the dependent variable is the total PPP loans approved by SBA through each bank in 2020, divided by the assets as of December 31, 2019. The control variables for explaining the approved PPP loans in 2020 are measured as of December 31, 2019, except for the dummy variable for PPPLF borrowers, measured as of September 30, 2020. We estimate the same cross-sectional model separately for the two years.

For the second round of PPP loans, PPP2.0, the dependent variable is the total PPP loans approved by SBA through each bank in 2021, divided by the assets as of December 31, 2020. The control variables included explaining the approved PPP loans in 2021 are measured as of December 31, 2020, except for the dummy variable for PPPLF borrowers, measured as of June 30, 2021. We then focus on the variable of interest, which is MDI_i, to determine whether its coefficients in terms of statistical significance are different in the two rounds of PPP.

Table 1 reports summary statistics for the variables from the sample used in the main regressions. There are 3,983 PPP-lender banks included in the regressions of 2020 and slightly fewer (at 3,969) PPP-lender banks included in the regressions of 2021.

Table 1. Summary Statistics
This table reports summary statistics for banks with approved PPP loans in 2020 ("2020 PPP Loans") and 2021 ("2021 PPP Loans"). The data are collected from SBA PPP loan data and bank Call Reports. The approved PPP loans are scaled by bank total assets as of yearend 2019 for 2020 PPP Loans and yearend 2020 for 2021 PPP Loans. MDI equals 1 if a bank is a minority depository institution; otherwise, zero. PPPLF Borrower" equals 1 if a bank reported an aggregate amount of PPP loans pledged to PPPLF as of September 30, 2020, for 2020 PPP Loans (as of June 30, 2021, for 2021 PPP Loans). All other variables are from the 2019 Q4 Call Reports for 2020 PPP Loans and from the 2020 Q4 Call Reports for 2021 PPP Loans.

	2020 PPP Loans		2021 PPP Loans	
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**
Approved PPP/Assets	0.078	0.154	0.030	0.049
MDI	0.028	0.165	0.028	0.166
Log of Assets	12.665	1.408	12.867	1.402
Unused C&I/Total C&I	0.009	0.103	0.005	0.046
Small Business C&I/Total C&I	0.688	0.266	0.680	0.242
Liquid Assets/Assets	0.100	0.095	0.136	0.103
Core Deposits/Assets	0.765	0.092	0.786	0.089
Large Time Deposits/Assets	0.144	0.092	0.119	0.081
Deposit Funding Costs	0.000	0.005	-0.000	0.004
T1 Capital Ratio (%)	11.583	3.808	10.646	3.267
FHLB Borrower	0.556	0.497	0.565	0.496
PPPLF Borrower	0.122	0.327	0.052	0.221
Observations	4,119	4,119	3,969	3,969

EMPIRICAL RESULTS

The main empirical results are reported in Tables 2 and 3. Table 2 reports the regression estimation results using 2020 PPP loan data, which relate to our first hypothesis (*H1*). The control variables are measured as of 2019 Q4, just before the pandemic of COVID-19. However, the dummy variable for PPPLF borrowers is measured as of September 30, 2021. Regression results reported in Column (1) are based on the sample that includes all PPP-lender banks in 2020. We find that the ratio of the PPP loans to the assets of MDI PPP lenders is lower than that of non-MDI PPP lenders (i.e., $\beta_1 < 0$, and is statistically significant at the 10% level) by nearly three percentage points. This finding is consistent with *H1*. Like Anbil, et al. (2021), we find that borrowing through the PPPLF program promotes PPP loans, as shown in Column (1), where the coefficient on the PPPLF borrower variable is positive and statistically significant. Furthermore, the results reported in Column (1) of Table 3 indicate that the lower the ratio of small business C&I loans to total C&I loans, the higher the liquidity ratio, and the higher the Tier one capital ratio, the higher the PPP loan to asset ratios, with all these variables entering statistically significant.

Table 2. PPP Loans Approved in 2020 of MDIs vs. Non-MDIs

This table reports the results of OLS regressions. The dependent variable is the ratio of PPP loans approved in 2020 divided by assets as of December 31, 2019. "MDI" equals 1 if a bank was a minority depository institution as of December 31, 2019; otherwise, zero. "PPPLF Borrower" equals 1 if a bank reported an aggregate amount of PPP loans pledged to the Federal Reserve PPP Liquidity Facility (PPPLF) as of September 30, 2020; otherwise, zero. The balance sheet control variables in all columns are from Call Reports as of December 31, 2019. Column 3 shows the results of the regression if PPPLF borrowers are excluded from the sample. We use robust standard errors.

	(1) All PPP Lenders	(2) All PPP Lenders	(3) Non-PPPLF Borrowers
MDI (Main)	-0.029*	-0.013	0.007
Log of Assets	-0.004	-0.004	0.002*
Unused C&I/Total C&I	-0.046***	-0.046***	-0.055***
Small Business C&I/Total C&I	-0.076***	-0.076***	-0.040***
Liquid Assets/Assets	0.105***	0.106***	0.033**
Core Deposits/Assets	-0.032	-0.032	0.037**
Large Time Deposits/Assets	-0.023	-0.023	-0.056***
Deposit Funding Costs	1.026	1.032	0.051
FHLB Borrower	-0.006	-0.006	0.004
T1 Capital Ratio (%)	0.003*	0.003*	0.001
PPPLF Borrower	0.139***	0.142***	
PPPLF Borrower*MDI		-0.057*	
Constant	0.150	0.150	0.023
Observations	4,119	4,119	3,618
Adjusted R^2	0.118	0.119	0.044

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

To test whether being a PPPLF borrower affects the PPP loan-to-asset ratio of MDI lenders, we include an interaction term of MDI and PPPLF in the analysis. The results are reported in Column (2) of Table 2. We find that the coefficient of the variable PPPLF borrower**MDI** is negative (and significant at the 10% level), indicating that PPPLF borrowers obtain lower loan amounts scaled by assets when the lender is an MDI. After excluding those PPPLF borrowers from the regression sample, new estimation results are reported in Column (3) of Table 2. We find that the PPP loan-to-asset ratio of MDI PPP lenders is neither higher nor lower than non-MDI PPP lenders if we only focus on those that did not borrow from the PPPLF program (i.e., $\beta_1 < 0$ but not statistically significant at the 10% level). Thus, based on the results reported in Table 3, we obtain only mixed evidence for our first hypothesis.

The results do not materially change in Column (2) compared to Column (1) for the bank control variables. Other than what has been found from the results in Columns (1) and (2), the results reported in Column (3) indicate that the larger the bank, the higher the ratio of core deposits to total assets, and the lower the large time deposit to total assets ratio, the higher the PPP loan to asset ratio, with these variables being statistically significant.

The results shown in Table 3 are the 2021 PPP loan data estimates and relate to the second hypothesis (*H2*). The control variables are measured as of 2020 Q4, just before the PPP program was

reopened in January 2021, except for the dummy variable of PPPLF borrowers, measured as of June 30, 2021. The results reported in Column (1) use the sample that includes all PPP-lender banks in 2021. We find strong statistical evidence that the ratio of the PPP loan amount to the assets of MDI PPP lenders is significantly higher than that of non-MDI PPP lenders in 2021 (i.e., $\beta_1 > 0$, and statistically significant at the 1% level). This finding provides strong empirical support for our second hypothesis and indicates that the ratio is higher by about three percentage points for MDIs compared to non-MDIs.

Table 3. PPP Loans Approved in 2021 of MDIs vs. Non-MDIs

This table reports the results of OLS regressions. The dependent variable is the ratio of PPP loans approved in 2021 divided by assets as of December 31, 2020. "MDI" equals 1 if a bank was a minority depository institution as of December 31, 2020; otherwise, zero. "PPPLF Borrower" equals 1 if a bank reported an aggregate amount of PPP loans pledged to the Federal Reserve PPP Liquidity Facility (PPPLF) as of June 30, 2021; otherwise, zero. The balance sheet control variables in all columns are from Call Reports as of December 31, 2020. Column 3 shows the results of the regression if PPPLF borrowers are excluded from the sample. We use robust standard errors.

	(1) All PPP Lenders	(2) All PPP Lenders	(3) Non-PPPLF Borrowers
MDI (Main)	0.027***	0.026***	0.027***
Log of Assets	-0.003**	-0.003**	-0.002*
Unused C&I/Total C&I	-0.037***	-0.037***	-0.035***
Small Business C&I/Total C&I	-0.013***	-0.013***	-0.0149***
Liquid Assets/Assets	0.011*	0.011*	0.001
Core Deposits/Assets	-0.058**	-0.058**	0.009
Large Time Deposits/Assets	-0.054***	-0.054***	-0.005
Deposit Funding Costs	0.440	0.440	-0.032
FHLB Borrower	-0.004**	-0.004**	0.000
T1 Capital Ratio (%)	-0.001	-0.001	-0.000
PPPLF Borrower	0.051***	0.051***	
PPPLF Borrower*MDI		0.008	
Constant	0.133***	0.134***	0.061
Observations	3,969	3,969	3,764
Adjusted R^2	0.089	0.088	0.013

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

To test whether this positive effect is driven by being a PPPLF borrower, we include a multiplicative interaction term consisting of MDI and PPPLF in the model specification. The results are reported in Column (2) of Table 3. We find that the ratio of the PPP loan amount to the assets of MDI PPP lenders is still significantly higher than that of non-MDI PPP lenders in 2021 (i.e., $\beta_1 > 0$, and significant at the 1% level). To further confirm this finding, we exclude PPPLF borrowers from the regression sample and then report the results in Column (3) of Table 3. We again find that the PPP loan-to-asset ratio of MDI PPP lenders is significantly higher than that of non-MDI PPP lenders when we only focus on those PPP lenders who are not PPPLF borrowers, finding that $\beta_1 > 0$ *and* significant at 1% level. Thus, based on the results in Table 3, we find statistically strong and consistent evidence to support our second hypothesis.

As for the bank control variables, the results reported in Columns (1) and (2) indicate that the PPP loan-to-asset ratios are higher when: the size of the bank is smaller; the ratio of small business C&I loans to total C&I loans is lower; the liquidity ratio is higher; the ratio of core deposit to total assets is lower; the large time deposit to total assets ratio is lower; the bank is not a Federal Home Loan Bank (FHLB) borrower, and the bank is a PPPLF borrower. When excluding the PPPLF borrowers from the regression, the results indicate that the PPP loan-to-asset ratios are higher when the size of the bank is smaller and when the ratio of small business C&I loans to total C&I loans is lower.

ROBUSTNESS CHECKS

To check whether these results are robust, we re-estimate all the regressions reported in Tables 2 and 3 using the PPP data from the *Call Reports*. Unlike the PPP data collected from SBA, the *Call Reports* data reveal each bank's PPP loans at the end of each calendar quarter. Accordingly, we substitute the total PPP loan amount approved in 2020 used in the regression estimates reported in Table 2 with the PPP loan balance as of 2020 Q3. Similarly, we substitute the total PPP loan amount approved in 2021 used in the regressions reported in Table 3 with the PPP loan balance as of 2021 Q2. The results for the bank control variables are essentially unchanged from those in the previous specifications. Results for 2020 and 2021 are reported in Tables 4 and 5.

Table 4. PPP Loan Balance as of 2020 Q3 of MDIs vs. Non-MDIs
This table reports the results of OLS regressions. The dependent variable is the ratio of the PPP loan balance as of September 30, 2020, divided by assets as of December 31, 2019. "MDI" equals 1 if a bank was a minority depository institution as of December 31, 2019; otherwise, zero. "PPPLF Borrower" equals 1 if a bank reported an aggregate amount of PPP loans pledged to the Federal Reserve PPP Liquidity Facility (PPPLF) as of September 30, 2020; otherwise, zero. The balance sheet control variables in all columns are from Call Reports as of December 31, 2019. Column 3 shows the results of the regression if PPPLF borrowers are excluded from the sample. We use robust standard errors.

	(1) All PPP Lenders	(2) All PPP Lenders	(3) Non-PPPLF Borrowers
MDI (Main)	-0.035**	-0.020	0.006
Log of Assets	-0.003	-0.003	0.002*
Unused C&I/Total C&I	-0.030***	-0.031***	-0.035***
Small Business C&I/Total C&I	-0.070***	-0.070***	-0.040***
Liquid Assets/Assets	0.124***	0.125***	0.039***
Core Deposits/Assets	-0.006	-0.005	0.042**
Large Time Deposits/Assets	0.025	0.025	-0.053***
Deposit Funding Costs	0.876	0.890	0.058
FHLB Borrower	-0.004	-0.004	0.003
T1 Capital Ratio (%)	0.004**	0.004**	0.001
PPPLF Borrower	0.140***	0.143***	
PPPLF Borrower*MDI		-0.053*	
Constant	0.090	0.090	0.0175
Observations	4,181	4,181	3,647
Adjusted R^2	0.130	0.130	0.068

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5. PPP Loan Balance as of 2021 Q2 of MDIs vs. Non-MDIs
This table reports the results of OLS regressions. The dependent variable is the ratio of the PPP loan balance as of June 30, 2021, divided by assets as of December 31, 2020. "MDI" equals 1 if a bank was a minority depository institution as of December 31, 2020; otherwise, zero. "PPPLF Borrower" equals 1 if a bank reported an aggregate amount of PPP loans pledged to the Federal Reserve PPP Liquidity Facility (PPPLF) as of June 30, 2021; otherwise, zero. The balance sheet control variables in all columns are from Call Reports as of December 31, 2020. Column 3 shows the results of the regression if PPPLF borrowers are excluded from the sample. We use robust standard errors.

	(1) All PPP Lenders	(2) All PPP Lenders	(3) Non-PPPLF Borrowers
MDI (Main)	*0.032****	*0.031****	*0.034****
Log of Assets	*-0.003**	*-0.003**	*-0.002****
Unused C&I/Total C&I	*-0.074****	*-0.074****	*-0.056****
Small Business C&I/Total C&I	*-0.014**	*-0.014**	*-0.024****
Liquid Assets/Assets	*0.015**	*0.015**	*0.004*
Core Deposits/Assets	*-0.167****	*-0.167****	*-0.015*
Large Time Deposits/Assets	*-0.098****	*-0.098****	*0.003*
Deposit Funding Costs	*-0.074*	*-0.074*	*-1.016**
FHLB Borrower	*-0.008****	*-0.008****	*0.001*
T1 Capital Ratio (%)	*-0.001**	*-0.001**	*-0.001*
PPPLF Borrower	*0.083****	*0.082****	
PPPLF Borrower*MDI		*0.006*	
Constant	*0.238****	*0.238****	*0.098****
Observations	*4,178*	*4,178*	*3,958*
Adjusted R^2	*0.222*	*0.222*	*0.058*

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

These new estimates yield the same conclusions obtained in Tables 2 and 3 using SBA data. The new estimates provide only mixed evidence (in Table 4) for our first hypothesis but substantial evidence (in Table 5) supporting our second hypothesis.

CONCLUSION

This study analyzes the role of MDIs in the Paycheck Protection Program in the two different rounds of the PPP. We find compelling evidence that the MDIs issued more PPP loans (scaled by total assets) than non-MDIs in the second round of the PPP, which is different from the conclusion for the first round of the PPP. We also find that PPP loans by banks in 2020 increased with increases in core deposits, the liquidity ratio, and the Tier one capital ratio, while decreasing in the case of small business C&I loans and large time deposits and being a PPPLF borrower. Turning to the second round of PPP, paralleling the results in the first round, the PPP loans by banks is an increasing function of the liquidity ratio, a decreasing function of small business C&I loans and large time deposits, and an increasing function of being a PPPLF borrower. Unlike the first-round results, the PPP loans by banks increase with decreasing bank assets and core deposits and not being an FHLB borrower.

Our study contributes to the literature by being the first to examine the role of MDIs in the PPP and enhances the understanding of bank financial factors that contributed to PPP loans in the two rounds of PPP. Our results provide evidence that the goal of the guidelines applied to the second round of PPP successfully promoted PPP loans through MDIs by implementing dedicated access. We cannot determine whether the PPP loans issued by MDIs did go to minority-owned businesses without reliable information on the ethnicity and race of business owners. This is an important issue to examine in future studies.

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