The Stability of the U.S. Commercial Banks During the COVID-19 Pandemic: Impacts and Implications from Regulator and Management Decisions

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ABSTRACT

U.S. banking regulators have made multiple regulatory interventions for the banks to lessen the impacts of the COVID-19 Pandemic on the U.S. financial services industry. These actions have directly impacted the banks' quarterly reporting of provision expenses, allowance for loan losses, and the capital ratios. The actions of the regulators have created an unprecedented opportunity for bank management to understate provision expense and therefore overstate earnings. History has shown that the failure of multiple small banks or one too big to fail bank could have catastrophic effects for the global markets. The regulator statements appear to show active attempts to slow the impact of the pandemic on the banks and therefore seem to show the regulators' stakeholder view. Statistical analysis from a large sample of the top U.S. banks has revealed statistically significant increases in bank capital ratios and no increase in provisions, allowance or losses. Regulatory changes are then impacting the banks' financials and are providing some opportunity for moral hazard on the part of bank management.

KEYWORDS: COVID-19 Pandemic, Capital Ratios, Bank Failure, Provision Expense, Moral Hazard, Regulator Response

INTRODUCTION

The COVID-19 pandemic has substantially impacted the United States' financial environment. The direct impacts of the financial turmoil should be visible in the bank quarterly financial reporting. However, U.S. regulators have taken specific actions to help mitigate those financial impacts and lessen the chance for bank failures. Some of the interventions include the temporary softening of capital requirements, troubled debt reporting, the impact of income reporting has been temporarily lessened, and credit restrictions have been temporarily weakened. All of these regulatory changes are having direct impacts on banks' reporting and provide some opportunity for moral hazard on the part of bank management. Additionally, as agents of the banks that

employ them, bank managers have a duty to their shareholders. Their decisions during the pandemic can have both short term and far reaching impacts on their banks and society. A decision to over report income in the current period could mean losses in future periods.

Effective for the fiscal years beginning after December 15, 2019, banks implemented their loan loss reserves under the new GAAP ASU 326 called Current Expected Credit Losses (CECL). CECL requires an advanced impairment model. The new model is based on expected losses rather than the incurred losses from the previous model. The new guidance was expected to dramatically impact the reporting of credit losses. 326-30-9 states:

> An entity shall not rely solely on past events to estimate expected credit losses. When an entity uses historical loss information, it shall consider the need to adjust historical information to reflect the extent to which management expects current conditions and reasonable and supportable forecasts to differ from the conditions that existed for the period over which historical information was evaluated.

With this requirement, there would be an expected increase in loan reserves caused by a global pandemic as a contributing factor.

It would be expected that COVID-19 impacts on bank customers' financials would cause default losses. Under normal U.S. GAAP requirements, banks would record additional provision expense and allowance for loan losses (ALLL) to cover customer expected defaults under the U.S. GAAP rule for Troubled Debt Restructures (TDR). Codification 310-40-35-8 states that a loan is impaired when a creditor determines that part or all the amounts owed on a loan will not be collected. It is then deemed and reported as a TDR. The rule also states that provision expense and ALLL would then be recorded. Because provision expense would decrease income, an accompanying impact on capital ratios would be expected. Additionally, CECL would require all loan loss models to incorporate, not only the historical losses, but also the current financial conditions including the pandemic effect on borrowers. However, Section 4013 of the Cares Act suspended through December 31, 2020, the U.S. GAAP requirement for TDR's for any determination of impairment as the results of COVID-19 effects (H.R. 745). The effects of this temporary change may be the underreporting of provision expense with allowance for loan losses and the overreporting of the bank capital ratios. These interventions have created unprecedented opportunities for some bank management to overreport income.

Additionally, the too big to fail banks have a requirement to hold capital and to report the supplementary leverage ratio (SLR) (Bernanke, 2010). COVID-19 lending programs and expected losses, would under normal circumstances affect the balances held by those banks. To combat the effects on the SLR ratio for the too big to fail banks, the regulators temporarily are allowing the exclusion of federal reserve deposits and U.S. treasuries in the calculation of the SLR. These changes for the capital ratios make them

not comparable to previous quarters and not representative of total risk for banks. Capital ratios with loan risk have been found to be the most accurate predictors of bank failures (Seelye, 2018). The temporary changes to the calculation and reporting of the ratios make them less representative of the actual risk at the banks and less accurate of predictors of possible failures for the banks.

Current interventions by banking regulators and bank management will, in all likelihood, have long-term effects on the U.S. Commercial Banking industry. Regulators appear to favor the "Stakeholder" approach to the various temporary rule changes and banking reviews. Stakeholder theory posits the idea that the conflicting claims for all stakeholders would be considered in decisions. In this case, regulators would review the offsetting effects on taxpayers, banks, markets, customers, etc. for the decisions (Freeman, 2001). However, this approach may also create a moral hazard opportunity for banks by allowing management to ignore current conditions and underreport troubled customers. In the financial reporting context, moral hazard is the risk that a party did not enter a contract in good faith or has provided misleading information about its assets, liabilities, or credit capacity (Kenton, 2020). Management of banks, due to some of the regulatory changes, may have the opportunity to change their quarterly reporting to make them appear more profitable or stable during the pandemic. Through either direct intervention or encouragement by regulators, banks can under report provision expense and allowance for loan and lease losses, over report capital ratios, and lend to more risky borrowers without additional review. Each of these decisions could impact bank stability and profitability in the future. Also, these changes appear to directly reduce the big banks' incentives to mitigate risk creating a moral hazard for their lending and other programs during this time. Moral hazard involves moving risk of losses from one party to another (Arrow, 1963). These interventions have moved the risk of failure to bank investors while potentially rewarding bank management for short term returns.

Some Changes and Announcements by Regulators in Response to COVID-19 Pandemic

On May 15, 2000, the Federal Reserve Banks (FRB) in conjunction with the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of Currency (OCC) issued a temporary change to one of the bank capital ratios to increase banks' ability to lend to households and businesses during the crisis. The ratio normally requires banks to hold a minimum ratio of three percent against their total risk weighted assets with a more stringent application to the largest financial institutions. The temporary suspension went into effect on March 31, 2020 and will remain in effect for twelve months. The new regulation allows banks to exclude U.S. Treasury securities and deposits at the Federal Reserve Banks from the calculation of the ratio to help facilitate lending.

Banking regulators also modified the liquidity coverage and bank capital ratio (LCR) for those banks participating in COVID-19 governmental lending programs including the Money Market Mutual Fund Liquidity Facility and the Paycheck Protection Program Liquidity Facility. The interim rule's stated intent is to "neutralize the LCR impact

allocated with non-recourse funding provided by these facilities" (Liquidity Coverage Ratio Rule, May 5, 2020). However, these loans are reported in the banks' balance sheet. Also, the banking regulators issued a revised statement on loan modifications to encourage banks to work with customers affected by COVID-19. The press release states:

> The agencies encourage financial institutions to work with borrowers and will not criticize institutions for doing so in a safe and sound manner. The agencies view prudent loan modification programs offered to financial institution customers affected by COVID-19 as positive and proactive actions that can manage or mitigate adverse impacts on borrowers and lead to improved loan performance and reduced credit risk. (Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, National Credit Union Administration & Office of Comptroller of the Currency, May 2020)

Another move made by the FRB was the removal of the temporary suspension on the reserve requirements for banks further impacting the capital ratios. The article *February 2020 Senior Finance Officer Survey* (s.a.a., February, 2020), published by the FRB, discussed the impact of COVID-19 as of February 2020, surveying the U.S. banks holding 75 percent of the total banking reserve balances in the United States. The survey as of February found the majority of respondents had not altered their reserve management strategies. Subsequently, on March 15, 2020, the Federal reserve reduced the reserve requirements.

The banking regulations, after the 2008-2009 downturn, have restricted bank lending for higher risk customers and businesses. However, the FRB in conjunction with the other regulatory bodies issued their position for offering "responsible small-dollar loans" (Board of Governors, May 2020). It encourages banks, saving associations and credit unions to offer loans specifically in response to COVID-19. Due to the current economic conditions, these loans would be much higher risk than normal lending, increasing bank failure risk.

During normal economic conditions, banks are required to report their troubled debt restructurings (TDR) giving visibility for investors and regulators into potential loan losses. However, the "Cares Act" H.R. 749 allowed the banks to elect to suspend the requirements under U.S. GAAP for loan modifications related to COVID-19 that would normally be reported as TDR and banks can elect to suspend determination for loans for impairment for accounting purposes.

On May 14, 2020, the FRB published a report on the economic well-being of U.S. households. This found, "financial conditions changed dramatically for people who experienced job loss or reduced hours during March 2020 as the spread of COVID-19 intensified in the United States" (Board of Governors, May 14, 2020). Therefore, loan losses and loan risk are expected to increase over the next few quarters, increasing the potential for bank failures.

LITERATURE REVIEW
Capital Requirements

In the United States, commercial bank deposits are insured to insulate the customers from any effects of bank failures. This insurance provides an incentive to banks to increase their risk profile. To offset this incentive, capital regulations have been established. Peltzman (1970) explained the difference between banking and most other industries relate to the relative importance of the capital to banks. The more the capital a bank has, the more the value of its assets can fall before depositors incur losses. Peltzman states there is no evidence that bank investment behavior is affected by the standards set by the government regulations. Per Peltzman (1976), the banks substitution of deposit insurance for bank capital has caused an illusion of a bank capital problem (p. 20-21). Seelye (2018) wrote capital ratios with loan risk were the most effective predictors of bank failure.

Former Federal Reserve Chairman, Tarullo wrote that a rationale for capital ratios is that the government can use them to reduce the chance of bank failures that cause significant negative externalities. With that, the most obvious external cost would be the potential for systemic risk. A bank failing might endanger another bank that has extended credit to the first bank through the interbank lending market or is expecting funds from the first bank for the accounts of its customers through the payment system. He wrote: “Since the social costs of widespread financial instability would be substantial and would not be borne solely by the shareholders and creditors of the bank whose failure triggered the crisis, the government might justify requiring higher levels of capital as an effort to align the social benefits and costs of the bank’s operations more closely (2008, para. 338).”

Basel III is an international agreed upon standard developed by the Basel Committee on Banking Supervision. It was issued in response to the financial crisis of 2007-2009 and aims to strengthen the regulation supervision and risk management of banks. Like all the previous Basel standards, Basel III included minimum requirements with apply to internationally active banks. Members are committed to applying the standards in their jurisdiction (BIS, 2020). On April 8, 2014, the Office of the Comptroller of the Currency (OCC), the Board of Governors of the Federal Reserve System (Board), and the Federal Deposit Insurance Corporation (FDIC) implemented the Enhanced Supplementary Leverage Ratio final rule. This rule applies to the largest banks and established a minimum supplementary leverage ratio of 3 percent, consistent with the minimum leverage ratio adopted by the Basel Committee on Banking Supervision. The final rule establishes enhanced supplementary leverage ratio standards for covered BHCs and their subsidiaries. They must also maintain a leverage buffer of tier 1 capital in an amount greater than 2 percent of its total leverage exposure is not subject to limitations on distributions and discretionary bonus payments under the final rule. (Federal Register, May 1, 2014)

Stakeholder Theory

Ansoff (1965, 1976), one of the first authors of stakeholder theory, wrote that the objectives of the firm should be derived from balancing the conflicting claims of the various "stakeholders" in the firm: managers, workers, stockholders, suppliers, vendors. Cyert & March (1963) expanded this theory and explained that the objective of a firm is to meet the needs and purposes of those who participate in it. They explained that a corporation is a part-oriented organization that serves the purposes of all its participants and those affected by the corporation's behavior. Taylor (1976) expanded the power of stakeholders to help or damage a business. Ackoff (1974) and Ackerman (1975) integrated the stakeholder theory of Ansoff with the profit maximization theory of Friedman.

Freeman (1984), Donaldson & Preston (1995), and Freeman, Harrison & Wicks (2007) further explained how stakeholder theory is defined today and linked business success with a stakeholder perspective. In this, a focus on stakeholders' interests helps a firm create value for both the firm and the stakeholders. Per Freeman, in the traditional management concepts, the shareholders or stockholders are the owners of the company, and the firm has a binding financial obligation to put their needs first and to increase value for them. However, in direct contrast, stakeholder theory argues that there are other parties involved: including governmental bodies, political groups, trade associations, trade unions, communities, financiers, suppliers, employees, customers and even competitors are counted as stakeholders. The parties' status is derived from their capacity to affect the firm and its other stakeholders. Traditional focus of stakeholder theory has been on corporate managers and corporate theory. However, Freeman (2016) wrote that stakeholder theory would apply to regulators. Per the author, this theory would apply to anyone including regulators that had to decide weighing the impact on multiple parties. Seelye (2018) expanded this concept to apply the theory specific to regulatory capital decisions.

Agency Theory

Principals (wealth-maximizing shareholders) want agents (managers) to adopt policies that will maximize their wealth (Dye, 1985). Agency theory attempts to explain the relationship (costs) between the principals of a firm and their agents. Jensen and Meckling (1976) found that agency costs exist anytime there is a separation of ownership and control – the principal and agent are not the same people. A profitable banking industry minimizes economic shocks and contributes to the stability of the monetary policy and the financial system (Palia & Porter, 2007). "The essence of the problem between bank managers and shareholders are mainly due to bank managers being reluctant or unwilling to increase banks risk to the level that would maximize shareholders' wealth" (Darayseh & Chazi, 2018).

At the beginning of the 21st century, financial institutions were achieving tremendous success through risk taking behavior: "Risk-seeking behavior can potentially earn greater profits during an economic expansion, but may lead to failure when the expansion ceases" (Trendowski & Rustambekov, 2017). Prior to the 2008 financial crisis, the United States banking industry enjoyed a financially stable decade following

the deregulation that was occurring in the financial services industry (Bolton et al., 2016; Valdez & Molyneux, 2015). Bank managers (i.e. agents) maximized their utility in the form of bonuses by trying to make huge short-term profits at the expense of long-term risk (i.e. effecting principals). After receiving bonuses, the managers (i.e. agents) are no longer accountable for their risk seeking behavior. The short-term strategies that were employed before the financial crisis resulted in a strong stock value decline during the crisis (Campbell & Cocco, 2015). In the aftermath of the 2008 financial crisis, the United States endured its third highest rate of bank failures since the establishment of the Federal Reserve in 1913 (Acharya & Yorulmazer, 2008; Ng & Roychowdhury, 2014).

Too Big to Fail Banks

On September 2, 2010, former Federal Reserve Chairman Ben S. Bernanke spoke on the 2008-2009 financial crisis. In this speech, he addressed the concept of a too big to fail bank and what this encompassed. He said: “A too-big-to-fail firm is one whose size, complexity, interconnectedness, and critical functions are such that, should the firm go unexpectedly into liquidation, the rest of the financial system and the economy would face severe adverse consequences.” He further explained that governments provide support to too-big-to-fail firms in a crisis not out of favoritism or particular concern for the management, owners, or creditors of the firm, but because failure to do so would have consequences for the broader economy. He said, some ways of avoiding failure include facilitating a merger, providing credit, or injecting government capital, all of which protect at least some creditors who otherwise would have suffered losses.

Moral Hazard

Moral hazard within economics was addressed by Arrow (1963). He wrote that it did not imply fraud or immoral behavior. It instead represented the economic inefficiencies or externalities that would occur when risks, through a decision of one party, are moved over to a different party. Hellmann, Murdoch and Stiglitz (2000) discussed that rate competition between banks induces a moral hazard. Per the authors, making good loans is not profitable when banks are incentivized against rate competitions. Heppke-Falk and Wolff (2008) using an in-situation example in Germany, wrote that banks that expected a bail-out got a lower, not higher, risk premium from investors. Per the authors, this result provided strong evidence for investor moral hazard in the German federation. Allen, Carletti, Goldsteing and Leonello (2015) challenged the view that moral hazard is increased by bailouts by contrasting the trade-off costs for letting banks fail with the cost of the actual bailout. Crawford (2015) wrote that moral hazard for banks being the priority but should be more worried about impacts of failures. He wrote regulators use bailouts from stopping panics in the markets. With that, regulators are more likely to err on the side of saving a weak firm than to allow the panic in the markets.

DATA COLLECTION AND RESEARCH METHODOLOGY

This study used data from 68 of the largest 100 U.S. banks as defined by the Federal Reserve Statistical Release. The study excluded any banks whose asset size changed by more than 30% due to merger or acquisition activity. As these banks encompass the majority of the assets for the US market and have high levels of regulatory oversight

due to their size, they were used as a proxy for well preforming banks in the industry. All of the reviewed banks included in the study are within the top 100 largest banks in the U.S. reporting financials utilizing U.S. GAAP with financials available for March 31, 2020, June 30, 2020 and September 30, 2020. We used statistical testing to evaluate the comparisons between the three quarters' reporting. The research hypothesis considered the change in the ratio quarter over quarter.

With normal GAAP requirements, the expected default amounts for customers requesting modification of their loans due to layoffs, financial difficulties, etc. would be reported and recorded as troubled debt restructures. These would increase provision expense with an offsetting increase to allowance for loan losses. The Cares Act suspension of GAAP became effective on April 1, 2020. To review the effects of the suspension of the TDR process for COVID-19 modifications, we reviewed provision expense changes from Q1-2020 to Q2-2020 and for Q1-2020 to Q3-2020. Also, we reviewed the ratios of allowance for loan losses/total assets, provision expense/allowance for loan losses, and provision expense/total assets to determine if any changes in the provision expense were caused by a normal increase in loans or if there was a proportional increase in the allowance for loan losses.

Ultimately, the recording of provision expense decreases income for the period which subsequently decreases equity (capital). Therefore, to review the effects of the regulator interventions, we also reviewed the common equity Tier 1 capital/risk-based assets and total capital/risk-based assets. Included with the income effect of the provision expense, the regulators also specifically adjusted the calculation of the supplementary leverage ratio (SLR) for too big to fail banks. We reviewed the impact of their changes on the ratio quarter over quarter.

Finally, to give a basis for normal changes without the regulator interventions, we evaluated the total debt/total equity ratio quarter over quarter. This would give an estimation of what actual capital ratio changes would have been expected with the regulator interventions.

The hypotheses, stated in the null, for this analysis are:
$H1_0$ - Provision expense would not significantly change quarter over quarter
$H2_0$ - Allowance for loan losses as percentage of total assets would not significantly change quarter over quarter
$H3_0$ - Provision expense as a percentage of allowance for loan losses would not significantly change quarter over quarter
$H4_0$ - Provision expense as a percentage of total assets would not significantly change quarter over quarter
$H5_0$ - Common Equity Tier 1 Capital as a percentage of risk-based assets would not significantly change quarter over quarter
$H6_0$ - Total Capital as a percentage of risk-based assets would not significantly change quarter over quarter
$H7_0$ - Supplementary leverage ratio would not significantly change quarter over quarter

$H8_0$ - Total liabilities as a percentage of Total Equity would not significantly change quarter over quarter

EMPIRICAL RESULTS

Table 1: Decriptive Statistics of Q2-2020 v. Q1-2020

Change	Mean	Median	StdDev	Min	Max
Provision Expense	36.70%	0.055	1.271	(6.515)	0.804
ALLL/Total Assets	(0.001)	(0.001)	0.004	(0.013)	0.020
Prov/ALLL	0.705	0.022	5.444	(1.178)	45.534
Prov/Total Assets	0.000	0.000	0.002	(0.005)	0.007
Tier 1 Capital Ratio	0.370	0.300	1.182	(3.610)	4.500
Total Capital Ratio	0.746	0.500	1.241	(1.580)	5.750
SLR	0.751	0.700	0.836	(0.500)	2.600
Debt/Equity	0.253	0.380	0.731	(3.926)	1.269

Table 2: Decriptive Statistics of Q3-2020 v. Q1-2020

Change	Mean	Median	StdDev	Min	Max
Provision Expense	64.67%	(0.708)	0.333	(1.214)	0.566
ALLL/Total Assets	(0.003)	(0.001)	0.013	(0.107)	0.012
Prov/ALLL	0.915	0.189	5.563	(0.431)	45.720
Prov/Total Assets	(0.002)	(0.002)	0.002	(0.013)	0.000
Tier 1 Capital Ratio	0.766	0.700	1.780	(6.190)	6.870
Total Capital Ratio	1.051	1.110	1.853	(5.800)	6.890
SLR	0.758	1.275	0.147	(0.600)	0.800
Debt/Equity	0.106	0.262	0.872	(4.548)	1.722

Statistical analysis was performed reviewing the changes between the base quarter of Q1-2020 and both Q2-2020 and Q3-2020. For all hypotheses, we used the t-test to compare the quarterly data. For the Supplemental Leverage Ratio (SLR) in hypothesis 7, we also tested using the Wilcox Sign Ranked test. Since this ratio covers only the banks larger than $400 billion in assets, we felt the non-parametric Wilcox test would provide additional robustness due to the small sample size.

In hypothesis 1, provision expense decreased by 37% between Q1-2020 and Q2-2020 reporting but was not statistically significant at the 95% level causing us to fail to reject the null hypothesis. Provision expense decreased by 65% between Q1-2020 and Q3-2020 at a statistically significant level causing us to reject the null hypothesis. We would have expected provision expenses to increase, but there was a large variation on how banks approached their pending losses including some banks decreasing and some banks increasing their expense quarter over quarter. For TDR loan modifications due to

difficulties for the customer, US GAAP normally requires an adjustment to provision expenses (Codification 310-40-35-8). With the reported unemployment and turmoil in the markets, troubled debt restructurings would be increased. However, with the suspension of the rule through the end of 2020, banks are not required to book the additional provision expenses for those modifications. The change for the provision expenses for the well performing banks was as expected given the regulatory change to the rule.

The allowance for loan losses as a percentage of total assets ratio tested in hypothesis 2, had a significant negative change at the 95% level for the comparison between Q1-2020 and Q2-2020 causing us to reject the null hypothesis. For the comparison between Q1-2020 and Q3-2020, the negative change was not statistically significant causing us to fail to reject the null hypothesis. The financial impact of COVID-19 would normally have caused an increase in the allowance for loan losses at banks. But, with the suspense of the TDR GAAP, we expected less allowance for loan losses to be recorded. Our result showed the changes in the allowances were not proportional to the changes in asset growth.

For hypothesis 3, provision expense as a percentage of allowance for loan losses change was not significant for either comparison causing us to fail to reject the null hypothesis. Provision expense and allowance for loan losses in generally proportional in their change. When an entry is booked to increase provision expense, normally the offset to the entry is allowance for loan losses. Therefore, we expect this to be proportional and the results agreed.

The provision expense as a percentage of total assets ratio tested in hypothesis 4 showed a negative change for the Q1-2020 to Q2-2020 comparison but was not significant causing us to fail to reject the null hypothesis. For the Q1-2020 to Q3-2020, there was a statistically significant negative change causing us to reject the null hypothesis. Provision expense is not always proportional in change to total assets as it is with allowance for loan losses. Since provision expense was proportional to total allowance and is not proportional to total assets, the change in the total assets varied from change in allowance balances. This is consistent with hypothesis 2.

Table 3: Hypotheses 1-4 – Provision Expense Analysis

		Q2-2020 v. Q1-2020		Q3-2020 v. Q1-2020	
Hypothesis	**Ratio**	**p-Value**	**Avg Diff**	**p-Value**	**Avg Diff**
H1	Change in Provision Expense	0.1202	-36.70%	0.0023**	-64.58%
H2	ALLL/Total Assets	0.0466**	-0.10%	0.1002	-0.12%
H3	Prov/ALLL	0.2820	70.55%	0.1830	91.46%
H4	Prov/Total Assets	0.2160	-0.03%	0.0000**	-0.22%

For hypotheses 5 and 6, both capital ratios, Tier 1 Capital to Risk-Based Assets and Total Equity to Risk-Based Assets, showed strong statistical significance for both

comparisons allowing us to reject the null hypothesis. The suspension of the TDR modifications would have impacted banks risk-based assets. Additionally, the temporary changes in the capital ratio calculations further impacted the reporting of the ratios. With these changes, we expected the reporting of the ratios to increase; and, our results showed the performing banks' capital ratios increased to a level even greater than expected. Unfortunately, this result means capital ratios are no longer comparable quarter over quarter.

Table 4: Hypotheses 5-6 – Capital Ratios

		Q2-2020 v. Q1-2020		Q3-2020 v. Q1-2020	
Hypothesis	**Ratio**	**p-Value**	**Avg Diff**	**p-Value**	**Avg Diff**
H5	Tier 1/Risk-Based Assets	0.0114**	37.01%	0.0009**	0.77%
H6	Total Equity/Risk-Based Assets	0.0000***	74.57%	0.0000***	1.05%

Hypothesis 7 tested the SLR ratio, required in the reporting of the too big to fail banks. Both the t-test and the Wilcox tests showed the SLR had a statistically significant change for both comparisons. With the temporary changes in the calculation by the regulators to remove some assets from the denominator of the ratio, we expected this ratio to increase. And, our results revealed this result. Unfortunately, this result removes the comparability and reliability of the ratio quarter over quarter.

Table 5: Hypothesis 7 – SLR Ratio

		Q2-2020 v. Q1-2020		Q3-2020 v. Q1-2020	
Hypothesis	**Ratio**	**p-Value**	**Wilcox**	**p-Value**	**Wilcox**
H7	SLR	0.019**	0.015**	0.0502*	0.0590**

Finally, hypothesis 8, the ratio of Total Debt to Total Equity, showed a statistically significant change for the Q1-2020 to Q2-2020 comparison but not for the Q1-20202 to Q3-2020 comparison. Given the turmoil in the financial markets, this ratio was expected to increase, and our results matched this expectation. However, during normal reporting requirements, increases in the Total Debt to Total Equity ratio would mean a decrease in the Total Equity to Risk-Based Assets ratio but is not exactly proportional. This is because Total Assets equals Total Liability minus Total Equity. However, due to the interventions by the regulators on the capital ratios, this comparability is no longer possible.

Table 6: Hypothesis 8 - Debt/Equity Change

Q2-2020 v. Q1-2020				Q3-2020 v. Q1-2020			
Hypothesis	**Ratio**	**p-Value**	**Avg Diff**	**Hypothesi**	**Ratio**	**p-Value**	**Avg Diff**
H8	Debt/Equity	0.0051***	25.30%	H8	Debt/Equity	0.3217	10.64%

DISCUSSION

With normal GAAP requirements for TDR's and with the continued negative impacts of COVID-19 on employment, banks would normally have increased their provision expense between March 31 to September30, 2020. Additionally, the CECL GAAP requirements implemented in 2020 would indicate a requirement to take current economic conditions and other inputs into the determination of allowance for loan losses and provision levels. However, the analysis showed a decrease in the provision levels for both comparisons and was a statistically significant decrease in the comparison between Q1-2020 and Q3-2020

The provision to allowance ratio comparisons both showed an increase in the proportion but not to a level of statistical significance. The provision to total assets ratio comparison showed decreases in the average but was only significant for the Q1-2020 to Q3-2020 comparison. This indicates that the chance in provision expense was not proportional between allowance and assets. All capital ratio comparisons increased to levels of statistical significance. This indicates a clear impact of the provision adjustments on the reporting income and capital for the banks. These results reveal the regulator interventions have directly impacted the financial reporting for the banks. However, at some point, the interventions will cease creating an expected volatility in the financial sector reporting directly caused not only by the pandemic but also the regulators' "good intentions".

CONCLUSION

Given the current economic conditions, provision expense and allowance for loan losses would be expected to increase due to increased risk for customer defaults. This would then cause the capital ratios to decrease. However, the analysis showed that, including the regulators' interventions, banks did not record additional provision expenses and ALLL related to the COVID-19 loan modifications. Additionally, the capital ratios showed statistically significant increases. This was unexpected with significant increases in the debt to equity. Banks have statistically altered their debt and equity structure. But this is not revealed in the reported capital ratios. Unfortunately, this means the ratios are not representative of the banks' actual risk for investor caused by potential failure.

Additionally, the regulator interventions would have provided direct opportunities for moral hazard on the part of bank management. Banks might have a short-term opportunity to manipulate earnings by underreporting provision expense to yield higher short-term performance for their bank. This will eventually need to be corrected. This could mean increased volatility and the possibility of bank failure beyond the normal failures due to the pandemic losses.

Regulators, through their interventions, have increased the risk of failure and moral hazard at the banks. However, the risk to the financial structure and the impacts on the U.S. financial system of markets due to multiple or one large bank failure could be catastrophic. With this, the regulator decisions might be considered in the best interest of the U.S. financial system. However, additional regulatory review of the banks should

be completed going forward to prevent the impacts of the regulator changes from impacting the banking industry over the long term. Future research will be needed after the end of the pandemic to review the long-term impacts caused by the bank regulators' interventions.

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