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Bank Fragility and Reclassification of Securities into HTM

João Granja

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João Granja[†]

University of Chicago

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Abstract

Held-to-Maturity (HTM) accounting allows banks to avoid using current market prices to value securities on their balance sheet. During 2022, the HTM portfolios of U.S. banks grew from \$2 to \$2.75 trillion while their overall holdings of securities remained constant at \$6 trillion. U.S. banks transferred \$.9 trillion to their HTM portfolios by relabeling securities as HTM. Accounting rules determine that banks must have not only the intent but also the ability to hold securities to maturity when using HTM accounting. I find that banks with lower capital ratios, higher share of run-prone uninsured depositors, and more exposed to interest rate risks were more likely to reclassify securities to HTM during 2021 and 2022.

JEL Classification Numbers: G21; G28; M41; G32; E43

Keywords: Held-to-Maturity accounting; Accounting rules; Interest rate risk; Liquidity Risk

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[†]Email: joao.granja@chicagobooth.edu. Address: 5807 South Woodlawn Avenue, Chicago IL 60637

1 Introduction

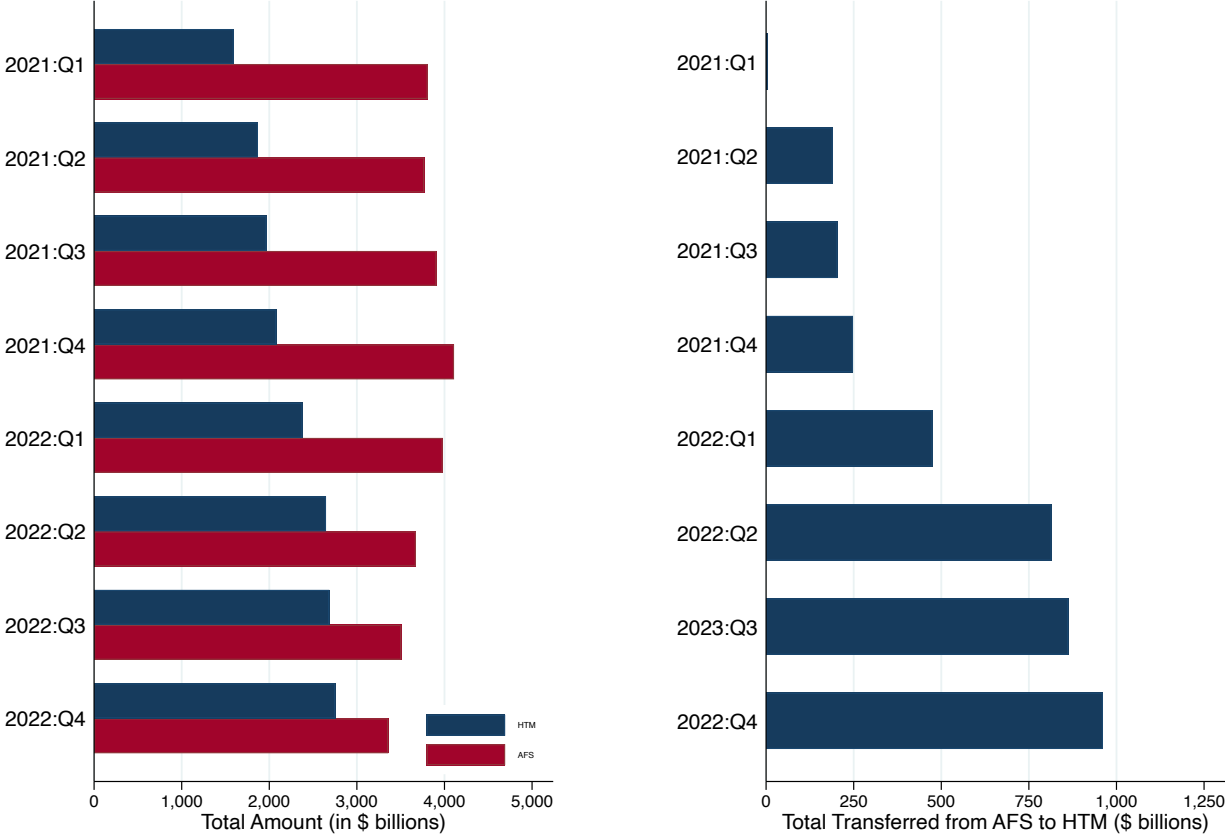
The recent demise of the Silicon Valley Bank (SVB) put the accounting rules governing the valuation of government bonds and mortgage-backed securities under the microscope. The reason for this interest is that SVB accounted for a large portion of its securities portfolio using held-to-maturity (HTM) accounting. By doing so, SVB avoided recognizing unrealized losses on these securities in their financial statements for multiple quarters until a massive run by its uninsured depositors made it inevitable that SVB would have to liquidate these securities to meet depositors' demands. These sales would have required SVB to recognize enormous "hidden" losses that would render it insolvent. This chain of events forced the FDIC to put SVB into receivership.

The rationale for HTM accounting is that if a bank holds a security until its maturity, then the short-term dislocations between the book and market value of the securities eventually wash out. The critical condition for using HTM accounting is, therefore, that banks declare that they have both the intent and the ability to hold the securities until they mature such that the bank does not have to close the position at a significant accounting loss. Otherwise, banks must value their securities using available for sale (AFS) accounting, which forces them to mark the securities in their balance sheets using current market prices and to recognize unrealized losses on those securities in their statements of comprehensive income. With the benefit of hindsight, it is clear that SVB might have had the intent but did not have the ability to hold these securities until their maturity.

The cycle of sharp monetary tightening that began in the first quarter of 2022 had a drastic impact on the prices of long duration fixed-income securities. As discussed in [Jiang et al. \[2023\]](#), the market value of long duration fixed income securities declined between 10% and 30% during 2022 depending on the type and maturity of these long-term securities. Unless banks valued these securities using HTM accounting, their balance sheets and statements of comprehensive income would have to reflect these losses. [Figure 1a](#) indicates that in the beginning of 2022, only about

one-third of the \$6 trillion of securities held by commercial banks were valued using HTM accounting. This breakdown between AFS and HTM securities in the aggregate balance sheet of the banking

Figure 1: Breakdown of Total Securities between HTM and AFS and Amounts Reclassified from AFS to HTM by U.S Banks



(a) Total AFS and HTM securities

(b) Total amounts reclassified

system saw a substantial change over the following twelve months. By the end of 2022, the banking system still held approximately \$6 trillion in securities but 45% of those securities, or \$2.75 trillion, were now valued using HTM accounting. These numbers suggest that banks actively sought to insulate their balance sheets and statements of income from declining market prices. Figure 1b

shows that banks transferred almost \$1 trillion of their existing AFS securities to HTM during 2021 and 2022, thus avoiding recognizing losses on these assets simply by slapping a new accounting label on them. I estimate that U.S. banks were able to avoid recognizing \$175 billion in losses due to these reclassifications at the end of 2022 and that these losses would wipe out half of the common equity capital of a group of banks that collectively represents five percent of all assets in the U.S. banking system.

The substantial amount of securities that were opportunely reclassified from the AFS to the HTM portfolio begs the question of what were the true intentions of banks that engaged in this kind of behavior. Were weak banks attempting to purposefully “hide” potential future losses that might expose their frail capital and liquidity positions? Or were these reclassifications operated mostly by strong banks that had both the intent and the ability to hold these securities until their maturity and just wanted to protect their balance sheets and statements of income from short-term volatility in the value of these assets?

I find evidence that less stable banks with lower capital ratios, higher share of run-prone uninsured depositors, and with longer duration securities portfolios that were more exposed to interest rate risk were more likely to reclassify securities from AFS to HTM during 2021 and 2022. For instance, only one percent of banks reclassify securities from AFS to HTM if they depend on uninsured deposits for less than 20% of their total deposit funding. By contrast, more than ten percent of the banks that depend on uninsured deposits for more than half of their deposit funding reclassify securities from AFS to HTM. These effects are particularly strong for the group of banks that finance longer duration securities portfolios with a large fraction of run-prone uninsured deposits.

That the least healthy and stable banks were allowed to reclassify large swaths of their securities portfolios from AFS to HTM just as the value of these securities were starting to decline raises important policy questions about the enforcement of HTM accounting rules. Were auditors and

supervisors sufficiently assured that the reclassifying banks had the ability to hold these securities until their maturity? Or is it possible that auditors and supervisors failed to properly evaluate the reasonableness of banks' claims that they had the ability to hold these securities until their maturity? I investigate whether there are differences in the likelihood that a bank reclassifies securities depending on their auditors and on their primary banking supervisors. I find that banks audited by the reputed Big-4 auditing firms are not significantly less likely to reclassify securities from AFS to HTM. I find some differences in reclassification rates across banks depending on their primary regulator. Specifically, banks that are solely supervised by national regulators and not supervised by state banking departments are less likely to reclassify securities even when I tightly match for differences in size across these types of banks and control for a host of factors that might affect reclassification rates. These findings offer suggestive evidence that stricter external scrutiny might lead to differences in the enforcement of HTM accounting rules.

The paper is most related to the current debate about the role of accounting rules in shaping financial stability during the 2022 and 2023 monetary tightening. [Jiang et al. \[2023\]](#) shows that banks have substantial hidden mark-to-market losses in HTM assets and that bank runs by uninsured depositors may trigger the failure of many financial institutions. [Drechsler et al. \[2017\]](#), [Drechsler et al. \[2021\]](#), and [Drechsler et al. \[2023\]](#) underscore the critical interaction between the deposit funding structure and accounting standards. When deposits are stable, banks are naturally hedged and a HTM rule may better reflect banks' equity value because it does not reflect neither the changes in asset values nor the offsetting change in the intangible deposit franchise value, which cannot be marked-to-market. In a high-interest-rate environment, however, uninsured depositors are more likely to run and the deposit franchise value becomes unstable raising questions about the natural hedge between asset and deposit franchise values and in turn about the adequacy of HTM accounting. [Bischof et al. \[2021\]](#) also presciently discuss the costs of HTM accounting when the

deposit composition of banks is unstable. My paper contributes to this debate by pointing out that the decision to mark-to-market or hold to maturity is, in practice, an endogenous choice of banks that they can and do use to their favor as they become increasingly frail. This discussion suggests that the current rules governing HTM accounting may be appropriate but that it is important to enforce them and obtain reasonable assurance that banks using HTM accounting are able to hold securities until they mature.

This paper speaks to a literature that examines the interactions between accounting standards and financial stability. During the Global Financial Crisis (GFC) of 2007–2009, many studies suggested that mark-to-market accounting could force financial intermediaries to sell assets at depressed market prices, thus further depressing market prices and creating a negative spiral that could lead to the failure or near failure of financial intermediaries (e.g., [Adrian and Shin \[2010\]](#) and [Plantin et al. \[2008\]](#)). [Laux and Leuz \[2010\]](#) [Badertscher et al. \[2012\]](#), and [Bischof et al. \[2021\]](#) have nevertheless provided evidence that circuit-breakers embedded in the accounting rules limited such negative spirals and that mark-to-market accounting was unlikely to be responsible for substantial asset sales during the crisis. The paper also relates to studies showing that regulators relax accounting standards and their respective enforcement during banking crises as a means of regulatory forbearance. [Hoshi and Kashyap \[2010\]](#) show that Japanese banking regulators did not force banks to recognize losses in their deferred tax assets that would have made them fall below critical capitalization thresholds and [Bischof et al. \[2023\]](#) show that regulators relaxed the rules for reclassification of financial assets during the GFC to allow banks to conserve capital.

2 Amounts transferred to HTM and “Hidden” Accounting Losses

In this section, I provide statistics about the total value of securities transferred from AFS to HTM between 2021 and 2022 and I estimate the accounting losses that reclassifying banks avoided by relabeling these securities to HTM. I describe in detail the data collection and measurement process in Internet Appendix [A](#).

In Figure [1](#), I provide a bar chart with the total amounts of HTM and AFS securities held by US banks (Figure [1a](#)) and with the cumulative amounts of securities transferred from AFS to HTM in each quarter between 2021 and 2022 (Figure [1b](#)). Figure [1a](#) indicates that the breakdown between HTM and AFS securities in the balance sheets of US banks changed significantly between the first quarter of 2021 and the fourth quarter of 2022. At the beginning of 2021, HTM securities comprised only a third of the \$6 trillion of AFS and HTM securities in banks’ balance sheets. By the end of 2022, the amount of HTM securities increased by approximately \$750 billion and now comprised almost half of the \$6 trillion in AFS and HTM securities in banks’ balance sheets.

Figure [1b](#) shows that the total amounts reclassified from AFS to HTM exceed \$.9 trillion. The total amount of securities transferred from AFS to HTM, therefore, fully account for the convergence between the values of AFS and HTM securities in the US banking system observed during the 2021 and 2022. During 2021, U.S. banks reclassified \$250 billion in securities led by JPMorgan Chase, which alone reclassified \$104.5 billions. The reclassification activity accelerated considerably during the first and second quarters of 2022 with more than half a trillion of reclassified securities during this period and slowed down in the second half of 2022. In Internet Appendix [B](#), I further describe the evolution of the number of banks reclassifying in each quarter and I provide histograms describing what is the share of total bank securities that banks reclassify to HTM.

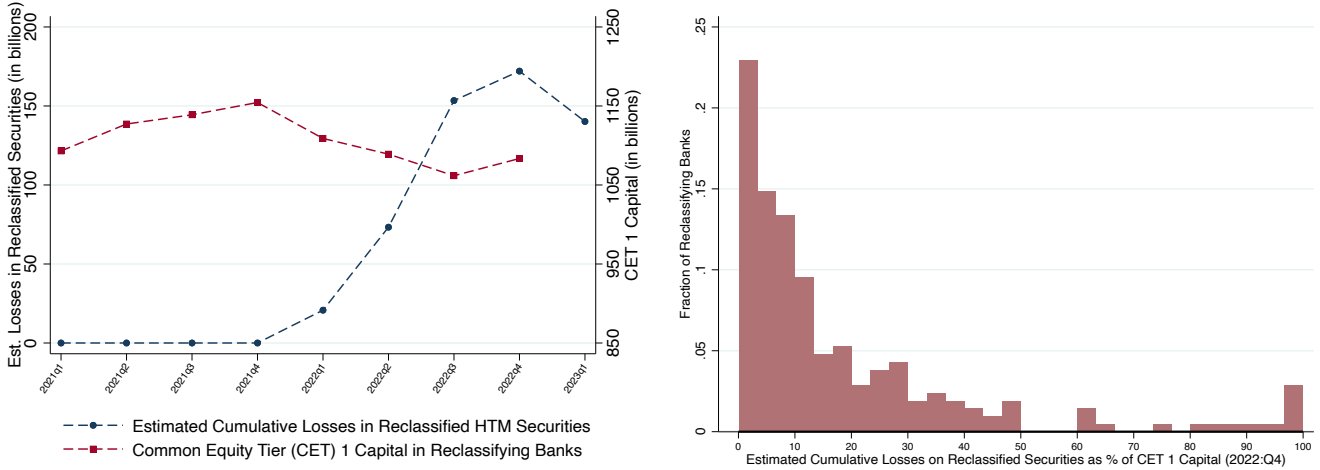
Next, I turn my attention to estimating the total amount of accounting losses that banks avoided in their balance sheets and statements of comprehensive income by transferring these securities from AFS to HTM. To do this, I closely follow the methodology proposed in [Jiang et al. \[2023\]](#) to estimate the impact of interest rate increases on asset values. Specifically, I obtain asset maturity and repricing data from the call reports and I use traded indexes in mortgage backed securities (MBS) and treasuries to impute the value of these securities. I refer to [Jiang et al. \[2023\]](#) about additional details on the computation of these values.

I make two additional assumptions to estimate “hidden” losses on these reclassified securities: (i) the securities are transferred to HTM at the end of the quarter and (ii) the composition of the securities (Treasuries or MBS) transferred to HTM and the maturity and repricing structure of securities transferred to the HTM portfolio mimics the composition of the securities portfolio allocation of the bank. Both assumptions are conservative and likely underestimate the true amount of losses that are not recognized in the balance sheet due to reclassification of securities. The first assumption implies that declines in the value of securities affect the balance sheet only in the following quarter. The second assumption is also conservative as banks possibly have greater incentives to reclassify long-term securities with high interest rate risk.

In [Figure 2](#), I plot the aggregate estimated losses on reclassified securities during 2022 and the aggregate Common Equity Tier (CET) 1 Capital of the group of banks that reclassified securities ([Figure 2a](#)) and I provide a histogram with the estimated losses on reclassified securities of each bank as a percentage of their CET1 Capital at the end of 2022.

[Figure 2a](#) shows that the estimated losses on reclassified securities increase steadily during 2022 and amounted to approximately \$175 billion in the fourth quarter of 2022. The CET1 capital (prior to adjustments) of the banks that reclassified securities did not increase during 2022. These reclassifying banks held approximately \$1 trillion in CET1 capital (60% of aggregate CET1 in the

Figure 2: Estimated Losses on Reclassified Securities



(a) Aggregate Losses on Reclassified securities

(b) Losses on reclassified Sec. as % of Bank Equity

U.S. banking system) and their capital remained stable throughout 2022 despite losses on these reclassified securities and other securities more generally. At the end of 2022, the estimated losses on securities reclassified from AFS to HTM would wipe out more than 15% of these banks' capital.

In Figure 2b, I provide a histogram with the estimated losses on reclassified securities for each bank as a fraction of their respective CET1 capital at the end of 2022. I find that the estimated losses account on average for 20% of the CET1 capital of reclassifying banks and that for 10% of reclassifying banks, estimated losses that were avoided on these securities due to their transfer to HTM account account for more than half of their equity capital. Furthermore, I estimate that these losses would make the CET1 Tier 1 capital (prior to adjustments) of six banks turn negative.

Overall, this section establishes that reclassifications of securities from AFS to HTM represent a meaningful portion of the aggregate portfolio of securities held by US banks and that by transferring these assets to HTM, banks avoided recognizing substantial losses in their balance sheets and statements of comprehensive income.

3 Bank Fragility and Reclassification of Securities from AFS to HTM

In this section, I examine if healthier banks that more plausibly had the ability to hold long-term securities until their maturities were more likely to operate reclassifications of AFS securities into the HTM portfolios or if, on the contrary, reclassifications of AFS securities into HTM were predominantly made by more fragile banks that had more to lose by recognizing potential future losses in their balance sheets and statements of comprehensive income.

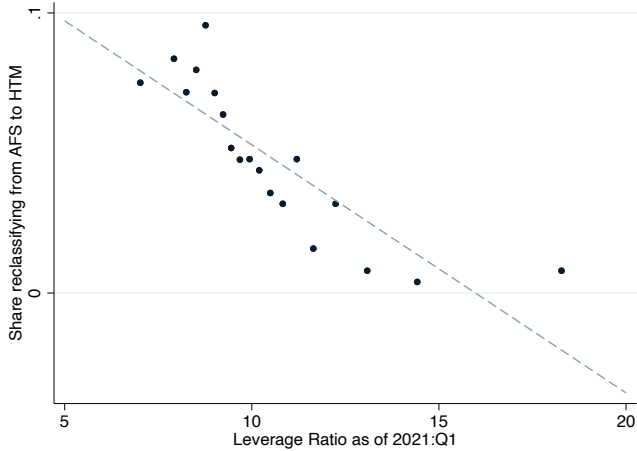
To examine this question, I compute measures of capitalization, liquidity risk, and asset duration for all banks in the United States at the beginning of 2021. I proxy for banks' capitalization using the Tier 1 leverage ratio, which is defined as Tier 1 capital divided by total assets. The liquidity risk of each bank is the share of uninsured deposits of each bank in their deposit funding. I use this measure as a measure of liquidity risk as it is well-known that uninsured depositors are more run-prone and that this type of depositors played a key role in the bank run that led to SVB's demise. Finally, I proxy for the duration of a bank's security portfolio as the share of Treasury and Mortgage Backed Securities (MBS) with a maturity of over 15 years.

Figure 3 explores the relation between these measures of bank solvency and liquidity and their decisions to reclassify assets from AFS to HTM. Specifically, I partition banks in twenty bins based on each measure of bank financial health and I plot the fraction of banks reclassifying securities from AFS to HTM in each bin.

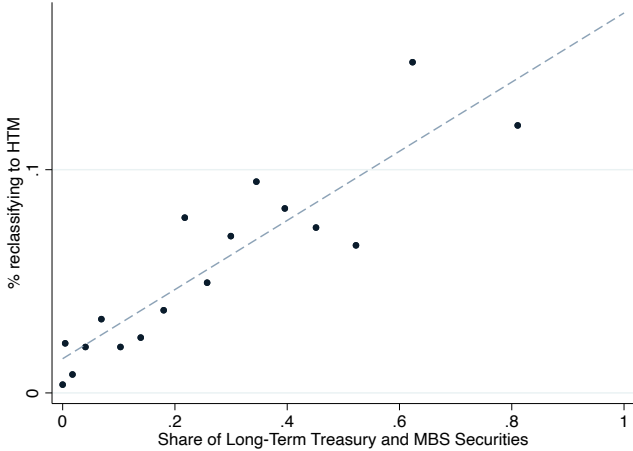
Figure 3a shows a strong negative relation between levels of regulatory capital and the propensity to reclassify assets from AFS to HTM. More than 5% of banks with leverage ratios below 10% reclassify securities from AFS to HTM whereas less than 1% of banks do the same if they have leverage ratios exceeding 12%.

Figure 3b shows a strong positive relation between the share of banks that are highly-exposed to interest rate risks given their exposure to long duration assets and the propensity to transfer assets from AFS to HTM. I find that one-tenth of banks that hold more than 60% of their portfolio of U.S. treasuries and MBS in securities with a maturity over 15 years reclassified assets from AFS to HTM. By contrast, only a small fraction of banks that hold few U.S. treasuries and MBS reclassify

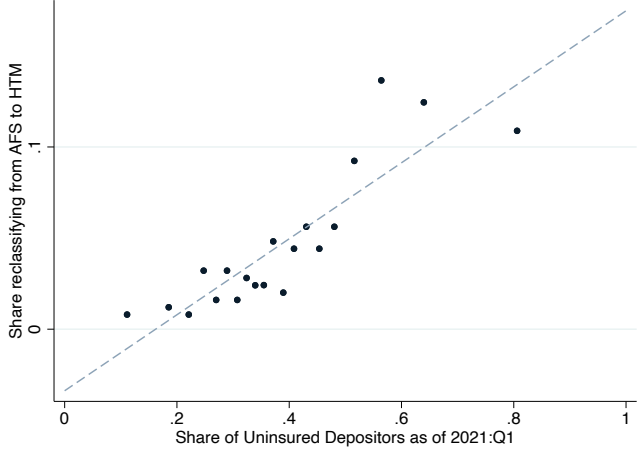
Figure 3: Bank Fragility and Reclassification of Securities to HTM



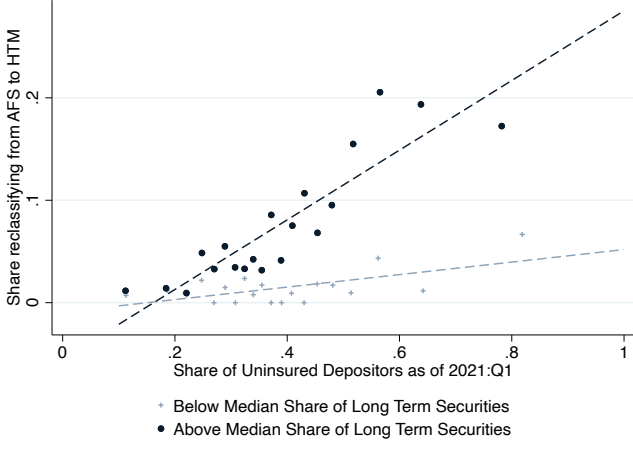
(a) Leverage Ratio



(b) Share of Long Term Securities



(c) Share of Uninsured Depositors



(d) Share of Uninsured Depositors

securities into HTM. Figure 3c repeats the analysis for the share of uninsured deposits at the bank. The plot shows that banks whose ability to hold securities to maturity is potentially compromised by their reliance on run-prone uninsured depositors were also more likely to reclassify securities to HTM during 2021 and 2022. Finally in Figure 3d, I repeat the analysis in (3c) after splitting the sample between below- and above-median share of long-term securities. The idea is to assess whether banks that are more exposed to interest rate risk and are also financed primarily by run-prone uninsured depositors are incrementally more likely to transfer assets from AFS to HTM. The results indicate that the association between the share of deposits financed by uninsured deposits and the frequency of reclassification is positive but weak when banks' portfolios of securities are not exposed to significant interest rate risk. I find a significantly stronger association between the uninsured deposits and asset reclassification when banks have significant investments in long term securities that are exposed to significant interest rate risks. Overall, the results of Table 3 strongly indicate that more fragile banks were more likely to reclassify securities from AFS to HTM during this period.

I further probe the relation between these bank characteristics and their decisions to transfer securities from AFS to HTM in Table 1. I estimate cross-sectional regressions in which the dependent variable is a dummy variable that takes the value of one if the bank reclassified securities from AFS to HTM during 2021 and 2022 and the main variables of interest are the measures of capitalization, liquidity risk, and exposure to interest rate risk that I introduced in the analysis of Figure 3. I also include asset percentile dummies to control for bank size and to ensure that the estimated coefficients are not merely capturing differences in the main variable of interest and in the propensity to reclassify securities into HTM across banks of different sizes. I cluster standard errors at the level of the bank's state headquarters.

The results in Panel A further support the idea that more fragile banks were also more likely to

reclassify securities from AFS to HTM. Column (1) indicates that a one-standard deviation increase in the leverage ratio lower the likelihood of a reclassification by .7 percentage points (p.p.). The results of column (2) suggest that a bank that is 100% financed by uninsured deposits was 8.6 p.p. more likely to reclassify securities into HTM than a bank with no uninsured deposits. In column (3), the results show that banks with higher exposure to interest rate risks through their holdings of high-duration longer term securities are also significantly more likely to reclassify assets. Column (4) shows that the interaction between the exposure to run-prone depositors and the exposure to interest rate risk matters. Banks with a high share of exposure to uninsured deposits are incrementally more likely to reclassify if they also have greater exposures to longer-term securities. In column (5), I show that the explanatory power of each of these variables is not subsumed when I include them in a multivariate specification and when I add additional controls for the ratio of securities to total assets in each bank and for the percentage of securities that is classified as AFS at the beginning of 2021. In Panel B, I use as dependent variable a measure of the percentage of securities that each bank reclassified to the HTM securities between 2021 and 2022. I find similar results when I use this measure that takes into account the intensive margin of asset reclassification.

4 External Scrutiny and Reclassification of Securities from AFS to HTM

In this section, I investigate whether differences in external scrutiny by banking regulators and private auditors are associated with differences in banks' propensity to reclassify securities from AFS to HTM. I examine if the banks that are audited by the reputed Big-4 auditing firms (Deloitte and Touche, Ernst & Young, KPMG, and PriceWaterHouseCoopers) are less likely to transfer securities than banks audited by other firms. The Big-4 auditing firms have a reputation for stronger

audit quality. I examine if the data is consistent with the possibility that they requested greater assurances from their audited banks about their ability to hold these securities until maturity. I also examine if banks' reclassification rates depend on their respective primary banking regulator. [Agarwal et al. \[2014\]](#) and [Granja and Leuz \[2018\]](#) document significant differences in accounting scrutiny across regulators. In particular, both studies offer evidence that national banking regulators and in particular the Office of the Comptroller of the Currency is a relatively strict supervisor relative to counterparts.

In Table 2, I estimate cross-sectional regressions similar to those of Table 1 in which the main variables of interest are dummy variables that indicate whether the bank was audited by a Big-4 auditing firm and whether the bank's primary regulator was the OCC, FDIC, or Federal Reserve. I also include controls for the measures of bank fragility used above and for asset percentile dummies. In columns (5)-(8), I implement a matching procedure based on [Iacus et al. \[2012\]](#) to ensure covariate balance in terms of the size and percentage of securities held across banks with and without a big-4 auditor and across banks with different primary regulators. I caveat that the results in this empirical exercise should be interpreted with caution as the choice of private auditor and primary regulator is a highly endogenous choice that in itself might be driven by unobservable characteristics such as banks' willingness to be good actors and comply with accounting standards. I cluster standard errors at the level of the bank's state headquarters.

The results of Table 2 indicate that big-4 audited banks are not statistically less likely to reclassify securities during 2021 and 2022. Consistent with the idea that the OCC-regulated banks are more strictly supervised than state-regulated banks, I find that OCC-banks are significantly less likely to reclassify securities. Despite the caveats concerning the interpretation of the empirical results that I noted above, the results are consistent with the idea that even the most reputed private auditors did not curb banks' efforts to transfer securities from AFS to HTM in order to avoid recognizing

accounting losses. The fact that OCC-supervised banks were less likely to reclassify securities is, however, suggestive that stricter regulatory enforcement of accounting standards to have resulted in fewer reclassifications.

5 Conclusion

I provide a simple analysis of U.S. banks' decisions to reclassify assets from their AFS portfolios into HTM during the recent cycle of monetary tightening. Banks using HTM accounting should demonstrate their intent and ability to hold on to these securities until their maturity. Yet, I find that more fragile banks are significantly more likely to opportunistically transfer securities from their AFS portfolios to their HTM portfolios just as the value of these securities were starting to decline. These banks might have the intent but are less likely to have the ability to hold on to these securities until their maturity.

My findings cast some doubt upon whether auditors and supervisors were sufficiently assured that the reclassifying banks had the ability to hold these securities until their maturity. Furthermore, they suggest that a potential regulatory response might be to enforce proper scrutiny and evaluation of the reasonableness of banks' claims that they have the ability to hold these securities until they mature. The demise of SVB led many pundits to call for the abolishing of HTM accounting in social media. While this is a possible regulatory response, it is important to carefully ponder the consequences of such choice. During the Global Financial Crisis of 2007–2009, there were significant concerns that mark-to-market accounting precipitated and amplified the crisis. Moreover, given banks' natural hedge between changes in asset values and changes in the value of the deposit franchise, HTM accounting may better reflect the value of equity when depositors are sticky. Thus, there might be important trade-offs to consider in choosing between mark-to-market and historical cost accounting.

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Table 1: Bank Fragility and Reclassification into HTM

Table 1 reports the coefficients of OLS regressions examining the relation between measures of bank fragility and banks' decision to transfer assets from AFS to HTM. The dependent variable in Panel A is a dummy variable that takes the value of one if the bank reclassified assets from AFS to HTM between 2021 and 2022. The dependent variable in Panel B is the ratio between the total amount of transferred securities and total securities in the AFS and HTM portfolios. *Lev. Ratio* is Tier 1 capital divided by total assets. *% Uninsured Deposits* is the ratio between uninsured deposits and total deposits. *% Long Term securities* is the ratio between total securities with maturity or repricing exceeding 15 years and the total securities. Baseline controls include a set of indicator variables for asset percentile and controls for the share of AFS securities in banks' securities portfolios and for the percentage of securities in total assets. Standard errors are presented in parentheses, and are clustered at the state level. ***, **, and *, represent statistical significance at 1%, 5%, and 10% levels, respectively.

Panel A: Dummy Variable for Reclassification to HTM					
	(1)	(2)	(3)	(4)	(5)
	I(Reclassification to HTM)=1				
Lev. Ratio	-0.007*** (0.002)				-0.019*** (0.005)
% Uninsured Deposits		0.086*** (0.024)		0.019 (0.024)	0.099*** (0.029)
% Long Term Securities			0.109*** (0.019)	-0.024 (0.038)	0.098*** (0.018)
% Long Term Securities × % Uninsured Deposits				0.332*** (0.098)	
Share of AFS Securities					0.009 (0.007)
Securities (% Assets)					0.109*** (0.020)
Observations	5027	4978	4850	4818	4818
Adjusted R^2	0.097	0.099	0.109	0.116	0.120
Asset Percentile Dummies	Yes	Yes	Yes	Yes	Yes
Panel B: % Assets Reclassified to HTM					
	(1)	(2)	(3)	(4)	(5)
	% Assets Reclassified to HTM				
Lev. Ratio	-0.004*** (0.001)				-0.008*** (0.002)
% Uninsured Deposits		0.031** (0.014)		0.004 (0.013)	0.034** (0.015)
% Long Term Securities			0.052*** (0.010)	0.003 (0.018)	0.047*** (0.010)
% Long Term Securities × % Uninsured Deposits				0.121*** (0.044)	
Share of AFS Securities					0.006 (0.004)
Securities (% Assets)					0.046*** (0.010)
Observations	17	4918	4884	4850	4818
Adjusted R^2	0.030	0.031	0.042	0.045	0.049
Asset Percentile Dummies	Yes	Yes	Yes	Yes	Yes

Table 2: External Scrutiny and Reclassification into HTM

Table 1 reports the coefficients of OLS regressions examining the relation between measures of bank fragility and banks' decision to transfer assets from AFS to HTM. The dependent variable in Panel A is a dummy variable that takes the value of one if the bank reclassified assets from AFS to HTM between 2021 and 2022. The dependent variable in Panel B is the ratio between the total amount of transferred securities and total securities in the AFS and HTM portfolios. The main variables of interested are dummy variables that take the value of one if the banks is audited by a big-4 auditing firm or if the bank is primarily regulated by the OCC, FDIC, and Federal Reserve. Baseline controls include a set of indicator variables for asset percentile and controls for the share of AFS securities in banks' securities portfolios and for the percentage of securities in total assets. In columns (5)–(8), I coarsen exact match (Iacus et al. [2012]) the sample to achieve covariate balance between the size and securities portfolio composition across banks with and without big-4 auditing and different types of regulators. Standard errors are presented in parentheses, and are clustered at the state level. ***, **, and *, represent statistical significance at 1%, 5%, and 10% levels, respectively.

Panel A: Dummy Variable for Reclassification to HTM								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	I(Reclassification to HTM)=1							
Big 4 Auditor	-0.003 (0.044)				0.043 (0.055)			
OCC		-0.011* (0.006)				-0.035** (0.015)		
FDIC			0.010* (0.005)				0.018* (0.010)	
Fed. Reserve				0.014* (0.007)				0.011 (0.017)
Observations	1964	4818	4818	4818	1702	1892	1921	1882
Adjusted R^2	0.134	0.120	0.120	0.120	0.156	0.183	0.121	0.157
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Asset Ptile Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coarsened Exact Matching	No	No	No	No	Yes	Yes	Yes	Yes

Panel B: % Assets Reclassified to HTM								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	% Assets Reclassified to HTM							
Big 4 Auditor	-0.029** (0.013)				-0.015 (0.014)			
OCC		-0.004 (0.003)				-0.012* (0.007)		
FDIC			0.001 (0.003)				0.002 (0.006)	
Fed. Reserve				0.008** (0.003)				0.005 (0.007)
Observations	1964	4818	4818	4818	1702	1892	1921	1882
Adjusted R^2	0.057	0.049	0.049	0.049	0.055	0.094	0.049	0.057
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Asset Ptile Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coarsened Exact Matching	No	No	No	No	Yes	Yes	Yes	Yes

Internet Appendix for “Bank Fragility and Reclassification of Securities into HTM”

A Data Appendix and Descriptive Statistics

This paper uses hand-collected data from public banks’ annual reports submitted to the Securities Exchange Commission (SEC) for fiscal years ending in 2021 and 2022 and from regulatory bank call report data capturing asset and liability composition and income statements of all US banks between the first quarter of 2021 and the fourth quarter of 2022.

The regulatory call reports that all U.S. banks file with the banking regulators do not contain a field indicating the total value of securities that a bank reclassified from the AFS to the HTM portfolios. For publicly-listed banks, I hand-collected the total amounts of securities transferred from the AFS to HTM from the annual reports of all publicly listed U.S. banks and bank holding companies and I merged this data to the banks’ call reports using the New York Fed’s CRSP-FRB link. These amounts are not reported in a standard footnote, so I collected them on a best-effort basis by searching for the terms “transfer” “reclassification” and “HTM” and reading the passages of the footnotes to the consolidated financial statements of the 2022 and 2021 that indicated the amounts that were transferred from AFS to HTM. Most reclassifying banks do not indicate in which quarter they transferred the securities from AFA to HTM. For each public bank that reclassified securities from the AFS to the HTM portfolio, I allocate the amounts transferred during the year to the quarter in which I observe a greater increase in HTM securities and a decline in AFS securities.

Private banks that are not registered with the SEC do not file annual reports and do not have to report the amounts of securities transferred from AFS to HTM in their regulatory call reports. The call reports, nevertheless, provide a group of variables that collectively allow for reasonable

identification of banks that transferred a large fraction of their AFS portfolio to HTM.

I define a bank reclassification of AFS securities into the HTM portfolio for private banks using two different criteria. The first set of criteria defines a bank-quarter as a reclassification quarter if the following conditions are jointly met:

- Increase in the amortized cost of held-to-maturity securities that exceeds 15% of the total amortized cost of AFS and HTM securities in the previous quarter,
- Increase in the sum of the amortized costs of held-to-maturity and available for sale securities that does not exceed 7.5% of the total amortized cost of AFS and HTM securities in the previous quarter, and
- a non-zero change in the absolute value of the net unrealized gains (losses) on held-to-maturity securities that are included in Accumulated Other Comprehensive Income (AOCI)

The first two conditions ensure that there is a substantial increase in the book value of HTM securities that is at least partly offset by a decline in the book value of AFS securities. The third condition takes advantage of the fact that banks that opted out of including their accumulated other comprehensive income (AOCI) in the computation of regulatory capital must report the unamortized balance of the unrealized gain (loss) that existed at the date of transfer of a debt security transferred into the held-to-maturity category from the available-for-sale category, net of applicable income taxes. This is an important condition because it indicates that banks reclassified securities from AFS to HTM during that quarter and that the reallocation between HTM and AFS portfolios is not entirely driven by sale or redemption of AFS and subsequent purchase of HTM securities. Because 99% of US banks have opted out from including AOCI in the computation of their regulatory capital, we can assess this condition for the near universe of banks in the United States. For the remaining one percent of banks that did not opt out of including AOCI in their regulatory capital, I define a

bank-quarter as a reclassification based on the two other conditions alone. I define the amounts of securities transferred from AFS to HTM during a reclassification quarter as the increase in the amortized cost of HTM securities during bank quarters.

A potential problem with the previous set of criteria is that it might exclude some asset reclassifications that are large in terms of absolute size but do not comprise more than 15% of the total amortized cost of AFS and HTM securities in the previous quarter. Because of this, I use the following alternative set of criteria to define a bank-quarter as a reclassification quarter:

- Increase in the amortized cost of held-to-maturity securities that exceeds 5% of the total amortized cost of AFS and HTM securities in the previous quarter,
- Increase in the sum of the amortized cost of held-to-maturity and available for sale securities that does not exceed 2.5% of the total amortized cost of AFS and HTM securities in the previous quarter, and
- An absolute change in the absolute value of the net unrealized gains (losses) on held-to-maturity securities that are included in Accumulated Other Comprehensive Income (AOCI) that exceeds 0.25% of the total amortized cost of AFS and HTM securities in the previous quarter

In this alternative set of criteria, I admit a lower amount of portfolio reallocation between AFS and HTM provided that there is a meaningful change in the net unrealized gains (losses) on held-to-maturity securities that are included in Accumulated Other Comprehensive Income (AOCI). Similar to above, I define the amounts of securities transferred from AFS to HTM during a reclassification quarter as the increase in the amortized cost of HTM securities during bank quarters.

I manually inspected the AFS and HTM portfolios of all banks in the United States for possible cases of reclassifications of securities from AFS to HTM that I had not caught using my classification above. In the rare cases, in which there was a significant increase in HTM and decline in AFS that

was not flagged by my classification criteria above, I searched for the bank’s annual reports in the company websites to further examine if there were reclassifications during 2021 and 2022. I found ten cases of private banks or banks listed in the Pink Sheets that provided annual reports in their websites and that mentioned having reclassified securities from AFS to HTM.¹

Finally, I also considered that some banks reclassified securities when there was a change in the amounts of AFS and HTM that met the criteria that I defined above but the change in the absolute value of the net unrealized gains (losses) on held-to-maturity securities that are included in Accumulated Other Comprehensive Income (AOCI) occurred only in the following quarter or during the last quarter of the year. I surmised that some smaller banks are unsophisticated and might have misreported this item in the quarter that they reclassified their securities. It is likely that these banks only corrected their misreporting in the last quarter of the year when their financial statements were audited.

B Additional Descriptive Statistics

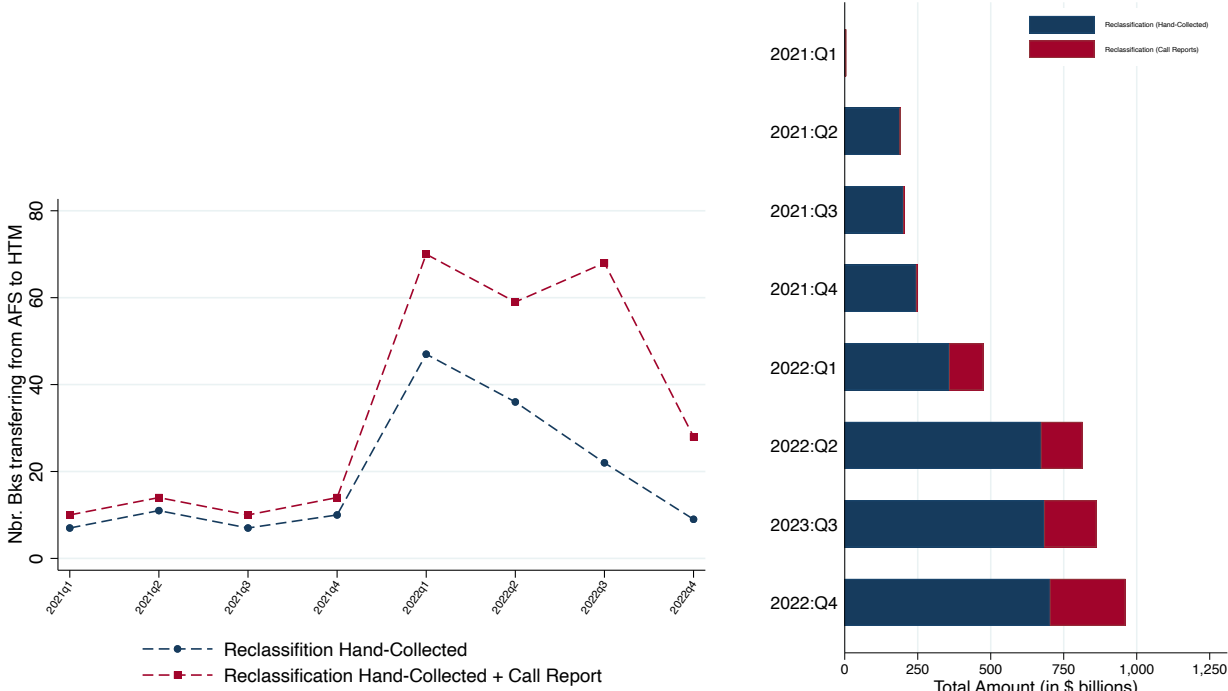
In Figure B.1, I provide descriptive statistics about the number and amount of hand-collected reclassifications and reclassifications that I classified as such using data from the regulatory call reports. In Figure B.1a, I provide a time series of the number of banks that reclassified securities in each quarter during 2021 and 2022. During 2021, approximately 10 banks reclassified securities from AFS to HTM in each quarter. During 2022, the number of distinct banks that reclassified securities jumped to approximately 60 banks in the first three quarters before dropping to approximately 25 banks in the last quarter of 2022. Most banks reclassifying securities during 2021 were publicly-listed banks for which I hand-collected reclassification information. During 2022, hand-collected

¹These banks were: Canandaigua National Bank, Commercial and savings bank of Millersburg, Juniata Valley Financial Corp., Bank of Idaho, Morris State Bancshares, Farmers & Merchants Bank of Central California, BankFirst Financial Services, American Riviera Bank, John Marshall Bank, and River Bank & Trust.

reclassifications continued to comprise most reclassifications but I also identify a large number of private banks that transferred securities from AFS to HTM.

In Figure B.1b, I show that the hand-collected reclassifications are also larger in size than the reclassifications that I identified from call report data. At the end of 2022, the hand-collected

Figure B.1: Breakdown of Number and Amount of Reclassifications by Collection method



(a) Nbr of Reclassifications by quarter

(b) Total amounts reclassified by quarter

reclassifications from the annual reports of public banks accounted for approximately \$700 billions whereas other reclassifications accounted for \$250 billions.

Next, I restrict my attention to the group of banks that reclassified securities at some point between 2021 and 2022 and I examine what percentage of their HTM portfolio at the end of 2022 was reclassified from AFS in the preceding two years. Figure B.2 is a histogram of the total amount

of securities that a bank reclassified from AFS to HTM as a fraction of that bank's total amortized cost of HTM assets as of the end of 2022. The histogram shows that reclassified assets from AFS to HTM between represent all or nearly all HTM securities at the end of 2022 for approximately 40% of the banks that reclassified securities between 2021 and 2022. Most other banks transferred securities from AFS to HTM that amounted to between 15% to 90% of their HTM securities at the end of 2022. In some instances, I computed an amount reclassified from AFS to HTM that exceeds the amounts of securities in the HTM portfolio at the end of 2022. It is possible that such cases represent situations in which part of the reclassified securities either matured or were sold until the end of 2022.

Figure B.2: Histogram of amounts reclassified as a % of HTM securities at the end of 2022

