How Much Would Banks Be Willing to Pay to Become "Too-Big-to-Fail" and to Capture Other Benefits?

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Abstract: This paper examines an important aspect of the "too-big-to-fail" (TBTF) policy employed by regulatory agencies in the United States. How much is it worth to become TBTF? How much has the TBTF status added to bank shareholders' wealth? Using market and accounting data during the merger boom (1991-2004) when larger banks greatly expanded their size through mergers and acquisitions, we find that banking organizations are willing to pay an added premium for mergers that will put them over the asset sizes that are commonly viewed as the thresholds for being TBTF. We estimate at least $14 billion in added premiums for the nine merger deals that brought the organizations over $100 billion in total assets. These added premiums may reflect that perceived benefits of being TBTF and/or other potential benefits associated with size.

Keywords: Bank merger, too-big-to-fail, TBTF subsidy, large bank subsidy

JEL classification: G21, G28, G34

**How Much Would Banks Be Willing to Pay to Become
"Too-Big-to-Fail" and to Capture Other Benefits?**

I. Introduction and Background:

Equitable treatment of different sizes and types of financial institutions has often been cited as an objective of financial regulation. How regulators treat different types of financial institutions offering essentially the same financial services can influence the optimal flow of financial resources throughout the economy and competition among these institutions. However, there has been little consensus about which type of institutions receives the greatest regulatory benefits or, conversely, incurs the greatest regulatory cost. One key issue in this debate is whether the largest U.S. banking organizations receive more favorable regulatory treatment than other organizations.

In a number of areas, larger banking organizations may receive benefits unavailable to smaller organizations. Many of these benefits could arise because of a perception by market participants that the largest U.S. banking organizations may be "too-big-to-fail" (TBTF). Through recent merger waves, banks have become larger and more complex and increased their market shares and market power. The perception is that these institutions may have become TBTF. Kane (2000) describes these giant banks as being "too-big-to-unwind" or "too-big-to-discipline-adequately" (TBTDA). If true, these TBTF banks may be more likely to receive favorable treatment by the market and by regulators during a financial crisis.

Overall, these benefits or potential subsidies to large banks may outweigh any advantages held by smaller banks. However, it is very difficult to put a price or value on some of these potential subsidies and come up with an aggregate measure of the benefits relative to those received by other banks. The benefits of TBTF may be reflected in a number of ways – e.g. gaining favor with uninsured bank creditors and other market participants, operating with lower regulatory costs, and increasing the organization's chances of receiving regulatory

forbearance -- and these advantages could vary over time as a bank's condition changes. Several studies have examined the existence of these TBTF impacts, but it remains unclear how much value the TBTDA aspect has added to bank shareholders' wealth. The value created by these TBTDA banks may also reflect costs borne by other investors (e.g. shareholders of small banks) and society at large. Our study attempts to examine one aspect of TBTF (or TBTDA) – how much is it worth to become TBTF? We believe our estimates of the possible subsidy to these giant banks could serve a useful purpose for future public policy discussions.

Our study examines one potential measure of the subsidies to large bank. If there is a significant value to achieving TBTF size and capturing other large bank subsidies, banking organizations should be willing to pay more for those acquisitions that enable them to reach such a size. Moreover, if there are a limited number of suitable acquisitions that would allow an organization to become TBTF and if the organization has to outbid other organizations with similar motivations, the added acquisition premium could provide an indication of the overall magnitude of large bank subsidies.[1] It should be noted that this added premium could also imply that banking organizations see a strong benefit in reaching a threshold size large enough to become a key player in banking and to have control of their own fate, e.g. through increases in market power and political clout (see Kane, 2000). To test the hypothesis that banks perceive benefits from reaching a TBTF threshold size, we use market pricing data and other financial data over the merger boom period 1991-2004, where a number of banking organizations expanded their size greatly by acquiring other organizations.

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[1] Another complementary market-based method for measuring large bank subsidies is an event study that examines how the stock of an acquiring bank fares after it announces a merger that would enable it to become TBTF. This stock performance -- relative to that of organizations making non-TBTF acquisitions – could capture any TBTF benefits that the acquiring bank does not lose to the stockholders of the target through higher acquisition premiums. The acquirer's stock price movement would provide a complementary measure of large bank subsidies.

The scope and the issue of TBTF have been influenced by a number of legislative and regulatory events. These events have had an important role in determining the existence and potential size of large bank subsidies. Among the most important of these have been the Federal Deposit Insurance Corporation (FDIC) financial assistance to prevent the closure of Continental Illinois National Bank in 1984, the passage of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), and the Federal Reserve's intervention in resolving the capital shortage of Long Term Capital Management in 1998.

In 1984, the Comptroller of the Currency testified before the Congress on the bailout of Continental Illinois National Banks -- implying that the banking agencies did not have the means to close any of the 11 largest multinational banks without a significant impact on the U.S. financial system. This testimony thus provided an official acknowledgement of a TBTF policy, while also indicated the type and size of banking organizations that might be considered TBTF. There have been concerns that regulatory agencies might have gone too far in protecting large banking organizations during the 1980-1990s bank failures, which led to Congressional passage of the FDICIA in 1991.

The FDICIA sought to change how regulators could deal with failing banks and, in particular, with TBTF banks. This legislation makes it more difficult for the FDIC to protect uninsured depositors and creditors at failing banks by requiring that bank failures be resolved in a manner that results in the least cost to the insurance fund.[2] However, there is an exception to this provision -- where a bank's failure "would have serious adverse effects on economic conditions or financial stability."[3] This exception effectively allows the FDIC to protect all depositors at TBTF banks (given approval from two-thirds of the FDIC Board, two-thirds of the

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[2] FDICIA also limits the time that Federal Reserve banks can provide discount window support to undercapitalized and critically undercapitalized institutions without becoming liable for any losses the FDIC would experience from the delayed closure of a failing bank.

[3] 12 U.S.C. §1823 (c)(4)(G)

Federal Reserve Board, and the Secretary of the Treasury, and the President of the United States). As a result, the FDICIA does not eliminate the TBTF protection, but creates a more formal and visible process for a TBTF bailout for some large U.S. banking organizations.

Stock Market Reactions to Bank Mergers and TBTF: Typically, finance literature has established that the value of target stock increases relative to the acquirer's stock value on the merger announcement date. However, unlike typical merger deals, Kane (2000) demonstrates that in a merger that involves very large banks -- megabank mergers – stock of a megabank acquirer gains value at the announcement. These megamerger gains arise in part from improved access to monopoly rents and regulatory subsidies, including lower funding cost and increased market capitalization. [4]   Kane (2000) examines banking megamergers during the period 1991-1998 (after the FDICIA) and found evidence of TBTF benefits even in the post-FDICIA period. It is concluded that institutions engaging in megamergers hope to become so large or complex that they and their creditors will benefit from the FDICIA's systemic-risk exception, and that the FDICIA may not be sufficient to minimize the TBTF merger incentives, especially with the banking industry becoming much more complex and globally involved.

In addition, Schmid and Walter (2006) examine the value of financial conglomerates – whether bigger and/or broader (through scope economy) is better. They find that, overall, the negative elements present in financial conglomerates outweigh the positive elements, so that financial conglomerates generally trade at a discount relative to specialized financial firms. However, they find no conglomerate discount, but a significant positive premium, for firms with total assets larger than $100 billion. They conclude that the TBTF perception exists.

Bond Market Reactions to Bank Mergers and TBTF: Penas and Unal (2004) examine changes in adjusted bond returns at acquiring and target banking organizations in response to

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[4]   Megamerger is defined as a merger involving one of the twelve largest banks that increases the size of the merged organization by at least half the amount of assets or market capitalization As of 1998, these banks were Chase Manhattan, Citicorp, Nations, J.P. Morgan, Bank America, First Union, Bankers Trust, Bank One, First Chicago NBD, Fleet, Wells Fargo, and Norwest.

their merger announcements during the period 1991-1998 time period. They also compare credit spreads (difference between the bond yield at issue and the yield on comparable U.S. Treasury securities) on bonds issued before and after the merger. They find little change in either bond returns or credit spreads when the acquiring banks are either small or already TBTF (with assets at least 2% of the banking industry). However, when banks between these size ranges acquire another bank, they find that existing bondholders benefit from increased returns and that credit spreads decline significantly after the merger. They attribute this result to the benefits banks derive from reaching or getting closer to the TBTF status and from attaining a higher degree of diversification. These results thus provide evidence that bondholders attach a value to banks becoming TBTF through mergers.

The Continental Illinois Evidence of TBTF: Using an event study methodology, O'Hara and Shaw (1990) investigate the effects of the Comptroller of the Currency's 1984 announcement that some banks were TBTF. They find that banks deemed to be TBTF experienced a statistically significant positive average abnormal return of 1.3 percent on the day the Comptroller's announcement was made, with the highest returns to the riskiest and very largest banks. In contrast, banks not regarded as TBTF had median returns of -0.22 percent that day, and the banks that were hurt the most were those just under the TBTF cutoff. These results thus suggest that becoming TBTF is valued by market participants and carries a wealth effect reflective of this favored treatment.

In addition, Morgan and Stiroh (2005) find that the naming of the TBTF banks by the Office of the Comptroller of the Currency (OCC) in 1984 elevated the bond ratings of those banking organizations (holding companies) about one notch compared to non-TBTF organizations, with subordinated note investors showing even more optimism than the rating agencies about future support for TBTF banks. Morgan and Stiroh further discover that this

spread and rating relationship continues in the 1990s, suggesting that FDICIA had little effect on how debtholders perceive the possibility of support for TBTF banks.[5]

Other Related Studies: Brickley and James (1986) analyze how access to deposit insurance affects the common stock returns of financial institutions during a period of financial distress, using S&L data from 1976 to 1983 (pre-FDICIA period). They find that stock returns for financially distressed S&Ls were less sensitive to market movements than other S&Ls – weaker S&Ls, in fact, responded to modifications in FSLIC closure policy as if deposit insurance is a valuable subsidy.

Rime (2005) examines the effect of TBTF on credit ratings, using a sample of large and small banks ($1 billion to $1.1 trillion) in 21 industrialized countries during the period 1999-2003. Moody's and Fitch assign two types of ratings to banks – with and without consideration of other external factors (including a possible external or federal support) that would influence the bank's capacity to repay its debt. Rime finds that the TBTF status of a bank (proxied by size and market share) has a significant, positive impact on the bank's credit rating – controlling for all the other external factors such as explicit state guarantee, etc. The largest banks in the sample get a rating "bonus" of several notches for being TBTF.

Evidence Against TBTF: While several recent studies have found evidence of TBTF even after the FDICIA, a few studies found no evidence of TBTF. For example, Angbazo and Saunders (1997) find that the systematic risk estimate for large banks declined after FDICIA was passed, presumably in part because of the new incentives FDICIA gave uninsured depositors to monitor banks more closely. Flannery and Soresco (1996) examine market

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[5] The rating agencies even acknowledge that they continue to consider a bank's TBTF status when issuing their ratings. According to Moody's, "Institutional support, that is the likelihood that in case of need banks will get help from the public sector (central governments, regional governments, etc.), is a factor taken into account in the analytical mix underpinning banks' debt and deposit ratings ..... it is very likely that governments in developed markets, having both the capacity and the willingness to act, will continue to offer support to the country's largest financial institutions." (Moody's Investors Service – Global Credit Research, *Rating Methodology (An Analytical Framework for Banks in Developed Markets),* April 1999).

discipline in the subordinated debt market for banks in the pre- and post-FDICIA period, and find

some evidence of stronger market discipline (thus little or no TBTF effect) in the post-FDICIA

period.   Ennis and Malek (2005) revisited the empirical relationship between bank performance

and asset size – reexamining the emergence of TBTF found by Boyd and Gertler (1994) – using

the data from 1991 to 2003. They find no evidence of TBTF evidence in this post-FDICIA

period.

Benston, Hunter, and Wall (1995) examine the prices that acquirers are willing to bid to

acquire target banks during the period 1980-1989, and find little evidence of a TBTF-subsidy-

enhancing motive. They conclude that most of mergers in the 1980s were motivated by

earnings diversification – rather than an attempt to exploit the FDIC insurance subsidy.

Our Objectives and Findings: While the TBTF evidence has so far been inconclusive

(depending on the data, time period, research methodology, etc.), the cost of TBTF distortions

could be large.[6]   The objective of our paper is to shed some light on the perceived TBTF

threshold size and the magnitude of the TBTF subsidy. Following the basic model used in

Benston, Hunter, and Wall (1995), we re-specify the model to incorporate the variables

designed to capture TBTF benefits.   In other words, we include additional variables that would

separate out the TBTF effects that may have been embedded in other factors in their model,

such as the market to book value variables. Interestingly, we find evidence consistent with our

TBTF subsidy hypothesis, even with more recent data in the post-FDICIA period.

The next section develops an empirical model for measuring the potential TBTF

subsidies. Section IV discusses the empirical results. The conclusions and policy implications

are presented in Section V.

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[6] See Stern and Feldman (2004) and Mishkin (2005) for the various policy measures currently being
discussed for reducing potential distortions induced by TBTF.

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III. The Data and Research Framework:

   Our analysis looks at the purchase premiums (offer price at an announcement date minus market price prior to the announcement date) that acquiring banking organizations are willing to offer to buy a target organization and whether these premiums are higher when an acquisition enables an organization to reach a size that is commonly perceived by the market as being TBTF. The analysis utilizes merger transactions among publicly-traded banking organizations during the period 1991-2004. These mergers and acquisitions, along with information about each transaction, are obtained from the Security Data Corporation. To be included in this study, both the acquiring and target banks and thrifts must be publicly-traded. In all, the data set encompasses 412 merger transactions. Additional stock price and financial data are derived from the Center for Research in Security Prices (CRSP) database, thrift Financial Reports, and bank holding company Y-9 Reports, including information for the thirteen quarters prior to the merger announcement date.

   The basic framework of this study is adapted from that of Benston, Hunter and Wall (1995), which examines bank mergers in the 1980s. Their two competing hypotheses that determine purchase premium in bank mergers are earning diversification (risk-reducing strategy) vs. deposit insurance put option value maximization (risk-increasing strategy). Our model relates the purchase premiums that acquiring organizations pay to whether the merged organizations will become large enough to reach TBTF status and capture other regulatory benefits.   This is in addition to the various risk factors included in Benston, Hunter, and Wall (1995). To the extent that investors place a value on TBTF banking organizations, purchase premiums should be larger when the acquisition will help create a TBTF bank, provided adjustments are made for other relevant factors.[7] Conversely, purchase premiums would be expected to be smaller when the merged organizations are too small to become TBTF. Thus,

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[7] This assumes that there are a limited number of appropriate targets, and that other acquiring banks are also interested in these targets as a means of becoming TBTF.

our model will relate purchase premiums to the different merger scenarios regarding the TBTF

status of the merging organizations, while controlling for other characteristics of the acquiring

and target banking organizations and for other possible merger motivations. The basic model

takes the form of:

Purchase Premium = f(TBTF status, Characteristics of the Target, Characteristics of the

Acquirer, Characteristics of the Merger Deal, Other Control Factors)

Purchase Premiums – Purchase premiums are calculated by taking the difference

between the announced offer price for a target organization and the market price of the target's

common stock before the merger announcement. The purchase premium thus captures the

dollar markup over a target's pre-acquisition stock price that the acquiring organization must pay

to acquire control of the target. The target's market price is obtained for three different dates:

20, 40, and 60 business days prior to the merger announcement date. These three different

dates are used as a means of capturing the most current market valuation of the target, while

acknowledging that many mergers may be anticipated or become known to investors before the

announcement date.[8] A comparison of the regression results for the three intervals will provide

some indication of which interval (20, 40, or 60 days) best captures the "true" purchase premium

(*PREM_20, PREM_40, or PREM_60*) for the target organization. Following Benston, Hunter,

and Wall (1995)'s model, the purchase premiums (in $ million) are computed as purchase price

less pre-consolidation market value. Table 1 summarizes how these purchase premiums, TBTF

variables, and all of the control variables are calculated or defined.

Merger Scenarios – Bank mergers in the data set can be divided into four categories,

with the fourth category (both the acquirer and the target too small to create a TBTF bank

through merging) serving as the base to which we compare the other merger possibilities.

These categories are:

Category 1 – Both the acquiring bank and the target bank are not TBTF in the pre-merger period, but after the merger their combined assets will reach or exceed the TBTF size threshold. In this case, the hypothesis would be that the acquiring organization would be willing to pay a higher purchase premium, given the potential benefits that would accrue to becoming TBTF and to capturing other large bank advantages.[9] We construct an indicator variable (*D_Become_TBTF*) to capture this hypothesized relationship, and this variable takes on a value of "1" for each merger that creates a new TBTF organization and "0" for all other mergers. A positive coefficient would be expected for *D_Become_TBTF* if organizations are willing to pay more to capture the benefits of TBTF.

Category 2 – The acquiring bank is already TBTF before the merger takes place, while the target bank is not TBTF. In this case, the acquiring bank has previously captured the benefits of being TBTF, and the merger would not add the same value as in Case 1. In some cases, target bank stockholders and management might even be willing to accept somewhat lower premiums compared to other merger possibilities, particularly if they will be continuing their role in the merged organization and will receive long-run benefits from being part of a TBTF organization. We use the indicator variable, *D_Acquirer_TBTF*, to represent this case, and this variable takes on the value of "1" when the acquirer is TBTF, but the target is not, and "0" otherwise. When compared to the base case, this variable would be expected to have a coefficient that is near 0 or possibly negative (as the target may be willing to accept a smaller premium or a discount in order to become TBTF after the merger).

In addition, we also construct another variable (*D_Acquirer_TBTF * TA_TGT*), which is a cross product of the indicator variable *D_Acquirer_TBTF* and the target's asset size. Since the acquirer, although already TBTF prior to the merger, would further benefit from the potential

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[8] For more about market anticipation of bank mergers, see Houston, James, and Ryngaert (2001).
[9] The shareholders of the target organization could also experience a gain from becoming TBTF if they become part of the new organization. However, we hypothesize that these stockholders are fully aware

TBTF subsidy as its deposit base expands, the acquirer may be willing to pay more for the target with larger deposit or asset base. Thus, the coefficient of this variable is expected to be positive.

Category 3 – This category is for mega-mergers where both the acquirer and the target are already TBTF before they merge. Consequently, neither organization is likely to capture significant additional regulatory benefits, thus, the coefficient of this indicator variable would be expected to be near zero. This variable, *D_Both_TBTF*, is defined as taking on the value of "1" when both the acquirer and the target are already TBTF prior to the merger.

In this case, while the acquirers are already TBTF, there may still be an incentive to further maximize the value of deposit insurance put option by acquiring a TBTF target whose returns are highly correlated with theirs. This impact on the purchase premium is captured by an interactive variable *D_Both_TBTF * COV*, which is a product of *D_Both_TBTF* and *COV_TGT_ACQ*. In addition, the TBTF acquirer may also be willing to pay a larger purchase premium to acquire a TBTF target with larger deposit base. This impact is captured by a variable *D_Both_TBTF * TA_TGT*, which is a cross product of the indicator variable *D_Both_TBTF* and the target's asset size.

Category 4 – Mergers assigned to this category are those where the acquirer and the target are too small to create a TBTF bank after their merger, and this case provides the base or the omitted variable to which the other merger categories will be compared.

Definition of TBTF – Before we can assign values to the indicator variables described above, a definition or size threshold for TBTF status must be specified. Selecting this TBTF size threshold is a conceptual matter. TBTF is not specified anywhere by law or regulatory policy, but instead depends on the judgments of regulators about which banks would be a threat

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of their value to the acquirer and other organizations nearing TBTF status and know that their stock can command a higher premium.

to financial stability if they were to encounter problems. In addition, market perceptions of TBTF may change over time.

An initial guide to defining TBTF comes from 1984, when the Comptroller of the Currency implied that 11 large multinational banks were TBTF.[10] Since then, a number of these banks have disappeared through mergers with the other TBTF banks, thus leaving a smaller population now of the "original" TBTF banks. However, with rapid banking consolidation, a significant number of other banks have reached fairly high size thresholds, and a number of these banks might now be judged as TBTF by market participants. Since TBTF is not officially defined, there is no way to know with certainty what size of banking organization might be regarded by regulators as being TBTF. However, the market (including investors and uninsured depositors) form their own perceptions and these perceptions are reflected in the prices of securities issued by the banks. Interestingly, O'Hara and Shaw (1990) found that the policy to which the market reacted to after the OCC's announcement in 1984 was that suggested by the *Wall Street Journal*, and NOT that actually intended by the Comptroller of the Currency.

O'Hara and Shaw (1990) thus demonstrate that market perceptions of TBTF will influence firm values, even when those perceptions are in fact not correct. It is important to point this out since nobody really knows what the correct threshold size is for banks to become TBTF. One of our objectives is to estimate a perceived TBTF threshold size in this study based on the observed behavior of market participants during bank mergers. In this study, we examine several different definitions for a TBTF size threshold. We find that $100 billion in total assets, $20 billion in market capitalization, and being the largest 11 banks in the U.S. have been perceived by the market as important criteria for becoming TBTF. In addition, we find that the market participants seem to believe that the TBTF subsidy would gradually increase further as the TBTF banks continue to expand their asset base.

Other TBTF definitions we have examined include the various asset sizes and the various market capitalization thresholds – both unadjusted and adjusted for inflation. As would be expected, a handful of organizations shift between the various merger categories, depending on which TBTF size threshold is used. Appendix I lists the acquirers and targets in each of the three TBTF cases when the $100 billion dollar asset size threshold is used to define TBTF organizations. Appendix II presents the number of banks in each TBTF category when using the different TBTF threshold definitions.

The results presented in this paper are for the following TBTF definitions: 1) Based on asset size of the organization -- $100 billion in total assets; 2) Based on the asset size of the 11th largest banking organization in each year; 3) Based on market value of equity of the organization -- $ 20 billion in market capitalization. Note that the $100 billion threshold used in this paper also provides a good dividing line for separating organizations with a national scope from regional organizations. Overall, we find that banking organizations seem to be willing to pay extra premiums in order to reach these TBTF thresholds. This may be due to the various benefits that derive from being TBTF, other regulatory benefits associated with size, or the banking organization's ability to better compete in the domestic and global market.

Control Variables – Acquisition purchase premiums could be influenced by a variety of factors other than whether the combined organization will become TBTF. These factors include the characteristics of the target and acquiring organizations and the nature of the acquisition itself. We follow the variables and the model used in Benston, Hunter, and Wall (1995) for the basic model shown in equation (1). In addition to those variables included in their analysis, our basic model also includes a set of year indicator variables *D_1991- D_2003,* with 2004 serving as the base for comparison or the omitted variable. These year indicator variables are

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[10] Even the Comptroller's statement led to a lot of confusion, since some took this to mean just the 11 largest national banks, others thought it meant the 11 largest banks in the country – with either state or national charters, and others interpreted this to mean any bank larger than the 11th largest national bank.

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introduced to capture the general economic conditions in each year and any other trends where a merger might lead to higher purchase premiums.

Another consideration in an acquisition is whether it is an instate or an interstate acquisition. While interstate acquisitions provide a chance to enter new markets and to achieve greater geographic diversification, instate deals may increase market power and allow greater cost savings through the consolidation of operations and closing of duplicate offices. To test for these possible effects, we define an indicator variable (*D_INSTATE*) that takes on the value of "1" if the target and the acquirer have their headquarters in the same state and "0" if they do not. We also include an indicator variable that flags the mergers of equal deals (*D_MOE*) to capture the impact on the purchase premiums when the target and the acquirers are similar in terms of asset size. In a merger of equals, the target and acquirer tend to have similar bargaining powers and would likely be willing to exchange shares roughly in relation to their current market prices. The offer price over the prior market value would likely be much smaller than other types of acquisitions, thus a negative coefficient for this variable would be expected.

The empirical specification takes the following form:

$PREM\ (20,40,60)\ = a + b_1\ (VAR\_ROA\_TGT)\ (TA\_TGT) +\ b_2\ (MKT\_BOOK\_TGT)\ (TA\_TGT)$

$\quad +\ b_3\ (BETA\_TGT)(TA\_TGT) +\ b_4\ (GROWTH\_TGT)(TA\_TGT)$

$\quad +\ b_5\ (VAR\_ROA\_ACQ)\ (TA\_TGT) +\ b_6\ (MKT\_BOOK\_ACQ)\ (TA\_TGT)$

$\quad +\ b_7\ (BETA\_ACQ)\ (TA\_TGT) +\ b_8\ (GROWTH\_ACQ)\ (TA\_TGT)$

$\quad +\ b_9\ (BV\_CAP\_ASSET\_ACQ)\ (TA\_TGT)$

$\quad +\ b_{10}\ (COV\_TGT\_ACQ)\ (TA\_TGT) +\ b_{11}\ (REL\_SIZE\_TGT\_ACQ)\ (TA\_TGT)$

$\quad +\ b_{12}\ (D\_INSTATE) +\ b_{13}\ (D\_MOE) + b_{14}\ (D\_East) +\ b_{15}\ (D\_West)$

$\quad +\ b_{16}\ (D\_Southeast) +\ b_{17}\ (D\_1991) + b_{18}\ (D\_1992) +\ \ldots b_{30}\ (D\_2003)$ \quad -------------- (1)

Target's Characteristics: The attractiveness of a target organization will be related to relative size, earnings potential, risk of its operations, growth potential, and location. Earnings variability is measured by the variance of return on assets (*VAR_ROA_TGT*) over the 13 quarters previous to the merger announcement date. We also included the market-to-book value ratio of the target (*MKT_BOOK_TGT*) as a measure of how investors view the target's prospects or potential growth and the target's actual asset growth over the last thirteen quarters (*GROWTH_TGT*). The target's systematic risk (*BETA_TGT*) is a measure of how volatile the target's returns have been in the past year (i.e. 300 business days) relative to the market overall – a negative coefficient would be expected to reflect smaller premiums for higher risk targets.

Acquirer's Characteristics: For the acquiring organization, a number of characteristics could influence its willingness to undertake acquisitions and the premiums it might pay. An acquirer, for instance, might be willing to pay more for targets when the acquirer had higher levels of capital (*BV_CAP_ASSET_ACQ)*, good control of risk (*VAR_ROA_ACQ*), higher asset growth (*GROWTH_ACQ*), and higher share price relative to book (*MKT_BOOK_ACQ*). The systematic risk measure of the acquirer is also included in the analysis (*BETA_ACQ*).

Target & Acquirer's Relation: The relative size of the target and the acquirer (*REL_SIZE_TGT_ACQ*) is included in the model to capture the potential economies of scale impact. In addition, the correlation of returns of the target and the acquirer is included as a measure of risk impact on the combined organization. Acquisitions that offer better diversification by the merged organization could elicit higher premiums. As a result, the analysis includes the covariance of the return on assets for the target and acquirer (*COV_TGT_ACQ*) over the 13 quarters prior to the merger announcement date.

Regional Impact: Following Benston, Hunter, and Wall (1995), we include the regional indicator variables (*D_East, D_West, and D_Southeast*, with the *Midwest* providing the base for comparison or the omitted indicator variable) to capture in which part of the U.S. a target was headquartered. Targets located in faster growing regions of the country or those headquartered

in key financial centers or regions would be expected to command higher purchase premiums. In addition, the combined target assets in the region controls for the demand pressure in the specific region.

Our objective is to examine the relationship between the purchase premium that acquirers are willing to pay and the potential TBTF benefits from the merger transaction. The purchase premiums are regressed on the indicator variables that capture the TBTF status of each merger deal, controlling for the target characteristics, acquirer characteristics, and the type of merger – as described earlier. Table 1 summarizes the definition and calculation of the dependent and independent variables. The complete model is written in equation (2) below:

$PREM\ (20,40,60)\ = a + b_1\ (VAR\_ROA\_TGT)\ (TA\_TGT) +\ b_2\ (MKT\_BOOK\_TGT)\ (TA\_TGT)$

$+\ b_3\ (BETA\_TGT)(TA\_TGT) +\ b_4\ (GROWTH\_TGT)(TA\_TGT)$

$+\ b_5\ (VAR\_ROA\_ACQ)\ (TA\_TGT) +\ b_6\ (MKT\_BOOK\_ACQ)\ (TA\_TGT)$

$+\ b_7\ (BETA\_ACQ)\ (TA\_TGT) +\ b_8\ (GROWTH\_ACQ)\ (TA\_TGT)$

$+\ b_9\ (BV\_CAP\_ASSET\_ACQ)\ (TA\_TGT) +\ b_{10}\ (COV\_TGT\_ACQ)\ (TA\_TGT)$

$+\ b_{11}\ (REL\_SIZE\_TGT\_ACQ)\ (TA\_TGT) +\ b_{12}\ (D\_INSTATE) +\ b_{13}\ (D\_MOE)$

$+\ b_{14}\ (D\_East) +\ b_{15}\ (D\_West) +\ b_{16}\ (D\_Southeast) +\ b_{17}\ (D\_1991) + b_{18}\ (D\_1992) + ...$

$+\ b_{30}\ (D\_2003) +\ b_{31}\ (D\_Become\_TBTF) +\ b_{32}\ (D\_Acquirer\_TBTF)$

$+\ b_{33}\ (D\_Acquirer\_TBTF * TA\_TGT) +\ b_{34}\ (D\_Both\_TBTF) +\ b_{35}\ (D\_Both\_TBTF * TA\_TGT)$

$+\ b_{36}\ (D\_Both\_TBTF * COV)$ -- (2)

IV. The Empirical Results

Tables 2, 3, and 4 present the results of the regression analysis for *PREM_20*, *PREM_40*, and *PREM_60*, respectively. All the analysis includes the same 412 merger deals in the sample period 1991 to 2004 (post-FDICIA period), based on three different TBTF thresholds. Column 1 presents the results when using a $100 billion asset size threshold for an organization to reach TBTF status. Columns 2 and 3 present the results when using asset size

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of the 11th largest bank in each year and the $20 market capitalization thresholds, respectively. The year indicator variables (*D_1991 - D_2003*) are included in all columns and in all three tables but the coefficients are not reported here.

The results are generally consistent across all the TBTF thresholds. Overall, the results for the various TBTF variables support the hypothesis that acquiring banks are willing to pay a higher price for merger deals that would take them over the TBTF thresholds. The regressions for purchase premiums over market as of 40-day (Table 3) and 60-day (Table 4) prior to the announcement seem to provide a better fit than those of 20-day premiums (Table 2) – with adjusted R^2 ranging from 87% to 93% -- versus the 78% to 81% for 20-day premiums. This is probably due to the leakage of information about the merger transaction prior to the official announcement date.

Are Banks Willing to Pay Significant Premiums To Become TBTF?

Becoming TBTF: As shown in Appendix II, there were 9, 10, and 7 mergers that allowed the banking organizations to reach the TBTF thresholds during 1991-2004, based on the $100 billion asset size threshold, the OCC announcement (largest 11th bank) threshold, and the $20 billion market capitalization threshold, respectively. From Tables 2, 3, and 4, the coefficients of D_Become_TBTF are consistently positive and significant. The results strongly indicate that these organizations are willing to pay higher premiums for acquisitions that enable them to reach the TBTF threshold and to capture the benefits of being a large banking organization, controlling for other things that might impact the purchase prices. These higher premiums are consistent with a TBTF subsidy from reaching the size thresholds, although they could also reflect other perceived benefits associated with being large.

Acquirers Already TBTF, Target Becoming TBTF: From Appendix II, there were 30, 33, and 21 mergers during 1991-2004 in this category based on the $100 billion asset size threshold, the OCC announcement (largest 11th bank) threshold, and the $20 billion market

capitalization threshold, respectively. From Tables 2, 3, and 4, the coefficients of

D_Acquirer_TBTF are consistently negative but mostly insignificant, as expected. Some of the

non-TBTF targets seem to be willing to accept purchase premiums below those on other types

of transactions just for the opportunity to become part of a TBTF organization. However, the

coefficients of the cross product term *D_Acquirer_TBTF * TA_TGT* are consistently positive and

significant. This provides some indication that while the organizations that are already TBTF

are not paying as much for their acquisitions compared to banking organizations that are striving

to reach that level, the TBTF acquiring banks are willing to pay increasing purchase premiums

according to the target's asset size.   Larger targets allow the TBTF banks greater opportunity to

expand their deposit base and increase the TBTF subsidy, and thus receive larger purchase

premiums. The net change in purchase premiums in this case depends on the combined

effects of both the coefficient estimates. As shown in Table 5, the net effect is an increase in

purchase premiums based on the 30 merger cases where the acquirers were already TBTF

(larger than $100 billion in assets) and the targets were not.

  Both Acquirers and Targets Already TBTF: From Appendix II, 6 mergers were in this

category based on the $100 billion asset size threshold and the $20 billion market capitalization

threshold – and 8 mergers based on the OCC announcement (11th largest bank) threshold –

during 1991-2004.   From Tables 2, 3, and 4, the coefficients of the stand-alone indicator

variable *D_Both_TBTF* are mixed and inconclusive.   When taking into consideration the target's

asset size, the coefficients of the cross product term *D_Both_TBTF * TA_TGT* are consistently

insignificant. The results suggest that TBTF acquirers have no incentive to pay excess

premiums to acquire another TBTF banking organization in order to expand their asset base.

From our examination of the TBTF banks' potential motivation to increase portfolio risk to

maximize the value of their deposit insurance put option, we find that the coefficients of the

cross product term *D_Both_TBTF * COV* are consistently negative and significant, indicating

that the purchase premiums are significantly smaller when the TBTF acquirers merge with a

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TBTF target whose returns are highly correlated with the acquirer's. These TBTF acquirers do not look to increase their portfolio risk. In fact, they would be willing to pay higher purchase premiums to acquire a TBTF target whose returns would help increase portfolio diversification of the combined banking organization. The net impact in this case depends on the combined impact from all three variables. As discussed later, the net effect is a decrease in purchase premiums based on the 6 merger cases where both the acquirers and the targets were already larger than $100 billion in assets.

Importance of Other Characteristics:

   Target's Characteristics: From Tables 2, 3, and 4, the coefficients of *BETA_TGT* are consistently negative and mostly significant in determining the 20-day and 40-day bid premiums, but insignificant for the 60-day premiums. The results suggest that acquirers pay smaller premiums (or possibly discounts) when acquiring a systematically risky target, whose returns are subject to greater volatility (non-diversifiable risk) than the overall market portfolio. However, we find that the coefficients of *VAR_ROA_TGT* are consistently insignificant, suggesting that the target idiosyncratic risk does not matter while the systematic risk does. The coefficients of *COV_TGT_ACQ* are mixed and insignificant (although significantly negative for *D_Both_TBTF * COV*), suggesting that the correlation between the target's returns and the acquirer's are mostly unimportant for non-TBTF banking organizations. In other words, portfolio diversification is probably not the primary motivation for most merger deals. Unlike most merger deals, as discussed earlier, TBTF banks seem to prefer to increase their portfolio diversification when merging with another TBTF banking organization (the coefficients on *D_Both_TBTF * COV* are significantly negative). Overall, portfolio diversification is not an important factor in bank mergers except for the mergers between TBTF banking organizations.

   The coefficients of *MKT_BOOK_TGT* are mixed and mostly insignificant. Targets with higher market-to-book value ratios are not perceived by the market to have a greater potential

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for earnings growth and be more efficient than the other target organizations. In addition, the coefficients of *GROWTH_TGT* are consistently negative and mostly significant, suggesting that targets with high asset growth (in the past 13 quarters) do not command a larger purchase premium in the mergers in our sample.

Acquirer Characteristics: From Tables 2, 3, and 4, the coefficients of *VAR_ROA_ACQ* are consistently negative and significant, suggesting that less risky acquirers (better risk control and management) are generally more likely to offer larger purchase premiums in merger and acquisition transactions, given the same characteristics of the targets and the merger deals.   In addition, the coefficients of *MKT_BOOK_ACQ* are consistently positive and significant, consistent with the view that more efficient acquirers are willing to pay more (as their share prices are also highly priced) in the stock market. These results are consistent with an argument that acquirers with higher management quality can benefit more from mergers and acquisitions. This is also consistent with our earlier finding that the target's return volatility (poor quality of risk management) is unimportant in determining the bid premium.

The coefficients of *GROWTH_ACQ* are consistently negative but insignificant. The coefficients of *BETA_ACQ* and *BV_CAP_ASSET_ACQ* are mixed and mostly insignificant. The coefficients of are also mixed and mostly insignificant. The results suggest that there is no strong relationship between the purchase premium that the acquirer is willing to offer and the acquirer's systematic risk, the acquirer's leverage ratio (capital ratio), or the acquirer's asset growth. Finally, we find that the coefficients of *REL_SIZE_TGT_ACQ* are positive and mostly significant, suggesting that the acquirers are willing to pay more to acquire targets of greater relative size, since such targets might provide greater opportunities for merger-related efficiencies.

Deal Characteristics: We find that the regional variables are not significant after controlling for other characteristics of the targets and the acquirers. The coefficients for *D_Instate* are negative and mostly significant, suggesting that there is no significant enhanced

cost efficiency benefit in same state mergers. Interstate mergers may tend to provide more

opportunity for the acquirers to expand their out-of-state client base. Finally, we find that the

coefficients for *D_MOE* are consistently negative and significant about half of the time,

suggesting that purchase premiums may be smaller for mergers of equal deals. This finding is

consistent with Brewer, Jackson, Jagtiani, and Nguyen (2000) and Brewer, Jackson, and

Jagtiani (2005) in that any mergers involving two banking organizations of equal size are more

likely to face problems in melding their cultures after the merger.

<u>What is the Estimated Dollar Value of the Potential TBTF Subsidies?</u>

Our empirical results suggest that banking organizations are willing to pay an added

premium for mergers that will take them across the TBTF size thresholds. This additional

amount of purchase premium could provide some indication of the overall value of the benefits

an organization will get as it becomes TBTF. Some care, though, must be taken in interpreting

what these added premiums mean. A portion of these premiums could be tied to something

other than more favorable regulatory treatment for large banks. For instance, reaching the $100

billion asset size threshold might mean that an organization now has a national rather than a

regional presence and will be viewed more favorably by investors. However, even allowing for

this broader range of benefits, there are reasons why the added premiums might understate the

true value of potential subsidies to these large banks.

First, the overall benefits to large banking organizations might be expected to accrue to

several parties other than just the stockholders of the target organization. A substantial portion

of the benefits, for instance, could go to the stockholders of the acquiring organization and to

bondholders and uninsured depositors of both the target and the acquirer. An acquiring

organization and its stockholders are likely to have the bargaining power to retain many of the

TBTF benefits, particularly since this organization may be able to select from a variety of

acquisition targets or combinations of targets in reaching the desired size threshold. To the

extent that this is true, the value of any retained benefits should be reflected in greater investor interest and a higher market price for the acquirer's stock. The uninsured depositors -- and possibly the bondholders -- of both the target and acquiring organizations would also anticipate receiving greater protection once they become part of a TBTF organization, and the value of this protection would thus be an additional benefit (not accounted for in our study).

One other factor that could lead to our under-estimation of the TBTF benefits is that investors may try to anticipate which acquisition targets would provide a good stepping stone for organizations trying to become TBTF. These investors may bid up the price of such targets well in advance of the 20-, 40-, and 60-day windows we use to capture purchase premiums, thereby leading to lower estimated values for the additional purchase premiums.[11] Consequently, while acquirers may pay greater purchase premiums to capture the expected benefits of TBTF, there are a number of factors that suggest these added premiums may only be a starting point or lower bound for estimating the overall TBTF benefits.

Based on our estimation of equation (2) and the regression results from Tables 2, 3, and 4, we calculate the TBTF premiums that are associated with coefficients on *D_Become_TBTF*, *D_Acquirer_TBTF*, *D_Acquirer_TBTF * TA_TGT*, *D_Both_TBTF*, *D_Both_TBTF * TA_TGT*, and *D_Both_TBTF * COV* for each of the merger deal. The specification is described in equations (3), (4), and (5) below.

Subsidy (Become_TBTF) $= b_{31}$ ------- (3)

Subsidy (Acquirer_Already_TBTF) $= b_{32} + b_{33}(TA\_TGT)$ ---- (4)

Subsidy (Acquirer & Target_Already_TBTF) $= b_{34} + b_{35}(TA\_TGT) + b_{36}(COV\_TGT\_ACQ)$ -- (5)

Table 5 presents the total dollar value of the TBTF premiums for all the merger deals in each merger category, based on those merger deals that are associated with TBTF during

1991-2004. The estimated TBTF premiums in column 1 of Table 5 are *Subsidy (Become_TBTF)* – equation (3). The top panel is for the $100 billion asset TBTF threshold – 9 merger deals. The combined excess purchase premiums paid by these nine acquirers to become TBTF range from $14 billion (60-day window) to $16.5 billion (40-day window). Becoming TBTF is worth an additional over $1 billion on average for each of these nine acquiring organizations. Our estimated TBTF premiums account for 46 percent (60-day window) to 71 percent (20-day window) of the total purchase premiums that the nine acquiring banks actually paid.   The middle and the lower panels report the TBTF premiums for the other TBTF thresholds – also average excess purchase premium of over a billion dollar for each TBTF merger deal.

Column 2 of Table 5 presents the excess purchase premiums that the TBTF acquirers paid to acquire non-TBTF targets – *Subsidy (Acquirer_Already_TBTF)* – equation (4). There are 30 merger deals for the top panel ($100 billion asset TBTF threshold) in this category. As discussed earlier, the premiums in this case are mostly based on the size of the target, as larger targets provide greater opportunity for the TBTF acquirers to expand their deposit base. The estimated total TBTF premiums range from about $20 billion (60-day window) to $29 billion (20-day window) for the 30 merger deals.

Column 3 of Table 5 presents the excess purchase premiums (discounts) that the TBTF acquirers paid to acquire another TBTF target – *Subsidy (Acquirer & Target_Already_TBTF)* – equation (5). From Tables 2, 3, and 4, the excess premiums are mostly insignificantly different from zero, except for those related to the co-variation of the returns between the TBTF targets and the TBTF acquirers. The results show a small net negative purchase premium for all the TBTF thresholds as reported in Table 5.

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[11] Our results provide some support for the claim that investors may be bidding up the price of targets in advance. We find that the regressions that use 40- and 60-day windows for calculating bid premiums have greater explanatory power than those using just 20-day windows.

Overall, our results indicate that there may be significant benefits accrued to TBTF banking organizations. It is important to point out that these estimated TBTF benefits do not include the benefits that have been captured by organizations, such as Bank America Corporation and Citigroup, which were already TBTF prior to our study period. Therefore, the true value of potential TBTF benefits could be much larger than our estimate.

V. Conclusions and Policy Implications:

Our empirical results are consistent with the hypothesis that large banking organizations obtain advantages not available to other organizations. These advantages may include becoming TBTF and thus gaining favor with uninsured bank creditors and other market participants, operating with lower regulatory costs, and increasing the organization's chances of receiving regulatory forbearance. Other advantages could be associated with organizations becoming large enough to be "national players" and thus be in control of their own future rather than being acquisition targets themselves.

We find that banking organizations are willing to pay an added premium for mergers that will put them over a TBTF threshold. This added premium amounted to an estimated $14 to $16.5 billion extra that nine banking organizations (Table 5 Column 1) in our data set were willing to pay for acquisitions that enabled them to become TBTF (crossing the $100 billion threshold). As mentioned earlier, since TBTF is not officially defined, there is no way to know with certainty what size of banking organization might be regarded as being TBTF. We find that the TBTF banking organizations in our data set paid an estimated $20 to $29 billion of extra purchase premiums in total (in 30 acquisitions) to further expand their asset base and to obtain additional TBTF benefits after having crossed the TBTF threshold.

While these amounts are large, they may underestimate the total value of the benefits that accrue to large banking organizations. Organizations seeking to obtain TBTF benefits are not likely to be forced by the marketplace to pass on anywhere near the full value of these

benefits to the shareholders of their acquisition targets. In addition, these estimated benefits only apply to the organizations that became TBTF during our study period. Benefits already obtained by banking organizations that became TBTF prior to our sample period thus would not be included in our TBTF benefit calculations. As a result, the total value to large banks could easily be much higher than what we estimate.

These estimates provide an aggregate measure of the benefits accruing to large banking organizations from exceeding a TBTF threshold and do not indicate the relative contribution of any particular regulatory advantage or individual policy. By themselves, our results do not point out which particular policy directions would be most effective in addressing the benefits large banks may obtain once they become TBTF. However, our estimates of the benefits from exceeding a TBTF threshold appear large enough to cause increasing concerns as the megamerger trend continues in the U.S. banking industry. These trends could potentially hinder the efficient allocation of financial resources across different sizes of institutions, and, in turn, their customers and the overall macroeconomy.[12] Consequently, this is an important public policy issue that merits consideration for competitive balance between large and small banking organizations and the overall U.S. financial system.

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[12] See Hoenig (1999) and Carow, Kane, and Narayanan (2006) for further discussion.

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Table 1
Summary of Description of the Variables

Dependent Variables	
PREM_20	20 day purchase premium of a target bank ($ mill) -- computed as purchase price less pre-consolidation market value.
PREM_40	40 day purchase premium of a target bank ($ mill)
PREM_60	60 day purchase premium of a target bank ($ mill)

"Too-Big-To-Fail" Variables	
D_Become_TBTF	Indicator variable equal to 1 if the acquirer and the target are both not TBTF prior to the merger, but the combined banking firm will become TBTF after the merger, and zero otherwise.
D_Acquirer_TBTF	Indicator variable equal to 1 if the acquirer is already TBTF prior to the merger but the target is not TBTF, and zero otherwise.
D_Acquirer_TBTF * TA_TGT	Interactive term of the variable D_Acquirer_TBTF and the target's total assets
D_Both_TBTF	Indicator variable equal to 1 if both the acquirer and the target are already TBTF prior to the merger, and zero otherwise.
D_Both_TBTF * TA_TGT	Interactive term of the indicator variable D_Both_TBTF and the target's total assets
D_Both_TBTF * COV	Interactive term of the indicator variable D_Both_TBTF and the covariance variable COV_TGT_ACQ

Acquirer Characteristics	
VAR_ROA_ACQ	The variance (volatility) of ROA of the acquirer over the 13 quarters before the quarter of the merger announcement date.
MKT_BOOK_ACQ	The ratio of market value of common to the book value of common in the quarter before the quarter of the merger announcement date.
BETA_ACQ	The acquirer's Beta (measure of systematic risk) calculated from daily stock returns for the period beginning 300 days prior to the merger, using the One-Factor Model
GROWTH_ACQ	Growth rate of total assets of the acquirer over the 13 quarters before the quarter of the merger announcement date
BV_CAP_ASSET_ACQ	Book value of capital-to-asset ratio of the acquirer in the quarter prior to the announcement date

	Target Characteristics
VAR_ROA_TGT	The variance (volatility) of ROA of the target over the 13 quarters before the quarter of the merger announcement date
MKT_BOOK_TGT	The ratio of market value of common to the book value of common in the quarter before the quarter of the merger announcement date
BETA_TGT	The target's Beta (measure of systematic risk) calculated from daily stock returns for the period beginning 300 days prior to the merger, using the One-Factor Model.
GROWTH_TGT	Growth rate of total assets of the target over the 13 quarters before the quarter of the merger announcement date

	Target-Acquirer Relationship
COV_TGT_ACQ	Covariance of the ROA of the target and acquirer over the 13 quarters before the quarter of the merger announcement date
REL_SIZE_TGT_ACQ	Ratio of target's total assets to acquirer's total assets

	Regional Binary Variables
D_East	Indicator variable equal to total target assets in the East region if target's state is CT, DE, DC, ME, MD, MA, NH, NJ, NY, RI, VT, or PA, and zero otherwise.
D_West	Indicator variable equal to total target assets in the West region if target's state is AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, or WY, and zero otherwise.
D_Southeast	Indicator variable equal to total target assets in the Southeast if the target's state is AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, or WV, and zero otherwise

	Other Deal Characteristics
D_InState	Indicator variable equal to 1 if the acquirer and the target are in the same state, and zero otherwise.
D_MOE	Indicator variable equal to 1 if it is a merger of equal
D_1991, to D_2003	Indicator variable equal to 1 if the transaction occurred in the year Specified -- from 1991 to 2003 (2004 is the base year).

Table 2
The Empirical Results – Dependent Variable is *PREM_20*
Using Three Different Definitions of "Too-Big-To-Fail" Thresholds

The definition of the dependent and independent variables are summarized in the Table 1. Sample Period: 1991-2005 (N=412). The heteroscedasticity consistent standard errors are reported in the parentheses. The coefficients of year and regional indicators (control variables) are not reported in the table. The ***, **, and * denote significance at the 1% level, the 5% level, and the 10% level based on robust t-test with White (1980) correction, respectively.

Independent Variables	I Total Assets > $100 Bill	II Largest 11 Banks Total Assets	III Market Value of Equity > $20 Bill
Intercept	-419.12**	-185.05	-390.70**
	(194.95)	(142.51)	(174.89)
TBTF Variables:			
D_Become_TBTF	1397.81*	1293.82***	1182.21*
	(807.93)	(466.51)	(656.20)
D_Acquirer_TBTF	-199.40	-205.13	-428.27**
	(145.94)	(128.30)	(213.69)
*D_Acquirer_TBTF * TA_TGT*	0.0346**	0.0453***	0.0494***
	(0.0174)	(0.0151)	(0.0172)
D_Both_TBTF	-3128.17	165.97	3875.32
	(4040.54)	(1646.59)	(2435.33)
*D_Both_TBTF * TA_TGT*	0.0373	0.0166	0.0056
	(0.0310)	(0.0164)	(0.0163)
*D_Both_TBTF * COV*	-8.6109**	-8.5464***	-7.4464**
	(3.7981)	(3.1273)	(2.9096)
Target's Characteristics:			
VAR_ROA_TGT	938.08	454.55	760.15
	(930.35)	(886.94)	(767.66)
MKT_BOOK_TGT	-0.0125	-0.0157*	-0.0141*
	(0.0095)	(0.0088)	(0.0080)
BETA_TGT	-0.0400***	-0.0212*	-0.0254**
	(0.0124)	(0.0129)	(0.0114)
GROWTH_TGT	-0.0360	-0.0328*	-0.0440**
	(0.0220)	(0.0182)	(0.0219)

Acquirer's Characteristics:			
VAR_ROA_ACQ	-4008.81**	-4780.25**	-4690.33**
	(1793.63)	(2049.85)	(2052.71)
MKT_BOOK_ACQ	0.0164*	0.0289***	0.0172*
	(0.0092)	(0.0106)	(0.0098)
BETA_ACQ	-0.0077	0.0092	0.0066
	(0.0140)	(0.0129)	(0.0119)
GROWTH_ACQ	-0.0072	-0.0070	-0.0066
	(0.0064)	(0.0050)	(0.0041)
BV_CAP_ASSET_ACQ	1.1745***	0.3021	0.7376**
	(0.3731)	(0.3617)	(0.3728)
Target-Acquirer Relation:			
COV_TGT_ACQ	-1.0452	0.2246	-0.2185
	(0.6512)	(0.6213)	(0.8562)
REL_SIZE_TGT_ACQ	196.60**	227.59**	308.58**
	(94.3937)	(87.6655)	(119.14)
Deal Characteristics:			
D_MOE	-589.24**	-453.56*	-486.38*
	(0.268.15)	(262.03)	(279.62)
D_INSTATE	-81.6629*	-84.4028*	-113.11**
	(48.1168)	(48.9970)	(46.6719)
R-Square (Adjusted)	77.87%	80.52%	81.12%

Table 3
The Empirical Results – Dependent Variable is *PREM_40*
Using Three Different Definitions of "Too-Big-To-Fail" Thresholds

The definition of the dependent and independent variables are summarized in the Table 1. Sample Period: 1991-2005 (N=412). The heteroscedasticity consistent standard errors are reported in the parentheses. The coefficients of year and regional indicators (control variables) are not reported in the table. The ***, **, and * denote significance at the 1% level, the 5% level, and the 10% level, based on robust t-test with White (1980) correction, respectively.

Independent Variables	I **Total Assets > $100 Bill**	II **Largest 11 Banks Total Assets**	III **Market Value of Equity > $20 Bill**
Intercept	-383.24**	-243.49*	-406.97**
	(183.64)	(137.99)	(177.93)
TBTF Variables:			
D_Become_TBTF	1447.15**	1308.94***	1057.17**
	(723.69)	(425.13)	(537.43)
D_Acquirer_TBTF	-162.39	-181.06	-422.67*
	(137.09)	(123.665)	(246.88)
D_Acquirer_TBTF * TA_TGT	0.0278*	0.0405***	0.0434***
	(0.0157)	(0.0136)	(0.0162)
D_Both_TBTF	642.86	2057.92*	5945***
	(3087.88)	(1227.17)	(2238.46)
D_Both_TBTF * TA_TGT	0.0099	0.0031	-0.0136
	(0.0269)	(0.0153)	(0.0149)
D_Both_TBTF * COV	-6.8559*	-6.9251**	-5.0091*
	(3.4913)	(2.9730)	(2.6180)
Target's Characteristics:			
VAR_ROA_TGT	611.48	377.11	548.62
	(881.08)	(889.76)	(738.86)
MKT_BOOK_TGT	0.0016	-0.0019	-0.0007
	(0.0093)	(0.0085)	(0.0082)
BETA_TGT	-0.0254**	-0.0126	-0.0131
	(0.0113)	(0.0108)	(0.0106)
GROWTH_TGT	-0.0363**	-0.0320**	-0.0397**
	(0.0177)	(0.0161)	(0.0190)

Acquirer's Characteristics:			
VAR_ROA_ACQ	-5693.77***	-6242.12***	-6448.02***
	(1805.67)	(2030.19)	(2084.97)
MKT_BOOK_ACQ	0.0235***	0.0323***	0.0212**
	(0.0076)	(0.0092)	(0.0089)
BETA_ACQ	-0.0028	0.0068	0.0074
	(0.0130)	(0.0115)	(0.0111)
GROWTH_ACQ	-0.0040	-0.0038	-0.0037
	(0.0056)	(0.0049)	(0.0040)
BV_CAP_ASSET_ACQ	0.4190	-0.1719	0.1927
	(0.3893)	(0.3239)	(0.4008)
Target-Acquirer Relation:			
COV_TGT_ACQ	-0.0804	0.7334	0.2550
	(0.5871)	(0.6417)	(0.8321)
REL_SIZE_TGT_ACQ	154.95**	199.998**	257.14***
	(78.42)	(78.6259)	(96.5804)
Deal Characteristics:			
D_MOE	-399.29*	-288.60	-343.97
	(230.38)	(237.74)	(250.71)
D_INSTATE	-69.9872	-74.0742*	-91.7435**
	(43.6879)	(44.0897)	(41.4060)
R-Square (Adjusted)	86.65%	87.81%	87.88%

Table 4
The Empirical Results – Dependent Variable is *PREM_60*
Using Three Different Definitions of "Too-Big-To-Fail" Thresholds

The definition of the dependent and independent variables are summarized in the Table 1. Sample Period: 1991-2005 (N=412). The heteroscedasticity consistent standard errors are reported in the parentheses. The coefficients of year and regional indicators (control variables) are not reported in the table. The ***, **, and * denote significance at the 1% level, the 5% level, and the 10% level, based on robust t-test with White (1980) correction, respectively.

Independent Variables	I Total Assets > $100 Bill	II Largest 11 Banks Total Assets	III Market Value of Equity > $20 Bill
Intercept	-329.45**	-207.35	-319.33**
	(158.05)	(126.39)	(150.99)
TBTF Variables:			
D_Become_TBTF	1228.44**	963.99***	732.46*
	(599.98)	(365.57)	(420.87)
D_Acquirer_TBTF	-111.40	-96.8062	-274.33
	(118.24)	(105.47)	(215.45)
*D_Acquirer_TBTF * TA_TGT*	0.0239*	0.0293**	0.0340**
	(0.0129)	(0.0113)	(0.0132)
D_Both_TBTF	-953.12	900.91	3209.73*
	(2462.57)	(1106.16)	(1713.48)
*D_Both_TBTF * TA_TGT*	0.0170	0.0045	-0.0041
	(0.0217)	(0.0130)	(0.0124)
*D_Both_TBTF * COV*	-4.9256*	-4.7159**	-3.7034*
	(2.6034)	(2.3502)	(2.1643)
Target's Characteristics:			
VAR_ROA_TGT	445.64	203.28	362.46
	(628.57)	(633.84)	(559.59)
MKT_BOOK_TGT	0.0071	0.0048	0.0055
	(0.0070)	(0.0065)	(0.0062)
BETA_TGT	-0.0144	-0.0031	-0.0034
	(0.0091)	(0.0091)	(0.0087)
GROWTH_TGT	-0.0235*	-0.0214	-0.0268*
	(0.0140)	(0.0138)	(0.0154)

Acquirer's Characteristics:			
VAR_ROA_ACQ	-5426.56***	-5850.99***	-6039.93***
	(1613.12)	(1787.66)	(1846.96)
MKT_BOOK_ACQ	0.0214***	0.0286***	0.0217***
	(0.0061)	(0.0073)	(0.0075)
BETA_ACQ	-0.0074	0.0025	0.0026
	(0.0103)	(0.0092)	(0.0088)
GROWTH_ACQ	-0.0031	-0.0028	-0.0031
	(0.0046)	(0.0043)	(0.0032)
BV_CAP_ASSET_ACQ	0.2297	-0.2691	-0.0477
	(0.3344)	(0.2929)	(0.3375)
Target-Acquirer Relation:			
COV_TGT_ACQ	-0.0757	0.6330	0.3474
	(0.5554)	(0.6395)	(0.8260)
REL_SIZE_TGT_ACQ	96.1886	121.21*	168.89**
	(70.5946)	(68.7620)	(81.6003)
Deal Characteristics:			
D_MOE	-304.56	-232.62	-241.86
	(198.99)	(204.83)	(215.56)
D_INSTATE	-54.6156	-53.5866	-77.8919**
	(36.4683)	(37.2205)	(36.4836)
R-Square (Adjusted)	92.23%	92.66%	92.69%

Table 5
Estimated Dollar Value ($ Million in year 2005) of TBTF Premiums
Using Various TBTF Thresholds

The estimated TBTF premiums are calculated based on equations (3), (4), and (5), using those coefficients that are significant at the 10% level or higher from the results presented in Tables 2, 3, and 4. The reported dollar values below are the combined TBTF premiums for all the merger deals in each category.

	Acquirer & Target NOT TBTF, Combined Firm Becomes TBTF After the Merger Equation (3)	Acquirer Already TBTF, Target Not TBTF but Becomes Part of TBTF Org. After the Merger Equation (4)	Both Acquirer and Target Already TBTF Prior To the Merger Equation (5)
$100 Billion Asset:	N=9	N=30	N=6
60-Day Premium:			
Actual Total Premium	$30,671.70	$35,087.69	$60,230.11
TBTF Premium	$14,015.61	$19,933.28	$-2,074.32
40-day Premium:			
Actual Total Premium	$29,878.61	$32,646.35	$52,097.60
TBTF Premium	$16,510.96	$23,144.29	$-2,887.23
20-day Premium:			
Actual Total Premium	$22,502.04	$32,001.58	$40,440.63
TBTF Premium	15,948.02	$28,815.68	$-3,626.31
$20 Billion Mkt Cap:	N=7	N=21	N=6
60-Day Premium:			
Actual Total Premium	$17,262.57	$37,965.10	$65,181.90
TBTF Premium	$9,888.38	$17,349.96	$-4,947.00
40-day Premium:			
Actual Total Premium	$18,654.78	$35,315.19	$56,179.79
TBTF Premium	$11,648.89	$20,144.82	$-6,885.69
20-day Premium:			
Actual Total Premium	$17,450.50	$33,812.15	$41,583.28
TBTF Premium	$11,251.73	$25,081.21	$-8,648.30
Largest 11th Bank:	N=9	N=33	N=8
60-Day Premium:			
Actual Total Premium	$20,202.39	$41,503.27	$67,723.85
TBTF Premium	$13,998.63	$19,394.54	$-6,474.06
40-day Premium:			
Actual Total Premium	$20,450.53	$40,271.04	$58,625.37
TBTF Premium	$16,490.93	$22,518.77	$-9,011.18
20-day Premium:			
Actual Total Premium	$19,063.13	$38,928.27	$43,133.12
TBTF Premium	$15,928.68	$28,036.88	$-11,317.89

Appendix I
List of Acquirers and Target in Each Merger Type
When Definition of TBTF is -- Total Assets Larger Than $1 Billion

Case 1: Acquirers Become TBTF After the Merger – 9 observations

Year	Acquirer	Target
1991	Chemical Banking Corp.	Manufacturers Hanover Corp.
1991	NCNB Corp, Charlotte, NC	C&S/Sovran Corp.
1995	First Union Corp, Charlotte, NC	First Fidelity Bancorporation
1995	NBD Bancorp, Detroit, MI	First Chicago Corp, Illinois
1995	Wells Fargo & Co.	First Interstate Bancorp
1996	Banc One Corp, Columbus, OH	Liberty Bancorp Inc, Oklahoma
1998	Washington Mutual Inc., Seattle	Ahmanson H.F. & Co., Irwindale, CA
1998	Norwest Corp	Wells Fargo
2000	Firstar Corp, Milwaukee	U.S. Bancorp, Minneapolis

Case 2: Acquirers Are Already TBTF Prior to the Merger – 30 observations

Year	Acquirer	Target
1991	Bank America Corp	Valley Capital Corp
1991	Bank America Corp	Security Pacific
1992	NationsBank Corp	MNC Financial
1994	Bank America Corp	Continental Bank Corp
1994	NationsBank Corp	RHNB Corp
1995	NationsBank Corp	Intercontinental Bank
1995	NationsBank Corp	Bank South Corp
1996	First Union Corp	Home Financial Corp
1996	NationsBank Corp	Charter Bancshares Inc
1996	First Union Corp	Center Financial Corp
1996	NationsBank Corp	Boatmen's Bancshares Inc.
1997	First Union Corp	Signet Bkg Corp
1997	First Union Corp	Covenant Bancorp
1997	NationsBank Corp	Barnett Banks
1997	Banc One Corp	First Commerce
1997	First Union Corp	CoreStates Financial Corp
1999	Fleet Financial Group	BankBoston
2000	Wells Fargo	First Security Corp
2000	Wells Fargo	First Commerce Bancshares
2000	Wells Fargo	First Security Corp
2000	Wells Fargo	Brenton Banks Inc
2000	Washington Mutual	Bank United Corp
2000	FleetBoston Financial Group	Summit Bancorp Princeton
2001	First Union Corp	Wachovia Corp
2001	Washington Mutual Inc.	Dime Bancorp NY
2002	Citigroup	Golden State Bancorp
2003	Wells Fargo	Pacific Northwest Bancorp
2004	National City Corp	Provident Financial Group
2004	SunTrust Banks Inc.	National Commerce Financial Corp
2004	Wachovia Corp	SouthTrust Corp

Case 3:   Both Acquirers and Targets are already TBTF Prior to the Merger

Year	Acquirer	Target
1995	Chemical Bank	Chase Manhattan Bank
1998	Banc One Corp (Columbus, OH)	First Chicago NBD Corp
1998	NationsBank	BankAmerica Corp
2000	Chase Manhattan Corp	J.P. Morgan & Co
2003	BankAmerica	FleetBoston Financial Corp
2004	J.P. Morgan Chase & Co	Bank One Corp (Chicago)

Case 4: Both Acquirers and Targets Are Not TBTF Prior to the Merger and Will Not Become
TBTF After the Merger – 367 merger transactions – not listed here

Appendix II
Distribution of Merger Categories
Based on the Various Definitions of TBTF Thresholds

TBTF Thresholds	*Combined Firm Become TBTF*	*Acquirer Already TBTF*	*Acquirer & Target Already TBTF*	Not_TBTF
Total Assets Larger Than $100 Bill	9	30	6	367
Total Assets Larger Than that of the 11th Largest Bank	10	33	8	361
Market Value of Equity Larger Than $20 Bill	7	21	6	378
Total Assets Larger Than $150 Bill	8	18	4	382
Total Assets Larger Than $200 Bill	5	11	3	393

Note: Total number of observations is 412.