Does Bank Diversification Create Value?

Darren Filson[*]

Claremont McKenna College

April 4, 2013

---

[*] Send correspondence to Darren Filson, Associate Professor, Robert Day School of Economics and Finance, Claremont McKenna College, Bauer Center 325, 500 E. Ninth Street, Claremont, CA 91711. Email: dfilson@cmc.edu. Phone: (909) 607-6796. Fax: (909) 621-8249.

Does Bank Diversification Create Value?

Abstract:

Evidence from the combined abnormal returns associated with U.S. bank holding company acquisitions during 2001-2011 suggests that diversification into investment banking, securities brokerage and insurance permitted by the Gramm-Leach-Bliley Act of 1999 creates value. Effects are particularly large if the acquirer is large and if the acquirer's and the market's value have declined over the prior year. These factors also generate exceptional returns for acquirers, although acquirers also benefit from the unique circumstances of the U.S. Financial Crisis. Offsetting these beneficial effects, large size is associated with increasing systematic risk, and falling acquirer values are associated with increasing idiosyncratic risk.

In the aftermath of the 2008 financial crisis, many have called for the repeal of the Financial Services Modernization Act of 1999 (also known as the Gramm-Leach-Bliley Act and referred to as the GLBA in what follows). The goal would be to prevent bank holding companies (BHCs) from participating in investment banking, securities brokerage, and insurance activities.[1] While the role of the GLBA in the financial crisis is subject to debate (for background information and an introduction to the debate, see White (2010) and the sources cited there), it remains of interest to determine whether permitting BHCs to diversify into other financial services is desirable. A substantial literature prior to the GLBA explores the possibility of universal banking in the U.S. (for an overview see Benston (1994)). We can now observe the results of the steps taken so far.[2]

This paper uses the combined abnormal returns from 138 U.S. bank mergers during 2001-2011 to estimate whether diversifying into investment banking, securities brokerage, and insurance (referred to as "GLBA diversification" in what follows) enhances or destroys value in BHCs (relative to non-diversifying mergers). A complete policy analysis of the GLBA would compute the expected net present value of the welfare impact on all consumers and firms in the economy and also assess distributional consequences. Starting with an analysis of whether GLBA diversification creates value in the diversifying BHCs is useful for three reasons. First, it is much simpler than a complete policy analysis. Second, if the results suggest that GLBA diversification does not create value for the diversifying firms, then it seems unlikely that such diversification would enhance welfare more broadly. The diversifying firms should be able to

---

[1] Currently, the term "bank holding company" includes holding companies focused mostly on commercial banking (Bank of America and Wells Fargo, for example) but also applies to regulated financial holding companies focused mostly on other activities (Goldman Sachs and MetLife, for example).

[2] GLBA diversification is one version of universal banking, and broader or narrower versions are possible. Broader versions could go beyond the GLBA to permit BHCs to own equity in non-financial firms and/or permit nonfinancial firms (such as Walmart, for example) to own commercial banks. The Volcker Rule included in the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 imposes a narrower version by restricting BHC involvement in hedge funds and private equity funds in addition to restricting proprietary trading.

appropriate some of the social returns to their diversification if those social returns are positive.[3]

Third, if the results suggest that GLBA diversification does create value (as they do here), then

further investigation might reveal circumstances in which it does so (and by extension, the

circumstances in which such diversification might enhance social welfare).

Much of the literature suggests that the impact of bank diversification is negative,

particularly for U.S. BHCs, which weighs in favor of repealing the GLBA (DeLong (2001),

Stiroh (2004, 2006), Stiroh and Rumble (2006), Schmid and Walter (2009)).[4] Negative results

are not confined to the U.S.; Laeven and Levine (2007) analyze 43 countries including the U.S.

and find a diversification discount for financial conglomerates. However, prior literature on U.S.

BHCs does not focus directly on GLBA diversification, and much of the time period analyzed

also predates the GLBA. Further, results from Europe, which has permitted GLBA-type

diversification for longer than the U.S. (since the Second Banking Directive in 1989), suggest

that diversification might not be associated with a discount, at least under some conditions

(Baele, De Jonghe and Vennet (2007) and van Lelyveld and Knot (2009)), and Sanya and Wolfe

(2011) find that bank diversification enhances profitability in emerging economies. In addition,

Elsas, Hackethal and Hozhauser (2010) find evidence against a conglomerate discount using

evidence that includes the 2001-2008 period (their data starts in 1996). Thus, it remains of

interest to explore whether and under what conditions GLBA diversification creates value for

U.S. BHCs in the current environment.

---

[3] Of course, this does not imply that if diversification creates value for the participants, it must enhance social welfare. Much of the literature has expressed the concern that value creation could be at the expense of society. This might be because large institutions become too big to fail. Even if merging firms do not become too big to fail, systematic risk might rise, and even an increase in idiosyncratic risk could be cause for concern due to the possibility of bank failure.
[4] This literature builds on the pioneering work of Lang and Stulz (1994) and Berger and Ofek (1995) that documents a diversification discount but focuses on nonfinancial firms.

To measure the degree of GLBA diversification, I isolate the components of noninterest income that pertain to investment banking, securities brokerage and insurance, and I compare income from these sources to the sum of net interest income and total noninterest income. Over time, BHC incomes have depended more on noninterest income (DeYoung and Rice (2004)), but changes in noninterest income blend changes in commercial banking activities with GLBA diversification. In the period I am focusing on (2001-2011), the average U.S. BHC earns only 10% of its total noninterest income from GLBA activities. The average is larger for larger BHCs (21% for BHCs with assets of at least $50B (40 BHCs), and 37% for those with assets of at least $500B (8 BHCs)), but income from GLBA diversification remains a relatively small part of total noninterest income.[5]

My empirical approach exploits the fact that GLBA diversification typically occurs through mergers and acquisitions (DeYoung, Evanoff and Molyneux (2009)). In contrast to the literature that uses regressions of Tobin's q on measures of diversification or similar methods to assess whether diversification creates value (following Lang and Stulz's (1994) original approach), I employ event studies of merger announcements. I measure the degree of GLBA diversification of both parties to project whether the merger will likely increase or decrease the degree of GLBA diversification of the acquiring BHC. Event studies are generally more robust and less controversial than q regressions and related approaches. Q regressions and related approaches create several challenges, including measuring q or the other measures of value employed, coming up with a comparable set of non-diversified firms, and controlling for

---

[5] This is based on all U.S. BHCs that file quarterly FR Y-9C reports. Prior to 2006, all BHCs with assets of at least $150 million were required to file FR Y-9C reports. In 2006, the cutoff rose to $500 million. The rest of noninterest income comes from several sources such as fiduciary activities, service charges, bank card and credit card interchange fees, other fees, trading revenue, venture capital revenue, and gains and losses disposing of loans, leases and other assets (including real estate). Gains and losses associated with selling assets in securitization transactions (mortgage-backed securities) are also part of total noninterest income.

endogeneity of the diversification decision.[6] In contrast, results from event studies, particularly those based on short-horizon abnormal returns, are less sensitive to measurement and modeling problems, including endogeneity problems. Daily expected returns are essentially zero, so the particular factor model employed to predict normal returns does not influence the estimates of abnormal returns during the event window much.[7] There are two main challenges of using event studies in my context. First, the number of observations is limited by the number of events. Small samples lead to more tentative conclusions, and it is difficult to disentangle some of the competing explanations of the results. Second, it is impossible to isolate every aspect of every merger that impacts the value the merger creates. Thus, I might over- or under-attribute the benefits of a particular merger to the GLBA diversification it creates. I attempt to mitigate this by considering alternatives types of diversification and other factors that might impact returns.[8]

My main results are as follows. During 2001-2011, mergers that are projected to enhance GLBA diversification generate combined cumulative abnormal returns (CARs) that are approximately double those of other BHC mergers. Mergers that enhance GLBA diversification more have higher combined CARs, and the results remain compelling if I restrict attention to large mergers. In contrast, mergers that are projected to enhance geographic diversification or non-GLBA functional diversification appear, if anything, to destroy value when these factors are

---

[6] The literature focuses on nonfinancial firms, but the insights into methodology are universal. See Whited (2001) and Erickson and Whited (2006) for analyses that consider the difficulty of measuring q. Graham, Lemmon and Wolf (2002) present evidence that challenges the approach of using non-diversified firms to create comparison groups. Campa and Kedia (2002) and Villalonga (2004) show that addressing the selection problem created by the endogeneity of the diversification decision can eliminate the diversification discount.

[7] Some event studies find evidence consistent with a diversification discount but others do not. DeLong (2001) analyzes bank mergers in the pre-GLBA period and concludes that diversification destroys value. In a recent study with a broader scope, Akbulut and Matsusaka (2010) analyze almost 5,000 mergers that occurred in the period 1950-2006 and find no evidence that diversifying mergers yield lower combined abnormal returns. Prabhala (1997) provides a formal argument that standard event study methods remain useful when the decisions reflected in observed announcements (such as the decision to merge) are endogenous.

[8] A related possibility is that changes that occur at the same time as GLBA diversification are actually responsible for the observed effects. For example, Klein and Saidenberg (2010) argue that corporate structures that tend to be employed by highly diversified firms have important impacts on the estimated effects of diversification.

examined in isolation, although geographic diversification creates value when it is combined with GLBA diversification. An attempt to distinguish between GLBA diversification efforts that enhance investment banking or securities brokerage activities versus efforts that enhance insurance activities yields no clear conclusions about which has higher returns, although the former type of enhancement has been more prevalent than the latter.

Examining impacts by year shows that GLBA diversifying mergers were particularly advantageous in 2008, the year of the financial crisis. One possible conclusion is that the GLBA can help mitigate the impacts of financial crises, because it allows relatively stable BHCs to takeover other more vulnerable financial firms. I also explore whether other factors might account for the apparent 2008 effect, and examining several possible factors in isolation reveals several possible candidates. Combined CARs associated with GLBA diversifying mergers are particularly high when the acquirer is large or when the market, the target's value, or the acquirer's value has declined in the year prior to the merger announcement. I use regression analysis to conduct a horse race between the factors that appear to lead to unusually high returns for GLBA diversifying mergers, and I find that declining acquirer values and acquirer size along with a declining market are the most robust factors. The first two of these effects are consistent with Matsusaka's (2001), Maksimovic and Phillip's (2002) and Gomes and Livdan's (2004) theoretical models of optimal diversification: Firms diversify when they have exhausted opportunities in their current lines of business. This is most likely to happen when firms are large, and it is also consistent with declining acquirer values.

Additional analysis establishes that large acquirer size along with declining acquirer values have robust effects on the ability of a diversifying acquirer to appropriate returns from the merger, but the 2008 effect also matters. Thus, the diversifying mergers with the highest

combined returns are also those that acquirers are most likely to pursue, although diversifying

acquirers also benefited from the unusual circumstances of the financial crisis.

Offsetting the beneficial effects of diversification, an analysis of the impacts of mergers

on systematic and idiosyncratic risk suggests that the key factors that appear to help GLBA

diversifying mergers create value also increase risk. In particular, large acquirer size is

associated with a larger increase in systematic risk, and low acquirer returns are associated with

an increase in idiosyncratic risk. Thus, a complete welfare analysis would have to weigh the

gains of GLBA diversification against the cost of increased risk.

II. Theory

There are theoretical arguments for and against diversification creating value. Thus, whether

diversification creates value or not is ultimately an empirical question, and empirical results

might vary by industry, time period, the nature of the diversification, and other factors depending

on which of the forces dominate in any particular case. Combining financial services can

potentially improve both revenues and costs. As DeYoung and Rice (2004) discuss, diversified

banks can provide one-stop shopping for consumers interested in a range of financial services,

including investment products and insurance, in addition to the more traditional checking and

savings accounts and loans. Similarly, such banks can provide firms with a more complete range

of financing options that goes beyond traditional loans to include stock and debt underwriting.[9]

Futher, the GLBA encourages BHCs to exploit improvements in data processing and

communications technologies, because the improved information flow can be used across more

activities. Alternatively, as Jensen (1986) discusses, firms might pursue acquisitions because of

---

[9] Both the banks and their customers potentially benefit from such diversification. Simple game-theoretic models that date back to Cournot suggest that both firms and consumers benefit from mergers between monopolists producing complements. The merged firm boosts demand for the complement goods by lowering the price of each product and thus raises consumer surplus as well as its own profits (for a textbook treatment see Pepall, Richards and Norman (2008), pages 175-80 and 190-91).

managerial motives (the desire to manage a large organization and/or the desire to diversify the income streams to provide more stable cash flows) rather than the desire to create value for shareholders. If the harm associated with these effects outweighs the benefits associated with increasing revenue and exploiting economies of scope, diversification destroys value.[10]

The related literature on internal capital markets provides several additional insights into the tradeoffs diversifying BHCs face (Holod and Peek (2010) provide an empirical analysis that shows that multi-bank holding companies actively employ internal capital markets). Gertner, Scharfstein and Stein (1994) and Stein (1997) show that combining separate lines of business in a single firm can lead to more effective monitoring by the capital provider (headquarters rather than an external source) and facilitates redeploying assets of projects that perform poorly. However, it also reduces entrepreneurial incentives, and several studies show that redeploying assets need not improve efficiency; cross-subsidization and divisional rent-seeking can result in inefficient resource allocation (Lamont (1997), Shin and Stulz (1998), Scharfstein and Stein (2000)). Further, Stein (1997) shows that if project evaluation errors are correlated when projects are similar, then focused firms can make fewer resource allocation errors (mistakes are less likely to lead to inefficiently favoring one project over another). In general, the lack of focus in the firm's operations could lead to worse decision making.

Formal models also show how rational value-creating diversification can be consistent with the empirical observation of a diversification discount in cross-sectional studies. In Matsusaka (2001), firms that experience declining value in their current activities diversify to find a better match for their capabilities. In Maksimovic and Phillips (2002) and Gomes and Livdan (2004), single-segment firms are particularly productive in their segment and have a high

---

[10] Managerial motives need not be completely inconsistent with value creation. Large size might increase value through economies of scale or by creating a BHC that is too big to fail, and as Smith and Stulz (1985) argue, generating more stable cash flows can increase value if it encourages employees to make firm-specific investments.

opportunity cost of diversifying. Firms that outgrow their opportunities in their current lines of

business and/or experience favorable productivity shocks for other lines of business are those

most likely to pursue diversification. In Gomes and Livdan (2004), despite the fact that

diversification creates value in the model, a q regression using data generated from the model

still produces an apparent diversification discount. These models provide further support for

using event studies to estimate the effects of diversification on value (when diversification

occurs through well-defined events such as mergers and acquisitions). The act of diversification

can reveal the value created or destroyed by diversifying whether or not a diversification

discount appears in a cross-sectional study.

III. Data and Measures of Diversification

Data

I analyze 138 mergers announced during 2001-2011 in which the acquirer is a BHC. Daily stock

returns and accounting data for measuring GLBA diversification must be available for both

parties. Accounting data is from quarterly FR Y-9C reports. I collect all reports filed during

2001-2011 by U.S.-based BHCs (RSSD9005 = United States) that have non-missing values of

total assets, net interest income and total noninterest income. Stock returns are from the Center

of Research on Securities Prices (CRSP). The Federal Reserve Bank of New York's matches of

BHC IDs (RSSD9001) with CRSP's permanent company numbers (PERMCO) along with the

dates each match is reliable ensure that each BHC-quarter observation I retain pertains to a

publicly traded BHC. The FR Y-9C reports, the stock returns and the matching file are all

available from wrds-web.wharton.upenn.edu. The result is 17,787 BHC-quarter observations.

To assemble the set of mergers, I begin with all announcements from Thomson ONE

Banker during 2001-2011 (completed deals only) where both firms are in the U.S. in the macro

industry "finance," the acquiring firm is publicly traded and has at least $500M total assets, and the target's total assets and equity valuation at the time of the announcement are both at least $25M. There are 425 such mergers. I further impose that 100% of the shares are acquired in the transaction. This eliminates only 20 cases, and it avoids comparing purchases of minority equity stakes, increases in existing equity stakes, and purchases of less-than-complete majority stakes to full mergers. For each merger, I collect the names of the firms, their locations, the announcement date, the completion date, the target's assets, and whether financing involved cash, stock or both.

Next I combine the Thomson merger data with the FR/CRSP data. I match BHCs using location (the state, and the city if possible) as well as name. Of the 405 mergers obtained from Thomson, 315 have a BHC acquirer. I impose that either the target's assets must be at least 5% of those of the acquirer or be at least $10B (as discussed below, these are reporting criteria for mergers on FR Y-9C forms starting in 2003). This results in 218 mergers. I can compute combined abnormal returns for 170 of these mergers (some targets are either private or lack sufficient data on returns). If the target is not a BHC, I obtain its ticker symbol from Mergent Online (matching on name and location). The final step involves using the data provided on FR Y-9C forms to construct measures of diversification. In 32 cases, sufficient income data to construct my main measure of diversification is not provided (smaller BHCs only file the FR Y-9C report every second quarter). Thus, I end up with 138 mergers.

Measures of GLBA Diversification

I use data from the Consolidated Income Statement provided in the FR Y-9C reports to measure the extent of the BHC's involvement in investment banking, securities brokerage, and insurance. Sufficient information is available beginning in 2001, and this determines the starting point of my analysis. In recent statements, GLBA activities are captured by BHCKC886 (fees

and commissions from securities brokerage), BHCKC888 (investment banking, advisory, and underwriting fees and commissions), BHCKC887 (fees and commissions from annuity sales), BHCKC386 (underwriting income from insurance and reinsurance activities), and BHCKC387 (income from other insurance activities). Prior to 2007, the first three of these categories are aggregated as BHCKB490 (combining investment banking and securities brokerage); I construct this sum in 2007 and later. Prior to 2003, the last two categories are aggregated as BHCKB494 (all insurance activities); I construct this sum in 2003 and later. I refer to BHCKB490 as IB/SB income and BHCKB494 as INS income and their sum as IB/SB/INS income. When considering a merger of firms A and B, I assess whether the merger will increase or decrease A's GLBA diversification by examining the two firms' ratios of IB/SB/INS income to the sum of net interest income and total noninterest income:

$$\text{GLBA DIV} = \frac{\text{IB/SB/INS Income}}{\text{Net Interest Income} + \text{Total Noninterest Income}} \tag{1}$$

If the ratio in equation (1) is higher for B than for A, then I project that the merger will increase A's GLBA diversification. The main measure of GLBA diversification I employ is a dummy variable that takes the value 1 in this case. In my sample, GLBA DIV is bounded between 0 and .5, so I can focus on the effects of GLBA DIV rising without concern that an increase might actually make the firm less diversified (as could be the case if the firm's activities were mainly GLBA activities). Net interest income is BHCK4074 and total noninterest income is BHCK4079. If both parties are BHCs that file FR Y-9Cs, I attempt to use the firms' own filings to measure the components of equation (1). In most such cases I can compute equation (1) for both firms in the quarter of the announcement. In a few cases, I use information from the closest quarter in the prior three where both firms report. In cases where no such match is available (typically because the target does not file FR Y-9Cs), I use entries in the notes to the income statement of the

acquiring firm to measure the target's IB/SB income (BHBCB490), INS income (BHBCB494), net interest income (BHBC4074), and total noninterest income (BHBC4079). Acquirers are required to provide this information for any acquired firm with assets of at least \$10B or 5% of the acquirer's total assets as of the previous quarter-end, whichever is less. This information is provided in the quarter in which the merger is completed.[11]

I also measure how much the merger is likely to increase the firm's GLBA diversification. If I can obtain income information from the target's filings, then I compare A's GLBA DIV to

$$\text{POST GLBA DIV} = \frac{\text{IB/SB/INS Income of A and B}}{\text{Net Interest Income of A and B} + \text{Total Noninterest Income of A and B}}$$
(2)

If I rely on the acquirer's notes to the income statement, then because this information is provided in the quarter the merger is completed, the acquiring firm's income already incorporates the income of the target. In this case, equation (1) measures POST GLBA DIV and I need to subtract out B's income of each type to project what A's GLBA DIV would have been in the absence of the merger (in equation (2) replace "and" with "less than that of" to measure A's GLBA DIV prior to the merger). In both cases, once I have computed GLBA DIV and POST GLBA DIV, I quantify the impact of the merger on diversification using the difference between the two measures and create two dummies. The first takes the value 1 if POST GLBA DIV exceeds GLBA DIV by at least .005. The second takes the value 1 if POST GLBA DIV exceeds GLBA DIV by .01. Table 1 provides summary statistics on the acquirer's initial level of GLBA DIV and the projected change due to the merger.

---

[11] I used cases where multiple quarters of information are provided to ensure that the level of GLBA DIV is extremely stable over time. Thus, I do not believe using data from quarters prior to the announcement or from the quarter of completion poses any problems for estimating investors' projections of the merger's impact on GLBA diversification at the time of the announcement.

I briefly attempt to assess whether the results I obtain on GLBA diversification are due more to IB/SB diversification or INS diversification. For this purpose, I recomputed POST GLBA DIV and GLBA DIV using IB/SB only in the numerator (I refer to the resulting measure as IB/SB DIV in Table 1) and compare the difference between the two to the difference I obtain if I use only INS in the numerator (INS DIV in Table 1). If the difference is greater for the IB/SB measure, I assume the observed cumulative abnormal return is due more to IB/SB diversification; otherwise I assume it is due more to INS diversification.

Measures of Other Types of Diversification

I consider two additional types of diversification. First, following DeLong (2001), I assume that the merger enhances geographic diversification if the two entities are headquartered in different states. Second, I measure non-GLBA functional diversification by using the difference between total noninterest income and IB/SB/INS income in the numerator of equations (1) and (2) (I refer to the resulting measure as non-GLBA Functional DIV in Table 1). Much of the prior literature focuses on comparing total noninterest income to net interest income to assess the impact of a merger on diversification (Stiroh (2004, 2006), Stiroh and Rumble (2006), Laeven and Levine (2007)). My main focus is on the GLBA-related component of total noninterest income, but it is worth testing whether mergers that increase diversification within banking (through obtaining more income from fees or securitization, for example) create value in the period I am examining.

IV. Event Studies

Event studies estimate the impact of news (such as merger announcements) on firm value. MacKinlay (1997) describes the basic methodology, and Andrade, Mitchell and Stafford (2001) summarize common approaches for analyzing mergers. For each firm in each merger, I estimate a standard four-factor model of returns using a period of up to 250 trading days (a year's worth)

that ends 21 trading days prior to the merger announcement (stopping the estimation window well prior to the announcement helps ensure that any information leaked prior to the announcement does not contaminate the model of normal returns):

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \gamma_{i1}SMB_t + \gamma_{i2}HML_t + \gamma_{i3}UMD_t + \varepsilon_{it} \tag{3}$$

where R_{it} is firm i's return on day t, R_{ft} is the risk-free return on day t (measured using the 1-month U.S. Treasury Bill), α_i, β_i, γ_{i1}, γ_{i2} and γ_{i3} are parameters to be estimated, R_{mt} is the return on the value-weighted market index on day t, SMB_t and HML_t are the Fama-French factors (Fama and French (1993), (1996)), UMD_t is the momentum factor (Carhart (1997)), and ε_{it} is the residual (also referred to as the abnormal return). The risk-free return and the factors are from wrds-web.wharton.upenn.edu. Only 7 targets and 3 acquirers lack 250 trading days for estimating equation (3), and in all cases there are over 100 observations.

From a social welfare perspective, we care about whether diversifying mergers increase the combined value of the merging firms. Given this, I focus on the combined cumulative abnormal returns associated with the announcements. To compute these, I use the estimated factor model and the data surrounding the announcement to compute the cumulative abnormal return (the summed OLS residuals) for each party and then use market capitalization weights to construct their weighted average. I report results for three event windows. The CAR[-1,1] sums the combined abnormal returns in the 3 trading days surrounding the announcement, which allows for some information leakage prior to the announcement and for the possibility that the announcement does not impact returns until the following day because it was made after trading closed. Following Andrade, Mitchell and Stafford (2001), I also consider a much longer window that begins 20 trading days prior to the announcement and ends with the completion of the

merger. I also report results for an intermediate window [-5,5] to allow for earlier information leakage and for information that might be released shortly after the announcement. For the [-1,1], [-5,5] and [-20,completion] windows, the market capitalization weights are determined on days -2, -6, and -21 respectively. I follow MacKinlay's (1997) approach to estimate the variance of each CAR: Under the null hypothesis that the event has no effect, shocks are independently and identically distributed across time, so the variance of the CAR is given by the variance of the combined abnormal returns during the estimation window (days -270 to -21) multiplied by the number of days in the event window.

In most of my tests, I use dummy variables to split the sample and compare the mean CARs in each subgroup. To construct the variance of the mean CARs, I follow MacKinlay (1997) and sum the variances of the individual CARs and divide by the square of the number of CARs summed (different merger announcements are independent events so there is no need to consider covariances). To test for significance I use two approaches. The first employs the typical test statistic: the mean CAR divided by its estimated standard deviation. Under the null hypothesis that the merger has no effect, this test statistic is distributed according to a N(0,1). The second approach employs an empirical distribution of the mean CAR. I compute the mean CAR during the estimation window using every possible combination of consecutive days. For example, a 3-day mean CAR can be computed using days -270, -269, and -268 of each merger, another can be computed using days -269, -268, and -267, and so on. I then compare the empirical distribution of these 248 mean CARs to the [-1,1] mean CAR estimated using the event window abnormal returns. If the [-1,1] mean CAR exceeds all 248 observations, it is significant at the 1% level (using a two-tailed test, the two most extreme observations are the 1% critical values in a sample of 248). If it exceeds the top 6th, it is significant at the 5% level, and if it

exceeds the top 12th it is significant at the 10% level. I construct the empirical distribution for the [-1,1] and [-5,5] windows. This approach is similar to the one advocated for single-firm single-event studies in legal disputes by Gelbach, Helland and Klick (forthcoming). In the tables, the significance level I report is the more conservative of the two approaches. In all but a few cases, the two approaches yield identical conclusions about statistical significance.

Table 2 provides my initial results. In the sample as a whole, the mean combined CARs range from .014 to .016. Results for the [-1,1] and [-5,5] windows are significant at the 1% level. Results for the [-20,completion] window are insignificant, but this is to be expected. The large number of observations included in the event windows in this case inflates the estimated standard deviation of the mean CAR.

The next set of results in Table 2 show that the mean combined CAR is higher when the merger is projected to increase GLBA diversification. For the [-1,1] window, the CAR is almost twice as high when the merger increases GLBA diversification (.021 vs. .011) and the difference is statistically significant. For the [-5,5] window, the CAR is more than twice as high when the merger increases GLBA diversification (.026 vs. .012) and the difference remains significant (tests are performed by constructing the t statistic for differences in means under the assumption that the two variances are not equal and comparing to a $N(0,1)$). Although the difference for the [-20, completion] window remains substantial, it is statistically insignificant, again because of the loss in precision at long horizons. Further results show that more diversification tends to generate higher returns. If POST GLBA DIV exceeds GLBA DIV by at least .005, the mean CARs rise, and all are significant at the 1% level. If the cutoff rises to .01 the mean CARs are even higher, and all remain significant at the 1% level. The remaining results in Table 2 establish that the results tend to hold up when I restrict attention to large mergers.

16

Table 3 considers two alternative types of diversification. First I consider geographic diversification. The initial point estimates in Table 3 suggest that geographic diversification destroys value, although the differences are statistically insignificant. Restricting attention to mergers that are projected to increase GLBA diversification suggests that combining geographic diversification with GLBA diversification can be particularly valuable, and here the differences are statistically significant. Next I consider non-GLBA functional diversification. Initial comparisons suggest that, if anything, increasing the extent of non-GLBA functional diversification destroys value, although only the results for the [-5,5] window are significant.[12] Restricting attention to GLBA diversifying mergers does not yield clear conclusions about whether increasing non-GLBA functional diversification creates or destroys value in such cases. The results for the [-1,1] window suggest a slight increase in returns and the results for the other two windows suggest decreases, but in all cases the differences are insignificant.

Table 4 returns attention to GLBA diversification and attempts to determine whether the results observed in Table 2 are due to IB/SB diversification or INS diversification. Two-thirds of the GLBA diversifying mergers involve a greater impact on IB/SB diversification than INS diversification, but the evidence does not suggest that this type of merger generates higher combined CARs than other GLBA diversifying mergers. The point estimates for the [-1,1] window favor INS mergers, but the difference is insignificant. The differences in the other two cases are significant, but they each point in different directions: results for the [-5,5] window favor IB/SB mergers while results for the [-20,completion] window favor INS mergers. Given

---

[12] This suggests that the negative impacts of expanding noninterest income found in prior work by Stiroh (2004, 2006), Stiroh and Rumble (2006), and Laeven and Levine (2007) are more likely to be due to expanding non-GLBA noninterest activities than GLBA ones. The low fraction of total noninterest income attributable to GLBA activities in most BHCs (discussed in the introduction) also supports this view.

these mixed results, in what follows I continue to focus on all GLBA diversifying mergers rather than pursue the breakdown between IB/SB and INS further.

Table 5 provides a breakdown by year. In most years, the difference in mean CARs between GLBA diversifying mergers and others is statistically insignificant. When using the short-horizon [-1,1] and [-5,5] windows, only the 2008 effects are significantly different at the 5% level or better. In 2008 the U.S. Financial Crisis led to several high profile mergers: Bank of America and Countrywide Financial in January, J.P. Morgan Chase and Bear Stearns in March, and Wells Fargo and Wachovia in October. These three mergers are among the GLBA diversifying mergers of 2008, and one conclusion might be that GLBA diversifying mergers are likely to generate the highest returns during times of crisis. In such times, when some firms are at risk of failure, diversifying mergers can prevent some of the costly reallocation of resources that would take place in the event of bankruptcy, liquidation, etc. One of the proponents of the bill (Leach (2008)) has argued that a key benefit of the GLBA is that it allows such mergers to occur. In any case, there are also several other possible factors that could lead to a strong 2008 effect, and in what follows I explore these and then test all possible explanations against each other.

Table 6 tests whether diversifying mergers create more value in falling markets. In this view, all economic downturns create opportunities for resource reallocation through diversifying mergers, and it is not necessary to have a full-blown crisis. The results support this view. If the market return in the year prior to the merger announcement was negative, GLBA diversifying mergers have higher CARs than others, and the difference is statistically significant using the [-1,1] and [-5,5] windows. Alternatively, if the market rose in the year prior to the merger announcement, there is not a substantial difference in the mean CARs in the two groups.

Table 6 also tests whether a declining target results in abnormal value creation. A declining target might present a buying opportunity regardless of whether the economy is in crisis. If the target's return in the year prior to the merger announcement was negative, GLBA diversifying mergers are associated with higher returns than those that do not increase GLBA diversification, although the difference is significant only in the [-1,1] case. If the target's value rose in the year prior to the merger announcement, there is no significant difference between the mean CARs in the GLBA diversifying and the other group.

Table 7 considers whether acquirer characteristics might be responsible for the 2008 effect. First, a declining value might indicate that the firm has exhausted its opportunities in its current lines of business. The models of Matsusaka (2001), Maksimovic and Phillips (2002) and Gomes and Livdan (2004) all suggest that such firms will optimally diversify. The empirical results show that if the acquirer's value has fallen over the year prior to the announcement, the mean CAR associated with GLBA diversifying mergers is significantly higher than the mean CAR associated with other mergers, and the difference is significant using every event window. In contrast, if the acquirer's value rose over the year prior to the announcement, there is no significant difference between the mean CARs in the diversifying and non-diversifying groups.

Table 7 also considers whether the 2008 effect might be due to large size. The largest BHCs absorbed firms in trouble during the crisis, and perhaps diversifying mergers involving large acquirers always tend to generate higher returns than others. The Maksimovic and Phillips (2002) and Gomes and Livdan (2004) models both suggest that larger firms are more likely to benefit from diversification (these are the firms that are most likely to have outgrown opportunities in their current lines of business). The results support this view. If the acquirer's assets exceed $100B, diversifying mergers have higher returns than others, and the difference is

significant for every event window. In contrast, when the acquirer's assets do not exceed $100B, the difference in mean CARs in the two groups is statistically insignificant.

Next I conduct a horse race between the different factors that appear to impact value creation to determine which effects are the most robust. I focus on the 39 GLBA diversifying mergers, and I regress the combined CARs for these mergers on dummy variables that take the value 1 in the following cases:

1) The year is 2008

2) The acquirer and target are headquartered in different states

3) The market return was negative in the year prior to the announcement

4) The target's return was negative in the year prior to the announcement

5) The acquirer's return was negative in the year prior to the announcement

6) The acquirer has over $100B in assets

In addition, I including two financing dummy variables that prior literature suggests can help explain exceptional CARs (see Andrade, Mitchell and Stafford (2001)):

7) The acquirer uses only cash to purchase the target

8) The acquirer uses only stock to purchase the target

Table 8 confirms that several of the variables are highly correlated (particularly those that were tested to help explain the 2008 effect). To isolate the most robust effects, I use the Schwarz Information Criteria (SIC) to build models. The SIC is relatively insensitive to multicollinearity because it just weighs improvements in overall fit against the number of parameters estimated instead of relying on individual t statistics. However, alternative procedures, such as beginning with all effects included and eliminating insignificant effects until all remaining effects are significant, or starting from a model with just a constant and using stepwise regression to test for

inclusion, yield identical conclusions. Table 9 provides the robust effects. Results for the [-1,1] window suggest that GLBA diversifying mergers have higher returns when the acquirer's value has fallen over the prior year and the market return has been negative. The [-20, completion] window also suggests the first of these two effects. Results for the [-5,5] window suggest that GLBA diversifying mergers have higher returns when the acquirer is large. Taken in combination, the results suggest that GLBA diversification creates most value when the acquirer is large and has experienced declining market value in a declining market.

Impacts on Acquirers

While I have established conditions under which GLBA diversification is associated with exceptionally high combined CARs, it remains possible that gains could be appropriated by the target during the bidding process. In such a case, mergers that have the most potential to generate social welfare gains might not be those that are most likely to be pursued by potential acquirers. In unreported regressions, I confirm that the [-20,completion] regression in Table 9 yields the same final specification if I use the acquirer's CAR rather than the combined CAR as the dependent variable. For the [-5,5] window, the cash-only dummy enters the model with a positive and significant impact, but otherwise the model is the same as above: high acquirer assets are associated with exceptional abnormal returns. The cash-only dummy also appears in the [-1,1] model, and the 2008 effect is the strongest of the other tested effects. Thus, the [-1,1] results suggest that a full-blown crisis (and not just a declining market) is best for acquirers.

Do GLBA Diversifying Mergers Increase Risk?

It remains possible that GLBA diversifying mergers create value for participants under the conditions identified above but impose costs on society. In particular, the mergers might increase systematic or idiosyncratic risk (both might contribute to the possibility of bank failure).

Diversifying mergers might cause harm in other ways as well, but I restrict attention to impacts on risk. I begin by estimating a standard market model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{it} \qquad (4)$$

The market model yields a decomposition of risk into systematic and idiosyncratic components. I estimate the market model for the acquirer and target separately in the period [-270,-21] (the estimation window) and for the acquirer in the 250 trading days that follow completion of the merger (I drop cases with less than 100 trading days observed after completion). I use β_i to capture systematic risk. I estimate the combined β_i prior to the merger by constructing the weighted average of the acquirer's and target's initial β_is using market capitalization weights on day -21. I then measure the change in systematic risk by subtracting this combined β_i from the β_i estimated using post-completion data. To measure the impact of the merger on idiosyncratic risk, I use the day -21 market capitalization weights and the estimated residuals to construct the combined abnormal returns during the period [-270,-21]. I measure the change in idiosyncratic risk by subtracting the standard deviation of these combined abnormal returns from the standard deviation of the abnormal returns computed in the post-completion period.

Table 10 presents results of regressions of the change in systematic risk and the change in idiosyncratic risk on the GLBA diversification dummy and the effects that prior tables suggest impact whether GLBA diversification creates value. The point estimates in columns 2 and 5 suggest that GLBA diversifying mergers increase risk more than other mergers, although the effects on systematic risk are small and statistically insignificant (the two dependent variables have different scales: the mean value of β_i after the merger is 1.13 while the mean value of idiosyncratic risk is .018). Columns 3 and 6 include the additional variables from Table 9 and the

interactions between these dummies and the GLBA diversification dummy. Most of the coefficients are statistically insignificant, and while this could be due to high correlations between the included independent variables, columns 4 and 7 verify that conclusions about which variables have significant impacts do not change if I eliminate insignificant effects and re-run the regressions until all remaining effects are significant (although the magnitudes of the estimated coefficients tend to fall, as one might expect).

I focus on which variables appear to impact whether GLBA diversification increases risk (the interactive effects). Columns 3 and 4 suggest that systematic risk is more likely to rise in a GLBA diversifying merger if the acquirer and target are headquartered in the same state, the target's value has fallen over the prior year, the acquirer is large, and/or cash-only financing is used (stock-only financing has a negative impact on systematic risk). Columns 6 and 7 suggest that idiosyncratic risk is more likely to rise in a GLBA diversifying merger if the market has gone up in the prior year and/or the target's and/or acquirer's values have fallen. Thus, the results suggest that some of the key factors found to increase returns in GLBA diversifying mergers (acquirer characteristics in particular) also increase risk.

Conclusion

GLBA diversifying mergers create value for the merging firms. Such mergers have particularly high combined abnormal returns when they are accompanied by geographic diversification, when they occur during the financial crisis, when the market, target's, and acquirer's value has fallen in the prior year, and when the acquirer is large. The effects of the market and the acquirer's value falling and the size of the acquirer are the most robust. The effects of acquirer characteristics are consistent with theoretical models of optimal diversification provided by Matsusaka (2001), Maksimovic and Phillips (2002) and Gomes and Livdan (2004). These effects

also have robust effects on the acquirer's ability to appropriate returns, although diversifying acquirers also benefited from the unusual circumstances of the financial crisis.[13]

The consistency of the main findings with existing models of optimal diversification and the strong effects associated with the financial crisis suggest that GLBA diversification could be socially beneficial (although it remains possible that the merging firms benefit at the expense of the rest of society). The relatively low incidence of GLBA diversification, reflected in the low number of mergers observed relative to prior periods of deregulation (as documented by Berger, Kashyap and Scalise (1995), for example) but also in the lack of large income shares associated with GLBA activities, suggests that it is unlikely that the GLBA was responsible for the increase in risky lending at BHCs that contributed to the financial crisis (as has been suggested by Stiglitz; see Baram (2008)). However, my results do suggest that the acquirer characteristics that appear to help GLBA diversifying mergers create value also increase risk. Thus, a complete welfare analysis would have to weigh any gains associated with GLBA diversification against the cost of increased risk. In any case, the substantial abnormal returns associated with GLBA diversifying mergers, particularly under the conditions described above, suggest we can expect more GLBA diversification in the years to come.

---

[13] I have not analyzed particular metrics of operating performance that appear to improve as a result of diversifying mergers, but future work could explore such links. Cornett and Tehranian (1992) analyze large bank mergers in the 1982-87 period and find that high abnormal returns anticipate subsequent favorable changes in operating performance.

References:

Akbulut, Mehmet E. and John G. Matsusaka "50+ Years of Diversification Announcements" *Financial Review* 45 (2010): 231-62.

Andrade, Gregor, Mark Mitchell and Erik Stafford "New Evidence and Perspectives on Mergers" *Journal of Economic Perspectives* 15:2 (Spring 2001): 103-20.

Baele, Lieven, Olivier De Jonghe and Rudi Vander Vennet "Does the Stock Market Value Bank Diversification?" *Journal of Banking and Finance* 31 (2007): 1999-2023.

Baram, Marcus "Who's Whining Now? Gramm Slammed By Economists" ABC News Internet Ventures (September 19, 2008). http://abcnews.go.com/print?id=5835269 accessed February 1, 2013.

Benston, George J. "Universal Banking" *Journal of Economic Perspectives* 8:3 (Summer 1994): 121-43.

Berger, Allen N., Anil K. Kashyap and Joseph M. Scalise "The Transformation of the U.S. Banking Industry: What a Long, Strange Trip It's Been" *Brookings Papers on Economic Activity* 2 (1995): 55-201.

Berger, Philip G. and Eli Ofek "Diversification's Effect on Firm Value" *Journal of Financial Economics* 37:1 (January 1995): 39-65.

Campa, Jose Manual and Simi Kedia "Explaining the Diversification Discount" *Journal of Finance* 57:4 (August 2002): 1731-62.

Cornett, Marcia Millon and Hassan Tehranian "Changes in Corporate Performance Associated with Bank Acquisitions" *Journal of Financial Economics* 31 (1992): 211-34.

DeLong, Gayle L. "Stockholder Gains from Focusing versus Diversifying Bank Mergers" *Journal of Financial Economics* 59 (2001): 221-52.

DeYoung, Robert, Douglas D. Evanoff and Philip Molyneux "Mergers and Acquisitions of Financial Institutions: A Review of the Post-2000 Literature" *Journal of Financial Services Research* 36 (2009): 87-110.

DeYoung, Robert and Tara Rice "How Do Banks Make Money? A Variety of Business Strategies" *Economic Perspectives* (Q4 2004): 52-67.

Elsas, Ralf, Andreas Hackethal and Markus Holzhauser "The Anatomy of Bank Diversification" *Journal of Banking & Finance* 34 (2010): 1274-87.

Erickson, Timothy and Toni M. Whited "On the Accuracy of Different Measures of Q" *Financial Management* 35:3 (Autumn 2006): 5-33.

Gelbach, Jonah, Eric Helland and Jonathan Klick "Valid Inference in Single Firm, Single Event Studies" *American Law and Economics Review*, forthcoming.

Gertner, Robert H., David S. Scharfstein and Jeremy C. Stein "Internal versus External Capital Markets" *Quarterly Journal of Economics* (November 1994): 1211-30.

Gomes, Joao and Dmitry Livdan "Optimal Diversification: Reconciling Theory and Evidence" *Journal of Finance* 59:2 (April 2004): 507-35.

Graham, John R., Michael L. Lemmon and Jack G. Wolf "Does Corporate Diversification Destroy Value?" *Journal of Finance* 57:2 (August 2002): 695-720.

Holod, Dmytro and Joe Peek "Capital Constraints, Asymmetric Information, and Internal Capital Markets in Banking: New Evidence" *Journal of Money, Credit and Banking* 42:5 (August 2010): 879-906.

Jensen, Michael C. "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers" *American Economic Review* 76:2 (May 1986): 323-29.

Klein, Peter G. and Marc R. Saidenberg "Organizational Structure and the Diversification Discount: Evidence from Commercial Banking" *Journal of Industrial Economics* 58:1 (March 2010): 127-55.

Lamont, Owen "Cash Flow and Investment: Evidence from Internal Capital Markets" *Journal of Finance* 52:1 (March 1997): 83-109.

Lang, Larry H.P. and Rene M. Stulz "Tobin's q, Corporate Diversification, and Firm Performance" *Journal of Political Economy* 102:6 (1994): 1248-80.

Laeven, Luc and Ross Levine "Is There a Diversification Discount in Financial Conglomerates?" *Journal of Financial Economics* 85 (2007): 331-67.

Leach, James A. "Did Gramm-Leach-Bliley Contribute to Crisis?" *North Western Financial Review* 193:20 (October 2008): 8-9.

MacKinlay, A. Craig "Event Studies in Economics and Finance" *Journal of Economic Literature* 35 (March 1997): 13-39.

Maksimovic, Vojislav and Gordon Phillips "Do Conglomerate Firms Allocate Resources Inefficiently Across Industries? Theory and Evidence" *Journal of Finance* 57:2 (April 2002): 721-67.

Matsusaka, John G. "Corporate Diversification, Value Maximization, and Organizational Capabilities" *Journal of Business* 74 (July 2001): 409-31.

Pepall, Lynne, Dan Richards and George Norman *Industrial Organization: Contemporary Theory and Empirical Applications* 4e (Malden, MA: Blackwell, 2008).

Prabhala, N.R. "Conditional Methods in Event Studies and an Equilibrium Justification for Standard Event Study Procedures" *Review of Financial Studies* 10:1 (Spring 1997): 1-38.

Sanya, Sarah and Simon Wolfe "Can Banks in Emerging Economies Benefit from Revenue Diversification?" *Journal of Financial Services Research* 40 (2011): 79-101.

Scharfstein, David and Jeremy C. Stein "The Dark Side of Internal Capital Markets: Divisional Rent-Seeking and Inefficient Investment" *Journal of Finance* 55:6 (December 2000): 2537-64.

Shin, Hyun-Han and Rene M. Stulz "Are Internal Capital Markets Efficient?" *Quarterly Journal of Economics* 113:2 (1998): 531-52.

Schmid, Markus M. and Ingo Walter "Do Financial Conglomerates Create or Destroy Economic Value?" *Journal of Financial Intermediation* 18 (2009): 193-216.

Smith, Clifford W. and Rene M. Stulz "The Determinants of Firms' Hedging Policies" *Journal of Financial and Quantitative Analysis* 20:4 (December 1985): 391-405.

Stein, Jeremy C. "Internal Capital Markets and the Competition for Corporate Resources" *Journal of Finance* 52 (1997): 111-34.

Stiroh, Kevin J. "Diversification in Banking: Is Noninterest Income the Answer?" *Journal of Money, Credit and Banking* 36:5 (2004): 853-82.

Stiroh, Kevin J. "A Portfolio View of Banking with Interest and Noninterest Activities" *Journal of Money, Credit and Banking* 38 (2006): 1351-61.

Stiroh, Kevin J. and Adrienne Rumble "The Dark Side of Diversification: The Case of U.S. Financial Holding Companies" *Journal of Banking & Finance* 30 (2006): 2131-61.

van Lelyveld, Iman and Klaas Knot "Do Financial Conglomerates Create or Destroy Value? Evidence for the EU" *Journal of Banking & Finance* 33 (2009): 2312-2321.

Villalonga, Belen "Does Diversification Cause the "Diversification Discount"?" *Financial Management* (Summer 2004): 5-27.

White, Lawrence J. "The Gramm-Leach-Bliley Act of 1999: A Bridge Too Far? Or Not Far Enough?" *Suffolk University Law Review* 43 (2010): 937-56.

Whited, Toni M. "Is It Inefficient Investment that Causes the Diversification Discount?" *Journal of Finance* 56:5 (October 2001): 1667-91.

Table 1. Summary Statistics

Variable	Mean	Standard Deviation	Min	Max
Acquirer Assets ($M)	84,168	273,689	628	1,743,478
Target Assets ($M)	20,918	82,608	158	764,378
Target Equity ($M)	2,471	7,850	33	58,663
Acquirer's GLBA DIV	.044	.047	0	.22
Projected change in GLBA DIV	-.00014	.022	-.070	.20
Acquirer's IB/SB DIV	.031	.041	0	.19
Projected change in IB/SB DIV	-.00048	.021	-.060	.20
Acquirer's INS DIV	.013	.019	0	.098
Projected change in INS DIV	.00035	.0074	-.018	.053
Acquirer and Target headquarters states differ	.42	.50	0	1
Acquirer's Non-GLBA Functional DIV	.25	.12	.019	.77
Projected change in Non-GLBA Functional DIV	-.0042	.034	-.14	.17
Market's gross return over the past year	1.07	.19	.56	1.48
Target's gross return over the past year	1.12	.31	.21	1.89
Acquirer's gross return over the past year	1.16	.22	.65	1.92
Cash-only financing	.065	.25	0	1
Stock-only financing	.30	.46	0	1

Table 2. Comparison of GLBA-Diversifying Mergers to Others (Table Entry: Mean CAR)

Sample	Number of Mergers	[-1,1]	[-5,5]	[-20,completion]
Full sample	138	.014***	.016***	.016
GLBA Diversification Projection:				
Decrease	99	.011***	.012***	.011
Increase	39	.021***	.026***	.028
Is the difference statistically significant?		Yes, at 5%	Yes, at 10%	No
Increase by at least .005	18	.029***	.049***	.12***
Increase by at least .01	10	.044***	.062***	.15***
Restrict Target Equity Value > $100M				
GLBA Diversification Projection:				
Decrease	75	.0085***	.014***	-.000048
Increase	32	.0097**	.020***	.011
Is the difference statistically significant?		No	No	No
Increase by at least .005	15	.019***	.057***	.13***
Increase by at least .01	8	.031***	.084***	.18***
Restrict Target Equity Value > $1B				
GLBA Diversification Projection:				
Decrease	19	-.00056	-.0038	.0068
Increase	11	.011*	.052***	.026
Is the difference statistically significant?		No	Yes, at 1%	No
Increase by at least .005	7	.035***	.10***	.088**
Increase by at least .01	5	.050***	.14***	.15***

*, **, and *** denote statistical significance at the 10, 5, and 1% levels

Table 3. Alternative Types of Diversification (Table Entry: Mean CAR)

Sample	Number of Mergers	[-1,1]	[-5,5]	[-20,completion]
Geographic Diversification: Acquirer and Target Headquarters are in the				
Same state	80	.016***	.019***	.018
Different states	58	.011***	.011**	.012
Is the difference statistically significant?		No	No	No
Restrict to GLBA Diversifying Mergers				
Same state	25	.014***	.011	-.010
Different states	14	.032***	.053***	.096***
Is the difference statistically significant?		Yes, at 1%	Yes, at 1%	Yes, at 5%
Non-GLBA Functional Diversification Projection:				
Decrease	91	.014***	.021***	.026
Increase	47	.013***	.0057	-.0047
Is the difference statistically significant?		No	Yes, at 10%	No
Restrict to GLBA Diversifying Mergers				
Decrease	26	.020***	.029***	.056*
Increase	13	.022***	.020*	-.027
Is the difference statistically significant?		No	No	No

*, **, and *** denote statistical significance at the 10, 5, and 1% levels

Table 4. The Breakdown Between IB/SB Diversification and INS Diversification (Table Entry: Mean CAR)

Sample	Number of Mergers	[-1,1]	[-5,5]	[-20,completion]
Restrict to GLBA Diversifying Mergers				
The impact on IB/SB diversification is greater than the impact on INS diversification	26	.019***	.037***	-.0041
The impact on INS diversification is greater than the impact on IB/SB diversification	13	.024***	.0030	.092**
Is the difference statistically significant?		No	Yes, at 5%	Yes, at 5%

** and *** denote statistical significance at the 5 and 1% levels

Table 5. Comparison of GLBA-Diversifying Mergers to Others by Year (Table Entry: Mean CAR).
Differences between the mean CARs for the Decrease and Increase sets by year are statistically insignificant except where noted.

Year: GLBA Diversification Projection	Number of Mergers	[-1,1]	[-5,5]	[-20,completion]
2001: Decrease	13	.011	.016	-.013
2001: Increase	3	.049***	.057*	.029
Significance level of the difference		10%	-	-
2002: Decrease	8	.025***	.013	.0017
2002: Increase	1	.016	-.040	-.084
2003: Decrease	14	.015**	.010	-.059
2003: Increase	8	.0030	.00053	-.17***
2004: Decrease	18	.0080**	.0097	.018
2004: Increase	5	.0041	.019	.071
2005: Decrease	6	.0016	-.00071	-.018
2005: Increase	4	.0043	-.0020	-.041
2006: Decrease	14	.0040	.0038	-.019
2006: Increase	6	.016**	.031*	-.037
Significance level of the difference		-	10%	-
2007: Decrease	10	.031***	.031***	.10***
2007: Increase	4	.030***	.015	.34***
Significance level of the difference		-	-	1%
2008: Decrease	7	-.011	-.0045	.027
2008: Increase	5	.075***	.10***	.21***
Significance level of the difference		1%	1%	10%
2009: Decrease	1	-.012	.022	.11
2009: Increase	0	-	-	-
2010: Decrease	6	.012	.011	.020
2010: Increase	0	-	-	-
2011: Decrease	2	.013	.060**	.32***
2011: Increase	3	-.0045	.0081	.027
Significance level of the difference		-	-	5%

*, **, and *** denote statistical significance at the 10, 5, and 1% levels

Table 6. Interactive Effects that Might Explain the 2008 Effect (Table Entry: Mean CAR)

Sample	Number of Mergers	[-1,1]	[-5,5]	[-20,completion]
The Market Fell in the Year Prior to the Announcement				
GLBA Diversification Projection:				
Decrease	34	.012**	.012	-.017
Increase	11	.055***	.059***	-.0060
Is the difference statistically significant?		Yes, at 1%	Yes, at 5%	No
The Market Rose in the Year Prior to the Announcement				
GLBA Diversification Projection:				
Decrease	65	.010***	.012**	.025
Increase	28	.0069**	.013*	.041*
Is the difference statistically significant?		No	No	No
The Target's Value Fell in the Year Prior to the Announcement				
GLBA Diversification Projection:				
Decrease	32	.014***	.015*	.063**
Increase	15	.032***	.037***	.15***
Is the difference statistically significant?		Yes, at 5%	No	Yes, at 10%
The Target's Value Rose in the Year Prior to the Announcement				
GLBA Diversification Projection:				
Decrease	67	.0096***	.010*	-.014
Increase	24	.013***	.019**	-.047
Is the difference statistically significant?		No	No	No

*, **, and *** denote statistical significance at the 10, 5, and 1% levels

Table 7. Acquirer Characteristics that Might Explain the 2008 Effect (Table Entry: Mean CAR)

Sample	Number of Mergers	[-1,1]	[-5,5]	[-20,completion]
The Acquirer's Value Fell in the Year Prior to the Announcement				
GLBA Diversification Projection:				
Decrease	20	.017***	.023**	.12***
Increase	13	.053***	.066***	.23***
Is the difference statistically significant?		Yes, at 1%	Yes, at 1%	Yes, at 10%
The Acquirer's Value Rose in the Year Prior to the Announcement				
GLBA Diversification Projection:				
Decrease	79	.0092***	.0089*	-.016
Increase	26	.0044	.0057	-.071**
Is the difference statistically significant?		No	No	No
Acquirer Assets Exceed $100B				
GLBA Diversification Projection:				
Decrease	11	-.0032	-.012	.024
Increase	5	.038***	.12***	.13***
Is the difference statistically significant?		Yes, at 1%	Yes, at 1%	Yes, at 10%
Acquirer Assets Do Not Exceed $100B				
GLBA Diversification Projection:				
Decrease	88	.013***	.015***	.0091
Increase	34	.018***	.012	.013
Is the difference statistically significant?		No	No	No

*, **, and *** denote statistical significance at the 10, 5, and 1% levels

Table 8. Correlations (Computed using the subsample of 39 GLBA diversifying mergers)

Variable	Year=2008	States differ	Market fell	Target's value fell	Acquirer's value fell	Acquirer's assets exceed $100B	Cash-only	Stock-only
Year=2008	1							
Acquirer and target headquarters states differ	.033	1						
The market fell in the prior year	.44	-.11	1					
The target's value fell in the prior year	.49	.068	.21	1				
The acquirer's value fell in the prior year	.54	.038	.28	.34	1			
The acquirer has over $100B in assets	.54	.35	.10	.17	.22	1		
Cash-only financing	-.089	.068	.11	-.18	.082	-.089	1	
Stock-only financing	.58	-.036	.076	.16	.35	.58	-.16	1

Table 9. Regression Analysis (Table Entry: Coefficient from a regression where the dependent variable is the CAR). The sample consists of all mergers that are projected to increase GLBA diversification (39 observations). The original regression includes all variables listed. Results shown are after testing and eliminating insignificant effects until only significant effects remain. Standard errors are in parentheses.

Variable	[-1,1]	[-5,5]	[-20,completion]
Year=2008	-	-	-
Acquirer and target headquarters states differ	-	-	-
The market fell in the prior year	.037** (.018)	-	-
The target's value fell in the prior year	-	-	-
The acquirer's value fell in the prior year	.039** (.017)	-	.30*** (.091)
The acquirer has over $100B in assets	-	.11** (.044)	-
Cash-only financing	-	-	-
Stock-only financing	-	-	-
Constant term	-.0028 (.010)	.012 (.016)	-.071 (.053)
R-squared	.27	.15	.22

** and *** denote statistical significance at the 5 and 1% levels

Table 10. Regression Analysis of Impacts on Risk (Table Entry: Coefficient from a regression where the dependent variable is the change in systematic risk or the change in idiosyncratic risk associated with the merger). The sample consists of all mergers where the changes in risk can be estimated (131 observations). White standard errors are in parentheses.

Variable	Change in Systematic Risk			Change in Idiosyncratic Risk		
GLBA diversification is projected to rise	.046 (.085)	.10 (.12)		.0064** (.0028)	-.0026 (.0028)	
Year=2008		.37** (.15)	.41*** (.12)		.013* (.0070)	.015*** (.0031)
Acquirer and target headquarters states differ		-.10 (.066)	-.16** (.067)		-.0022 (.0018)	
The market fell in the prior year		.13 (.088)			-.0060*** (.0015)	-.0060*** (.0018)
The target's value fell in the prior year		-.12 (.072)			.0025 (.0020)	
The acquirer's value fell in the prior year		-.22*** (.080)	-.33*** (.078)		.0029 (.0032)	.0045** (.0022)
The acquirer has over $100B in assets		-.14 (.11)			-.00020 (.0023)	
Cash-only financing		-.12 (.14)			-.0019 (.0024)	
Stock-only financing		-.082 (.066)			-.0032 (.0019)	
Interacted with GLBA DIV projected to rise:						
Year=2008		.20 (.34)			.0027 (.0093)	
Acquirer and target headquarters states differ		-.43** (.17)	-.32** (.13)		.0026 (.0037)	
The market fell in the prior year		-.19 (.19)			-.0084* (.0044)	-.0087** (.0035)
The target's value fell in the prior year		.29* (.17)	.20* (.11)		.0088* (.0045)	.011*** (.0029)
The acquirer's value fell in the prior year		-.21 (.14)			.010* (.0062)	.010** (.0039)
The acquirer has over $100B in assets		.80** (.31)	.65*** (.22)		.0019 (.0053)	
Cash-only financing		.92*** (.17)	.79*** (.25)		.0026 (.0041)	
Stock-only financing		-.26* (.16)	-.29** (.14)		.0047 (.0043)	
Constant term	.24*** (.036)	.35*** (.085)	.35*** (.045)	.0027*** (.00096)	.0046** (.0018)	.0028*** (.0010)
R-squared	.0029	.34	.29	.060	.55	.52

*, ** and *** denote statistical significance at the 10, 5 and 1% levels