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Kyle D. Allen  
*Boise State University*

Ken B. Cyree  
*University of Mississippi*

Matthew D. Whitedge  
*Mississippi State University*

Drew B. Winters  
*Texas Tech University*

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Kyle D. Allen

Boise State University

kyleallen@boisestate.edu

Ken B. Cyree

Frank R. Day/Mississippi Bankers' Association Chair

University of Mississippi

kcyree@bus.olemiss.edu

Matthew D. Whitedge

Mississippi State University

matthew.whitedge@msstate.edu

Drew B. Winters (corresponding author)

Lucille and Raymond Pickering Chair in Finance

Texas Tech University

Lubbock, TX 79409

806-834-3350

drew.winters@ttu.edu

# An Event Study Analysis of Too-Big-to-Fail after the Dodd-Frank Act:

## Who is Too Big to Fail?

### Abstract

One feature of the Dodd-Frank Act is the elimination of too-big-to-fail (TBTF) banks. TBTF is a government guarantee of large banks that has been shown to increase the value of these banks, so removing the guarantee should result in a price decline of TBTF bank stock. Using event study methods, we find very limited reaction to the process of eliminating TBTF. Specifically, there is limited reaction among the largest banks and banks receiving special attention, such as Systemically Important Financial Institutions (SIFI) banks. Instead, smaller banks not receiving special attention show some evidence of negative returns with the elimination of TBTF.

Keywords: Too-big-to-fail; Dodd-Frank Act; Event study

# An Event Study Analysis of Too-Big-to-Fail under the Dodd-Frank Act:

## Who is Too Big to Fail?

### 1. Introduction

The *Dodd-Frank Wall Street Reform and Consumer Protection Act* passed the House of Representatives on June 30, 2010, passed the Senate July 15, 2010, and was signed into law by President Obama on July 21, 2010. The purpose of the Act is to “promote the financial stability of the U.S. by improving accountability and transparency in the financial system, to end ‘too-big-to-fail’, to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes.”<sup>1</sup> We examine the elimination of Too-Big-to-Fail (TBTF) under Dodd-Frank in an event study framework.

The explicit policy of TBTF for banks in the U.S. began in the 1984 Congressional hearing on the FDIC intervention in the failure of Continental Illinois. O’Hara and Shaw (1990) use an event study and find positive and significant wealth effects when the Comptroller of the Currency announced the TBTF doctrine, and importantly the market reaction to the doctrine applied to all banks deemed TBTF by a *Wall Street Journal* article and not just national banks that were regulated by the OCC. Since the failure of Continental Illinois, the TBTF doctrine has been a feature in bank risk and performance evaluation and the subject of many research papers. For example, Brewer and Jagtiani (2013) develop size hurdles for banks likely to be TBTF and find that banks are willing to pay premiums when the merged bank cross a hurdle to become TBTF and was not before the merger. They find premiums of at least \$14 billion with positive abnormal returns of 15.54%. Similarly, Penas and Unal (2004) develop a asset-based size hurdle for TBTF and find that banks achieving TBTF status after mergers have higher bondholder gains, all else equal.

We investigate the effect of the removal of TBTF to determine whether or not there was a reversal of the wealth effect found by O’Hara and Shaw (1990). Specifically, Section 1101 of the Dodd-Frank Act amended section 13(3) of the Federal Reserve Act to eliminate *emergency funding to individual firms*, i.e., to end TBTF. However, in many respects the Dodd-Frank Act is an outline

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<sup>1</sup> See the complete Dodd-Frank Act at: <https://www.gpo.gov/fdsys/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf>.

with the specific rules to be developed later, so we examine the evolution of the rules in section 1101 to determine the market's reaction to the legislation. We anticipate a negative reaction to the elimination of TBTF as a reversal of the positive wealth effect found by O'Hara and Shaw (1990).

Our null hypothesis is that the market did not respond to the development of section 1101. One alternative hypothesis is that section 1101 eliminates TBTF and the market responds by lowering the prices (negative returns) of TBTF banks. We begin with analysis of each bank in our sample because if section 1101 eliminates TBTF then it would be useful for future research to determine the set of banks that the market believed was TBTF. Following the financial crisis, categories of financial institutions were created that received additional regulation and supervision, such as Systemically Important Financial Institutions (SIFI). We examine these portfolios of banks relative to the development of section 1101 to determine if the market views these institutions differently.

Our empirical tests do not find a negative market reaction for the largest banks from the elimination of TBTF. Instead, the overall reaction is best described as a non-event. As we expand our investigation, the evidence is counter to our expectations. First, Dodd-Frank passing the Senate and moving to the President is our most negative event with half of the sample having a significant and negative reaction. However, the negative reaction is spread across all dimensions of our sample so this is not consistent with the elimination of TBTF. Second, amending Dodd-Frank to go from "general" emergency to "limited" emergency is the first specific move to eliminate TBTF. Eleven of the 55 banks in the sample have a negative reaction to this event and eight of the 11 banks are among the smallest portfolio in our sample. This is not consistent with the elimination of TBTF. Our results are consistent with public opinion suggesting that implementation of the final rule to eliminate TBTF did not eliminate it. Our results suggest that banks identified by regulators for special attention are viewed as continuing to be TBTF by the market, while other banks may be allowed to fail.

## **2. Literature and Research Question**

Market reactions to events such as public announcements, new or changing regulations, macro-economic statistics, etc. have been vigorously researched and tested across time. We

review a sample of this literature here. Our review ends with recent post financial crisis research related to the *Dodd-Frank Wall Street Reform and Consumer Protection Act* and special groups of large financial institutions.

### 2.1. *Bank Performance and Regulation*

We begin our literature review with some examples of bank event studies. Allen and Wilhelm (1988) and Millon-Cornett and Tehranian (1989) study the effect of the 1980 *Depository Institutions Deregulation and Monetary Control Act* on banks and find increased returns in response to the Act being passed. Similarly, Cornett and Tehranian (1990) test whether events leading to the *Garn-St. Germain Depository Institutions Act* of 1982 have significant effects on stock returns and find that commercial banks and large savings and loans benefited from the Act's passage through higher returns.<sup>2</sup> Cyree (2000) examines the diminishing of the *Glass-Steagall Act* using an event study and finds stock prices increased significantly for large money center banks and prices fell for small regional banks. Final removal of *Glass-Steagall* happened with the passage of the *Gramm-Leach-Bliley Act* (GLBA) of 1999, and Filson and Olfati (2014) find significantly positive Cumulative Abnormal Residuals (CARs) for diversifying mergers well after the GBLA went into effect.

In general, bank event studies on regulation changes show that the market responds to new regulations that change banks' business or regulatory environments. We now discuss the findings for wealth effects related to TBTF and the Dodd-Frank Act.

### 2.2. *Dodd-Frank and Too-Big-To-Fail*

In September, 1984 the Comptroller of the Currency mentioned a group of at least 11 banks that had become TBTF. O'Hara and Shaw (1990) test market reactions to the 1984 announcement and find that the TBTF banks experienced increased wealth effects in response to the

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<sup>2</sup> Similar studies have analyzed other events such as *the Federal Deposit Insurance Corporation Improvement Act*, the *Riegle-Neal Interstate Banking and Branching Efficiency Act* of 1994, and the *Gramm-Leach-Bliley Act* in 1999 (See Akhigbe and Whyte (2001); Brook, Hendershott, and Lee (1998); Mehran, Morrison, and Shapiro (2011)).

announcement. One purpose of the *Dodd-Frank Act* was to end ‘too-big-to-fail’ (TBTF).<sup>3</sup> In this section we review the literature on Dodd-Frank and large financial institutions.

Gao, Liao, and Wang (2018) study stock market reactions to events leading up to the passage of Dodd-Frank. Using the definition of Systemically Important Financial Institutions (SIFI) of over \$50 billion in assets, they find that these large financial institutions had negative abnormal stock returns during the events leading to the passage of Dodd-Frank with more negative returns as the bill moved through Congress and passage was more certain. Gao, Liao, and Wang (2018) have a group they call the “Big 6” banks (Bank of America, Citigroup, Goldman Sachs, JP Morgan Chase, Morgan Stanley, and Wells Fargo) and the Big 6 exhibit positive returns as the Dodd-Frank Act moves through Congress. Their findings suggest that investors continue to view the biggest banks as different and protected in spite of the stated purpose of the Dodd-Frank Act to eliminate TBTF banks.<sup>4</sup> We note that at the time of passage the Dodd-Frank Act has the stated intent to eliminate TBTF, but no specific rules implementing the elimination of TBTF.

Other studies show the expected response to Dodd-Frank. Balasubramnian and Cyree (2014) suggest that market discipline has improved since the Dodd-Frank Act. They find that the TBTF discount on subordinated debt transactions has been reduced by 94% since Dodd-Frank passed. Akhigbe, Martin, and Whyte (2015) suggest financial institutions have decreased discretionary risk taking since the passage of Dodd-Frank. The largest and riskiest banks are the banks that have decreased their risk taking the most.

### 2.3. *Post Crisis Market Reaction for Special Groups of Banks (SIFIs and GSIBs)*

The Financial Stability Board and Basel Committee created a set of Systematically Important Financial Institutions (SIFIs) which includes a set of banks as Global Systemically Important Banks (GSIBs) in November 2011. The creation of the special groups by regulators has led to the analysis of market reactions to the creation of these groups.

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<sup>3</sup> See the complete Dodd-Frank Act at: <https://www.gpo.gov/fdsys/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf>.

<sup>4</sup> In the non-banking area of insurance, Dewenter and Riddick (2015) find that Globally Systematically Important Insurers (G-SIII) have abnormal stock returns of 11.7% for eight events starting when AIG is bailed out during the 2008 crisis and ending with the identification of the eight G-SIII firms in 2013. These findings indicate the importance of being declared systemically important and therefore TBTF.

Using an event study, Bongini, Nieri, and Pelagatti (2015) study 70 global banks around the development of the list of SIFIs. They examine three announcements: (1) SIFI methodology, (2) the first list of SIFIs, and (3) second list of SIFIs. They find a positive reaction for the set of institutions when the methodology is announced for the set of institutions that will become SIFIs. However, when they divide the 70 banks by region, only Europe has a positive reaction. U.S. institutions do not react. Their regional analysis did not separate SIFIs from non-SIFIs.

Kleinow, Nell, Rogler, and Horsch (2014) examine SIFIs in an event study similar to Bongini, Nieri, and Pelagatti (2015). Both studies use the same second and third events and both find a general lack of market response to these events. The two studies use a different first event. Kleinow, Nell, Rogler, and Horsch (2014) find no market reaction to their first event. Kleinow, Nell, Rogler, and Horsch use a Financial Times article that provides an internal watch list for potential SIFIs from the Financial Stability Board while Bongini, Nieri, and Pelagatti use the announcement of the methodology to be used to determine the list of SIFIs.

Abreu and Gulamhussen (2013) find no abnormal reaction in a sample of global systemically important banks (GSIBs) and their peer group when examining the market reaction to the list of GSIBs being announced. The event date used is when the Financial Stability Board first announced its full list of systemically important banks on November 4<sup>th</sup>, 2011. This is the second event date used in both Kleinow, Nell, Rogler, and Horsch (2014) and Bongini, Nieri, and Pelagatti (2015). All three studies agree that November 4, 2011 is a non-event for SIFIs and GSIBs. These studies on SIFIs and GSIBs find that the market reacted to the announcement of the methodology but not to subsequent announcements of lists. This suggests that the methodology contains the information the market needed to determine the institutions that would become SIFIs and GSIBs and the later lists of these sets contained no new information.

#### 2.4. *Research Question*

The extant literature shows that market prices react to legal and regulatory changes that impact firm values. We examine if section 1101 of the Dodd-Frank Act changes bank values. Since the original Dodd-Frank Act was mostly an outline of proposed changes with the specific rules left to regulators and supervisors, we examine, using event study methods, the development of rules related to section 1101 across time to determine its impact.



Traditional event study methods (for example, Brown and Warner (1985)) use a pre-event estimation period (typically over 200 days) followed by event analysis. These methods do not work well for analysis of legislation as the events are typically clustered too close together. Millon-Cornett and Tehranian (1989) and Cornett and Tehranian (1990) develop event study methods for analyzing the development of legislation as used in many studies. These studies examine events specifically related to the progression of legislation. Dodd-Frank is unusual in that the legislation passed, yet many details remain. Thus, we examine events related specifically to the development of section 1101.

Gao, Liao, and Wang (2018) examine the development of Dodd-Frank. Their events begin with an Obama administration announcement on global financial regulation (January 2009) and end with the passage of Dodd-Frank (July 2010). Dodd-Frank, in the form that passed through Congress, specified the desire to eliminate TBTF, but provided no details on how this would be implemented.

We begin our event analysis with the final steps of the passage of Dodd-Frank: (1) the initial bill presented to Congress on January 5, 2010, (2) passage in the House on June 30, 2010, and (3) passage in the Senate on July 15, 2010.<sup>5</sup> Our fourth event is on July 21, 2010 when Dodd-Frank was signed into law with an amendment to provide only limited emergency liquidity through broad-based programs. The final rules to implement the elimination of TBTF banks (eliminate emergency lending to individual banks) were not enacted until November 30, 2015 (Event 9). Additionally, there are some milestones directly related to the elimination of TBTF between the passage of the act and announcement of the final rules on TBTF, which are detailed in Table 2 in the list of events we test.

We follow the methods from Cornett and Tehranian (1990) to test how the market reacted to the development of the rules to eliminate TBTF. Specifically, our testable hypotheses are:

Null:                No market reaction to the development of the rules in section 1101 of Dodd-Frank to eliminate TBTF.

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<sup>5</sup> On this date, Congress was assembled to present the Dodd-Frank act cited as the “Dodd-Frank Wall Street Reform and Consumer Protection Act.” This document is formally called H.R. 4173 by Congress. See <https://www.sec.gov/about/laws/wallstreetreform-cpa.pdf>.

Alternative: Significant market reaction to rules for section 1101 for large banks.

We estimate the event study model for the individual banks in our sample and various groups/portfolios of banks, some of which receive special attention, to determine the banks that market participants believe to be TBTF.

Brewer and Jagtiani (2013) note that "... there is no such thing as a list of TBTF banks ..." and that "... the specific TBTF threshold has never been officially defined." Absent specific definitions, Brewer and Jagtiani (2013) define TBTF in three ways: 1) if the bank has total assets greater than \$100 billion, 2) if the bank is one of the 11 largest banks, and 3) if the market value of equity is greater than \$20 billion. Alternatively, Penas and Unal (2004) suggest that a bank with total assets of more than 2% of all depository assets is TBTF and a bank with less than 0.35% of all depository assets are clearly not TBTF. These definitions are reasonable, yet arbitrary.

Kane (2000) suggests that very large banks are "... more likely to receive favorable treatment by both the market and regulators during a financial crisis." Dodd-Frank is intended to eliminate favorable treatment of TBTF banks by regulators and the market should respond by decreasing the value of TBTF banks. The list of banks that the market devalues with the elimination of TBTF may not match the set of large banks that regulators would be willing to bailout. However, the list of banks that exhibit market reactions provides the set of banks whose securities prices included a TBTF premium. Thus, determining this group of TBTF banks are important to future research and public policy discussions.

Therefore, it is an empirical question as to how the market defines TBTF banks, and that is what we investigate. We use two methods to study what banks the market believes have a TBTF premium: 1) estimate individual bank reactions, and 2) separately form bank portfolios based on pre-identified bank groups such as SIFI banks. Using these two methods allows results from hypothesis tests to be robust to the potential for incorrect classification.

### **3. Data and Methods**

In this section, we discuss the data and methods used to study the wealth effects of the removal of TBTF from banks, and which banks are considered TBTF by market participants.

### 3.1. *Data: Bank Selection*

In order to analyze the impact the Dodd-Frank Act had on TBTF banks, we first collect Report of Condition and Income data from the Federal Reserve Bank of Chicago on all commercial banks for December 2009, which is the quarter preceding the drafting of the Dodd-Frank Act. We then aggregate data at the holding company level in order to match bank characteristics with the PERMCO-RSSD link from the Federal Reserve Bank of New York. The resulting list of banks is then merged with the CRSP daily stock file from December 1, 2009 through December 31, 2015 for a total of 1,532 trading days.<sup>6</sup> Consistent with Cornett and Tehranian (1990) and Cyree (2000) we keep only banks, which trade every day over the sample period, resulting in a total of 271 banks.

We are concerned with how the Dodd-Frank Act might have affected market perceptions of banks considered TBTF. Within sections 165 and 166 of the Dodd-Frank Act, the Federal Reserve was required to enhance scrutiny on banks with \$50 billion or more in total assets.<sup>7</sup> In addition to the \$50 billion classification, section 165 also requires that banks with more than \$10 billion in total assets to have company-run stress tests beginning in October, 2013 with a one year transition period. Therefore, in order to ensure we capture any effect from the Dodd-Frank Act on those banks that are likely to be considered TBTF, we include all banks with more than \$10 billion in total assets. We also include any bank identified by InvestSnips as a mid- or large-cap bank not already present in the sample.<sup>8,9</sup> Our final sample includes a total of 55 banks. In general, these banks are very large compared to the industry as a whole, and represent the most likely banks to be considered TBTF by the market.

Gao, Liao, and Wang (2018) examine “Systemically Important Financial Institutions” and they include large financial institutions with SIC codes from 6000 through 6999. This set of SIC codes includes: banks, non-deposit credit institutions, securities firms, insurance, real estate, and

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<sup>6</sup> December 31, 2015 is the latest available data for daily stock prices at the time the study was conducted.

<sup>7</sup> One example came during the testimony before Congress of Michael Gibson, Director of Banking Supervision and Regulation, on May 16, 2012. The banks above this asset threshold were subject to “enhanced prudential standards.” Available at <http://www.federalreserve.gov/newsevents/testimony/gibson20120516a.htm>.

<sup>8</sup> The list includes the Bank of the Ozarks, F.N.B. Corporation, Home BancShares, Iberiabank Corporation, SVB Financial Group, Umpqua Holdings Corporation, United Bankshares, and Western Alliance Bancorporation.

<sup>9</sup> We do not include stocks below the mid-cap level to ensure we do not include stocks that are not traded frequently or may be wholly owned. In support of this, we find that the median (average) volume per day in the excluded group is 13,224 (438,439) shares compared to 1,280,631 (9,146,807) shares for the stocks in the sample.

other financial institutions. Their sample includes all the banks in our sample with more than \$50 billion in assets except for Discover Financial Services. However, their sample also includes a number of insurance companies, such as AIG, CIGNA and Prudential that are not in our sample of banks.

The Dodd-Frank Act, as well as other regulatory actions, creates sets of banks for special attention. The different groups of banks receiving special attention are the following. First, in November 2011 the Financial Stability Board and Basel Committee announce the first set of Systematically Important Financial Institutions (SIFIs) which includes a set of banks as Global Systemically Important Banks (GSIBs). Bongini, Mieri and Pelagatti (2015) note the Financial Stability Board oversees SIFI rules while the Basel Committee oversees GSIB rules. We have eight GSIBs in our U.S.-only sample: JP Morgan/Chase, Bank of America, Citigroup, Wells Fargo, BNY Mellon, State Street, Goldman Sachs, and Morgan Stanley.<sup>10</sup> We compare this group to the remaining 47 banks with the notion that there is little doubt that these institutions are considered TBTF banks, and any market reaction should be within this group if TBTF is removed. We note for comparison that Gao, Liao and Wang (2018) examine a group of “Big 6” banks. Their Big 6 banks are all included in our eight GSIBs. The two banks in our GSIB list, but not in their Big 6 list, are BNY Mellon and State Street.

Second, the Federal Reserve created the Supervisory Capital Assessment Program (better known as stress-testing) to assess the capital adequacy of large U.S. financial institutions in the event of another major financial downturn. Balasubramnian and Cyree (2014) use this set of banks required by the Federal Reserve to conduct stress tests in February, 2009, which is prior to our sample. We follow their lead and use this set of banks as our stress-tested banks. This set of banks includes all the banks in our GSIB group, as well as American Express, BB&T, Capital One Financial, Fifth Third, Keycorp, MetLife, PNC Financial Services, Regions Financial, SunTrust Banks, and U.S. Bancorp for a total of 18 banks.<sup>11</sup> It is plausible that these 18 banks could be

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<sup>10</sup> The original list of GSIBs from November 2011 includes 29 large financial institutions from around the world. Of the global set of 29 institutions eight are U.S. firms. Those eight firms are the set of GSIBs used in our analysis.

<sup>11</sup> GMAC/Ally was in the original set of 19 banks in 2009. GMAC/Ally is not in our sample. The reason is that GMAC stock returns do not exist in WRDS and Ally stock returns begin in April 2014. We require daily returns across our sample period for inclusion in our final sample, so Ally is excluded from our analysis.

considered TBTF. We compare this group to the remaining banks, which are not in the stress-tested sample.

Third, the banks identified for stress-testing under the Supervisory Capital Assessment Program is different from the requirement in Dodd-Frank Act that all banks with more than \$50 billion in total assets receive enhanced scrutiny. Accordingly, we divide the sample into three groups based on asset size with breakpoints at \$1 trillion and \$50 billion. There are four banks with more than \$1 trillion in total assets, 17 banks with total assets less than \$1 trillion but greater than or equal to \$50 billion, and 34 banks with total assets less than \$50 billion. Using different asset size groups allows us to determine the size that the market considered to be TBTF.

The list of the 55 banks in our sample appears in Table 1 along with their total assets from December 2009. The list is presented in order of decreasing total assets.

### 3.2 *Timeline*

This section provides the timeline of events that we examine in the evolution of the elimination of TBTF under Dodd-Frank. Before discussing the timeline, we provide some background on section 13(3) of the Federal Reserve Act and its amendment by Section 1101 of the Dodd-Frank Act.

Section 13(3) of the Federal Reserve Act provides the emergency lending authority to the Federal Reserve. Prior to the Dodd-Frank Act, section 13(3) provided for emergency lending to any individual, partnership or corporation subject to four conditions that provided the authority for the Federal Reserve's various financial crisis lending programs and allowed for TBTF bailouts.

Section 1101 of the Dodd-Frank Act amended section 13(3) to limit emergency lending to broad-based programs and facilities that relieve liquidity pressures in financial markets. Limiting authority to "broad-based programs" that "relieve liquidity pressures" is intended to eliminate TBTF. However, this statement allows a great deal of room for interpretation, and critics suggest it provides enough room to bailout large banks. When the draft of the rules for implementing section 1101 were provided for public comment on December 23, 2013, concerns continued about the possibility to bail out large banks. Public comments were due by March 7, 2014 with the final rules announced on November 30, 2015. The final rules include a number of specific restrictions including:

1. Defining broad-based to be:
  - a. An identifiable market or sector of the financial system,
  - b. At least five firms must be eligible to participate, and
  - c. Not be designed to assist any number of firms to avoid bankruptcy.
2. Programs cannot lend to insolvent firms and further defines insolvency to include borrowers not paying their debt as they come due over the previous 90 days.
3. Not lending to companies borrowing for the purpose of lending to insolvent companies.
4. Specify that emergency loans must be made at a penalty rate.
5. Each emergency program must be reviewed every six months and must be terminated within one year of start or last review.
6. All programs must have prior approval of the Secretary of the Treasury.

The restrictions are designed to prevent bailouts of failing firms and eliminate TBTF.

Following the final set of rules, critics continue to complain that the rules do not eliminate TBTF. For example, in 2016 the Chair of the House Committee on Financial Services Jeb Hensarling introduced the Financial CHOICE Act that includes a section titled “Ending Too Big to Fail and Bank Bailouts.” Thus, the elimination or continued existence of TBTF is an ongoing question.

We examine the market’s view on the rules to eliminate TBTF in an event study framework. Accordingly, we next provide the timeline of the relevant events. The timeline of events for TBTF elimination under section 1101 are listed in Table 2.

The first event in our timeline is the presentation of the Dodd-Frank Act to Congress that includes the statement that the policy of TBTF is coming to an end. We expect a negative reaction to the end of TBTF, but this announcement is not “clean” as it is part of the announcement on the overall Dodd-Frank Act. Event 4 is a specific rule to move toward elimination of TBTF. We expect a negative reaction to this rule. Event 5 is the announcement of the proposed rules to implement section 1101 and therefore to eliminate TBTF. This is the first announcement to move toward operationalizing the elimination of TBTF and we expect a negative reaction. Events 6 and 7 are specific concerns about section 1101 sent to the Fed Chair by a House committee (6) and by group of Senators (7). The final event (Event 9 on November 30, 2015) in our timeline is the announcement of the final rules to implement section 1101 that will go into effect on January 1,

2016. This is the specific elimination of TBTF. We expect a negative reaction to this event if the market finds any information in the final rule.

### 3.3. *Other Events, Anticipated Events, and Contaminated Events*

Our set of events include only events specifically related to the passage of Dodd-Frank and the subsequent development of the rules to implement the elimination of TBTF in section 1101 of Dodd-Frank. There are many events following the crisis related to issues with large banks. For example, Bongini, Mieri and Pelagatti (2015) examine events related to the development of the list of SIFIs. These events directly impact the value of these institutions, but have nothing to do with the development of section 1101 of Dodd-Frank and we account for these “noisy” events econometrically via the model intercept.

Once we have identified the events related to the development of section 1101 of the Dodd-Frank Act, we still need to be careful about the timing of events and whether the events are contaminated. The issue with timing is whether we have correctly identified when the event became public. If we miss the release date of the information then our methods will miss the impact of the information on returns. Since we are examining large publicly traded banks during a time when banks received a lot of attention, we do not believe the market would react slowly to new information. Instead, we are concerned with anticipated events where the market was aware of the information before its specific release. Our first four events are acts of Congress and these are difficult to anticipate. The last five events relate to internal workings of the Fed and Congressional responses. These are also difficult to anticipate. Accordingly, we do not believe there is an issue with our events being anticipated well in advance.

Since we examine large publicly traded banks, there is a substantial amount of information released regularly for the firms in our sample. This creates the concern that events may be contaminated with the release of other valuable information. We use Bloomberg news to review all nine of our events windows across all 55 banks in our sample for contaminating information. We find contaminated events for the following banks: American Express event 8; Bank of America events 1, 4, 6, and 9; BB&T event 7; Citigroup event 9; Goldman Sachs events 2, 3, 4, and 9; JP Morgan event 5; and Morgan Stanley event 5. In the individual bank analysis we zero

out the event dummy for the contaminated events. For the group analysis we zero out the bank returns in the group portfolio for each contaminated event.

### 3.4. Methods

Cornett and Tehranian (1990) examine the impact of the development of Garn-St. Germain Depository Institutions Act of 1982 on the value of commercial banks and savings and loans. We follow the Cornett and Tehranian methods and estimate the following event study model from the drafting of the Dodd-Frank Act through the announcement of the rule that eliminates TBTF. We estimate the model for each of the 55 banks in our sample in a system of seemingly unrelated equations (SUR methods).

$$\begin{aligned}
 R_{1,t} &= \alpha_1 + \beta_1 Rm_t + \sum_{k=1}^9 \gamma_{1,k} D_{k,t} + \eta_1 I_t + \varepsilon_{1,t} \\
 &\dots\dots\dots \\
 R_{55,t} &= \alpha_{55} + \beta_{55} Rm_t + \sum_{k=1}^9 \gamma_{55,k} D_{k,t} + \eta_{55} I_t + \varepsilon_{55,t}
 \end{aligned} \tag{1}$$

where

$R_{i,t}$  is the daily return for bank  $i$  on day  $t$  ( $T=1,532$  daily observations from December 1, 2009 through December 31, 2015),

$Rm_t$  is the daily return for equally-weighted CRSP index on day  $t$ ,

$D_{k,t}$  is a dummy variable equal to one for the  $k^{th}$  event using an event window of  $[-2, +2]$ ,<sup>12</sup>

$I_t$  is a dummy variable equal to one on the day of change in the discount window target rates and the day before.<sup>13</sup>

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<sup>12</sup> Bongini, Mieri and Pelagatti (2015) use a  $[-2, +2]$  event window for their primary results. Bongini, Mieri and Pelagatti (2015) use the  $[-2, +2]$  window in their secondary results using methods similar to ours and find results consistent with their primary results. For completeness, we also estimate our model using a variety of event windows. Our results are qualitatively similar across the various windows.

<sup>13</sup> On December 16, 2015 the Federal Reserve announced that it was going to raise the discount rate target by 25 basis points. An increase in interest rates typically reduces bank stock values resulting in negative returns, so we need to control for this event. We include this event as a control variable in our analysis following Flannery and James (1984).



In addition to the SUR estimation on the individual banks we also estimate the model for various groups of banks. The different groups include: (1) GSIBs vs. non-GSIBs, (2) Stressed-tested vs. non-Stress tested, and (3) by asset size: greater than or equal to \$1 trillion, less than \$ 1 trillion to greater than or equal to \$50 billion, and less than \$50 billion.

## **4. Results**

The empirical results are contained in this section for individual banks and groups of banks.

### *4.1. Individual Bank Results*

Our research question is whether or not large banks' (based on asset size) stock prices responded to the elimination of Too-Big-to-Fail. We begin with the estimation of equation (1) on the 55 large banks in our sample in a system of seemingly unrelated equations. The results from the estimation of equation (1) are reported in Table 3. Table 3 lists the banks in the same order as Table 1 and provides the total assets from Table 1 for ease of reference. To keep the table manageable, we report only the parameter estimates on the 9 events. Not reported in Table 3 are the market parameter estimates and the target rate parameter estimates. The parameter estimates for current market returns is significant and positive across all banks. The parameter estimates on the target rate change are insignificant across all banks.

Table 3 reports the event results for each of the 9 events listed in Table 2. To make it easier to identify the significant results we highlight all parameter estimate that are significant at the 10% level or better and then label the level of significance. Contaminated events (listed in section 3.3.) are left blank.

Our events 2 and 3 align with events 15 and 16 from Gao, Liao and Wang (2018), so we will begin our discussion here for comparison. Gao, Liao and Wang (2018) find significant and negative abnormal returns for SIFIs across both events 15 and 16. They include large U.S. financial institutions with SIC codes from 6000 through 6999. Additionally, they provide an analysis of abnormal returns for banks in aggregate across their events 13 through 16. The abnormal returns for Big 6 banks across these events is not different from zero, while the abnormal return for the non-banks is significant and negative across these events. In cross-sectional analysis the Big 6 banks show positive returns across events 13 through 16.

Event 2 has only seven significant parameters estimates across our 55 banks with five negative and two positive. These seven significant coefficients are spread across different sized banks and different groups of banks. These results suggest that Event 2 (House approval of the final Dodd-Frank bill) is a non-event for large U.S. banks. Our results indicate that the negative and significant returns for the corresponding event in Gao, Liao and Wang (2018) are driven by non-bank financial institutions.

Event 3 (Dodd-Frank passes the Senate) has 28 significant parameter estimates and all 28 are negative. Only three of the Big 6 banks examined in Gao, Liao, and Wang (2018) have a significant parameter estimate. Our results suggest that the negative abnormal returns for Event 16 in Gao, Liao and Wang (2018) are likely from non-bank financial institutions.

Event 3 has by far the largest number of significant parameter estimates, so we need to discuss Event 3 further. Event 3 is Dodd-Frank passing the Senate and being sent to the President. This event suggests that Dodd-Frank is likely to become law and we observe 28 significant and negative parameter estimates from 54 banks (Event 3 is contaminated for Goldman Sachs). Our average return for Event 3 is -0.0102, while the TBTF event return from O'Hara and Shaw (1990) is 0.0131. The O'Hara and Shaw return is from becoming TBTF. The question is whether our Event 3 could be from the elimination of TBTF or something else such as the increased compliance costs coming from Dodd-Frank. If the negative return from Event 3 is from the elimination of TBTF we would expect all the GSIBs and stress-tested banks to show negative returns. We find only half of the GSIBs and two-thirds of the stress-tested banks have negative parameter estimates. In addition, two-thirds of the banks with total assets of less than \$50 billion have negative parameter estimates. Thus, the negative parameter estimates on Event 3 are unlikely to represent a market response associated strictly with the elimination of TBTF.

Our expectation is that event 1 (presenting of Dodd-Frank Act to Congress), Event 4 (changing "general" emergency to "limited" emergency), Event 5 (public notice of operating rules for section 1101) and Event 9 (final rules implementing section 1101 to end TBTF) are more likely to be significant events as they suggest new information in developments leading to rules that eliminate TBTF, so we turn our discussion to these four events.

Event 1 is the presentation of the Dodd-Frank Act to Congress that includes an outline for the elimination of TBTF, which should be a negative event for large banks. However, the Dodd-

Frank Act is a wide-ranging bill and therefore not a clean event for TBTF, so we are agnostic as to the market reaction to the presenting of the bill. Table 3 reports 13 significant parameter estimates out of the 55 banks in our sample for Event 1. Of the 13 significant parameter estimates, nine are positive in contrast to the expected negative estimates if TBTF is eliminated. The positive parameter estimates are concentrated among the banks in our sample with assets exceeding \$50 billion.

Event 4 changed “general” emergency lending to “limited” emergency lending in an attempt to eliminate TBTF. We expect a negative reaction, especially from larger banks. We find 14 significant parameter estimates across the 55 banks with 11 being significantly negative. None of the eight GSIBs have significant parameter estimates and only one stress-tested bank (BB&T) has a significant and negative parameter estimate. Eight of the 11 negative parameter estimates are for banks with less than \$50 billion in total assets. This is consistent with the probability of bailouts declining only for banks less than \$50 billion, but not the largest banks in the sample.

Event 5 is the public announcement of the proposed rules to implement section 1101 of Dodd-Frank. We expected a negative reaction as the market learns that specific rules are written to operationalize section 1101. There are no significant parameter estimates for Event 5. Event 5 results suggests that the public announcement of a set of rules designed to eliminate TBTF was a non-event.

Event 9 is the final rule to eliminate TBTF. Our expectation is that the market will react negatively to the removal of the large-bank safety net. All but two (Cullen/Frost and International Bancshares) of the parameter estimates on Event 9 are insignificant. This indicates that the market did not respond to the final rule to eliminate TBTF for large banks. The lack of a market reaction to the final rule suggests that there was no additional information in the final rule.

All the parameter estimates for events 6, 7 and 8 are insignificant. These results indicate a series of non-events.

Finally, we estimate all nine events together as a global event. The global event has 18 significant parameter estimates across the 55 banks and all 18 are negative. The significantly negative parameter estimates are concentrated among the smaller banks with nine significantly negative parameters among the 13 smallest banks in our sample. Among the GSIBs, only Bank

of America has a significant parameter estimate. The overall results suggest that, on average, any negative effect of implementing rules to eliminate TBTF falls on the smaller banks in our sample instead of the largest banks in the U.S.

#### 4.2. *Group Results*

Since we do not know what banks are specifically designated as too-big-to-fail, we cannot form groups based on the actual banks declared TBTF by regulators. However, regulators and policymakers identify different groups of banks for analysis and special treatment. As we describe above in the data section, we test for market reactions from three groups of banks: (1) GSIBs vs. non-GSIBs, (2) Stressed-tested vs. non-Stress-tested, and (3) by asset size: greater than or equal to \$1 trillion, less than \$ 1 trillion to greater than or equal to \$50 billion, and less than \$50 billion. Table 4 provides the results from each grouping. Each group is treated as an equally-weighted portfolio. Contaminated events are set to zero in each portfolio.

Table 4 contains two panels and a large number of parameter estimates. In the interest of brevity we will only discuss significant results. We continue to discuss results by event. Event 1 is significant and positive for all groups of banks except for those with less than \$50 billion in total assets. The parameter estimate is not significant for the smallest banks. Event 3 is significant and negative for all of our groups of banks except for GSIBs and banks with more than \$1 trillion in total assets. The other events are non-events for all the groups of banks. The significant parameters in Table 4 suggest that Dodd-Franks is a positive for the “special attention banks” and limiting emergency lending is a negative event for smaller banks in our sample.

#### 4.3. *Summary Statistics*

Table 5 provides a frequency chart for the full sample and the various subsets of the sample of significant positive event parameters, significant negative event parameters and insignificant parameters for each individual bank. This summary provides additional information to support the event-study results in Tables 3 and 4. Events 1, 3, and 4 have, by far, the largest number of significant parameter estimates, so we will discuss these events in detail here.

Event 1 has nine significant and positive and four significant and negative parameter estimates across the 55 banks as shown in Table 3. Looking across the different sets of banks for Event 1, four of the positive parameter estimates are for Stress-tested banks. Three of the four

negative parameter estimates are for small banks (assets < \$50 billion). This suggests that the special identification of Stress-tested banks is viewed positively by the market while the lack of special identification is viewed negatively.

Event 3 has 28 significant and negative parameter estimates, which is half of the sample and the event with by far the largest number of significant parameter estimates. The negative parameter estimates span across the various dimensions of the sample. Since Event 3 spans the sample, it is unlikely to be a negative market response strictly to the elimination of TBTF.

Event 4 has three significant and positive parameter estimate and 11 significant and negative parameter estimates across the 55 banks as shown in Table 3. There are no significant and negative parameter estimates for GSIBs. There is only one significant and negative parameter estimate among the 18 stress-tested banks (BB&T: \$160 bil.). However, 8 of the 11 significant and negative parameter estimates are for smaller banks (assets < \$50 billion). Event 4 is the change from “general” emergency lending to “limited” emergency lending.

Across the other events there are only two significant parameter estimates: both on Event 9 and both negative. This suggests that remaining potential events are non-events.

#### 4.4. *Robustness*

We conduct a variety of tests for robustness. Specifically, we examine alternative event windows and include a risk-shift variable in the model. None of these tests create materially different results, so these results are not included in the interest of brevity.

One robustness check warrants a brief discussion. Event 3 (Dodd-Frank passed by the Senate and sent to President Obama for signing) exhibits the largest number of significant parameter estimates and all the significant parameters are negative. This is a noisy event about the Dodd-Frank Act and not an event specific to the elimination of TBTF. We examine Event 3 in a cross-sectional regression. The purpose of this analysis is to determine if the parameter estimates (abnormal returns) for each bank from Event 3 are the result of some banks being “special.” We test for a “special” explanation through dummy variables for banks in the various regulatory groups while controlling for some standard bank performance measures. The results are presented in Table 6.

Model 1 in Table 6 contains the control variables and a dummy variable for GSIBs. The GSIB variable is insignificant suggesting Event 3 is not related to TBTF. Total Assets is significant and negative suggesting that larger banks had a more negative reaction. Model 2 contains a dummy variable for stress-tested banks and it is significant and negative. This suggests that stress-tested banks exhibit a more negative reaction to Event 3, all else constant. The Loan ratio is also significant and negative suggesting that banks with more loans had a more negative reaction to Event 3. This is consistent with increased compliance costs related to larger loan portfolios. Model 3 contains dummy variables for asset size of banks so we drop the Total Assets control variable. The parameter estimates on the dummy variable for banks with assets over \$1 trillion is significant and positive for Event 3 suggesting that the largest banks exhibit a less negative reaction. Loans continue to be significant and negative while capital is also significant and negative. The results from our cross-sectional analysis of Event 3 are mixed across the different groups of “special” banks relative to the elimination of TBTF and thus consistent with our other results.

## 5. Conclusion

The purpose of the Dodd-Frank Act (DFA) was to “promote the financial stability of the U.S. by improving accountability and transparency in the financial system, to end ‘too-big-to-fail’, to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes.”<sup>14</sup> We examine one purpose of the Dodd-Frank Act—the intent to end ‘too-big-to-fail’ (TBTF). TBTF implies special protections to prevent the failure of large banks. Special protection against failure for large banks reduces the risk of banks that are TBTF and therefore should increase the value of these banks. Previous research supports the increase in value of banks that are deemed TBTF. The Dodd-Frank Act moved to eliminate TBTF and on November 30, 2015 the final rule to codify the elimination TBTF was put in place. We examine the market’s reaction to the elimination of TBTF for large banks.

As banks deemed TBTF increased in value because of their special protection, we expect that the explicit elimination of TBTF will be accompanied by a loss in value for banks that the

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<sup>14</sup> Reference in footnote 3.

market believes to be TBTF. We implement an event-study analysis to determine the market's reaction to the elimination of TBTF. In particular, we want to determine how many banks and at what asset size the market considered these banks to have TBTF status since there is no explicit identification of TBTF banks.

The market reacted (at least somewhat) negatively to the passage of Dodd-Frank and to the elimination of TBTF, but the market reaction is not from the top down. Instead, the reaction to Dodd-Frank is spread across all groups of banks and the reaction to the elimination of TBTF leans toward the smaller banks in our sample.

Our results for the largest banks support the contention that the TBTF policy has not been eliminated for the very largest systemically important banks, and are consistent with popular press accounts to this effect. For example, a recent article in the *Wall Street Journal* written after the final rule on TBTF was released, discusses the need to end TBTF once and for all.<sup>15</sup> The article is about a conference the Federal Reserve Bank of Minneapolis President wants to hold in order to discuss the complete elimination of TBTF. This article suggests that at least one member of the Federal Reserve Board believes that TBTF lives on, which is consistent with our results for the largest banks. Also, our findings indicate that more work is needed to truly eliminate the TBTF policy for at least the largest banks, which are the banks whose failure during a severe crisis would have the largest impact on the economy.

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<sup>15</sup> “Minneapolis Fed’s Kaskari says must consider options for ending ‘Too Big to Fail’,” article by Shayndi Raice, *Wall Street Journal*, April 4, 2016.

## References

- Abreu, J. F., & Gulamhussen, M. A. (2013). The stock market reaction to the public announcement of a supranational list of too-big-to-fail banks during the financial crisis. *Journal of International Financial Markets, Institutions and Money*, 25, 49-72.
- Akhigbe, A., & Whyte, A. M. (2001). The market's assessment of the Financial Services Modernization Act of 1999. *Financial Review*, 36(4), 119-138.
- Akhigbe, A., Martin, A. D., & Whyte, A. M. (2015). Dodd–Frank and risk in the financial services industry. *Review of Quantitative Finance and Accounting*, 1-21.
- Allen, P. R., & Wilhelm, W. J. (1988). The impact of the 1980 Depository Institutions Deregulation and Monetary Control Act on market value and risk: Evidence from the capital markets. *Journal of Money, Credit and Banking*, 20(3), 364-380.
- Balasubramnian, B., & Cyree, K. B. (2014). Has market discipline on banks improved after the Dodd–Frank Act? *Journal of Banking & Finance*, 41, 155-166.
- Bongini, P., Nieri, L., and Pelagatti, M. (2015). The importance of being systemically important financial institutions. *Journal of Banking & Finance*, 50, 562-574.
- Brewer, E. & J. Jagtiani. (2013). How Much Did Banks Pay to Become Too-Big-To-Fail and to Become Systemically Important? *Journal of Financial Services Research* 43(1), 1-35.
- Brook, Y., Hendershott, R., & Lee, D. (1998). The gains from takeover deregulation: evidence from the end of interstate banking restrictions. *The Journal of Finance*, 53(6), 2185-2204.
- Brown, S. & J. Warner. (1985). Using daily stock returns: The case of events studies. *Journal of Financial Economics* 14, 3-32.
- Cornett, M. M., & Tehranian, H. (1990). An Examination of the Impact of the Garn-St. Germain Depository Institutions Act of 1982 on Commercial Banks and Savings and Loans. *The Journal of Finance*, 45(1), 95-111.
- Cyree, K. B. (2000). The erosion of the Glass–Steagall Act: Winners and losers in the banking industry. *Journal of Economics and Business*, 52(4), 343-363.
- Dewenter, K. L., & Riddick, L. A. (2015). What's the Value of a TBTF Guaranty? Evidence from the G-SII Designation for Insurance Companies. *Evidence from the G-SII Designation for Insurance Companies (January 9, 2015)*.
- Filson, D., & Olfati, S. (2014). The impacts of Gramm–Leach–Bliley bank diversification on value and risk. *Journal of Banking & Finance*, 41, 209-221.
- Flannery, M. J., & James, C. M. (1984). The effect of interest rate changes on the common stock returns of financial institutions. *The Journal of Finance*, 39(4), 1141-1153.
- Gao, Y., Liao, S., & Wang, X. (2018). Capital Markets' Assessment of the Economic Impact of the Dodd-Frank Act on Systemically Important Financial Firms. *Journal of Banking & Finance*, 86, 204-223.



- Kane, E. (2000). Incentives for banking megamergers: What motives might regulators infer from event-study evidence? *Journal of Money, Credit & Banking*, 32, 671-701.
- Kleinow, J., Nell, T., Rogler, S., & Horsch, A. (2014). The value of being systemically important: event study on regulatory announcements for banks. *Applied Financial Economics*, 24(24), 1585-1604.
- Mehran, H., Morrison, A. D., & Shapiro, J. D. (2011). Corporate governance and banks: What have we learned from the financial crisis? *FRB of New York Staff Report*, (502).
- Millon-Cornett, M. H., & Tehranian, H. (1989). Stock market reactions to the Depository Institutions Deregulation and Monetary Control Act of 1980. *Journal of Banking & Finance*, 13(1), 81-100.
- O'Hara, M., & Shaw, W. (1990). Deposit Insurance and Wealth Effects: The Value of Being "Too Big to Fail". *The Journal of Finance*, 1587-1600.
- Penas, M.F. & H. Unal. (2004). Gains in Bank Mergers: Evidence from the Bond Markets. *Journal of Financial Economics* 74(1), 149-179.

Table 1 – List of the 55 banks in the final sample listed in order of decreasing total assets. Total assets are from December 2009.

Bank	Total Assets (\$Bil.)	Bank	Total Assets (\$Bil.)
JPMorgan Chase & Co.	1,729.23	East West Bancorp, Inc.	20.56
Bank Of America Corporation	1,653.45	First Bancorp	19.62
Citigroup Inc.	1,260.91	Commerce Bancshares, Inc.	17.96
Wells Fargo & Company	1,186.83	TCF Financial Corporation	17.92
U.S. Bancorp	281.5	Webster Financial Corporation	17.7
PNC Financial Services Group	260.31	Fulton Financial Corporation	16.71
Bank Of New York Mellon Corp.	178.25	Cullen/Frost Bankers, Inc.	16.34
Capital One Financial Corp.	165.35	First Citizens Bancshares, Inc.	15.8
SunTrust Banks, Inc.	164.34	Valley National Bancorp	14.26
BB&T Corporation	159.68	MetLife, Inc.	14.11
State Street Corporation	153.74	BancorpSouth, Inc.	13.16
Regions Financial Corporation	138.01	Bank Of Hawaii Corporation	12.39
Fifth Third Bancorp	112.74	UMB Financial Corporation	12.25
Goldman Sachs Group, Inc.	91.02	SVB Financial Group	12.19
Keycorp	90.18	Wintrust Financial Corporation	12.19
Northern Trust Corporation	81.46	Privatebancorp, Inc.	12.1
Morgan Stanley	66.16	International Bancshares Corp.	11.67
Discover Financial Services	65.86	Cathay General Bancorp	11.57
Comerica Incorporated	59.16	MB Financial, Inc.	10.84
Zions Bancorporation	52.32	Firstmerit Corporation	10.52
Huntington Bancshares Inc.	51.11	Umpqua Holdings Corp.	9.38
New York Community Bancorp	42.66	F.N.B. Corporation	8.5
Synovus Financial Corp.	34.5	Iberiabank Corporation	8.11
Popular, Inc.	34.14	Western Alliance Bancorp.	5.76
Bok Financial Corporation	25.91	Bank Of The Ozarks Inc	2.76
First Horizon National Corp.	25.84	Home Bancshares, Inc.	2.68
American Express Company	24.17	United Bancshares, Inc.	0.62
Associated Banc-Corp	22.56		

Table 2- This table shows a timeline of the events used in this study beginning with January 5<sup>th</sup>, 2010 and ending with November 30, 2015. Information from the event was collected from the source in the last column.

Date	Event	Regulation	Source
5-Jan-10	1	Congress assembled to present and begin deliberations over The Dodd-Frank Wall Street Reform and Consumer Protection Act.	Federal Reserve
30-Jun-10	2	The House approved the final Dodd-Frank proposal in the 111 <sup>th</sup> Congress by a vote of 237 to 192. This was the final bill sent to the Senate and eventually President Obama.	Govtrack.us
15-Jul-10	3	Dodd-Frank passed by the Senate and sent to President Obama for signing.	Washington Post
21-Jul-10	4	Amendment to Dodd-Frank removing “general” emergency lending and replaced it with “limited” emergency lending was signed into law.	Federal Reserve
23-Dec-13	5	Notice of proposed ruling making and request for public comment on section 1101 of the Dodd-Frank Act.	Federal Reserve
13-Jan-14	6	Letter from the House Committee on Financial Services to Fed Chair Bernanke raising concerns on the adequacy of the proposed rules for implementing section 1101 of the Dodd-Frank Act.	Bloomberg News
18-Aug-14	7	Letter from Senators to Fed Chair Yellen raising concerns on the adequacy of the proposed rules for implementing section 1101 of the Dodd-Frank Act.	Warren.senate.gov
20-Nov-15	8	Federal Reserve staff sent internal memo to Board of Governors with final rule including staff recommendation.	Federal Reserve
30-Nov-15	9	Final rules for implementing section 1101 of the Dodd-Frank Act issued. The Fed can no longer provide emergency funding to individual firms. Additionally, no lending to insolvent firms. Board must find “unusual and exigent circumstances” to authorize emergency credit programs.	Federal Reserve

Table 3-This table reports the coefficient results from the SUR model from equation 1 (

$$R_{i,t} = \alpha_i + \beta_1 Rm_t + \sum_{k=1}^9 \gamma_{i,k} D_{k,t} + \eta_1 I_t + \varepsilon_i ).$$

Control variables are omitted for readability. The estimates for the 9 events are shown for each bank. Each event number is shown in the top row and represents a column of parameter estimates for that event and its associated bank. The regression does not estimate a coefficient for banks with contaminating events on a bank-event basis. The first column lists the bank or bank holding company with its associated total assets (\$ Billions) listed in the second column. Each of the events are listed in detail in table 2. Dummy variables are equal to one for a five day window around the event day (the return on the day of the event a two day window around the event day) for all events except Event 4 when it is a four-day window (the day before the event, event day, and the two days after). The main focus of the study revolves around events 1, 4, 5, and 9. Event 1 is the presenting of the Dodd-Frank bill by congress on January 5, 2010. Event 4 is amendment to Dodd-Frank removing “general” emergency lending and replaced it with “limited” emergency lending was signed into law. Event 5 is the public announcement of the rules to implement section 1101 of the Dodd-Frank Act. Event 9 represents when the Fed confirmed it could no longer provide emergency funding to individual firms, and, additionally, no lending to insolvent firms. The Federal Reserve Board would have to find “unusual and exigent circumstances” to authorize emergency credit programs. Parameter estimate significance is identified with \*\*\* < 1%, \*\* < 5%, \* < 10%.

<u>Bank</u>	<u>Total Assets</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>All Events</u>
JPMorgan Chase	1729.23	0.0016	-0.0047	-0.0068	-0.0005		-0.0026	0.0002	-0.0022	-0.0019	-0.0015
Bank Of America	1653.45		-0.0032	-0.027***		-0.0033		0.0000	-0.0046		-0.0059**
Citigroup Inc.	1260.91	0.0019	0.0108*	-0.0115**	-0.0047	-0.0016	-0.0050	0.0008	-0.0027		-0.0005
Wells Fargo	1186.83	0.0048	-0.0032	-0.0107**	0.0059	-0.0012	-0.0023	0.0005	-0.0028	-0.0021	-0.0010
U.S. Bancorp	281.50	0.0046	-0.0008	-0.0089**	0.0008	-0.0017	-0.0018	-0.0008	0.0005	-0.0016	-0.0008
Pnc Financial Services	260.31	0.0028	-0.0055	-0.014***	0.0057	0.0007	-0.0026	0.0004	0.0004	-0.0011	-0.0013
Bank Of NY Mellon	178.25	-0.0017	0.0034	-0.0082*	-0.0063	0.0007	-0.0070	-0.0012	-0.0006	-0.0022	-0.0021
Capital One Financial	165.35	0.0119**	-0.0053	-0.0148**	-0.0093	0.0016	-0.0064	-0.0005	0.0023	-0.0009	-0.0019
Suntrust Banks, Inc.	164.34	0.0082	-0.0086	-0.018***	0.0093	0.0001	0.0010	-0.0005	-0.0028	-0.0005	-0.001
BB&T Corporation	159.68	0.0062	-0.0072	-0.018***	-0.0125**	0.0016	-0.0007		0.0000	-0.0012	-0.0032**
State Street	153.74	-0.0074	-0.0034	-0.0021	0.0078	-0.0001	-0.0060	-0.0017	-0.0004	-0.0014	-0.0015
Regions Financial	138.01	0.0141**	-0.0037	-0.019***	-0.0101	0.0009	0.0015	-0.0027	-0.0003	-0.0023	-0.0016
Fifth Third Bancorp	112.74	0.0123**	-0.0087	-0.024***	0.0001	0.0005	-0.0008	0.0012	0.0019	0.0009	-0.0014
Goldman Sachs	91.02	0.0009				0.0012	-0.0036	-0.0006	-0.0056		-0.0009
Keycorp	90.18	0.0118**	-0.0115*	-0.0146**	-0.0003	-0.0024	-0.0044	0.0008	-0.0010	-0.0007	-0.0020
Northern Trust Corp.	81.46	-0.01***	0.0008	-0.0056	-0.012***	0.0047	-0.0064	-0.0013	-0.0005	-0.0028	-0.0034**
Morgan Stanley	66.16	0.0052	0.0004	-0.0071	0.0143**		-0.0014	-0.0002	-0.0052	0.0058	0.0022
Discover Financial	65.86	-0.0062	0.0045	-0.0033	-0.0005	-0.0054	-0.0040	-0.0001	-0.0008	-0.0044	-0.0021
Comerica	59.16	0.0071	-0.0026	-0.017***	0.0024	0.0011	-0.0039	-0.0003	-0.0012	-0.0031	-0.0016
Zions Bancorporation	52.32	0.041***	-0.0103	-0.018***	-0.019***	0.0024	-0.0040	0.0015	-0.0037	-0.0015	-0.0004
HuntingtonBanc	51.11	0.019***	-0.0077	-0.0079	0.0027	-0.0022	-0.0021	-0.0022	-0.0018	-0.0016	-0.0001
New York Cmty	42.66	-0.0038	0.0059	0.0044	-0.0046	-0.0008	-0.0027	-0.0012	0.0027	0.0061	0.0010
Synovus Financial	34.50	0.0220**	-0.0124	-0.0201**	-0.0227**	-0.0023	0.0015	-0.0017	-0.0012	-0.0029	-0.0036
Popular, Inc.	34.14	0.0115	-0.0144	-0.0194**	-0.0119	0.0000	-0.0045	-0.0040	-0.0005	0.0020	-0.0040
Bok Financial Corp.	25.91	-0.0026	-0.0023	-0.0085*	-0.0016	0.0029	-0.0043	-0.0011	-0.0026	-0.0045	-0.0025*
First Horizon National	25.84	-0.0028	-0.0108*	-0.016***	-0.0056	0.0008	-0.0026	0.0005	-0.0015	-0.0036	-0.0041**
American Express	24.17	-0.0020	-0.0026	-0.0071	0.0104**	0.0025	-0.0061	-0.0002		-0.0023	-0.0010
Associated Banc-Corp	22.56	0.0057	-0.0026	-0.0043	0.0023	-0.0009	-0.0023	-0.0017	0.0004	-0.0039	-0.0005
East West Bancorp	20.56	-0.0031	0.0107*	-0.0056	-0.0010	-0.0020	-0.0035	-0.0011	0.004	-0.0022	-0.0001
First Bancorp	19.62	-0.0296*	-0.059***	0.0006	-0.0143	0.0115	-0.0084	-0.0074	-0.0140	-0.0127	-0.0147**
Commerce Banc	17.96	-0.0030	0.0046	-0.0008	-0.0015	-0.0017	-0.0014	-0.0014	0.0014	-0.0015	-0.0003
Tcf Financial Corp	17.92	-0.0053	-0.0089	-0.023***	0.0010	-0.0003	-0.0029	-0.0012	0.0004	-0.0028	-0.0045**
Webster Financial	17.70	0.0005	-0.0063	-0.0109*	-0.0005	-0.0010	-0.0045	-0.0021	-0.0007	-0.0031	-0.0029
Fulton Financial Corp.	16.71	-0.0081	-0.0015	-0.011**	-0.0201***	-0.0032	-0.0059	0.0007	0.0014	-0.0051	-0.005***
Cullen/Frost Bankers	16.34	-0.0044	0.0022	-0.0075*	-0.0019	0.0002	-0.0022	0.0005	0.0026	-0.0069*	-0.0017

<u>Bank</u>	<u>Total Assets</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>All Events</u>
First Citizens Banc	15.80	0.012**	0.0015	-0.006	0.0005	-0.0045	-0.0013	-0.0032	-0.0012	-0.0056	-0.0007
Valley National Banc	14.26	-0.0018	0.0023	-0.0064	-0.0046	0.0009	-0.0043	-0.0003	0.0009	-0.0060	-0.0018
Metlife, Inc.	14.11	0.0014	-0.0022	-0.0137***	0.0036	0.0034	-0.0043	0.0013	-0.0041	0.0001	-0.0013
Bancorpsouth, Inc.	13.16	-0.0087	0.0002	-0.0109	-0.0594***	-0.0013	-0.0066	-0.0025	0.0006	-0.0064	-0.009***
Bank Of Hawaii Corp.	12.39	-0.0053	0.0024	-0.0022	0.0038	-0.0010	-0.0022	-0.0010	0.0035	-0.0040	-0.0005
Umb Financial Corp.	12.25	-0.0107**	0.0050	-0.0023	-0.0014	-0.0035	0.0007	-0.0035	0.0026	-0.0077	-0.0020
Syb Financial Group	12.19	-0.0009	-0.0066	-0.0111*	0.0199***	-0.0036	-0.0031	-0.0007	-0.0006	-0.0075	-0.0018
Wintrust Financial	12.19	-0.0055	-0.0105*	-0.0139**	-0.0196***	-0.0020	-0.0019	-0.0063	0.0001	-0.00300	-0.006***
Privatebancorp, Inc.	12.10	-0.0012	0.0038	-0.0103	-0.0161*	-0.0037	-0.0059	-0.0027	-0.0048	-0.0051	-0.0045*
International Banc	11.67	-0.0068	-0.0001	-0.0139**	-0.0061	-0.0047	-0.0049	-0.0002	0.0008	-0.0102*	-0.0048**
Cathay General Banc	11.57	0.0192***	-0.0049	-0.0089	-0.002	-0.0016	-0.0076	-0.0016	-0.0009	-0.0062	-0.0012
Mb Financial, Inc	10.84	-0.0088	-0.0043	-0.0063	-0.0287***	0.0025	-0.0063	0.0004	0.0030	-0.0036	-0.0049**
Firstmerit Corporation	10.52	0.0010	0.0008	-0.0024	-0.0024	-0.0020	-0.0015	-0.0046	0.0012	-0.0047	-0.0013
Umpqua Holdings	9.38	-0.0044	-0.0053	-0.0045	-0.0069	0.0018	-0.0087	-0.0005	0.0008	-0.0070	-0.0035*
F.N.B. Corporation	8.50	-0.0029	-0.0048	-0.0136***	-0.0041	0.0004	-0.0060	-0.0033	0.0006	-0.0043	-0.0039**
Iberiabank	8.11	-0.0092*	0.0017	-0.0081	-0.0163***	-0.0016	-0.0009	-0.0031	-0.0001	-0.0057	-0.0043**
Western Alliance	5.76	0.0048	-0.0193**	-0.0129*	-0.0182**	-0.0002	-0.0107	-0.0030	-0.0028	-0.0057	-.007***
Bank Of The Ozarks	2.76	-0.0043	-0.002	-0.0029	-0.0015	0.0047	-0.0025	-0.0035	-0.0027	-0.0022	-0.0017
Home Bancshares	2.68	-0.0060	0.0007	-0.0093	-0.0091	-0.0003	-0.0008	-0.0022	-0.0027	-0.0090	-0.004**
United Bancshares	0.62	0.0000	0.0005	-0.0071	0.0024	-0.0032	0.0031	-0.0005	0.0020	0.0039	0.0001

Table 4 - This table reports the coefficient results from the SUR model from equation 1

$$(R_{i,t} = \alpha_i + \beta_1 Rm_t + \sum_{k=1}^9 \gamma_{i,k} D_{k,t} + \eta_1 I_t + \varepsilon_i).$$

The dependent variable is the equal weighted average of the daily return for each group of banks. Equal weighted market return and all events are listed in the first column. We also include the event when the Federal Reserve raised the interest rate for borrowing from the discount window. The model also removes banks from associated events with a contaminating event for an individual bank. For example, for Event 1 In Panel A, Columns 2 & 3 separate the sample between banks that are not Globally Systemically Important Banks (GSIB) and GSIBs. Columns 5 & 6 separate the sample between banks not included in Stress-tests and those stress tested in February, 2009. In Panel B, columns 1, 2, & 3 separate the sample by asset size of the bank. Banks with under \$50 billion in assets are shown in column 1. Column 2 contains results for banks with \$50 billion to \$1 trillion in assets. Column 3 gives results for banks with greater than \$1 trillion in assets. Each of the events are listed in detail in table 2. Dummy variables are equal to one for a five day window around the event day (the return on the day of the event a two day window around the event day) for all events except Event 4 when it is a four-day window (the day before the event, event day, and the two days after). The main focus of this study revolves around events 1, 4, 5, and 9. Event 1 is the presenting of the Dodd-Frank bill by congress on January 5, 2010. Event 4 is amendment to Dodd-Frank removing “general” emergency lending and replaced it with “limited” emergency lending was signed into law. Event 5 is the public announcement of the rules to implement section 1101 of the Dodd-Frank Act. Event 9 represents when the Fed confirmed it could no longer provide emergency funding to individual firms, and, additionally, no lending to insolvent firms. The Federal Reserve Board would have to find “unusual and exigent circumstances” to authorize emergency credit programs. The row “All DFA Events” provides the parameter estimate for a dummy variable equal to one, jointly for all events. Both of the last two rows are separate regressions and also include the Market Return, as well as the interest rate dummy variable. The table also includes a Wald Test for the differences between the coefficients from each group. Parameter estimate significance is identified with \*\*\* < 1%, \*\* < 5%, \* < 10%.

Panel A: Regressions for GSIBs and Stress-tested banks using a 5 Day Window removing contaminating events

	GSIB				Stress-tested Banks			
	(1)	(2)	(2) - (1)		(1)	(2)	(2) - (1)	
	NO	YES	Difference	P-value	NO	YES	Difference	P-value
Market Return	1.172***	1.3104***	0.1384***	0.0000	1.1532***	1.2768***	0.1236***	0.0000
DFA 1	0.0085**	0.0107***	0.0022	0.5267	0.0071*	0.0129***	0.0058**	0.0361
DFA 2	-0.0039	0.0004	0.0043	0.2260	-0.0035	-0.0028	0.0007	0.8045
DFA 3	-0.0076**	-0.0014	0.0063*	0.0729	-0.0069*	-0.0067**	0.0002	0.9326
DFA 4	-0.0057	-0.0034	0.0023	0.5577	-0.0063	-0.0031	0.0032	0.2963
DFA 5	0.0001	-0.0028	-0.0029	0.4079	0.0000	-0.0008	-0.0008	0.7751
DFA 6	-0.0005	0.0003	0.0008	0.8154	-0.0008	0.0006	0.0014	0.6099
DFA 7	-0.0036	-0.0027	0.0008	0.8089	-0.0038	-0.0026	0.0012	0.6539
DFA 8	-0.0009	-0.0037	-0.0029	0.4110	-0.0007	-0.0024	-0.0017	0.5324
DFA 9	-0.0010	0.0029	0.0039	0.2688	-0.0017	0.0023	0.0039	0.1546
Raising DW Rate	-0.0006	0.0006	0.0012	0.8272	-0.0009	0.0006	0.0015	0.7381
ALL DFA EVENTS	-0.0015	0.0001	0.0016	0.1734	-0.0018	-0.0002	0.0015	0.1084



Panel B: Regressions for Asset size groups using a 5 Day Window removing contaminating events

	Asset Sizes								
	(1)	(2)	(3)	(3) - (1)		(3) - (2)		(2) - (1)	
	< \$50 B	\$1 T > X >= \$50 B	>\$1 T	Difference	P-value	Difference	P-value	Difference	P-value
Market Return	1.144***	1.2564***	1.3528***	0.2089***	0.0000	0.0964***	0.0000	0.1123***	0.0000
DFA 1	0.0050	0.0161***	0.0139***	0.0089**	0.0398	-0.0022	0.4986	0.0111***	0.0000
DFA 2	-0.0033	-0.0042	0.0001	0.0034	0.4272	0.0043	0.1895	-0.0009	0.7449
DFA 3	-0.0069*	-0.0066*	-0.0071	-0.0002	0.9711	-0.0005	0.8885	0.0003	0.9091
DFA 4	-0.0050	-0.0060	-0.0061	-0.0011	0.8235	0.0000	0.9910	-0.0010	0.7261
DFA 5	0.0001	-0.0006	-0.0028	-0.0030	0.4886	-0.0023	0.4869	-0.0007	0.7859
DFA 6	-0.0009	0.0002	0.0017	0.0026	0.5423	0.0016	0.6349	0.0011	0.6832
DFA 7	-0.0038	-0.0029	-0.0021	0.0017	0.6921	0.0008	0.8155	0.0009	0.7201
DFA 8	-0.0006	-0.0020	-0.0038	-0.0032	0.4572	-0.0018	0.5720	-0.0014	0.6062
DFA 9	-0.0018	0.0018	0.0019	0.0037	0.3946	0.0002	0.9629	0.0035	0.1826
Raising DW Rate	-0.0008	-0.0007	0.0041	0.0049	0.4703	0.0048	0.3472	0.0001	0.9864
ALL DFA EVENTS	-0.0018	-0.0003	-0.0003	0.0015	0.3130	0.0000	0.9962	0.0015*	0.0995

Table 5 - This table reports the number of significant coefficient results from bank level regressions as shown in equation 1. This table removes the contaminated events for each bank when estimating equation 1. The last row tabulates the parameter estimates for a dummy variable equal to one, jointly for all events. Panel A shows tabulated results from all banks, stress-tested banks, and GSIBs. Panel B shows tabulated results based on the total asset size of the banks. These are counted and tabulated as significant in which direction or insignificant. For example, in Panel A the first row under Event 1, out of the 55 bank regressions, 18 banks had positive and significant coefficient estimates, 1 bank had a negative and significant estimate, and 36 banks had insignificant coefficients. The dependent variable for the underlying regression is the equal weighted average of the daily return for each group of banks. Event numbers are listed in the first column for both panels. In Panel A, Columns 2, 3, & 4 represent the tabulations from all banks. Columns 5, 6, & 7 show tabulated results from the stress-tested banks. Columns 8, 9, & 10 show tabulated results for GSIBs.

Panel B separates the banks by total asset size. Tabulated results for banks with under \$50 billion in assets are shown in columns 2, 3, & 4. Columns 5, 6, & 7 contain tabulated results for banks with \$50 billion to \$1 trillion in assets. Columns 8, 9, & 10 gives results for banks with greater than \$1 trillion in assets. The estimates for the 9 events are shown for each bank. Each of the events are listed in detail in Table 2. The main focus of this study revolves around events 1, 4, 5, and 9. Event 1 is the presenting of the Dodd-Frank bill by congress on January 5, 2010. Event 4 is amendment to Dodd-Frank removing “general” emergency lending and replaced it with “limited” emergency lending was signed into law. Event 5 is the public announcement of the rules to implement section 1101 of the Dodd-Frank Act. Event 9 represents when the Fed confirmed it could no longer provide emergency funding to individual firms, no lending to insolvent firms, and “unusual and exigent circumstances” to authorize emergency credit programs.

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PANEL A: INDIVIDUAL BANK LEVEL WITH 5 DAY WINDOWS AND CONTAMINATED EVENTS REMOVED

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EVENT	All (55 total)			Stress-tested (18 total)			GSIB (8 total)		
	Positive	Negative	Insignificant	Positive	Negative	Insignificant	Positive	Negative	Insignificant
1	9	4	41	4		13			6
2	2	5	47	1	1	15	1		6
3	0	28	26		12	4		4	3
4	3	11	39	2	1	13	1		6
5	0	0	53			16			16
6	0	0	54			17			17
7	0	0	54			17			17
8	0	0	54			17			17
9	0	2	50			15			15
ALL EVENTS	0	18	37		2	16		1	7

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PANEL B: INDIVIDUAL BANK LEVEL BY ASSET SIZE WITH 5 DAY WINDOWS AND CONTAMINATED EVENTS REMOVED

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EVENT	Total Assets <\$50 Billion			\$50 B < T.A. < \$1 T			Total Assets > \$1 Trillion		
	Positive	Negative	Insignificant	Positive	Negative	Insignificant	Positive	Negative	Insignificant
1	3	3	28	6	1	10			3
2	1	4	29		1	15	1		3
3		14	20		11	5		3	1
4	2	8	24	1	3	13			3
5			34			16			3
6			34			17			3
7			34			16			4
8			33			17			4
9		2	32			16			2
ALL EVENTS		15	20		2	15		1	3

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Table 6-This table reports results from a cross-sectional regression for sample banks using individual a bank's cumulative abnormal return for Event 3 as a dependent variable measured in percentages (i.e.. 1.2% not 0.012). *Total Assets* is the natural log of total assets. *Capital* is the level of equity capital measured in billions of dollars. *Deposit Ratio* is total deposits divided by total assets. *Loan Ratio* is total loans divided by total assets. *ROA* is the annualized return on assets for bank for a quarter calculated as net income divided by total assets. *GSIB* and *Stress-tested Bank* are dummy variables equal to one if the bank is GSIB or Stress-tested bank respectively. *Total Assets >\$1T* is a dummy variable equal to one if the bank's total assets are greater than \$1 trillion. The variable *\$1T <Total Assets >\$1B* is a dummy variable equal to one if the bank's total assets are less than \$1 trillion and greater than \$1billion. Robust p-values are reported in parentheses and parameter estimate significance is identified with \*\*\*<1%, \*\*<5%, and \*<1%.

VARIABLES	(1)	(2)	(3)
Total Assets	-0.0016** (0.025)	0.0001 (0.887)	
Capital	-0.0000 (0.401)	-0.0000 (0.615)	-0.0003*** (0.000)
Deposit Ratio	-0.0099 (0.493)	-0.0058 (0.665)	-0.0085 (0.538)
Loan Ratio	-0.0067 (0.412)	-0.0144*** (0.003)	-0.0117** (0.014)
ROA	0.0529 (0.243)	0.0732 (0.119)	0.0549 (0.223)
GSIB	0.0055 (0.221)		
Stress-tested Bank		-0.0064*** (0.005)	
Total Assets > \$1T			0.0327*** (0.001)
\$1T < Total Assets > \$50B			-0.0010 (0.599)
Constant	0.0278 (0.148)	0.0020 (0.915)	0.0047 (0.668)
Observations	54	54	54
R-squared	0.276	0.336	0.350