

State University of New York College at Buffalo - Buffalo State College

Digital Commons at Buffalo State

Applied Economics Theses

Economics and Finance

12-2022

A Comparison of M&T Bank and Citizens Bank Net Income Changes During the Coronavirus Pandemic

Alex R. Glasier

Buffalo State College, glasiear01@mail.buffalostate.edu

Advisor

Xingwang Qian

First Reader

Xingwang Qian

Second Reader

Theodore Byrley

Third Reader

Ted Schmidt

To learn more about the Economics and Finance Department and its educational programs, research, and resources, go to <https://economics.buffalostate.edu/>.

Recommended Citation

Glasier, Alex R., "A Comparison of M&T Bank and Citizens Bank Net Income Changes During the Coronavirus Pandemic" (2022). *Applied Economics Theses*. 49.
https://digitalcommons.buffalostate.edu/economics_theses/49

Follow this and additional works at: https://digitalcommons.buffalostate.edu/economics_theses



Part of the [Accounting Commons](#), [Corporate Finance Commons](#), [Econometrics Commons](#), [Economic Theory Commons](#), [Finance Commons](#), and the [Finance and Financial Management Commons](#)

State University of New York College at Buffalo – Buffalo State College
Digital Commons at Buffalo State

Applied Economics Thesis

Economics and Finance

12-2022

*A Comparison of M&T Bank and Citizens Bank Net Income Changes During the
Coronavirus Pandemic*

Alexander R. Glasier

State University of New York College at Buffalo – Buffalo State College
glasiear01@mail.buffalostate.edu

Advisor

Xingwang Qian

First Reader

Xingwang Qian

Second Reader

Theodore Byrley

Third Reader

Ted Schmidt

Department Chair

Victor Kasper

Recommended Citation

Glasier, Alexander R. “A Comparison of M&T Bank and Citizens Bank Net Income Changes During the
Coronavirus Pandemic” (2022). *Applied Economic Theses*.

https://digitalcommons.buffalostate.edu/economics_theses

Follow this and additional works at: https://digitalcommons.buffalostate.edu/economics_theses



Part of the [Public Economics Commons](#)

A Comparison of M&T Bank and Citizens Bank Net Income Changes to the Coronavirus Pandemic

by Alexander Glasier

An Abstract of a Thesis in Applied Economics

Submitted in Partial Fulfillment
Of the Requirements
For the Degree of

Masters of Arts

December 2022

State University of New York
College at Buffalo
Department of Economics and Finance

Abstract

The COVID-19 pandemic had a tremendous impact on every aspect of life, particularly within the world of banking & finance. All banks saw sharp drops in their stock prices and net income, but my hypothesis is that larger, more established banks maintained more stability during 2020 than smaller banks. This paper analyzes the income statements and balance sheets of M&T Bank (an older, more well-established bank) and Citizens Bank (a less-established bank) during this difficult time.

The first part of my thesis describes similarities and differences between M&T Bank and Citizens Bank. I explain how these similarities and differences may have had an impact on how each bank responded to the pandemic and what resources were available to them during that time. I conclude that M&T Bank has a more solid reputation and more resources available to them, primarily due to their long-standing reputation in comparison to Citizens Bank.

The second part of my thesis begins by analyzing the significant difference in the percentage change in net incomes between the two banks in 2021, with Citizens Bank's net income increasing by 119% from 2020 compared to M&T Bank's 37% increase. I ran a regression model and concluded several variables contributed to this difference. With a time dummy variable in the econometric model, I conclude that M&T Bank was indeed more stable than Citizens Bank with regards to maintaining a stable net income quarter-to-quarter. In other respects, I conclude that the impact of the pandemic on M&T Bank and Citizens Bank were fairly similar, although accounting differences and a lack of insider information may have manipulated the final results.



Alexander Glasier

1-9-2023

Date

State University of New York
College at Buffalo
Department of Economics and Finance

**A Comparison of M&T Bank and Citizens Bank Net Income Changes to the Coronavirus
Pandemic**

A Thesis in Economics

by

Alexander R. Glasier

Submitted in Partial Fulfillment

Of the Requirements
For the Degree of

Master of Arts

December 2022

Approved by:

Xingwang Qian, Ph.D
Professor of Economics
Chairperson of the Committee/Thesis Advisor

Victor Kasper, Jr., Ph.D
Professor of Economics
Chairperson of the Department of Economics and Finance

Kevin Miller, Ed.D
Dean of the Graduate School

Thesis Committee Signatory

Date of Approval:

12/20/2022

Xingwang Qian

Xingwang Qian, Ph.D.
Professor of Economics and Finance

12/24/22

Charles F. Byrley

Theodore Byrley, Ph.D.
Professor of Economics and Finance

12/21/22

Ted Schmidt

Ted Schmidt, Ph.D.
Professor of Economics and Finance

Acknowledgements

I am extremely grateful to Professor Xingwang Qian, my thesis advisor. It has been a long journey since I began this program, and the completion of my thesis would not have been possible without your guidance and support. I would also like to express my appreciation to Dr. Victor Kasper for his input and assistance with the econometric portion of my thesis. I would also like to thank both Dr. Theodore Byrley and Dr. Ted Schmidt for their valuable advice on my thesis. Last, but not least, thank you to my brother Adam for reading over my thesis for any grammatical errors, as well as my family for their moral support and motivation.

Table of Contents

Introduction	1
Data Collection	3
Context.....	4
“Too big to fail”	5
Similarities.....	8
Differences.....	11
Data Review	17
National Impact.....	18
Net Income.....	22
Review of Literature.....	23
Test of Statistical Significance.....	29
Conclusion.....	36
Provisions for Credit Losses.....	38

Acronyms

SEC – Securities and Exchange Commission

CFPB – Consumer Financial Protection Bureau

RWA – Risk-weighted asset

FDIC – Federal Deposit Insurance Corporation

RBS – Royal Bank of Scotland

DUS – Delegated Underwriting & Servicing

M&T – Manufacturers and Traders

GSE – Government-sponsored enterprise

DFS – Department of Financial Services

GAAP – Generally Accepted Accounting Principles

C&I – Commercial & industrial

PPP – Paycheck Protection Program

TBTF – Too big to fail

NBER – National Bureau of Economic Research

1. INTRODUCTION

My motivation for choosing this thesis topic was due to a curiosity about the extent to which older, more established banks handle economic volatility compared to their smaller counterparts. Recessions similar to the 2008-09 financial crisis and the coronavirus pandemic of 2020 (which will be studied in this paper) may impact smaller financial institutions more harshly than larger financial institutions, which can lead to a misallocation of resources that could harm the overall economy. In countries such as India, for example, a University of Florida article discusses how the stability of large banks may have a positive impact on the agricultural sector, but comes at the expense of the manufacturing sector in India, which relies more heavily on smaller financial institutions. This "...decline in capitalization causes cascading effects on the industry and country as a whole."¹

As banks grow and increase their pool of capital and resources, they may also utilize their capital to further solidify their position as an established corporation that, for purposes of economic stability, cannot fail. This phenomenon originates from the concept that certain banks are simply "too big to fail" and the dissolution of the bank would cause disastrous economic issues. Therefore, these banks would be allowed to operate in a risk-free environment, knowing their existence is solidified. Details of the risks of categorizing banks as "too big to fail" will be explained later in this paper.

The result of these two actions at play is that, in many cases, well-established banks with large sums of capital to draw from are much more stable when economic downturns occur. This

¹ "New Study Highlights the Real Cost of Political Interference in Banking." 2020. UF Warrington News. February 11, 2020. <https://news.warrington.ufl.edu/faculty-and-research/new-study-highlights-the-real-cost-of-political-interference-in-banking/>.

occurs even when the evidence suggests the funds should be funneled in a different direction.

The result is that banks and other financial institutions who do not have large amounts of capital to fall back on may have to downsize or dissolve altogether, leaving larger and more established financial institutions in a stronger position.

To control for as many variables as possible, this paper will examine the similarities and differences in the responses of M&T Bank and Citizens Bank to the coronavirus pandemic.

These two banks were chosen due to their strong similarities in terms of size and geographic influence. Both banks are headquartered and established in the northeastern United States and have similar levels of assets and liabilities. The primary difference, however, is the solidity of both banks. M&T Bank, being an older bank with a longer presence on the stock market, is more established and has a longer track record than Citizens Bank, which has only been an independently-run bank since 2015. The details and histories of both banks will be further explained later. This paper will look into how M&T Bank (a more established bank) and Citizens Bank (a less-established bank) reacted to the coronavirus pandemic. Specifically, this paper will analyze how their balance sheets and income statements were affected. Econometric modeling of the net incomes of both banks from 2015 through 2021, measured against several variables that impact banks' net income, will provide the parameters and estimates to be interpreted. These end results should give us conclusive evidence if banks with more capital maintained more stability during the 2020 coronavirus pandemic, holding as many other variables as possible constant.

1.1 Data Collection

The large majority of the data collected for this paper can be found in the 10-K forms that M&T Bank and Citizens Bank submits to the Securities and Exchange Commission (SEC) on a yearly basis. These forms fluctuate around 200 pages long and contain very specific details about the banks' overall financial status for the given year, which can take the form of balance sheets, financial statements, and descriptive paragraphs. In order to form a general trend of the direction certain variables were going in prior to the coronavirus pandemic, 10-K forms were used dating back to 2015. In addition, data were collected from 10-Q forms, which are similar to 10-K forms with the exception that they detail the financial status of a given quarter, rather than a year. The 10-Q forms for the 1st and 2nd quarters of 2020, that being from March 2020 to June 2020, will be cited in this paper for both M&T Bank and Citizens Bank. These are crucial months to investigate how both banks responded to the coronavirus pandemic with regards to their liquidity, credit supply, and other risk factors taken into consideration in analyses such as stress tests. Outside 3rd party citations, such as websites and journals that had no relation to the two banks or any government institution, were kept to a minimum in the Data Review section, except with regards to describing economic events and concepts that are necessary to explain for the purposes of context. This is in order to keep the data, and the subsequent analysis of the results, as accurate as possible.

1.2 Context

Before investigating the impact of the coronavirus pandemic on M&T Bank and Citizens Bank, it is important to properly explain legislation that these banks are subject to. Much of this legislation was brought about resulting from the 2008 recession, and it will be explained later how these new regulations affected the responses from both banks. While there are many similarities between the two banks with regards to the regulation they must abide by, there are some differences that may reveal itself in their responses to the COVID pandemic.

Perhaps the most significant piece of legislation impacting the functions of the financial system was the Dodd-Frank Act, passed in 2010 during the Obama administration. Although it was modified in 2018 by the Trump administration to ease the extent of regulations, many of the measures initially put into law were recovered by the Biden administration in 2021.² These regulations will be more thoroughly explained later. Most notably, the Act permanently increased the maximum deposit limit from its original state of \$100,000 per bank account associated with an FDIC-insured bank or credit union, and increased it to \$250,000.³ In other words, money deposited in an FDIC-insured bank (such as M&T Bank and Citizens Bank) is 100% secure up to \$250,000 in the case of a cyber hack, bank robbery, or other situation in which the bank loses liquidity. The purpose of this is to increase bank liquidity and reduce the likelihood of bank runs.

² Hayes, Adam. 2020. "Dodd-Frank Wall Street Reform and Consumer Protection Act." Investopedia. September 1, 2020. <https://www.investopedia.com/terms/d/dodd-frank-financial-regulatory-reform-bill.asp>.

³ Tumin, Ken. 2012. Review of The \$250,000 Standard Maximum Deposit Insurance Amount Is Permanent. DepositAccounts. March 2012. <https://www.depositaccounts.com/blog/2012/03/the-250000-standard-maximum-deposit-insurance-amount-is-permanent.html>.

In addition, due to the financial crisis of 2008 being caused primarily through overextending credit to subprime mortgages and the inflated credit ratings of these mortgage-backed securities that investment banks purchased, the Act created the Consumer Financial Protection Bureau (CFPB). Among other things, the CFPB more heavily regulated the quality of the mortgages banks were issuing to consumers, making it more difficult for brokers to close subprime loans and earn higher commissions from finalizing those loans.

Through the Volcker Rule portion of the Dodd-Frank Act, the previous financial crisis of 2008 resulted in a deeper separation between the functions of commercial banks and investment banks. According to the 10-K forms provided by M&T Bank and Citizens Bank, while M&T Bank does not engage in proprietary trading to any significant degree, Citizens Bank does not provide any explicit statement about the extent to which they engage in proprietary trading. What constitutes as proprietary trading will be elaborated on later.

1.2.1 “Too Big to Fail”

The concept of a bank being “too big to fail” has been around for decades, but was resurrected during the 2008 recession and the corresponding bailouts to major banks across the nation. According to the Legal Information Institute at Cornell Law School, “Too big to fail” refers to an entity so important to a financial system that a government would not allow it to go bankrupt due to the seriousness of the economic repercussions.”⁴ While this concept typically applies to banks and other financial institutions, firms such as automakers also received this

⁴ Review of Too Big to Fail. 2021. In Legal Information Institute. Cornell Law School. https://www.law.cornell.edu/wex/too_big_to_fail.

designation during the 2008 recession and received bailouts as well. These firms are effectively guaranteed permanent existence due to their critical role in the economic system.

With regards to the ease of regulations during the Trump administration in 2018, one of the most important measures taken was re-defining the measurement of a bank deemed “too big to fail.” Specifically, according to Greg Ryan at bizjournals.com, “Under Dodd-Frank, any bank with more than \$50 billion in assets got the ‘too big to fail’ label. But the new legislation ups that threshold to \$250 billion in assets, freeing Citizens...from the designation.”⁵ This new policy also withdrew M&T Bank from the designation as “too big to fail” with their total assets being more than \$50 billion but less than \$250 billion since 2018. Although the Biden administration reinstated several of the original Dodd-Frank measures upon entering office, these changes were not made until 2021, when recovery from the coronavirus pandemic had been well under way.

The action taken by the Trump administration to increase the threshold of “too big to fail” from \$50 billion to \$250 billion may have had a significant impact on the government’s response to the coronavirus pandemic and their relations with both banks. Although the law was not put into effect for M&T Bank and Citizens Bank immediately, it still occurred before the coronavirus pandemic became an issue in the United States. According to M&T Bank’s 10-K form in 2018, “...the increased asset threshold for bank holding companies with total consolidated assets of \$100 billion or more but less than \$250 billion, including M&T, generally will become effect 18 months after the date of enactment (that is, November 2019).”

⁵ Ryan, Greg. 2018. Review of Citizens, Santander No Longer “Too Big to Fail” under Bill Sent to Trump. Boston Business Journal. May 23, 2018. <https://www.bizjournals.com/boston/news/2018/05/23/citizens-santander-no-longer-too-big-to-fail-under.html#:~:text=Newsletters%20%26%20Subscriptions-,Citizens%2C%20Santander%20no%20longer%20'too%20bi>

In order to understand the impact of the removal of this TBTF designation between 2018 and 2021, it is important to know the implications of being a bank that is “too big to fail.” The Federal Reserve Bank of St. Louis details this in one of their 2016 issues:

- TBTF designation gives a bank free insurance

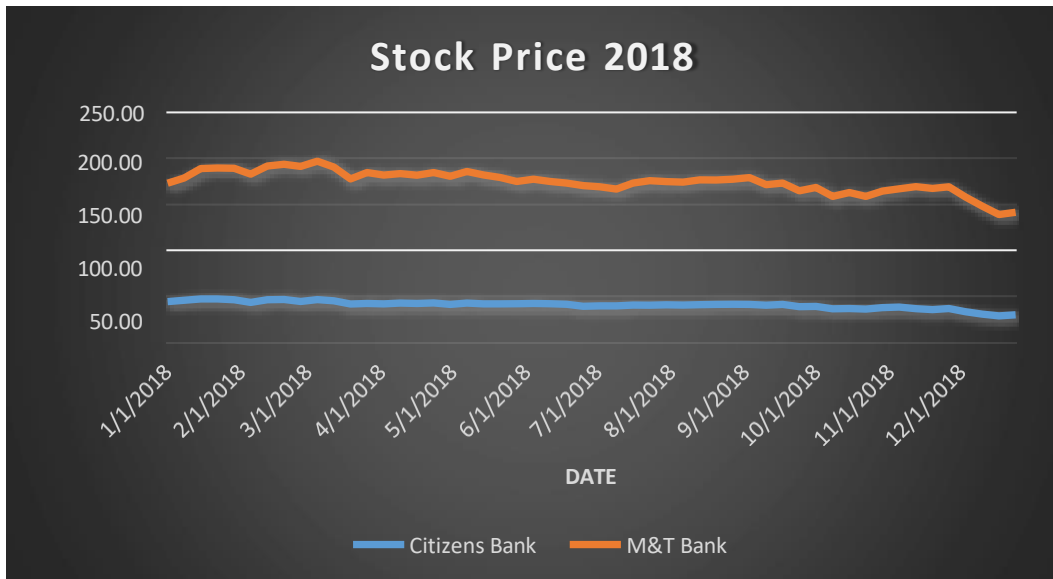
Effectively, a bank given the TBTF designation is fully insured against default, yet pays no premium for this de facto insurance policy. As Christopher Waller explains, “...being provided with this insurance creates moral hazard since bank management can undertake riskier activities and reap the higher returns while shifting the risk of default to the taxpayer.”⁶ Although a variety of market activities, particularly proprietary trading with deposit accounts, are generally prohibited by banks due to the Volcker Rule of the Dodd-Frank Act, the rule does allow exemptions in certain situation, which makes the entire rule subject to interpretation of those exemptions. Two of the most notable exemptions to the Volcker Rule are market making and hedging, which can be broken down further into different types of private equity funds.⁷ These exemptions will be detailed later.

- TBTF designation artificially increases stock & equity price

Upon the announcement that a bank is deemed too big to fail, the absence of default risk will cause upward pressure on their stock & equity prices. Conversely, when this designation is removed, prices will be pushed downward to reflect the increased risk those assets are now in. In practice, however, the removal of M&T Bank and Citizens Bank as being “too big to fail” did not play out in 2018, as seen by stock prices for both banks during the year:

⁶ Waller, Christopher J. n.d. “Who Exactly Benefits from Too Big to Fail?” Research.stlouisfed.org. <https://research.stlouisfed.org/publications/economic-synopses/2016/06/27/who-exactly-benefits-from-too-big-to-fail/>.

⁷ Carney, John. n.d. “What the Volcker Rule Really Means for Wall Street Trading.” CNBC. <https://www.cnbc.com/2013/12/10/what-the-volcker-rule-really-means-for-wall-street-trading.html>.



Source: Yahoo! Finance stock price data

The following sections will detail the similarities and differences between M&T Bank and Citizens Bank, and how these similarities and differences could impact the data analysis portion of this paper.

1.3 Similarities

The following sections of similarities and differences between M&T Bank and Citizens Bank will be based on the 10-K forms provided, particularly the first 20-25 pages that detail the functions of each bank.

- Both have elected to be financial holding companies.

Financial holding companies, by definition, are any kind of corporation that offers both banking and non-banking related services. Banks were given the option to elect to become financial holding companies through the Gramm-Leach-Bliley Act of 1999. Examples of these

non-banking services include sales of insurance products, merchant banking, underwriting of securities and securities trade, and financial and investment advisory services.⁸ This is important to note because revenue generated from these non-monetary functions are not as volatile to the economic climate as functions from direct monetary actions. Therefore, a bank that elects to be a financial holding company can maintain a relatively stable financial position if it devotes a sizable portion of their revenue stream to these non-monetary services.

- Both banks abide by Basel III requirements

These are capital reserve requirements that banks holding a certain amount of assets must abide by. Many of the world's economic powerhouses are a part of the Basel Accords, which are regulations brought forth to maintain international financial stability. While these regulations were initially brought forth in 1974 due to worldwide stagflation, they have been updated regularly to reflect changes in the economic environment. The Basel Accords were expanded in 2008, following the recession, to include a 3rd level of Basel requirements.⁹

According to the 10-K forms provided by both M&T Bank and Citizens Bank, as of 2021, a minimum of 10.5% of their risk-weighted assets (RWAs) must be in tier 1 capital. Tier 1 capital consists primarily of shareholders' equity and retained earnings, which are primary sources of funding for banks under Basel III requirements.¹⁰ In addition, banks such as M&T Bank and Citizens Bank must keep at least 8% of both tier 1 and tier 2 capital into RWAs. Tier 2 capital may include a variety of sources, including, "revaluation reserves, hybrid capital instruments and subordinated term debt, general loan-loss reserves, and undisclosed reserves."

⁸ "Financial Holding Company - Explained." n.d. The Business Professor, LLC.

https://thebusinessprofessor.com/en_US/banking-lending-credit-industry/financial-holding-company-definition

⁹ Review of Basel III: An Essential Guide. n.d. Delphix. <https://www.delphix.com/glossary/basel-iii#:~:text=The%20Basel%20III%20accord%20increased,order%20to%20be%20Basel%20compliant>

¹⁰ Nickolas, Steven. 2021. Review of Tier 1 Capital vs. Tier 2 Capital: What's the Difference? Investopedia. May 29, 2021. <https://www.investopedia.com/ask/answers/043015/what-difference-between-tier-1-capital-and-tier-2-capital.asp#:~:text=Under%20Basel%20III%2C%20the%20minimum,from%20the%20loans%20it%20underwrites>

Because Tier 2 capital is more difficult to calculate, may not appear on financial statements, and are not as easy to liquidate, tier 2 capital is considered a less reliable source of capital for banks. Lastly, Basel III requires banks to hold at least 4% of their tier 1 capital to average consolidated assets, also known as the “leverage ratio.” This is calculated, according to the Bank of International Settlements, by taking the capital measure and dividing it by the exposure measure.¹¹ Specifically, the “capital measure” represents the level of Tier 1 capital a bank holds, and the exposure measure represents all balance sheet assets except for Tier 1 capital.

- Both banks are subject to Volcker Rule limitations

The Volcker Rule, according to the 2021 10-K form from Citizens Bank, “prohibits banks and their affiliates from engaging in proprietary trading and investing in, sponsoring and having certain relationships with private funds such as certain hedge funds or private equity funds.” The Volcker Rule is a section of the Dodd-Frank Act of 2010 which effectively prohibits banks from using reserve deposits for proprietary financial trades, such as options contracts, credit default swaps, and securities trading. As stated earlier, some financial instruments are exempt from this rule, which opens the door for legal interpretations of the entire rule itself. The Volcker Rule was implemented as a means of limiting the risk banks exposed themselves to, knowing that the federal government would bail them out in the case of an economic downturn such as the 2008 recession because they were deemed “too big to fail.”

The non-financial activities stated earlier can be funded by reserve deposits, but due to the high-risk nature of proprietary trading, only trades that are low-risk or which have the purpose of reducing risk are allowed.

¹¹ Review of Basel III Leverage Ratio Framework and Disclosure Requirements. 2017. Bank for International Settlements, January (January), 1. <https://www.bis.org/publ/bcbs270.pdf>.

1.4 Differences

- While M&T Bank is a New York-chartered bank, Citizens Bank is a Pennsylvania-chartered bank.

This may not contribute to a significant difference in their internal functions. In April 2008, bank officials from New York, Pennsylvania, and New Jersey agreed to allow banks to expand outside of their home states and into those three respective states.¹² Because of this agreement, banks headquartered in the tri-state area can cross state lines and still adhere to regulations within their respective state charter. In addition, this agreement allows for just one state regulator for the tri-state area, which "...will simplify regulatory compliance for banks with offices in more than one state, reduce compliance costs and enhance the state charter."

- M&T Bank is regulated by New York state law, while Citizens Bank is incorporated under Delaware state law

It is common for many large corporations to place themselves as incorporated under Delaware state law¹³, even if they are not headquartered in Delaware, such as Citizens Bank. According to Jan Ting (2011), the primary reason this phenomenon happens is due to the speed and clarity of the legality of running a business incorporated in Delaware. "Corporate cases," Ting writes, "do not get stuck on dockets behind the multitude of non-corporate cases. Instead, Delaware corporations can expect their legal disputes to be addressed promptly and expertly by judges who specialize in corporate law."

¹² "New York, New Jersey and Pennsylvania Sign Landmark Banking Pact." n.d. www.state.nj.us. <https://www.state.nj.us/dobi/pressreleases/pr080415.htm>.

¹³ Ting, Jan. 2011. Review of Why Do so Many Corporations Choose to Incorporate in Delaware? Why. April 27, 2011. <https://why.org/articles/why-do-so-many-corporations-choose-to-incorporate-in-delaware/#:~:text=The%20other%20major%20reason%20corporations,multitude%20of%20non%2Dcorporate%20c> as

In contrast, New York state incorporation law is commonly viewed as more complex, and therefore more difficult to go through the legal proceedings when they arise. Daniel Wolf, Kirkland, and Ellis (2014) write in the Harvard Law School Forum on Corporate Governance that New York state corporate law, when compared to Delaware state law, can be “less clear” and “Delaware law, while less developed, appears more consistent...”¹⁴ They continue with examples of how New York state law holds contractual obligations to higher standards than is stated in Delaware law.

What this may have resulted in is a more rapid adjustment in corporate law in Delaware compared to New York, allowing for businesses incorporated under Delaware to exercise more flexibility with regards to changes in their procedures. According to an article from JD Supra written in July 2020, 11 sections of the General Corporation Law (DGCL) were amended following the coronavirus pandemic.¹⁵ While some of these sections, such as Section 110, simply allow for corporations to conduct stockholder meetings virtually, sections such as Section 110(i), “...allows corporations that had declared a dividend for which the record date had not yet occurred to postpone the dividend to a later date under certain circumstances.” For a business like Citizens Bank, this may have allowed for more liquidity during the initial phases of the pandemic, as they could potentially postpone their required dividend payments and use the extra funds as provisions for credit losses.

In comparison, according to information found on the New York State Department of

¹⁴ Wolf, Daniel, and Matthew Solum. 2014. “Delaware vs. New York Governing Law.” The Harvard Law School Forum on Corporate Governance. January 2, 2014. <https://corpgov.law.harvard.edu/2014/01/02/delaware-vs-new-york-governing-law/#:~:text=New%20York%20law%20generally%20requires>.

¹⁵ Patel, Ankita. 2020. Review of Delaware General Corporation Law Updates Tackle COVID-19, Proxy Information and Emergency Provisions. JD Supra. Fox Rothschild LLP. July 28, 2020. <https://www.jdsupra.com/legalnews/delaware-general-corporation-law-36214/>.

Financial Services (DFS), many amendments made to the state’s regulation laws typically came at the expense of the business liquidity and in favor of consumer financial protection. For example, a press release from March 19, 2020 recommended mortgage servicers to take such measures as “forbearing mortgage payments for 90 days from their due dates,” “Refraining from reporting late payments to credit rating agencies for 90 days,” and “Waiving late payment fees and any online payment fees for a period of 90 days.”¹⁶ Such measures, while favorable to borrowers of bank loans, came at the expense of bank liquidity for such banks as M&T Bank incorporated under New York State law.

- While M&T Bank “does not engage in any significant amount of proprietary trading as defined in the Volcker Rule” as explicitly stated in their annual 10-K forms, Citizens Bank does not outline this specifically in any of their last five 10-K forms forwarded to the SEC.

Granted that the Volcker Rule of the Dodd-Frank Act bans all forms of high-risk proprietary trading with reserve deposits, the omission of Citizens Bank to mention such regulations may imply that a degree of trading is used with customers’ accounts. This kind of trading, known as proprietary trading, occurs when a financial institution (such as a bank) uses reserve deposits to make high-risk market deals with other financial institutions.¹⁷ As stated earlier, these high-risk deals include options contracts, derivatives trading, and credit default swaps. These financial instruments are primarily speculative in nature, making them volatile and risky, thus potentially causing severe losses in net income and liquidity if the volatility swings in

¹⁶ “Industry Letter, March 19, 2020: Support for Borrowers Impacted by the Novel Coronavirus (COVID-19).” n.d. Department of Financial Services.

¹⁷ Chen, James. 2020. Review of Proprietary Trading. Investopedia. December 28, 2020. <https://www.investopedia.com/terms/p/proprietarytrading.asp>.

the negative direction. The Volcker Rule section of the Dodd-Frank Act has banned banks from almost all types of proprietary trading as a means of reducing the risk customers expose their accounts to, leaving banks to rely only on typical client lending and non-banking services that are either designated to reduce risk exposure, or are relatively low-risk with low returns on investment.

- M&T Bank is a more established bank, with their IPO date of February 27, 1981. On the other hand, Citizens Bank did not establish an IPO until September 23, 2014.

Citizens Bank originated in 1871, slowly growing in size and total assets over the course of a century. In 1988, Citizens was fully acquired by the Royal Bank of Scotland (RBS), which held Citizens as a wholly-owned subsidiary until 2014.¹⁸ During this time period, Citizens was able to expand enough to acquire several businesses throughout the New England area. As their growth continued, on September 23, 2014, Citizens completed their initial public offering with the New York Stock Exchange with the largest commercial bank IPO in history. By November 2015, Citizens Bank sold the last of their stake with RBS and became a fully separated, independent and publicly traded company on the stock market.

The history of M&T Bank goes back to 1856, and as a result of several acquisitions over a 125-year period, M&T Bank released their IPO on February 27, 1981. What separates M&T Bank from Citizens Bank is its independence since its founding. It has never been fully acquired by a separate entity in its entire history. This, I believe, makes a strong case for M&T Bank to be prioritized over Citizens Bank by governments and political institutions.

Since their inclusion into the New York Stock Exchange in 1981, M&T Bank has been

¹⁸ “Our History.” n.d. Investor.citizensbank.com. <https://investor.citizensbank.com/about-us/our-company/our-history.aspx>.

particularly noted for its explosive growth when compared to the rest of the market. By the end of 2014, its stock price has seen a 23,500% increase in nominal value,¹⁹ and this rapid increase in stock value may lead to preferential government treatment as being viewed “too big to fail” (as explained earlier).

- While M&T Bank is a fully accredited Fannie Mae DUS Lender and a Freddie Mac Program Plus Lender, Citizens Bank does not have either accreditation.

To briefly go over the purpose and functions of these two entities, Fannie Mae (also known as the Federal National Mortgage Association) and Freddie Mac (also known as the Federal Home Loan Mortgage Corporation) are government-sponsored enterprises (GSEs) that provide liquidity and stability to banks and other financial institutions within the home loan market. Although they are technically labeled as private enterprises, they were created by Congress and are thus heavily regulated by the federal government.²⁰ Essentially, when banks lend money to borrowers in the form of a mortgage, the paper can be sold to either Fannie Mae or Freddie Mac to maintain liquidity and further allow for continued lending. The loans that these two institutions purchase are typically packaged into mortgage-backed securities and then purchased again by investment banks. While Fannie Mae was formed in 1938 and provides liquidity primarily to large, well-established commercial banks, Freddie Mac was formed in 1970 and tends to perform the same functions for smaller banks.²¹

A Fannie Mae Delegated Underwriting and Servicing (DUS) Lender is an accreditation granted to specific financial institutions who are, “authorized to approve, fund and service loans

¹⁹ Jenkins, Jay. 2014. “How This Stock Returned 23,500% since 1980.” The Motley Fool. December 15, 2014. <https://www.fool.com/investing/general/2014/12/15/how-this-stock-returned-23500-since-1980.aspx>.

²⁰ “About Fannie Mae & Freddie Mac | Federal Housing Finance Agency.” n.d. www.fhfa.gov. <https://www.fhfa.gov/about-fannie-mae-freddie-mac>.

²¹ Amadeo, Kimberly. 2022. Review of Fannie Mae vs. Freddie Mac. The Balance. May 22, 2022. <https://www.thebalance.com/fannie-mae-vs-freddie-mac-3305695>.

on behalf of Fannie Mae without receiving Fannie Mae’s prior consent.”²² M&T Bank has had this accreditation since 1989, and it allows for a quicker loan approval or rejection speed, as well as faster resolution of any problems regarding a loan. This accreditation also allows M&T Bank to originate and service a variety of mortgage types besides traditional family homes. These may include student housing units, senior housing units, multi-family housing, and manufactured housing neighborhoods. These types of loans come with customizable features to better fit an individual person’s needs or desires with regards to their loan.

- Adherence to specific GAAP principles may differ between M&T Bank and Citizens Bank

According to the 10-K forms provided by M&T Bank in 2020, “Effective January 1, 2020, the Company adopted amended accounting guidance which requires an allowance for credit losses be deducted from the amortized cost basis of financial assets...” What this amendment did was drastically increase the level of provisions for credit losses. In addition, from a press release issued by M&T Bank in January 2021, “The provision for credit losses totaled \$75 million in the fourth quarter of 2020, compared with \$54 million in the year-earlier quarter and \$150 million in 2020’s third quarter. The provision was \$800 million for the year ended December 31, 2020, compared with \$176 million in 2019. The significantly higher level of the provision in 2020 reflected projections of expected credit losses under the provisions of new accounting guidance that became effective on January 1, 2020.”²³ Prior to 2020, the provision for credit losses reflected incurred losses only.

Information from Citizens Bank’s 10-K form in 2020 also reflects changes in their

²² “Fannie Mae DUS Lender - Conventional Multifamily, Affordable Housing, Seniors Housing.” n.d.

²³ “M&T Bank Corporation Announces 2020 Fourth Quarter and Full-Year Results.” n.d. M&T Bank Newsroom. Accessed August 9, 2022. <https://newsroom.mtb.com/2021-01-21-M-T-Bank-Corporation-Announces-2020-Fourth-Quarter-And-Full-Year-Results>.

provisions for credit losses. However, Citizens Bank notes this new standard, "...introduces heightened volatility in provision for credit losses, given uncertainty in the accuracy of macroeconomic forecasts over longer time horizons, variances in the rate and composition of loan growth, and changes in overall loan portfolio size and mix."

2. DATA REVIEW

As stated earlier, most of the data in this paper will come from the 10-K and 10-Q forms for both M&T Bank and Citizens Bank ranging from 2015 – 2021. Extrapolating the data from five years prior to the coronavirus pandemic gives us a general idea of the direction both banks were headed. Because Citizens Bank did not become a publicly traded company until November of 2014, no data are available for Citizens Bank prior to 2015. The net incomes for both banks will be analyzed for each quarter from 2015 through 2021. I hypothesize eight different variables that may have played a role on the fluctuations of their net incomes. For each variable, a compare-and-contrast between M&T Bank and Citizens Bank will be used to analyze the data, and t tests will be used to examine statistically significant differences in regression coefficients.

One of the issues brought up in preparation of this paper was the potential divergence in accounting standards between M&T Bank and Citizens Bank. Without adherence to consistent accounting principles, measuring the impact of the two banks on their financial statements would be extremely difficult, if not impossible, to accurately identify. However, Lizzette Matos from [accounting.com](https://www.accounting.com/resources/gaap/#:~:text=Are%20all%20companies%20required%20to,these%20standard) states in an article, "Only regulated and publicly traded businesses must adhere to Generally Accepted Accounting Principles (GAAP)."²⁴ Since M&T Bank and Citizens Bank

²⁴ Matos, Lizzette. 2022. Review of What Is GAAP? Accounting.com. March 4, 2022. <https://www.accounting.com/resources/gaap/#:~:text=Are%20all%20companies%20required%20to,these%20standard>

are publicly traded companies on the New York Stock Exchange, they both must adhere to GAAP accounting standards. In addition, comparison of the impact of the two banks due to the coronavirus pandemic is also made easier due to both abiding by Basel III requirements. As stated earlier, however, there may be slight differences in specific accounting practices between both banks, and these differences must be taken into consideration for an accurate analysis.

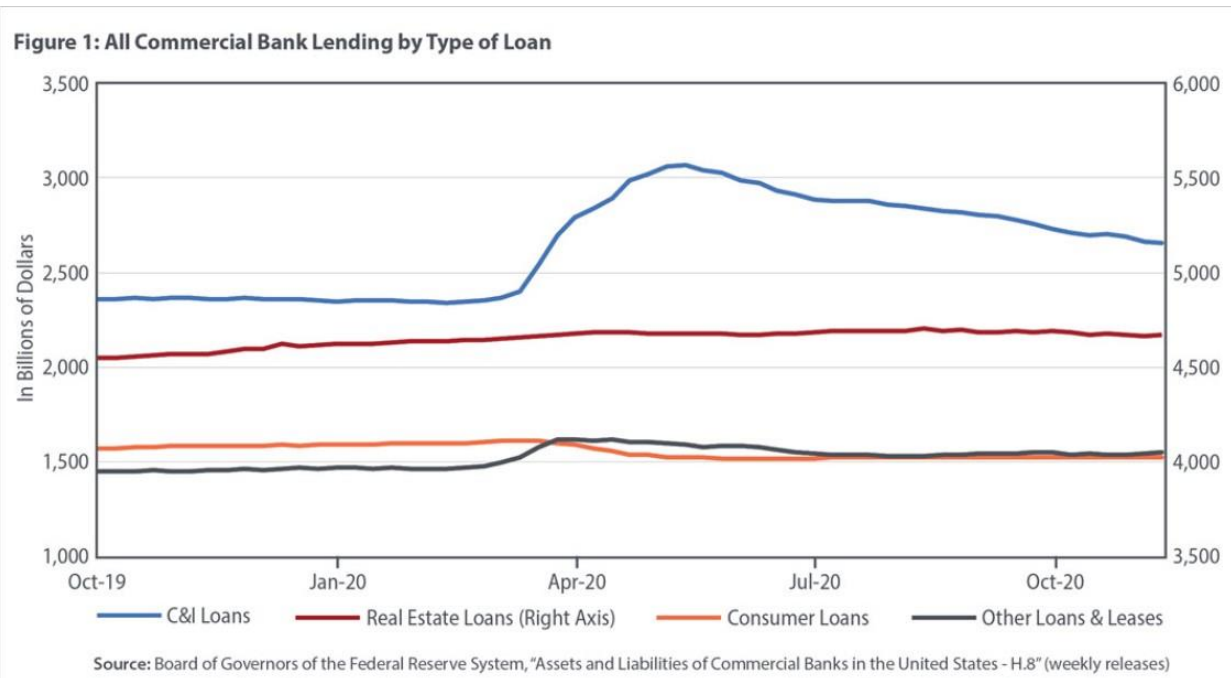
Before investigating the pandemic's effect on these two individual banks, the effect on the overall banking system is necessary to detail. Huberto M. Ennis and Arantxa Jarque (2021) of the Federal Reserve Bank of Richmond, VA did a thorough analysis on the pandemic's impact on the banking system²⁵, which will be briefly explained in the section below.

2.1 National Impact

The decade leading up to 2020 was a period of re-calibration for international financial systems, mostly due to the recession of 2008. This re-calibration included increasing the liquidity of bank assets and ease at which more illiquid bank assets could be converted to cash. Perhaps the most significant of these changes were the Basel III requirements (as explained previously), which will be further elaborated.

Ennis and Jarque provide the following line graph showing the change in demand for loans during 2020:

²⁵ Ennis, Huberto, and Arantxa Jarque. 2021. Review of Bank Lending in the Time of COVID. Richmond Fed. Federal Reserve Bank of Richmond. https://www.richmondfed.org/publications/research/economic_brief/2021/eb_21-05.



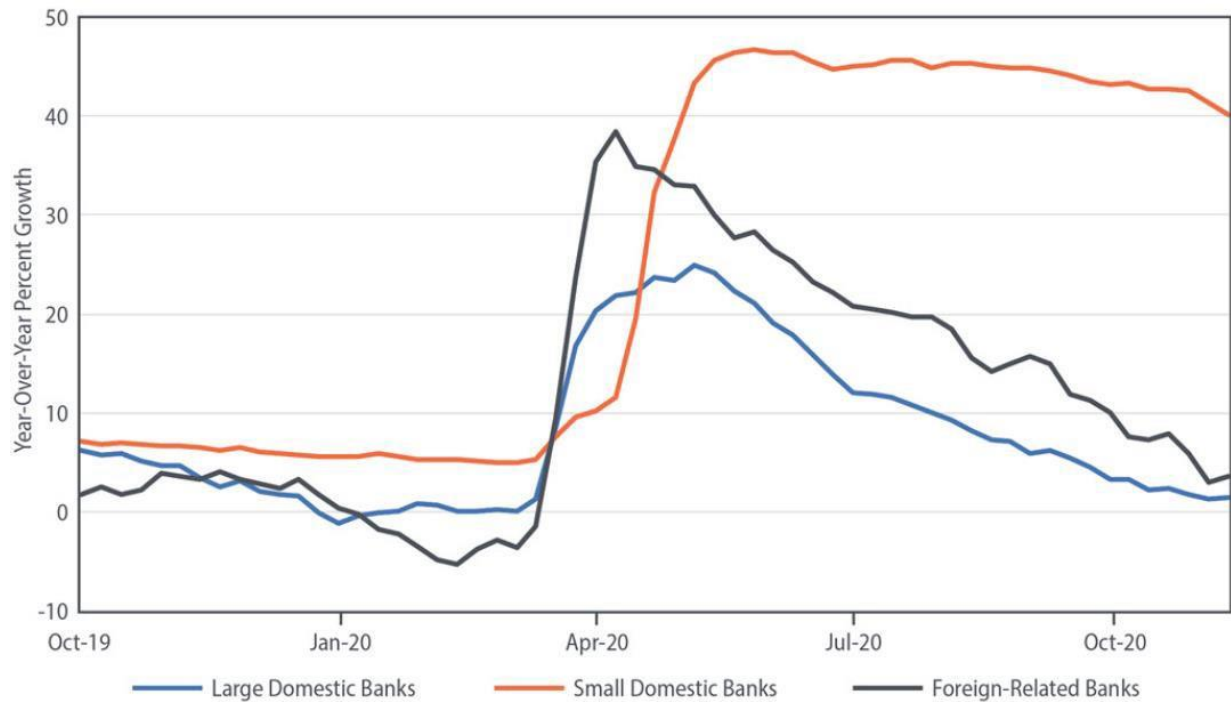
The coronavirus pandemic had a substantially larger impact on credit supply to commercial businesses than consumer borrowing, as Ennis and Jarque (2021) note how "...the stock of banks' residential mortgage loans did not change substantially..." At the start of the pandemic, the Richmond Fed notes how commercial and industrial (C&I) loans increased from below \$2.5 trillion to over \$3 trillion between March and April of 2020. Meanwhile, credit supply to individuals slightly decreased when the pandemic began.

This increase in demand for credit was met by the Federal Reserve's Paycheck Protection Program (PPP), in participation with the Small Business Administration (SBA) of the United States federal government. Initially issues on April 13, 2020, it extended until August 8th, 2020, and provided small businesses across the United States with \$525 billion in cash. David Rabinowitz (2020) of DigBos explains how the program works: "When you receive funding for a PPP loan, you are receiving the bank's money, not the government's...the US Small Business Administration (SBA) provides the bank a guarantee. The program assumes that in the worst

cases for the government, all the loans will be forgiven.”²⁶ In other words, the credit came out of the banks’ provisions for credit losses, and were expected to be paid back as par for a typical loan.

The graph below breaks down C&I lending from the year prior between large domestic banks, small domestic banks, and foreign-related banks:

Figure 2: Year-Over-Year Growth in C&I Lending by Type of Commercial Bank



Source: Board of Governors of the Federal Reserve System, “Assets and Liabilities of Commercial Banks in the United States - H.8” (weekly releases)

While there is clear growth for all three types of banks at the onset of the pandemic in C&I lending, year-to-year growth for foreign banks and large domestic banks leveled off into single-digit percentage growth by the end of 2020. Small domestic banks, however, continued to see their C&I lending over 40% larger than in 2019. This data is difficult to apply to M&T Bank

²⁶ RABINOVITZ, DAVID. 2020. “WHERE DOES CARES ACT MONEY COME FROM? AND HOW DO BANKS MAKE DECISIONS?” Digboston.com. April 29, 2020. <https://digboston.com/where-does-cares-act-money-come-from-and-how-do-banks-make-decisions/>.

and Citizens Bank, however, because the Richmond Fed fails to define what constitutes a “large domestic bank” and a “small domestic bank.” Therefore, it is inconclusive which category both banks belong to.

The last section of the Richmond Fed’s paper involves allowances for credit losses, which will be a significant variable in the upcoming data section. Enrique details how, “Call Report data suggest that banks started increasing their allowances in March.” If this is true of both M&T Bank and Citizens Bank, we should expect drastic decreases in net income starting in the first quarter of 2020, and perhaps extending to the second and third quarters of 2020 as well.

The table below details the changes in provisions for credit losses, according to the Richmond Fed paper. The changes are split between changes for large domestic banks and small domestic banks, as well as the percentage change from one time period to the next:

ALLOWANCE FOR CREDIT LOSSES				
<i>Quarter</i>	<i>Large Domestic Banks</i>	<i>% Change</i>	<i>Small Domestic Banks</i>	<i>% Change</i>
Q4 2019	\$ 71,000,000,000	N/A	\$ 53,000,000,000	N/A
Q1 2020	\$ 113,000,000,000	59.15%	\$ 84,000,000,000	58.49%
Q2 2020	\$ 147,000,000,000	30.09%	\$ 96,000,000,000	14.29%
Q3 2020	\$ 145,000,000,000	-1.36%	\$ 99,000,000,000	3.13%

Source: Table 3 of Richmond Fed paper

Again, due to the lack of definition between “large” and “small” domestic banks, the differentiation between the two sizes is ambiguous on how we can predict the impact on M&T Bank and Citizens Bank. However, the table shows the percentage increase in provisions in the first quarter of 2020 were almost identical, while large banks further increased their provisions in the second quarter of 2020 at a higher rate than small domestic banks.

2.2 Net Income

Due to the importance of net income and the emerging differences in net income between M&T Bank and Citizens Bank, this variable will be investigated most thoroughly through statistical testing. Below are charts representing net income for both banks by year from 2015 – 2021 and the percentage change from the year before:

M&T BANK		
<i>YEAR</i>	<i>NET INCOME</i>	<i>% CHANGE</i>
2015	\$ 1,079,667,000	N/A
2016	\$ 1,315,114,000	21.81%
2017	\$ 1,408,306,000	7.09%
2018	\$ 1,918,080,000	36.20%
2019	\$ 1,929,149,000	0.58%
2020	\$ 1,353,132,000	-29.86%
2021	\$ 1,858,746,000	37.37%

CITIZENS BANK		
<i>YEAR</i>	<i>NET INCOME</i>	<i>% CHANGE</i>
2015	\$ 871,000,000	N/A
2016	\$ 1,000,000,000	14.81%
2017	\$ 1,652,000,000	65.20%
2018	\$ 1,721,000,000	4.18%
2019	\$ 1,791,000,000	4.07%
2020	\$ 1,057,000,000	-40.98%
2021	\$ 2,319,000,000	119.39%

What stands out as significant is the increase in Citizens Banks' annual net income between 2020 – 2021. While a recover was expected after the initial shock of the coronavirus pandemic eased, Citizens Bank saw net income increase by 119%, compared to a 37% increase in net income for M&T Bank. Because of the noticeable difference in percentage change in net incomes, a test of statistical significance at a 95% confidence level was run to measure if the

difference is statistically significant. Specifically, a t-test was performed similar to what is described by the Census Bureau in how to calculate t-tests for percentage changes.²⁷ The regression models for M&T Bank and Citizens Bank, as well as the regression equations for each, will be detailed below.

2.3 Review of Literature

Previous research articles played a role in determining how to run the regression model for net income for both M&T Bank and Citizens Bank. Specifically, the focus of the literature was determining which variables affect bank profitability. Quarterly and annual forms filed to the SEC are available for both M&T Bank and Citizens bank dating back to 2015, in which the data for the regression were gathered. Gary Gorton and Richard Rosen (1995) found inconclusive evidence of the correlation of net income to derivatives trading. However, this paper was published before the Volcker Rule prohibited most forms of high-risk derivatives trading. The absence of such high-risk trading from reserve deposits could lead to different results in this analysis.

Petria, Capraru, and Ihnatov (2015) compared total assets and banks' efficiency ratios to net income, among other variables. Their conclusion was that total assets had no relation to net income, while efficiency ratios were statistically significant to net income. Macroeconomic variables were also considered in their analysis, such as GDP growth and the inflation rate. However, due to the volatile nature of the global economy at the time of this investigation, macroeconomic variables will be disregarded for this paper.

²⁷ "Percent Changes." n.d. https://www2.census.gov/programs-surveys/acs/tech_docs/accuracy/percchg.pdf.

Benjamin Cohen and Gerald Edwards (2017) researched the impact of provisional credit losses on the cyclicity of bank functions.²⁸ Following the recession of 2008, banks under certain Basel requirements were obligated to include a new accounting measure known as “expected credit losses” to replace the “incurred credit loss” accounting method. The expectation was that, by having a reserve set in the case of a sharp increase in loan defaults or adjustments, banks would be better suited to respond to these changes, rather than having their balance sheets follow the volatile nature of the business cycle. They conclude such an accounting change may have diminished the degree to which bank balance sheets follow the business cycle.

In order to bring in originality to this paper in comparison to other research articles, other variables are considered in this regression model that have not been studied to a similar extent as the variables mentioned above. These variables include the number of branches each bank has operating over each time period and the value of loans not accruing interest income. In addition, a time dummy variable will be used for the first two quarters of 2020, when the global economy was responding most strongly to the emergence of the pandemic.

Altogether, seven variables and a time dummy variable will be used in the next section to devise the regression model. The seven variables are as follows:

- Total assets
 - Total assets is comprised of a wide variety of bank holdings that are classified as assets. These include reserve deposits, investment securities held, the value of loans and leases, and any other asset that accrues interest to the bank. The hypothesis for this paper is that there is a positive correlation between total assets

²⁸ Cohen, Benjamin H, and Gerald A Edwards Jr. 2017. Review of The New Era of Expected Credit Loss Provisioning. BIS Quarterly Review, March (March). https://www.bis.org/publ/qtrpdf/r_qt1703f.htm.

and net income. This hypothesis is due to the general notion that any business that gains assets will typically earn more revenue from the utilization of those assets, which will in turn bring in a larger net income. In statistical terms this will be seen as...

- $H_0: \beta_{\text{assets}} = 0$
- $H_A: \beta_{\text{assets}} > 0$

- Number of branches

- The total number of branches a bank is running may have a statistical impact on their net income figures. While more bank branches have been shown to positively impact low- and middle-income neighborhoods with regards to access to loan credit²⁹, the hypothesis made for this paper is that there is a negative correlation between branch numbers and net income. This is due to the fact that adding a bank branch leads to more overhead maintenance costs, property tax and/or rental expenses, and increased labor costs. These costs can be largely removed or minimized due to the emergence of online banking and complex ATM machines. This will be seen as...

- $H_0: \beta_{\text{br}} = 0$
- $H_A: \beta_{\text{br}} < 0$

- Non-accrual loan value

- Non-accrual loan value is defined as the value of loans that are not giving the bank any interest income, even when payment installments are made. These loans may also be considered “non-performing assets.” Typically, loans are placed in the non-accrual

²⁹ Ergungor, O. Emre. 2011. “Do Bank Branches Matter Anymore?” Economic Commentary (Federal Reserve Bank of Cleveland), August (August), 1–6. <https://doi.org/10.26509/frbc-ec-201113>.

category if they are more than 90 days delinquent. These loans typically do not have any collateral to back up the outstanding amount, and they may have to be adjusted in favor of the borrower in order to resume typical payment installments. We assume non-accrual loan value to have a negative impact on net income, or in statistical terms...

- $H_0: \beta_{nlv} = 0$
- $H_A: \beta_{nlv} < 0$

- Net charge-offs

- Net charge-offs is defined as the dollar value of loans written off as bad debt. This debt is deemed unrecoverable and is removed from their outstanding loan balances. This paper specifies net charge-offs rather than gross charge-offs for one particular reason: net charge-offs include the amount recovered by the bank during a bankruptcy process. According to bizfluent.com, while gross charge-offs represent the total amount of money not repaid to banks or other lending institutions during a specific period, net charge-offs include any subsequent recoveries of delinquent debt.³⁰ For this reason, net charge-offs were chosen over gross charge-offs to maintain the most accuracy of debt owed to the bank. In addition, Gary Gorton, and Richard Rosen, both of the University of Pennsylvania, measured variables that impacted net income, one of which was the default rate.³¹ This paper assumes a negative correlation between net income and net charge-offs, or...

- $H_0: \beta_{nco} = 0$
- $H_A: \beta_{nco} < 0$

³⁰ Vera, Rolando. 2019. Review of Gross vs. Net Charge. Bizfluent. February 8, 2019. <https://bizfluent.com/info-12212004-gross-vs-net-charge.html>.

³¹ Gorton, Gary, and Richard Rosen. 1995. Review of Banks and Derivatives. NBER W5100, no. April (April): 333. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=225165.

- Provisions for credit losses
 - This portion of banks' balance sheets is the amount of money set aside to balance against credit risk and loan defaulting and/or delinquency. This is classified as a direct expense on bank balance sheets. For this reason, this paper assumes a negative correlation between net income and provisions for credit losses, or...
 - $H_0: \beta_{pcl} = 0$
 - $H_A: \beta_{pcl} < 0$

- Amount of assets in derivatives trading
 - Because of the Volcker Rule in the Dodd-Frank Act of 2010, many high-risk forms of derivatives trading by banks is largely prohibited in order to reduce the risk of reserve deposits being deemed unrecoverable. However, some derivatives trading is allowed if it is used to hedge against other forms of risk. Gorton and Rosen, in their journal article discussing factors impacting net income, found inconclusive evidence that the value of derivatives trading had any correlation to net income.³² Since the pandemic created an extremely volatile economic environment, and this volatility went down during the middle of 2020, this paper hypothesizes a negative correlation between net income and derivatives trading for the 28 quarters measured, or...
 - $H_0: \beta_{der} = 0$
 - $H_A: \beta_{der} < 0$

- Efficiency ratio
 - The efficiency ratio of a bank is calculated by dividing non-interest expenses by

³² See footnote 31 above

total revenue. A lower ratio means the bank is operating at a higher level of efficiency. Petria, Capraru, and Ihnatov (2015), in an article researching variables affecting bank profits, included the efficiency ratio as a possible determinant.³³ Because the ratio is negatively correlated with efficiency, and efficiency generally results in larger net income values, this paper assumes a negative correlation between net income and the efficiency ratio, or...

- $H_0: \beta_{\text{eff}} = 0$
- $H_A: \beta_{\text{eff}} < 0$

- Pandemic time dummy variable

- A time dummy variable was activated in this regression model for the first two quarters of 2020 and deactivated for the remaining time periods. According to the National Bureau of Economic Research (NBER), an agency responsible for defining recessions and boom periods, the recession resulting from the pandemic lasted only two months: April and May of 2020. However, there was undoubtedly an effect on the global economy several months before and after these two months, which likely indirectly impacted the functions and financial statements of both M&T Ban and Citizens Bank. For that reason, this time dummy variable was only activated for the first half of 2020, and deactivated for the remaining time periods. This paper assumes a statistically significant decrease in net income when the time dummy variable is activated, or...

- $H_0: \beta_{\text{pan}} = 0$

³³ Petria, Nicolae, Bogdan Capraru, and Iulian Ihnatov. 2015. Review of Determinants of Banks' Profitability: Evidence from EU 27 Banking Systems. *Procedia Economics and Finance* 20: 521. <https://www.sciencedirect.com/science/article/pii/S2212567115001045>.

- $H_A: \beta_{\text{pan}} < 0$

2.3.1 *Test of Statistical Significance*

In econometrics and statistics in general, it is commonly cited that at least 30 observations are necessary to run a statistical test of significance. This is to assure that there are enough data points to smooth out the significance of any outliers in the overall data. Due to Citizens Bank not being a publicly traded stock until November 2014, public data about Citizens Bank is only available from 2015 to the present. Since financial reports are filed to the SEC on a quarterly basis, both banks' 10-Q forms were pulled and analyzed, giving us 28 observation points. However, the time period 2015 – 2021 is an ideal time period to investigate due to the relative stability of the United States economy during the decade following the 2008 recession.

These observations were entered into SAS, and the following regression equation was generated. Below are the parameter estimates and their corresponding t-values. Other detailed statistics are outlined in the appendix of this paper.

Parameter Estimates for M&T Bank							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Tolerance	Variance Inflation
Intercept	1	3216155120	252590868	12.73	<.0001	.	0
assetmt	1	-0.00036207	0.00081814	-0.44	0.6631	0.18946	5.27807
brmt	1	-2504953	240521	-10.41	<.0001	0.28670	3.48798
nlvmt	1	-0.09354	0.03939	-2.37	0.0282	0.08382	11.92987
ncomt	1	0.66486	0.41649	1.60	0.1269	0.57567	1.73710
pclmt	1	-0.71195	0.30315	-2.35	0.0298	0.05755	17.37759
dermt	1	-0.01239	0.04004	-0.31	0.7604	0.13727	7.28494
effmt	1	-13648172	2084700	-6.55	<.0001	0.80823	1.23727
pan	1	-53745543	55845795	-0.96	0.3479	0.13571	7.36864

Parameter Estimates for Citizens Bank							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Tolerance	Variance Inflation
Intercept	1	1796116924	609196430	2.95	0.0083	.	0
assetcb	1	-0.00010452	0.00179	-0.06	0.9541	0.02084	47.98564
brcb	1	-350493	224144	-1.56	0.1344	0.03683	27.15451
nlvcb	1	-0.22288	0.05543	-4.02	0.0007	0.28567	3.50048
ncocb	1	0.82209	0.20975	3.92	0.0009	0.25919	3.85812
pclcb	1	-0.62863	0.06734	-9.33	<.0001	0.17166	5.82561
dercb	1	-0.00281	0.01895	-0.15	0.8837	0.11708	8.54091
effcb	1	-13531572	3186411	-4.25	0.0004	0.14631	6.83501
pan	1	-121016880	42685615	-2.84	0.0106	0.30388	3.29081

Based on the following parameter results, the following regression equations can be summarized as such:

$$Nimt = 3216155120 - 0.0004 \beta_{assetmt} - 2504953 \beta_{brmt} - 0.09354 \beta_{nlvmt} + 0.66486 \beta_{ncomt} \\ - 0.71195 \beta_{pclmt} - 0.01239 \beta_{dermt} - 13648172 \beta_{effmt} - 53745543 \beta_{pan}$$

$$Nicb = 1796116924 - 0.0001 \beta_{assetcb} - 350493 \beta_{brcb} - 0.22288 \beta_{nlvcb} + 0.82209 \beta_{ncocb} - \\ 0.62863 \beta_{pclcb} - 0.00281 \beta_{dercb} - 13531572 \beta_{effcb} - 121016880 \beta_{pan}$$

In addition, the following tables define which variables for each bank were rejected and which failed to be rejected based on the t-values shown above:

M&T Bank	
<i>Variable Results</i>	
Total Assets	Do not reject
Number of Branches	Reject
Nonaccruing Loan Value	Do not reject
Net Charge-Offs	Do not reject
Provisions for Credit Losses	Do not reject
Value of Derivatives Trading	Do not reject
Efficiency Ratio	Reject
Pandemic Time Dummy	Do not reject

Citizens Bank	
<i>Variable Results</i>	
Total Assets	Do not reject
Number of Branches	Do not reject
Nonaccruing Loan Value	Reject
Net Charge-Offs	Reject
Provisions for Credit Losses	Reject
Value of Derivatives Trading	Do not reject
Efficiency Ratio	Reject
Pandemic Time Dummy	Reject

Before explaining the results of this regression test, it is important to note the difference between correlation and causation in statistical analyses. This paper only looks for correlation between the independent variables listed and net income. For variables whose null hypotheses were rejected, it is possible that an unknown third variable could be causing both variables to shift. Validating a cause-and-effect between the dependent and independent variable requires either a control group or a theoretical foundation about a regression coefficient. The only variable in this paper that meets the requirements to prove causation is the time dummy variable, β_{pan} , due to the fixed nature of the variable. The outcome of that variable will be explained later in this section. While it is possible, we have discovered causation between some of the independent variables listed and net income, further research and statistical tests are needed to come to such a conclusion.

In addition, empirical support for the validation of the regression model is mixed because some null hypotheses failed to be rejected for the model for M&T Bank, while the same null hypothesis was rejected for Citizens Bank's model, and vice versa. This could be the result of differences in the internal functions of both banks or how they report their accounting figures. Again, further statistical analyses and more information on the accounting standards of both banks is necessary to reach a cause-and-effect conclusion.

Total assets were not strongly associated with net income, which may seem counterintuitive. However, Petria's research paper found a similar result when investigating variables that impact bank profitability.³⁴ In this specific situation, this lack of correlation is primarily caused by the Federal Reserve pumping banks with liquid assets at the onset of the pandemic, primarily through the Paycheck Protection Program and stimulus checks, which will

³⁴ Page 522 of Petria's paper

be discussed further. This increased their total assets on paper by increasing reserve deposits. Simultaneously, interest rates fell dramatically, meaning that banks were lending out these assets and gaining little interest income from it. Therefore, during the first half of 2020, both banks' total assets were increasing at the same time net income, particularly interest income, was decreasing. This led to an insignificant correlation between the size of bank assets and net income

The number of branches for Citizens Bank is not strongly correlated with net income but is correlated with net income for M&T Bank. This variable was difficult to measure accurately per quarter because the number of open branches is only available on an annual basis, not quarterly. Thus, due to lack of sufficient data, it is assumed that the number of branches listed on each 10-K form is consistent throughout the entire year. In addition, while M&T Bank noted the exact number of branches on their annual forms, Citizens Bank noted approximate figures. This also made collecting accurate data difficult for this variable. Lastly, both banks' parameter estimates were negative for this variable, which suggests that closing bank branches reduces bank expenses more than keeping them open increases revenue.

Upon researching the causes of Citizens Bank's 119% increase in net income between 2020 and 2021, an article from bankautomationnews.com mentioned that Citizens Bank cited "customer gains" and a "deepening digital product portfolio" as contributors to this phenomenon.³⁵ While the phrase "digital product portfolio" remains undefined in the article, it is generally defined as a product which provides value to customers but is not physical in nature.³⁶

³⁵ Marsh, Aaron. 2022. Review of Citizens' Net Income Climbs Nearly 120% YoY as Digital Portfolio Expands. Bank Automation News. January 20, 2022. <https://bankautomationnews.com/allposts/retail/citizens-net-income-climbs-nearly-120-yoy-as-digital-portfolio-expands/#:~:text=Citizens%20Financial%20Group%20reported%20net,fourth%2Dquarter%20earnings%20call%20toda>

³⁶ "What Is a Digital Product?" 2020. Productfolio. September 12, 2020. <https://productfolio.com/what-is-a-digital-product/>.

Perhaps the most common example of a digital product is an app on a smartphone. A thorough investigation of press releases does not reveal any significant changes to Citizens Banks' websites or mobile apps to help improve the quantity or quality of service.³⁷ Thus, neither branch closings nor a “deepening digital product portfolio” could validly explain the 119% net income increase from 2020 – 2021.

Nonaccruing loan value is not significantly correlated with net income for M&T Bank but is correlated with Citizens Bank in a negative direction. The probability value needed to reject the null hypothesis is 0.025 for a one-sided t-test at 95% confidence, which M&T Bank received a p-value of 0.0282. This variable direction is self-explanatory. More delinquent or bad loans which are not accruing interest income leads to a loss in overall net income. This variable can be difficult to measure in research due to the fluid definition of a “nonaccruing” loan.

According to the office of the Comptroller of the Currency, “The general rule is that an asset should be placed on nonaccrual when principal or interest is 90 days or more past due...”³⁸

Although there is no concrete definition as to which loans are considered “nonaccrual,” once a bank has reasonable doubt on the collectability of a loan, it is placed in the nonaccrual category. This can make a compare-and-contrast difficult due to the lax definition of “nonaccrual.”

Interestingly, the coefficient for net charge-offs for Citizens Bank was found to be statistically significant from zero, but in the opposite direction as hypothesized. Instead of net charge-offs having a negative correlation with net income, it appears to share a positive correlation. Logically, extending bad credit and writing off loans should have a negative impact

³⁷ Up-to-date press release information can be found at <https://investor.citizensbank.com/about-us/newsroom/latest-news/2022.aspx>.

³⁸ “Appeal of Nonaccrual Status - (First Quarter 2003).” 2019. www.occ.treas.gov. March 7, 2019. <https://www.occ.treas.gov/topics/supervision-and-examination/dispute-resolution/bank-appeals/summaries/files/appeal-nonaccral-status-q1-2003.html>.

on net income, or at least have a statistically insignificant correlation to net income. This similar observation can also be seen with M&T Bank. However, since the probability value for the net charge-off variable for M&T Bank is above the 0.025 threshold, such an observation would fail to be rejected, nonetheless.

Provisions for credit losses had a statistically significant relationship to net income for Citizens Bank, but not so for M&T Bank. Similar to the nonaccrual loan value variable, the probability value for M&T Bank was very close to the rejection threshold (0.0298), but was not significant enough to justify rejecting the null hypothesis. From an accounting perspective, the direction of this variable is also self-explanatory. Provisioning for credit losses is considered an expense on bank balance sheets and falls in accordance with GAAP principles. Logically, when bank managers increase the value of assets set aside for credit losses, this directly impacts their bottom line.

The value of derivatives trading failed to show any significant correlation to net income for both banks. This may be due to the lack of high-risk trades that are prohibited by the Volcker Rule. The risk-averse trading done by banks leads to minimal gains and minimal losses in net income, so any positive or negative correlation may be weak.

The efficiency ratio was found to be statistically correlated to net income as well. Again, the reasoning behind this is logical. Any firm which is capable of decreasing their overhead expenses while maintaining a constant revenue stream will see larger net incomes and smaller efficiency ratios, thus causing the negative correlation seen here.

Perhaps the most important variable to note is the pandemic time dummy variable. With the time dummy variable activated for the first and second quarters of 2020, we found that the coefficient is statistically significant from zero for Citizens Bank, but not so for M&T Bank.

Therefore, we can say with confidence that there is evidence that the coronavirus pandemic directly caused net income levels of Citizens Bank to decrease in the first two quarters of 2020. However, we cannot come to such a conclusion for M&T Bank. This observation enhances the legitimacy of the claim that M&T Bank was able to remain stable amidst the coronavirus pandemic better than Citizens Bank. Such a claim can be backed up by the fact that M&T Bank has been on the stock market for a longer period of time, having gone through several recessions prior and having a stronger reputation amongst larger financial firms in comparison to Citizens Bank.

3. CONCLUSION

Many of the actions taken by M&T Bank and Citizens Bank were synchronized and similar in value. I hypothesize this is largely due to the similar regulations placed on both banks by the Federal Reserve and the international economic system as a whole. Since both banks must abide by the Basel III requirements amended in 2008, both received similar treatment and similar responses were observed in the data section.

Due to the absence of insider information and some inconsistencies in how data was presented between M&T Bank and Citizens Bank, the collection of the data was slightly imperfect. However, because of the consistent regulatory standards of both banks, such as Basel III requirements, comparison of the data between the two banks was simplified and allowed for a much more accurate analysis of the impact the coronavirus pandemic had on both banks' internal functions and responses.

Specifically, one of the largest difficulties in researching and writing this paper was the

lack of sufficient observation points to use in the regression model for net income of both banks. Because Citizens Bank did not become a publicly traded corporation until the end of 2014, financial information was not available to the general public before then. With a lack of inside connections to Citizens Bank, I could only pull data from the 1st quarter of 2015 and later, resulting in only 28 observations between 2015 and 2021. Ideally, the initial goal was to pull data from 2010 to 2021, which would have provided over 50 observations from which to draw conclusions. This time period would also have been ideal due to the relative economic stability of the 2010s, following the Great Recession of 2008. Without proper inside information about Citizens Bank when they were owned by the Royal Bank of Scotland, the 28 observation points from 2015 were the most I could gather for this paper.

Another difficulty in researching and writing this paper was the differing terms used between both banks. While M&T Bank would use the phrase “nonaccrual loans” to categorize loans that are not gathering interest income, Citizens Bank frequently used the phrase “nonperforming assets” to categorize similar loans. However, “nonperforming assets” also include those loans accruing interest, but are more than 90 days delinquent. Therefore, they were still placed under “nonperforming assets” despite the loans giving the bank interest income. This made differentiating between “nonaccruing” and “nonperforming” quite difficult.

In addition, in the statistical portion of the paper regarding the variables causing changes in net income, some variables may admittedly be lagging variables. In other words, the variable does not perfectly follow the business cycle, but rather the changes in the variable follow the business cycle weeks or even months later.

In addition, as stated earlier, the regression analysis only focused on the relationship between the independent variables and net income. Validating causation would lead to a more

complete understanding of the relationships between such variables and banks' net income figures, however such research was not conducted in the making of this paper. While the theoretical implications of some variables should suggest a cause-and-effect relationship with net income, more advanced research is needed to reach a cause-and-effect conclusion.

Lastly, there was also difficulty in measuring when to activate and de-activate the time dummy variable. There are valid arguments that such a time variable should have been activated for several quarters longer, even up to the writing of this paper. However, in the initial draft of this thesis, the time variable was activated for all of 2020 and 2021, the time dummy variable failed to be rejected by both banks by a large margin. Strictly looking at net income and not the surrounding macroeconomic variables going into 2021 (and 2022, as of the writing of this paper), the recovery from the pandemic was well under way by the 3rd quarter of 2020. In addition, the NBER specifically categorized the pandemic recession as a two-month recession lasting only from March 2020 to April 2020. For these two reasons, it was decided that the time variable would only be activated for the 1st and 2nd quarters of 2020, and de-activated for the remaining time periods.

3.1 Provisions for Credit Losses

As a final note, it is important to specify the primary cause of the change in net income for both M&T Bank and Citizens Bank. This variable is the provisions for credit losses, which is listed as a liability on bank balance sheets. Of the eight variables investigated in the data section, provisions for credit losses is the only variable with a direct impact on net income. In other words, as provisions increases by a given amount, net income will decrease by that given

amount, holding all other variables constant. Because of this direct significance of provisions for credit losses to net income, it is important to note the exact fluctuations in this variable that led to significant changes in overall net income for both banks during the pandemic period. Below is a table detailing provisions for M&T Bank and Citizens Bank for each quarter between 2019 – 2021:

M&T BANK	
<i>Allowance for Credit Losses</i>	
Q1 2019	\$ 22,000,000
Q2 2019	\$ 55,000,000
Q3 2019	\$ 45,000,000
Q4 2019	\$ 54,000,000
Q1 2020	\$ 250,000,000
Q2 2020	\$ 325,000,000
Q3 2020	\$ 150,000,000
Q4 2020	\$ 75,000,000
Q1 2021	\$ (25,000,000)
Q2 2021	\$ (15,000,000)
Q3 2021	\$ (20,000,000)
Q4 2021	\$ (15,000,000)

CITIZENS BANK	
<i>Allowance for Credit Losses</i>	
Q1 2019	\$ 85,000,000
Q2 2019	\$ 97,000,000
Q3 2019	\$ 101,000,000
Q4 2019	\$ 110,000,000
Q1 2020	\$ 600,000,000
Q2 2020	\$ 464,000,000
Q3 2020	\$ 428,000,000
Q4 2020	\$ 124,000,000
Q1 2021	\$ (140,000,000)
Q2 2021	\$ (213,000,000)
Q3 2021	\$ (33,000,000)
Q4 2021	\$ (25,000,000)

Source: 10-Q and 10-K forms for M&T Bank and Citizens Bank

In the year leading up to the pandemic, provisions for credit losses were larger for Citizens Bank than M&T Bank. This was further exacerbated during the pandemic period, when Citizens Bank set aside over \$1.6 billion for credit losses in 2020, compared to M&T Bank setting aside \$800 million for credit losses. However, Citizens Bank recorded a net income of \$1.1 billion in 2020, compared to approximately \$1.35 billion for M&T Bank in 2020. This is a difference of \$250 million in favor of M&T Bank, despite the fact Citizens Bank set aside \$800 million more in provisions for credit losses in 2020 than M&T Bank. Therefore, setting aside provisions for credit losses, Citizens Bank performed better with regards to net income figures than M&T Bank.

In addition, a significant portion of Citizens Bank's 119% increase in net income in 2021 compared to 2020 can also be reflected by this sole variable. Since provisions for credit losses is labeled a liability on bank balance sheets, a negative figure for this variable will increase net income. Similar to how Citizens Bank set aside twice as many funds for credit losses than M&T Bank in 2020, Citizens Bank also withdrew more funds from their provisions in 2021: \$411 million, compared to \$75 million for M&T Bank. According to the net income table on page 22, Citizens Bank saw a net income increase of \$1,262,000,000 in 2021 from 2020. Knowing that \$411,000,000 of this came from their withdrawals from credit provisions, this means 32.6%, or roughly one-third, of Citizens Bank's net income increase in 2021 is solely attributed to provisions for credit losses. In contrast, M&T Bank's increase in net income in 2021 was \$505,614,000 compared to 2020. Dividing their \$75 million withdrawal from credit provisions to this figure, we see that the withdrawals only explain 14.8% of the increase in net income in 2021 for M&T Bank. This difference is further explained by the different t-values for this variable between M&T Bank and Citizens Bank, as seen on the parameter estimates table on page 30.

While M&T Bank had a t-value of -2.35 and the null hypothesis could not be rejected, citizens Bank showed a t-value of -9.33 for this variable. While this may reflect differences in the internal functions between M&T Bank and Citizens Bank, this is only speculation due to the lack of insider information, and further research will need to be done to determine if this is the case.

BIBLIOGRAPHY

“About Fannie Mae & Freddie Mac | Federal Housing Finance Agency.” n.d. [www.fhfa.gov](https://www.fhfa.gov/about-fannie-mae-freddie-mac).
<https://www.fhfa.gov/about-fannie-mae-freddie-mac>.

Amadeo, Kimberly. 2022. Review of Fannie Mae vs. Freddie Mac. The Balance. May 22, 2022.
<https://www.thebalance.com/fannie-mae-vs-freddie-mac-3305695>.

“Appeal of Nonaccrual Status - (First Quarter 2003).” 2019. www.occ.treas.gov. March 7, 2019.
<https://www.occ.treas.gov/topics/supervision-and-examination/dispute-resolution/bank-appeals/summaries/files/appeal-nonaccral-status-q1-2003.html>.

Carney, John. n.d. “What the Volcker Rule Really Means for Wall Street Trading.” CNBC.
<https://www.cnbc.com/2013/12/10/what-the-volcker-rule-really-means-for-wall-street-trading.html>.

Chen, James. 2020. Review of Proprietary Trading. Investopedia. December 28, 2020.
<https://www.investopedia.com/terms/p/proprietarytrading.asp>.

Cohen, Benjamin H, and Gerald A Edwards Jr. 2017. Review of The New Era of Expected Credit Loss Provisioning. BIS Quarterly Review, March (March).
https://www.bis.org/publ/qtrpdf/r_qt1703f.htm

Eder, Steve. 2009. Review of Banks with Political Ties Got Bailouts, Study Shows. Reuters. December 21, 2009. <https://www.reuters.com/article/us-banks-study/banks-with-political-ties-got-bailouts-study-shows-idUSTRE5BK3WF20091221>.

Ergungor, O. Emre. 2011. “Do Bank Branches Matter Anymore?” Economic Commentary (Federal Reserve Bank of Cleveland), August (August), 1–6. <https://doi.org/10.26509/frbc-ec-201113>.

Ennis, Huberto, and Arantxa Jarque. 2021. Review of Bank Lending in the Time of COVID. Richmond Fed. Federal Reserve Bank of Richmond.
https://www.richmondfed.org/publications/research/economic_brief/2021/eb_21-05.

“Fannie Mae DUS Lender - Conventional Multifamily, Affordable Housing, Seniors Housing.” n.d. https://www.mandtrealtycapital.com/fannie_mae/fannie_mae.html.

“Federal Reserve Board Releases Results of Annual Bank Stress Tests, Which Show That Large Banks Continue to Have Strong Capital Levels and Could Continue Lending to Households and Businesses during a Severe Recession.” n.d. Board of Governors of the Federal Reserve System.
<https://www.federalreserve.gov/newsevents/pressreleases/bcreg20210624a.htm>.

“Financial Holding Company - Explained.” n.d. The Business Professor, LLC.
https://thebusinessprofessor.com/en_US/banking-lending-credit-industry/financial-holding-company-definition.

Hayes, Adam. 2020. “Dodd-Frank Wall Street Reform and Consumer Protection Act.” Investopedia. September 1, 2020. <https://www.investopedia.com/terms/d/dodd-frank-financial-regulatory-reform-bill.asp>.

“Industry Letter, March 19, 2020: Support for Borrowers Impacted by the Novel Coronavirus (COVID-19).” n.d. Department of Financial Services.
https://www.dfs.ny.gov/industry_guidance/industry_letters/il20200319_coronavirus_mortgage_relief

Jenkins, Jay. 2014. “How This Stock Returned 23,500% since 1980.” The Motley Fool. December 15, 2014. <https://www.fool.com/investing/general/2014/12/15/how-this-stock-returned-23500-since-1980.aspx>.

Kaviani, Mahsa, Hosein Maleki, and Pavel Savor. 2021. Review of Reaching for Influence: Do Banks Use Loans to Establish Political Connections? ProMarket. Stigler Center. August 4, 2021. <https://www.promarket.org/2021/08/04/banks-loans-corporations-political-connections-interest-rates/>.

“M&T Bank Corporation Announces 2020 Fourth Quarter and Full-Year Results.” n.d. M&T Bank Newsroom. Accessed August 9, 2022. <https://newsroom.mtb.com/2021-01-21-M-T-Bank-Corporation-Announces-2020-Fourth-Quarter-And-Full-Year-Results>.

Marsh, Aaron. 2022. Review of Citizens’ Net Income Climbs Nearly 120% YoY as Digital Portfolio Expands. Bank Automation News. January 20, 2022. <https://bankautomationnews.com/allposts/retail/citizens-net-income-climbs-nearly-120-yoy-as-digital-portfolio-expands/#:~:text=Citizens%20Financial%20Group%20reported%20net,fourth%2Dquarter%20earnings%20call%20today>

Matos, Lizzette. 2022. Review of What Is GAAP? Accounting.com. March 4, 2022. <https://www.accounting.com/resources/gAAP/#:~:text=Are%20all%20companies%20required%20to,these%20standard>

“New Study Highlights the Real Cost of Political Interference in Banking.” 2020. UF Warrington News. February 11, 2020. <https://news.warrington.ufl.edu/faculty-and-research/new-study-highlights-the-real-cost-of-political-interference-in-banking/>.

“New York, New Jersey and Pennsylvania Sign Landmark Banking Pact.” n.d. Wwww.state.nj.us. <https://www.state.nj.us/dobi/pressreleases/pr080415.htm>.

Nickolas, Steven. 2021. Review of Tier 1 Capital vs. Tier 2 Capital: What's the Difference? Investopedia. May 29, 2021. <https://www.investopedia.com/ask/answers/043015/what-difference-between-tier-1-capital-and-tier-2-capital.asp>

“Our History.” n.d. Investor.citizensbank.com. <https://investor.citizensbank.com/about-us/our-company/our-history.aspx>.

Patel, Ankita. 2020. Review of Delaware General Corporation Law Updates Tackle COVID-19, Proxy Information and Emergency Provisions. JD Supra. Fox Rothschild LLP. July 28, 2020. <https://www.jdsupra.com/legalnews/delaware-general-corporation-law-36214/>.

“Percent Changes.” n.d. https://www2.census.gov/programs-surveys/acs/tech_docs/accuracy/percchg.pdf.

Rabinovitz, David. 2020. “Where Does CARES Act Money Come From? And How Do Banks Make Decisions?” Digboston.com. April 29, 2020. <https://digboston.com/where-does-cares-act-money-come-from-and-how-do-banks-make-decisions/>.

Review of Basel III: An Essential Guide. n.d. Delphix. <https://www.delphix.com/glossary/basel-iii#:~:text=The%20Basel%20III%20accord%20increased,order%20to%20be%20Basel%20compliant>

Review of Basel III Leverage Ratio Framework and Disclosure Requirements. 2017. Bank for International Settlements, January (January), 1. <https://www.bis.org/publ/bcbs270.pdf>.

Review of Liquidity. 2012. In . Office of the Comptroller of the Currency. <https://www.occ.treas.gov/topics/supervision-and-examination/capital-markets/balance-sheet-management/liquidity/index-liquidity.html#:~:text=Liquidity%20is%20the%20risk%20to,both%20funds%20providers%20and%20borrowers>

Review of Standard Error Calculation. 2004. Radford University. Radford University. September 22, 2004. <https://sites.radford.edu/~biol-web/stats/standarderrorcalc.pdf>.

Review of Too Big to Fail. 2021. In Legal Information Institute. Cornell Law School. https://www.law.cornell.edu/wex/too_big_to_fail.

Ryan, Greg. 2018. Review of Citizens, Santander No Longer “Too Big to Fail” under Bill Sent to Trump. Boston Business Journal. May 23, 2018. <https://www.bizjournals.com/boston/news/2018/05/23/citizens-santander-no-longer-too-big-to-fail-under.html#:~:text=Newsletters%20%26%20Subscriptions-.Citizens%2C%20Santander%20no%20longer%20'too%20bi>

Ting, Jan. 2011. Review of Why Do so Many Corporations Choose to Incorporate in Delaware? Why. April 27, 2011. <https://whyy.org/articles/why-do-so-many-corporations-choose-to-incorporate-in-delaware/#:~:text=The%20other%20major%20reason%20corporations,multitude%20of%20non%2Dcorporate%20cas>

Tumin, Ken. 2012. Review of The \$250,000 Standard Maximum Deposit Insurance Amount Is Permanent. DepositAccounts. March 2012. <https://www.depositaccounts.com/blog/2012/03/the-250000-standard-maximum-deposit-insurance-amount-is-permanent.html>.

Up-to-date press release information can be found at <https://investor.citizensbank.com/about-us/newsroom/latest-news/2022.aspx>.

Vera, Rolando. 2019. Review of Gross vs. Net Charge. Bizfluent. February 8, 2019. <https://bizfluent.com/info-12212004-gross-vs-net-charge.html>.

Waller, Christopher J. n.d. “Who Exactly Benefits from Too Big to Fail?” Research.stlouisfed.org. <https://research.stlouisfed.org/publications/economic-synopses/2016/06/27/who-exactly-benefits-from-too-big-to-fail/>.

“What Is a Digital Product?” 2020. Productfolio. September 12, 2020. <https://productfolio.com/what-is-a-digital-product/>.

Wolf, Daniel, and Matthew Solum. 2014. “Delaware vs. New York Governing Law.” The Harvard Law School Forum on Corporate Governance. January 2, 2014. <https://corpgov.law.harvard.edu/2014/01/02/delaware-vs-new-york-governing-law/#:~:text=New%20York%20law%20generally%20requires>.

APPENDIX

Variable	N	Mean	Median	Mode	Maximum	Minimum	Range	Std Dev	Coeff of Variation
nicb	28	3.6325E8	3.68E8	.	6.48E8	34000000	6.14E8	1.3998E8	38.5345
assetcb	28	1.601E11	1.57E11	.	1.884E11	1.354E11	5.296E10	1.718E10	10.7265
brcb	28	1092.9	1100.0	1100.0	1200.0	900.0	300.0	103.4	9.4598
nlvcb	28	9.3182E8	9.61E8	7.8E8	1.277E9	7.02E8	5.75E8	1.501E8	16.1080
ncocb	28	96035714	83000000	65000000	2.19E8	36000000	1.83E8	41641754	43.3607
pclcb	28	1.045E8	85500000	85000000	6E8	-2.13E8	8.13E8	1.5937E8	152.5
dercb	28	1.0994E9	8.705E8	.	2.477E9	2.95E8	2.182E9	6.8581E8	62.3812
effcb	28	61.4307	61.0100	.	70.0200	55.1800	14.8400	3.6485	5.9393
pan	28	0.0714	0	0	1.0000	0	1.0000	0.2623	367.2

	nicb	assetcb	brcb	nlvcb	ncocb	pclcb	dercb	effcb	pan
1	209000000	136535000000	1200	1127000000	54000000	58000000	917000000	68.49	0
2	190000000	137251000000	1200	1042000000	78000000	77000000	727000000	70.02	0
3	220000000	135447000000	1200	1019000000	75000000	76000000	837000000	66.02	0
4	252000000	138208000000	1200	1060000000	77000000	91000000	711000000	67.56	0
5	223000000	140077000000	1200	1079000000	83000000	91000000	896000000	65.66	0
6	243000000	145183000000	1200	1044000000	65000000	90000000	1018000000	64.71	0
7	297000000	147015000000	1200	1107000000	83000000	86000000	845000000	62.88	0
8	237000000	149520000000	1200	1045000000	104000000	102000000	707000000	63.8	0
9	320000000	150285000000	1150	1050000000	87000000	96000000	447000000	61.68	0
10	318000000	151407000000	1150	1025000000	75000000	70000000	480000000	61.94	0
11	348000000	151356000000	1150	932000000	65000000	72000000	658000000	59.41	0
12	414000000	152336000000	1150	871000000	78000000	93000000	693000000	60.87	0
13	388000000	153453000000	1100	868000000	70000000	78000000	369000000	60.43	0
14	425000000	155431000000	1100	845000000	76000000	85000000	353000000	57.95	0
15	443000000	158598000000	1100	832000000	86000000	78000000	295000000	58.2	0
16	444000000	160518000000	1100	797000000	85000000	85000000	444000000	59.06	0
17	439000000	161342000000	1100	780000000	89000000	85000000	597000000	59	0
18	453000000	162749000000	1100	770000000	106000000	97000000	969000000	58.41	0
19	449000000	164362000000	1100	793000000	113000000	101000000	1266000000	59.4	0
20	459000000	165733000000	1100	703000000	122000000	110000000	983000000	59.28	0
21	340000000	176719000000	1000	780000000	137000000	600000000	2477000000	61.1	1
22	253000000	179874000000	1000	990000000	147000000	464000000	2450000000	55.91	1
23	314000000	179228000000	1000	1277000000	219000000	428000000	2282000000	55.18	0
24	499000000	183349000000	1000	1019000000	190000000	124000000	2152000000	57.8	0
25	611000000	187217000000	900	1008000000	160000000	-140000000	1724000000	61.35	0
26	648000000	185104000000	900	779000000	79000000	-213000000	1909000000	61.63	0
27	530000000	187007000000	900	747000000	50000000	-330000000	2080000000	60.92	0
28	511000000	188409000000	900	702000000	36000000	-25000000	1497000000	61.4	0

Variable	N	Mean	Median	Mode	Maximum	Minimum	Range	Std Dev	Coeff of Variation
nimt	28	3.8794E8	3.6403E8	.	5.4622E8	2.4105E8	3.0517E8	94148101	24.2690
assetmt	28	1.254E11	1.23E11	.	1.551E11	9.708E10	5.803E10	1.515E10	12.0786
brmt	28	753.0	750.0	688.0	807.0	688.0	119.0	41.8958	5.5639
nlvmt	28	1.1152E9	8.821E8	.	2.2423E9	7.871E8	1.4552E9	4.7314E8	42.4262
ncomt	28	40849750	40146500	.	97118000	15760000	81358000	17074458	41.7982
pclmt	28	55750000	43500000	-1.5E7	3.25E8	-2.5E7	3.5E8	74195750	133.1
dermt	28	4.387E8	3.3877E8	.	1.2874E9	83162000	1.2042E9	3.6375E8	82.9153
effmt	28	56.4511	56.0850	.	63.9800	51.4100	12.5700	2.8789	5.0998
pan	28	0.0714	0	0	1.0000	0	1.0000	0.2623	367.2

	nimt	assetmt	brmt	nlvmt	ncomt	pclmt	dermt	effmt	pan
1	241613000	98377783000	807	790586000	36189000	38000000	312642000	61.46	0
2	286688000	97080076000	807	797146000	21386000	30000000	233876000	58.23	0
3	280401000	97797062000	807	787098000	40189000	44000000	299594000	57.05	0
4	270965000	122787884000	807	799409000	35806000	58000000	222901000	55.53	0
5	298528000	124625632000	799	876691000	42240000	49000000	364903000	57	0
6	336031000	123820584000	799	848855000	24256000	32000000	431210000	55.06	0
7	349984000	126841028000	799	837362000	41375000	47000000	384022000	55.92	0
8	330571000	123449206000	799	920015000	49124000	62000000	249988000	56.42	0
9	348927000	123223251000	780	926675000	42567000	55000000	135601000	56.93	0
10	381053000	120896567000	780	872374000	45205000	52000000	136496000	52.74	0
11	355923000	120401804000	780	869362000	24899000	30000000	128116000	56	0
12	322403000	118593487000	780	882598000	27128000	31000000	91144000	54.65	0
13	352610000	118622824000	750	864671000	40527000	43000000	94487000	63.98	0
14	493160000	118426053000	750	819984000	35423000	35000000	97205000	52.42	0
15	526091000	116827637000	750	870832000	15760000	16000000	83162000	51.41	0
16	546219000	120097403000	750	893608000	38044000	38000000	142242000	51.7	0
17	482742000	120025205000	731	881611000	22107000	22000000	219030000	57.56	0
18	473260000	121554895000	731	865384000	44470000	55000000	424386000	55.98	0
19	480081000	125500926000	731	1005249000	36430000	45000000	569892000	55.95	0
20	493066000	119872757000	731	963112000	41366000	54000000	425840000	53.15	0
21	268822000	124577833000	716	1061748000	49162000	25000000	1212912000	58.91	1
22	241054000	139536969000	716	1156650000	71130000	32500000	1287389000	55.71	1
23	372136000	138626743000	716	1239972000	29731000	15000000	1219131000	56.17	0
24	471140000	142601105000	716	1893299000	97118000	75000000	1064529000	54.6	0
25	447249000	150481060000	688	1957106000	75181000	-25000000	697344000	60.3	0
26	458069000	150622707000	688	2242057000	46078000	-15000000	707798000	58.4	0
27	495460000	151901194000	688	2242263000	40104000	-20000000	609699000	57.7	0
28	457968000	155107160000	688	2060083000	30798000	-15000000	438151000	59.7	0

Number of Observations Read	28
Number of Observations Used	28

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	2.243898E17	2.804872E16	35.68	<.0001
Error	19	1.493456E16	7.860294E14		
Corrected Total	27	2.393244E17			

Root MSE	28036216	R-Square	0.9376
Dependent Mean	387936214	Adj R-Sq	0.9113
Coeff Var	7.22702		

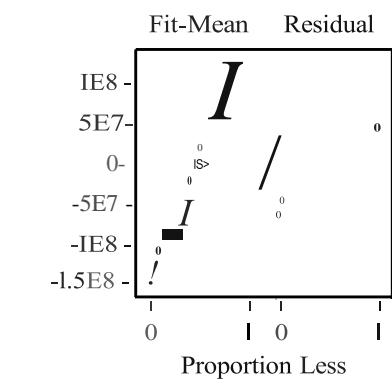
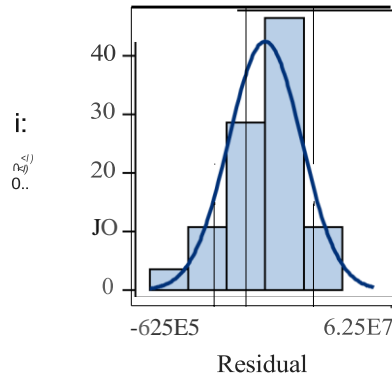
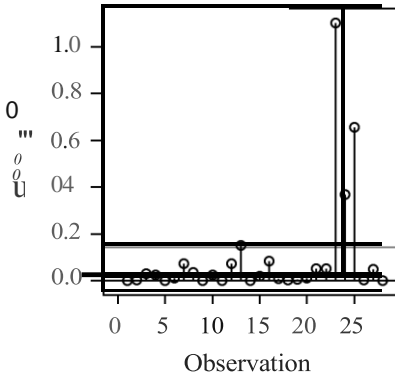
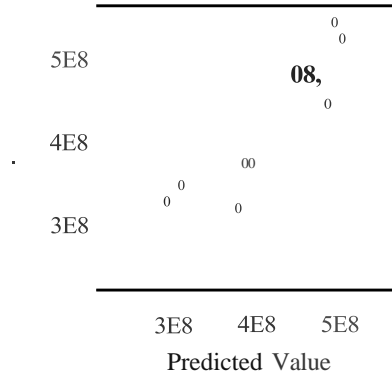
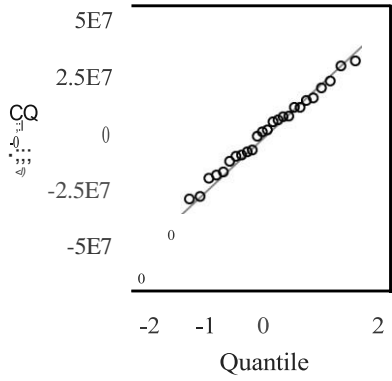
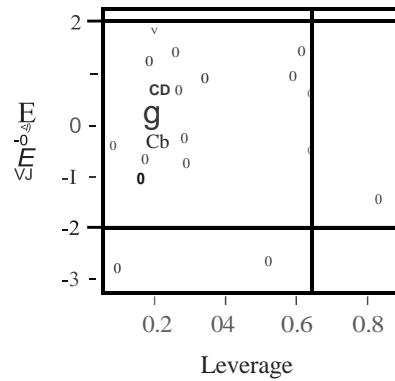
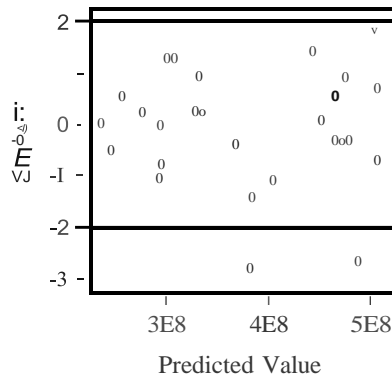
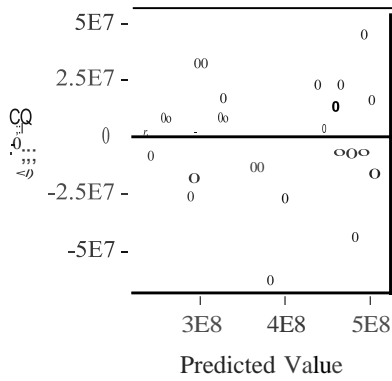
Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t 	Tolerance	Variance Inflation
Intercept	1	3216155120	252590868	12.73	<.0001	.	0
assetmt	1	-0.00036207	0.00081814	-0.44	0.6631	0.18946	5.27807
brmt	1	-2504953	240521	-10.41	<.0001	0.28670	3.48798
nlvmt	1	-0.09354	0.03939	-2.37	0.0282	0.08382	11.92987
ncomt	1	0.66486	0.41649	1.60	0.1269	0.57567	1.73710
pclmt	1	-0.71195	0.30315	-2.35	0.0298	0.05755	17.37759
dermt	1	-0.01239	0.04004	-0.31	0.7604	0.13727	7.28494
effmt	1	-13648172	2084700	-6.55	<.0001	0.80823	1.23727
pan	1	-53745543	55845795	-0.96	0.3479	0.13571	7.36864

Correlation of Estimates									
Variable	Intercept	assetmt	brmt	nlvmt	ncomt	pclmt	dermt	effmt	pan
Intercept	1.0000	-0.5712	-0.8025	0.0142	0.1007	0.0140	-0.0446	-0.4250	-0.0721
assetmt	-0.5712	1.0000	0.2646	-0.6231	0.0238	-0.3121	0.1719	0.1868	0.2432
brmt	-0.8025	0.2646	1.0000	0.2262	-0.1718	-0.0941	0.1560	-0.1236	0.2056
nlvmt	0.0142	-0.6231	0.2262	1.0000	-0.3034	0.7023	-0.5865	-0.1636	-0.4229
ncomt	0.1007	0.0238	-0.1718	-0.3034	1.0000	-0.2245	-0.0323	0.0286	0.1350
pclmt	0.0140	-0.3121	-0.0941	0.7023	-0.2245	1.0000	-0.7551	0.1546	-0.8326
dermt	-0.0446	0.1719	0.1560	-0.5865	-0.0323	-0.7551	1.0000	-0.1255	0.4120
effmt	-0.4250	0.1868	-0.1236	-0.1636	0.0286	0.1546	-0.1255	1.0000	-0.2112
pan	-0.0721	0.2432	0.2056	-0.4229	0.1350	-0.8326	0.4120	-0.2112	1.0000

Test of First and Second Moment Specification		
DF	Chi-Square	Pr > ChiSq
29	26.34	0.6075

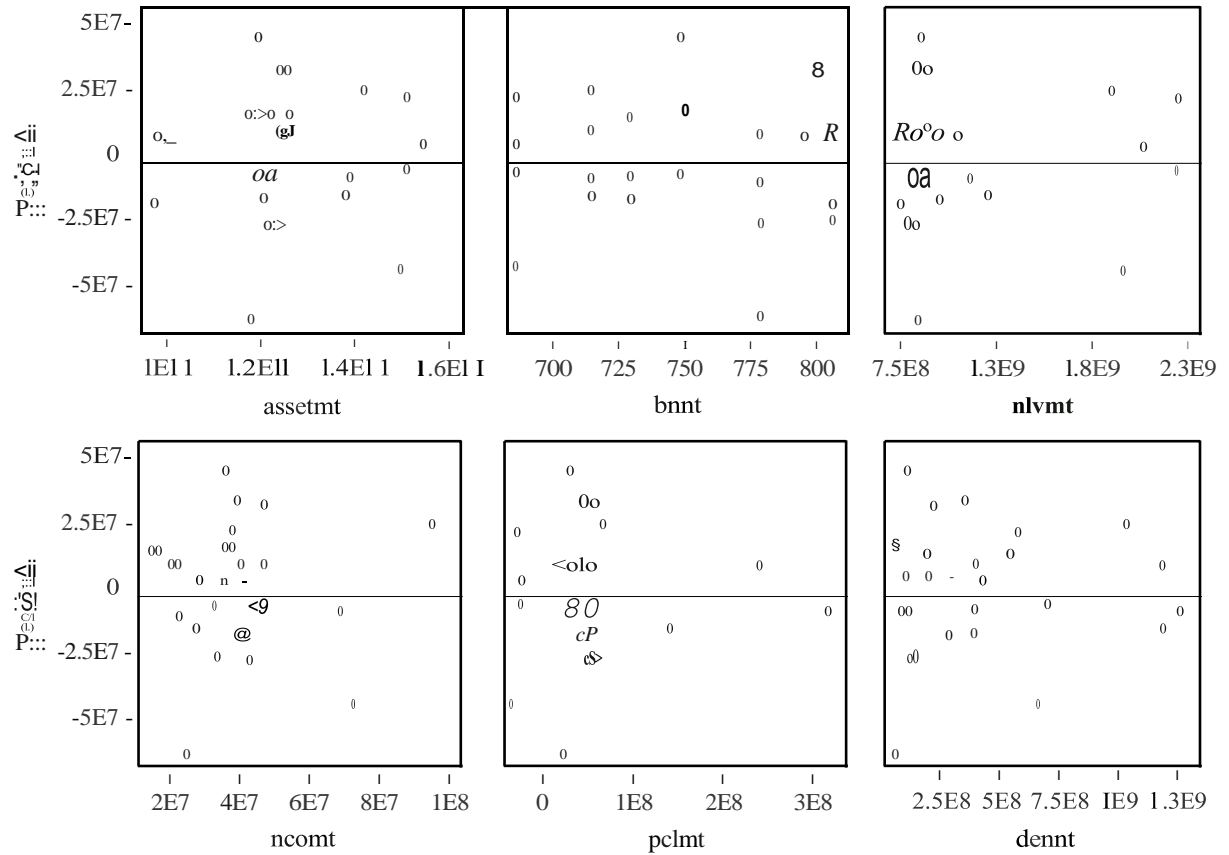
Durbin-Watson D	1.871
Number of Observations	28
1st Order Autocorrelation	0.064

Fit Diagnostics for nimt

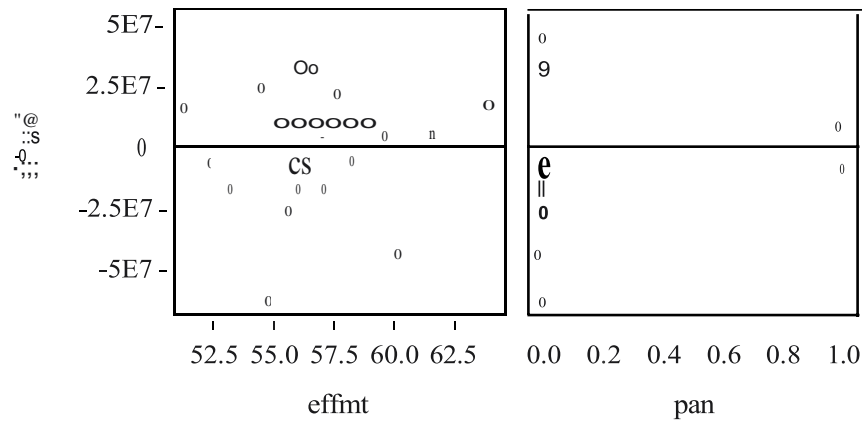


Observations	28
Parameters	9
EnorDF	19
MSE	786E12
R-Square	0.9376
Adj R-Square	0.9113

Residual by Regressors for nimt



Residual by Regressors for nimt



Number of Observations Read	28
Number of Observations Used	28

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	5.18879E17	6.485988E16	121.48	<.0001
Error	19	1.014424E16	5.339071E14		
Corrected Total	27	5.290233E17			

Root MSE	23106430	R-Square	0.9808
Dependent Mean	363250000	Adj R-Sq	0.9728
Coeff Var	6.36103		

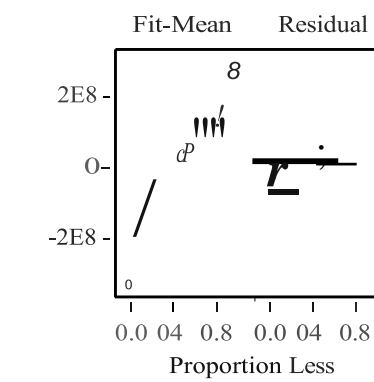
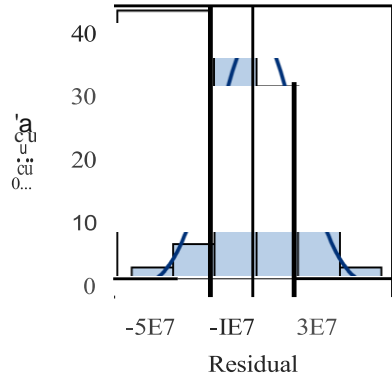
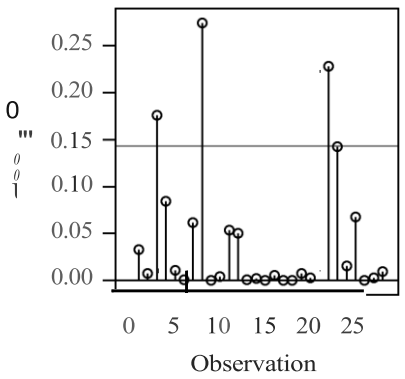
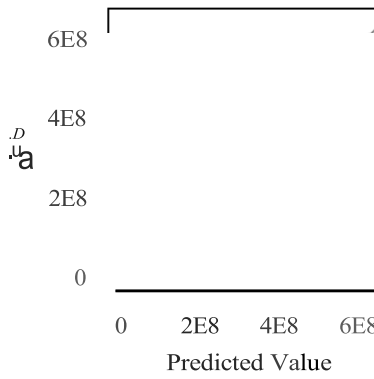
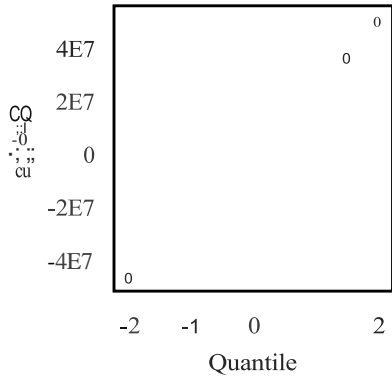
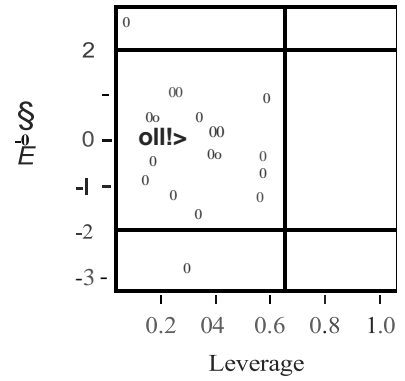
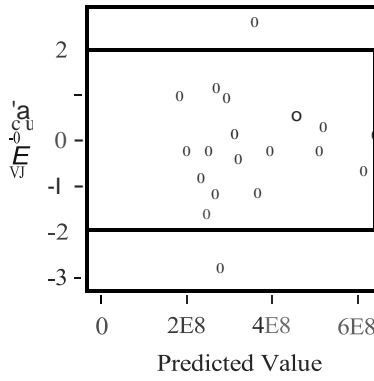
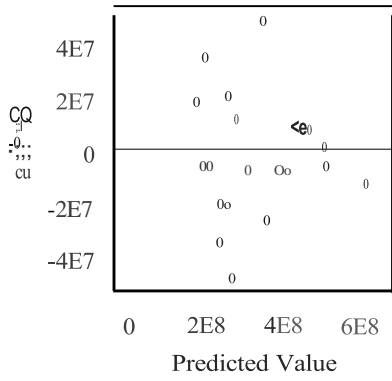
Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t 	Tolerance	Variance Inflation
Intercept	1	1796116924	609196430	2.95	0.0083	.	0
assetcb	1	-0.00010452	0.00179	-0.06	0.9541	0.02084	47.98564
brcb	1	-350493	224144	-1.56	0.1344	0.03683	27.15451
nlvcb	1	-0.22288	0.05543	-4.02	0.0007	0.28567	3.50048
ncocb	1	0.82209	0.20975	3.92	0.0009	0.25919	3.85812
pclcb	1	-0.62863	0.06734	-9.33	<.0001	0.17166	5.82561
dercb	1	-0.00281	0.01895	-0.15	0.8837	0.11708	8.54091
effcb	1	-13531572	3186411	-4.25	0.0004	0.14631	6.83501
pan	1	-121016880	42685615	-2.84	0.0106	0.30388	3.29081

Correlation of Estimates									
Variable	Intercept	assetcb	brcb	nlvcb	ncocb	pclcb	dercb	effcb	pan
Intercept	1.0000	-0.9807	-0.8529	-0.2663	0.2700	-0.2253	0.4403	-0.6026	0.0539
assetcb	-0.9807	1.0000	0.8390	0.3750	-0.3704	0.2157	-0.4914	0.5189	0.0056
brcb	-0.8529	0.8390	1.0000	0.2457	-0.3833	-0.1779	-0.0089	0.1525	0.1834
nlvcb	-0.2663	0.3750	0.2457	1.0000	-0.5938	-0.1740	-0.2368	-0.2038	0.4677
ncocb	0.2700	-0.3704	-0.3833	-0.5938	1.0000	0.0055	-0.1123	0.2499	-0.1831
pclcb	-0.2253	0.2157	-0.1779	-0.1740	0.0055	1.0000	-0.5755	0.6835	-0.7108
dercb	0.4403	-0.4914	-0.0089	-0.2368	-0.1123	-0.5755	1.0000	-0.6510	0.1413
effcb	-0.6026	0.5189	0.1525	-0.2038	0.2499	0.6835	-0.6510	1.0000	-0.5073
pan	0.0539	0.0056	0.1834	0.4677	-0.1831	-0.7108	0.1413	-0.5073	1.0000

Test of First and Second Moment Specification		
DF	Chi-Square	Pr > ChiSq
30	26.53	0.6477

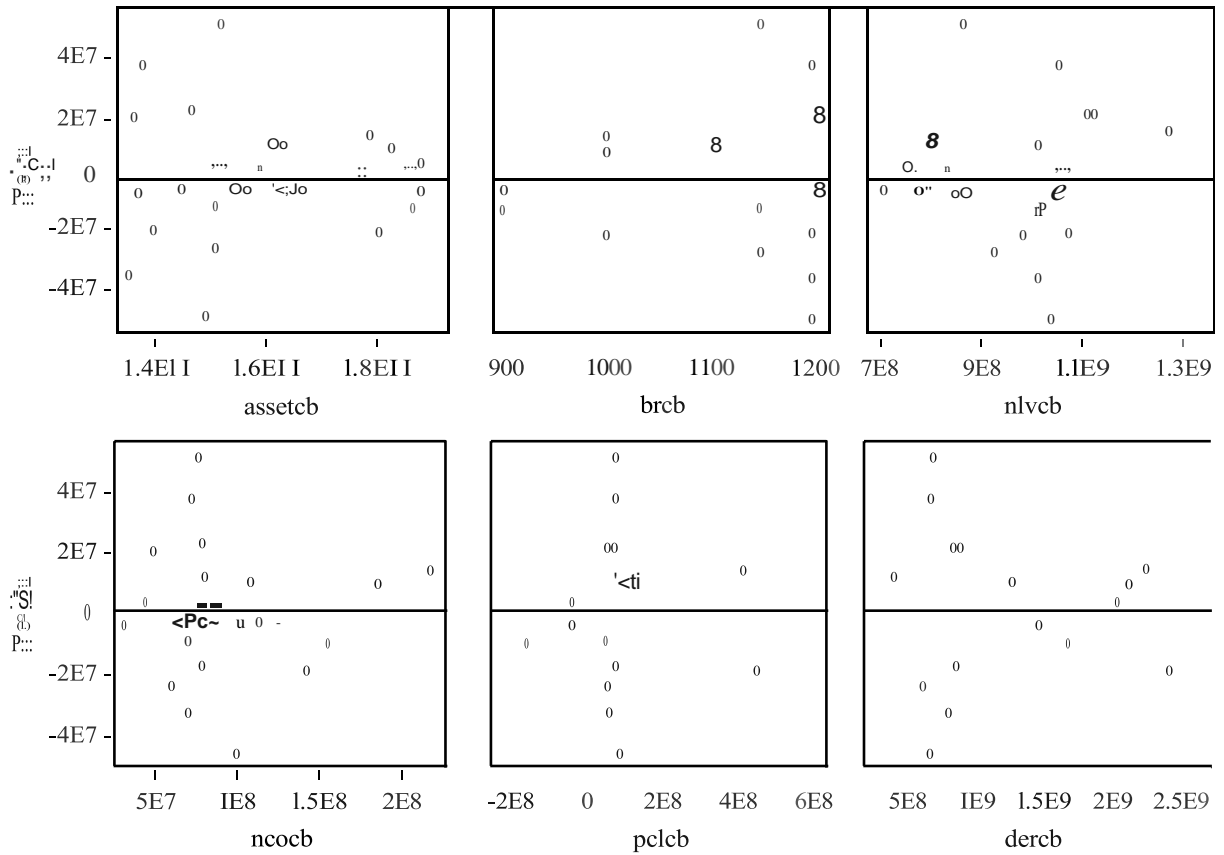
Durbin-Watson D	2.819
Number of Observations	28
1st Order Autocorrelation	-0.431

Fit Diagnostics for nich



Observations	28
Parameters	9
ErrorDF	19
MSE	534E12
R-Square	0.9808
Adj R-Square	0.9728

Residual by Regressors for nich



Residual by Regressors for nich

