

Shadow Bank Distress and Household Debt Relief: Evidence from the CARES Act[†]

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Lenders (loan originators) frequently sell the right to service loans to other intermediaries (loan servicers). It is loan servicers rather than originators who are responsible for resolving borrowers' financial distress. They are also required to make payment advances to investors on behalf of delinquent borrowers until the distress resolution process is complete. We begin with the observation that at the start of the COVID-19 pandemic, shadow banks—nondepository financial institutions—serviced approximately half of the total mortgage debt in the United States (Cherry et al. 2021).¹ While shadow banks are significantly better capitalized than traditional banks (Jiang et al. 2020), the large “spike” in payment advances during times of sudden macroeconomic stress may lead to a substantial shortfalls, resulting in a liquidity crunch and possible insolvency of shadow banks. Prior literature suggests that financing of servicers and other intermediary factors can impact how well they service distressed loans (e.g., Agarwal et al. 2017; Fuster, Lo, and Willen 2017; Piskorski and Seru 2018). Regulators and policymakers have been concerned that unstable

funding sources of shadow banks may exacerbate liquidity and solvency stress faced by these intermediaries during crises. Due to the size and speed of debt relief demanded by the Coronavirus Aid, Relief, and Economic Security (CARES) Act, the COVID-19 pandemic provides a useful episode to study shadow banks' ability to provide debt relief. Shadow banks were responsible for funding and implementing a large portion of the CARES Act–driven household debt relief (forbearance). This relief was taken up by 70 million individuals covering about \$90 billion payments between March 2020 and May 2021 (Cherry et al. 2021). We exploit shadow bank call reports (Jiang et al. 2020) to evaluate shadow banks' ability to weather these shocks.

I. Data

Shadow Bank Call Report Data.—We obtain shadow banks' quarterly call report filings to state regulators via Freedom of Information Act requests. Each shadow bank has a unique ID in the National Mortgage License System that is used as an identifier in the call reports. See Jiang et al. (2020) for a detailed description of the data and sample coverage.

Fannie Mae, Freddie Mac, and Ginnie Mae Data.—We obtain mortgage origination and monthly performance records from Fannie Mae, Freddie Mac, and Ginnie Mae covering loans acquired by these entities. We restrict our sample to active loans that had not been paid off, refinanced, or foreclosed by January 2020. We determine whether a seller or servicer is a bank or a shadow bank by merging the government-sponsored enterprise (GSE) dataset with bank regulatory filings (e.g., Form 031 and FY-9C) and shadow bank call reports (Jiang 2019 and Jiang et al. 2020) for entities that represent at least 1 percent of volume within a given acquisition or reporting quarter. Second,

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¹Shadow banks' share of mortgage originations has also grown explosively since the Great Recession (Buchak et al. 2018), but the largest shadow bank originators are not necessarily the largest shadow bank servicers.

TABLE 1—LOANS SERVICED BY BANKS AND SHADOW BANKS

	GSE		Ginnie Mae	
	Bank	Shadow bank	Bank	Shadow bank
Aggregate unpaid principal balance	2.8 T	2.3 T	0.60 T	1.3 T
Total loan count	15.6 M	10.8 M	4.1 M	7.3 M
Aggregate monthly payment	16.7 B	13.2 B	3.3 B	6.5 B
Unpaid principal balance in forbearance (%) in 2020:I	5.2 B (0.2%)	5.7 B (0.2%)	2.3 B (0.4%)	11.4 B (0.8%)
Unpaid principal balance in forbearance (%) in 2020:II	193 B (7.5%)	133 B (6.2%)	76 B (13.2%)	181 B (12.7%)
Unpaid principal balance in forbearance (%) in 2020:III	160 B (6.8%)	127 B (6.7%)	53 B (9.9%)	187 B (12.7%)
Unpaid principal balance in forbearance (%) in 2020:IV	110 B (5.3%)	92 B (5.6%)	27 B (5.6%)	153 B (10.1%)
Unpaid principal balance in forbearance (%) in 2021:I	85 B (4.7%)	75 B (5.5%)	19. B (4.2%)	130 B (8.5%)
Missed monthly payments (early pandemic)	735 M	711 M	74 M	248 M
Missed monthly payments (late pandemic)	413 M	343 M	24 M	224 M
Total forbearance dollars (pandemic)	10.1 B	6.5 B	2.00 B	8.16 B
Total missed payments (pandemic)	6.8 B	5.2 B	0.60 B	2.80 B

Notes: This table shows characteristics of loans by banks and shadow bank originators for both GSE- and FHA-backed mortgages. Static variables are taken as of January 2020. Forbearance dollars are the total scheduled payments of loans in forbearance. Missed payments are the payment amounts missed by borrowers in forbearance. Forbearance dollars are the aggregate monthly payments from mortgages in forbearance from 2020:I to 2021:I. Similarly, total missed payments are the total payments missed by loans in forbearance from 2020:II to 2021:I. Since the GSE do not disclose the identity of servicers that service less than 1 percent of the total unpaid outstanding balance, we remove loans without identified servicers. To account for these removed loans, we scale aggregate GSE numbers by a factor of 1.67. Standard deviations are in brackets.

Source: Loan-level data from GSEs (Fannie Mae and Freddie Mac) and Ginnie Mae (FHA loans)

all three entities collect information about mortgage forbearance (see Cherry et al. 2021). Our primary analysis combines these datasets and examines the period from 2020:I until 2021:I.

II. Servicers Temporarily Pay for Debt Relief: The Role of Servicer Advances

Over the last decade, the market share of shadow banks in servicing has grown until it reached about half the market in 2019. Shadow banks serviced over 18.1 million loans in January 2020, with an aggregate principal balance of over \$3.6 trillion (see Table 1). They serviced 64 percent of Federal Housing Administration (FHA) loans and 40 percent of GSE loans in early 2020, with progressively increased servicing share over the decade (see online Appendix Figure A1).

To provide forbearance to borrowers, servicers are required to make payment advances to investors instead of the borrowers until forbearance is resolved. Roughly two-thirds of outstanding mortgages in the United States are effectively guaranteed by the federal government (Buchak et al. 2020), comprising conforming loans sold

to GSEs and the FHA loans sold to Ginnie Mae. Mortgage servicers collect payments of mortgage principal and interest from borrowers whose mortgages are in mortgage-backed security (MBS) pools and use the funds to make payments to investors who contractually own the rights to the cash flows from the mortgages in the pool. When mortgage borrowers miss payments, servicers are contractually obliged to advance the originally scheduled, regular monthly payments of principal and interest to the securities holders. While these servicing advances are eventually reimbursed—i.e., when the loan is either restructured or foreclosed, lasting several months—servicers need to finance the advances in the interim. Therefore, servicers may need large liquidity when they are servicing loans in forbearance (see Kim et al. 2018).²

²We will evaluate GSE and Ginnie Mae loans separately since Ginnie servicers face significant delays before being reimbursed for payment shortfalls and need to advance more types of payments than GSE servicers (https://www.urban.org/sites/default/files/publication/102580/the-need-for-a-federal-liquidity-facility-for-government-loan-servicing_1.pdf).

Under the CARES Act, borrowers with federally backed mortgages, including GSE, FHA, and Veteran Administration loans, were allowed to pause their mortgage payments with no penalties until September 2021.

For shadow banks, advancing payments subject to forbearance was a substantial endeavor. These payments totaled \$959 million of monthly liquidity provided by shadow banks early in the pandemic, totaling about \$8 billion by 2021:I. This amount exceeded the \$809 million of monthly liquidity provided by traditional banks on government insured loans, which provided a total of \$7.4 billion of relief to mortgages mandated by the CARES Act (Table 1). This was the case despite a much smaller size of shadow banks (Jiang et al. 2020).

We exploit shadow bank call reports (Jiang et al. 2020) to evaluate shadow banks' ability to withstand these shocks (see online Appendix Table A1). For the median shadow bank, the payments it had to service in forbearance amounted to almost three times its cash and over 20 percent of its net income, and they comprised over 8 percent of assets and over one-third of the equity of these intermediaries. In other words, these payment advances were large enough to result in a severe liquidity and even solvency shock to shadow banks. The magnitude of stress on shocks to servicers might have been the reason why Fannie Mae and Freddie Mac capped servicers' obligation to advance principal, interest, taxes, and insurance payments at four months on April 21, 2020. Ginnie Mae announced a last-resort lending facility for servicers of government mortgages on April 10, 2020.

III. Shadow Bank Capital Structure and Debt Relief

One of the concerns of regulators is that shadow banks' liquidity and solvency stress spills over to the rest of the economy. Here, we show that during the first months of the pandemic, shadow banks provided less relief to households than banks despite their equal obligations under the CARES Act. We then tie the extent of debt relief provided by intermediaries to their capital structure. During the initial months of the pandemic, loans serviced by shadow banks had much lower rates of forbearance (1.3 p.p. lower for GSE loans and 0.5 p.p. lower for FHA loans in

2020:II) than those serviced by traditional banks (Table 1).³ This pattern reversed in the later months of the pandemic. By 2021:I, 5.5 percent (8.5 percent) of GSE (FHA) mortgages serviced by shadow banks were in forbearance, compared to 4.7 percent (4.2 percent) of those serviced by banks.

These univariate patterns are robust to regression specifications that account for the borrower and loan characteristics, as shown in online Appendix Table A3, which is also consistent with findings of Cherry et al. (2021) and Kim et al. (2021). If anything, these effects are even stronger and more persistent once we account for borrower and loan characteristics. Shadow banks offered debt forbearance at a significantly lower (2 p.p.) rate compared to traditional banks, amounting to a 27 percent decrease relative to the average banks' forbearance rate. Only after August 2020 are rates of forbearance on loans serviced by shadow banks similar to those serviced by traditional banks (see online Appendix Figure A2).

Capital Structure of Shadow Banks and Forbearance Rates.—As we show, payment advances were a significant liquidity and solvency shock to shadow banks. Shadow banks seem to prepare their capital structure to account for servicing shocks. They are better capitalized than banks on average (Jiang et al. 2020), and the mean capital ratio of the most-exposed banks was over twice as high as that of the least exposed banks. Over 2019:I to 2019:IV, the average equity-to-asset ratio of shadow banks was about 25 percent (see online Appendix Table A4), which is in line with the longer-term average of shadow bank equity-to-asset ratios, as shown by Jiang et al. (2020). While shadow banks have higher equity-to-asset ratios than banks, on the debt side, they are almost exclusively financed with (uninsured) short-term debt: the average short-term debt ratio was about 96 percent throughout. Moreover, banks that are more exposed to servicing shocks and have larger mortgage servicing rights (MSR) as a share of assets were better capitalized ex ante. The average capital ratio of the most exposed

³Loans serviced by shadow banks are somewhat riskier on average (see online Appendix Table A2), which makes the finding of lower forbearance rates on shadow-bank-serviced loans even more striking.

TABLE 2—FORBEARANCE LIKELIHOOD: SHADOW BANKS VERSUS BANKS

	GSE		Ginnie Mae	
	(1)	(2)	(3)	(4)
Shadow bank	−1.283 (0.0110)	−3.043 (0.0237)	0.439 (0.009)	−2.501 (0.029)
Equity ratio	2.441 (0.0480)	−15.43 (0.219)	6.924 (0.034)	−19.78 (0.254)
Shadow bank × equity ratio		18.00 (0.215)		27.32 (0.258)
Size	0.138 (0.00289)	0.0125 (0.00326)	0.139 (0.002)	0.107 (0.002)
Loan-level controls	Yes	Yes	Yes	Yes
Zip code fixed effects	Yes	Yes	No	No
Month-year fixed effects	Yes	Yes	Yes	Yes
State fixed effects	No	No	Yes	Yes
R ²	0.0281	0.0282	0.0536	0.0537
Observations	63,803,613	63,803,613	93,925,431	93,925,431

Notes: This table presents loan-level regression results of forbearance likelihood and servicer attributes. The dependent variable (forbearance indicator) takes on the value of 100 if a loan is in forbearance and 0 otherwise. Columns 1 and 2 use the sample that covers all loans sold to Fannie Mae and Freddie Mac since 2000 that were still active as of January 2020. Columns 3 and 4 use the sample that covers all Ginnie Mae loans that were still active as of January 2020. The underlying sample is from 2020:II–2021:I. Since the GSE do not disclose the identity of servicers that service less than 1 percent of the total unpaid outstanding balance, we remove loans without identified servicers. Standard errors are clustered by zip code.

Source: Loan-level data from GSEs (Fannie Mae and Freddie Mac), Ginnie Mae (FHA loans), and quarterly call report filings for banks and shadow banks

banks was over twice as high as that of the least exposed banks (see online Appendix Figure A3).

Despite a larger capital cushion *ex ante*, we find that during the most severe early stage of the COVID-19 crisis, shadow banks offered debt forbearance at a lower rate than banks. Next, we show that the ability to bridge shocks is the likely driver of differences in forbearance. Because banks and shadow banks differ on many dimensions, we examine the effect of funding by looking within shadow banks. More-capitalized shadow banks offer forbearance at substantially higher rates compared to less capitalized ones (see Table 2). The positive correlation between capitalization and forbearance rates is absent for traditional banks.⁴ Overall, this evidence suggests that financing constraints faced by shadow banks may have played a significant role in accounting for the lower forbearance rates of

shadow banks during the most severe early stage of the crisis.

IV. How Do Shadow Banks Adjust to Large Temporary Shocks?

We now analyze all the potential ways in which shadow banks adjusted to temporary outflow shocks during the pandemic. We do so by estimating the following difference-in-difference specification around the pandemic, exploiting the differential payment advances faced by shadow banks due to their differential exposure to mortgage servicing:

$$Y_{it} = \beta \text{Pandemic}_t \times \text{MSR}_i + \gamma \text{Pandemic}_t + \Gamma X_{it} + \mu_i + \epsilon_{it}.$$

Pandemic_t is an indicator that equals 1 for quarters after 2020:I. MSR_i is shadow bank i 's prepandemic MSR ratio. μ_i is shadow bank fixed effects. We control for the effect of size by including prepandemic asset size interacted with the pandemic dummy in X_{it} . The margins

⁴We note that unlike shadow banks, traditional banks have access to the Federal Home Loan Bank (FHLB) system. When the COVID-19 crisis began, the FHLB banks stepped up to keep liquidity in the market, meeting unprecedented advance demand from their member financial institutions.

TABLE 3—ADJUSTMENTS TO THE PANDEMIC BY SHADOW BANKS

<i>Panel A. Liability side</i>					
	Equity/asset ratio (1)	Current asset ratio (2)	Short-term debt/ debt ratio (3)	log equity (4)	log retained earnings (5)
Pandemic	−15.07 (5.45)	2.22 (7.56)	11.01 (6.35)	−0.16 (0.43)	0.53 (0.43)
Pandemic × MSR ratio	−1.18 (0.54)	0.06 (0.53)	0.50 (0.51)	−0.13 (0.03)	−0.40 (0.13)
Pandemic × Prepandemic size	0.89 (0.29)	−0.002 (0.40)	−0.68 (0.35)	0.037 (0.02)	0.018 (0.02)
R^2	0.875	0.865	0.871	0.962	0.956
Adjusted R^2	0.848	0.835	0.841	0.953	0.946
Observations	1,869	1,869	1,630	1,863	1,131

<i>Panel B. Asset side</i>					
	log asset (1)	log MSR (2)	log loan serviced (dollar) (3)	log loan serviced (count) (4)	log mortgage (5)
Pandemic	0.53 (0.22)	1.33 (1.18)	1.55 (1.62)	0.71 (0.78)	1.55 (0.83)
Pandemic × MSR ratio	−0.06 (0.03)	−0.52 (0.13)	−0.44 (0.13)	−0.28 (0.07)	−0.14 (0.23)
Pandemic × Prepandemic size	−0.006 (0.01)	−0.014 (0.06)	−0.02 (0.09)	0.001 (0.04)	−0.05 (0.04)
R^2	0.975	0.929	0.929	0.949	0.948
Adjusted R^2	0.970	0.913	0.913	0.938	0.936
Observations	1,869	1,868	1,869	1,869	1,869

Notes: This table shows how shadow banks adjust their balance sheets to fund mortgage payment advances. We estimate the following difference-in-difference specification:

$$Y_{it} = \beta \text{Pandemic}_t \times \text{MSR}_i + \gamma \text{Pandemic}_t + \Gamma X_{it} + \mu_i + \epsilon_{it}$$

where Pandemic_t is an indicator that equals 1 for quarters after 2020:I, MSR_i is shadow bank i 's prepandemic MSR ratio, and μ_i is shadow bank fixed effects. We control for the effect of size by including prepandemic asset size interacted with the pandemic dummy in X_{it} . Our sample period is from 2019:I–III to 2020:I–III. We estimate the difference-in-difference specification for various outcome variables, including equity-to-asset ratio, liquid asset ratio, short-term debt ratio, log asset, and log equity. The sample covers 343 shadow banks that have a license in the state that provided us data. Standard errors are reported in brackets.

Source: Shadow banks' quarterly call report filings

of adjustment we study—i.e., our outcome variables—are on both the liability side (equity-to-asset ratio, liquid asset ratio, short-term debt ratio, log equity, and log retained earnings) and the asset side (log assets, log MSR, log servicing dollar volume, log servicing loan count, and log mortgage asset).

Shadow banks change their capital structure significantly in response to shocks, mainly by increasing their leverage (Table 3). Following the pandemic, the equity-to-asset ratios of shadow bank servicers declined by 1.2 p.p. for every standard deviation increase in prepandemic MSR ratio (column 1, panel A

of Table 3). Moreover, the equity-to-asset ratios of shadow banks in the smallest-sized quartile (average size: \$5.4 million) declined by 5 p.p. more than the equity-to-asset ratios of shadow banks in the biggest-sized quartile (average size: \$1.6 billion). While there was a large adjustment in capital ratios for shadow banks doing more servicing, these intermediaries did not change their short-term asset or liability ratios compared to prepandemic levels (columns 2 and 3 of panel A).

Shadow banks weathered the shocks by using retained earnings and by decreasing the scale of their servicing operations and thus transferring

mortgage servicing to other intermediaries (see Table 3 and online Appendix Figure A4). There is a clear decline in equity of high-MSR shadow banks by about 13.6 percent (column 4, panel A of Table 3) driven by reduction in retained earnings (column 5 of panel A). There is also a concurrent reduction in assets by these intermediaries by 6.4 percent (column 1 of panel B). The reduction in balance sheet size was mainly driven by selling servicing assets. The total value of MSR assets on shadow banks' balance sheets dropped by 52 percent for shadow banks with a 1 standard deviation higher prepandemic MSR ratio (column 2 of panel B). Moreover, for these intermediaries, the total dollar volume of mortgages serviced dropped by 43.5 percent, and the total count of mortgage serviced dropped by 28 percent (columns 3 and 4 of panel B). The reduction in the extent of servicing is not simply a consequence of shadow banks' reduction in activities due to financial constraints: their mortgage origination activity was not affected much (column 5 of panel B). Instead, shadow banks with high prepandemic exposure to loan servicing seem to be concerned with further exposure to expected need to advance payments. This resulted in the transfer of servicing activity as well as the obligation to implement debt relief to other intermediaries.

V. Conclusion

Shadow banks now service approximately half of all mortgages in the economy. This implies that they are responsible for implementing debt relief. Major government policies for providing debt relief are generally accomplished through existing servicers. Therefore, the ability of these servicers to weather large relief shocks is of primary concern. We exploit shadow bank call report data to demonstrate that shadow banks' capital structures were set up to weather large shocks: they are better capitalized than banks, and more-exposed banks had larger ex ante capital cushions.

Our results suggest that the household relief demanded by the CARES Act was large enough to offset this additional capitalization. Shadow banks offered forbearance at much lower rates than traditional banks during the early stage of the pandemic when the economic downturn was the most severe and, arguably, such relief was most valuable to households. Only after

significant passage of time did rates of forbearance on loans serviced by shadow banks catch up to those of similar loans serviced by traditional banks. Moreover, the most-exposed shadow banks decreased the amount of servicing to accommodate the need for temporary funding of debt relief.

The significant and persistent differences in forbearance outcomes on shadow bank loans are remarkable given several initiatives aimed at alleviating liquidity in the mortgage servicing markets (see Calabria 2020) as well as a broad unprecedented array of actions by the Federal Reserve that included large purchases of US government- and mortgage-backed securities⁵ and lending to support households, employers, financial market participants, and state and local governments. It is conceivable that without these policies, pass-through of debt relief to distressed borrowers would have been hampered significantly for longer, similar to the Great Recession (see Piskorski and Seru 2018).

Overall, our results suggest that shadow banks can be an important pocket of fragility during times of macroeconomic stress by adversely affecting the pass-through of debt relief to households. Given the importance of shadow banks in the origination and servicing of household debt, stabilization policies going forward must consider the implications of these intermediaries for the implementation of such policies (see also Buchak et al. 2020).

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⁵See Di Maggio, Kermani, and Palmer (2017) for the effects of large purchases of mortgage-backed securities on mortgage borrowers.

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