

THE GRAMM-LEACH-BLILEY ACT OF 1999: RISK IMPLICATIONS FOR THE FINANCIAL SERVICES INDUSTRY

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Abstract

We document significant risk changes in the financial services industry following the passage of the Gramm-Leach-Bliley Act of 1999. Banks experience an increase in risk regardless of whether they have taken steps to participate actively in the investment banking business. Insurance companies also experience an increase in risk, whereas securities firms experience a decrease in risk. We attribute the increase in risk for banks and insurance companies to the fact that the securities business is relatively more risky, and the decline in risk for securities firms to the fact that they can now diversify into relatively less risky banking and insurance businesses.

JEL Classifications: G21, G22

I. Introduction

For most of the 20th century, banks in the United States were prohibited from engaging in investment banking under the Glass-Steagall Act of 1933. Over the years, banks used a variety of loopholes to circumvent the law such as forming Section 20 subsidiaries that engaged in nonbanking activities to some extent. A series of decisions by the Federal Reserve (Fed) beginning in 1987 also expanded the underwriting powers of banks and signaled that Glass-Steagall would eventually be repealed.

In addition to the separation between commercial and investment banking mandated by Glass-Steagall, the Bank Holding Company Act of 1956 separated the commercial banking and insurance businesses. Banks also found loopholes to enter the insurance business by capitalizing on state laws permitting state-chartered

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banks to sell insurance, and offering a variety of investment products to their clients.

Despite these strategies employed by banks to circumvent legal restrictions, a separation among commercial banking, investment banking, and insurance effectively remained in existence until 1999 when President Clinton signed the Gramm-Leach-Bliley Act (GLBA) into law.¹ The GLBA removes the firewall between the three types of businesses, paving the way for financial integration and the formation of large financial conglomerates.

We examine changes in the risk of financial institutions surrounding the passage of the GLBA. We are motivated to consider this issue by previous studies that show significant risk implications for financial institutions following major regulatory changes. For example, Aharony, Saunders, and Swary (1988) and Bundt, Cosimano, and Halloran (1992) find that the passage of the Depository Institutions Deregulation and Monetary Control Act of 1980 had significant risk implications for financial institutions. Other studies find that bank expansion into nonbanking activities can affect bank risk. Wall (1987) finds that nonbank subsidiaries tend to increase risk for bank holding companies (BHCs) composed of less risky banks but tend to decrease the risk of BHCs composed of risky banks. Rosen et al. (1989) find only limited potential for risk reduction from bank entry into real estate activities. Regarding bank expansion into the insurance and securities businesses, Boyd, Graham, and Hewitt (1993) find that mergers between BHCs and insurance companies may reduce risk whereas mergers between BHCs and securities firms would likely increase risk. More recently, Bhargava and Fraser (1998) find that banks experience a significant increase in both unsystematic and total risks in response to decisions by the Fed allowing BHCs to participate in investment banking. Cornett, Ors, and Tehranian (2002) find that the pre-tax cash flows for banks increased significantly following the establishment of a Section 20 subsidiary. However, they do not find any evidence of a significant change in risk using both accounting-based measures of risk, such as capital and liquidity ratios, and capital-market-based measures of risk, such as systematic and total risk.

These studies examine the effect of events that permitted only limited entry by banks into nonbanking activities. In view of the more comprehensive provisions of the GLBA, we contend that the risk implications may differ from previous studies. The potential for expansion into nontraditional activities may increase risk, but this may be offset by diversification benefits (Diamond 1984). Furthermore, earlier studies generally focus exclusively on the effect of expansion into the securities business on bank risk. We focus on the financial services industry in general. Recent studies by Akhigbe and Whyte (2001) and Yu (2002) document positive

¹The GLBA is also referred to as the Financial Services Modernization Act of 1999.

wealth effects for banks, securities firms, and insurance companies in response to the GLBA. However, both studies focus on the wealth effects of the new legislation. Akhigbe and Whyte do test for a shift in systematic risk when estimating the wealth effects and find no evidence of a significant change in systematic risk, whereas Yu reports increases in systematic risk for banks with Section 20 subsidiaries as well as insurance companies. However, both studies consider only the short-term change in systematic risk. We contend that a shift in risk is more likely to be apparent in the long term. Thus, we extend their analyses by examining the long-term shift in systematic risk. Furthermore, we examine changes in total and unsystematic risks. Because regulators are concerned about total risk, an understanding of how this seminal piece of legislation has affected all types of risks in the financial services industry is imperative.

We document a significant increase in total risk for banks and insurance companies. The increase in bank risk appears to be unrelated to involvement in the securities business before the passage of the GLBA or to the actual formation of financial holding companies (FHCs). Indeed, we find that banks both with and without Section 20 subsidiaries or FHCs experience a significant increase in total risk. This suggests that the market does not discriminate between actual and potential participation in the securities business. We attribute the finding of a significant increase in risk for banks and insurance companies to the fact that the securities business is generally more risky. Although not a primary concern for regulators, we also document increases (decreases) in unsystematic (systematic) risk for banks and insurance companies. Securities firms, however, experience a significant decline in total risk, suggesting that their newly found ability to diversify into less risky banking and insurance activities has decreased their risk.

II. Hypotheses

An important issue in the debate leading up to the passage of the GLBA is the potential effect of bank entry into nonbanking activities on risk. Some opponents of the GLBA argue that because the securities business is more risky than the banking business, bank expansion into this sector could potentially compromise the safety of the financial system. The GLBA addresses these concerns by imposing limits on the financial transactions between a bank and its nonbank affiliates or subsidiaries. Furthermore, the law provides that if the Fed has concerns about a bank's exposure to risk from an affiliate, it can work directly with the nonbank affiliate to resolve the concerns. In addition, financial statements must present separate financial information on the bank affiliate of the FHC. These provisions are designed to protect the integrity of the financial system and to minimize the potential risk exposure of banks. Although much of the debate focused on the implications for bank risk, the risk implications may extend well beyond banks to

other financial firms that are likely to capitalize on the new opportunities presented by the GLBA.

Under the GLBA, the Fed is the supervisor for FHCs, although securities and insurance affiliates are also regulated by the Securities and Exchange Commission (SEC) and state insurance commissions, among others. Despite these regulatory precautions, the new operating environment created by the GLBA is likely to alter the risk return trade-off for the financial services industry. The extent of the change is dependent on both the expanded investment opportunities and the risk preferences and choices of the individual institutions. Thus, the passage of the GLBA may decrease, increase, or result in no significant change in risk.

On the one hand, the increased potential for diversification through expansion into other lines of business may reduce risk for banks, securities firms, and insurance companies (e.g., see Saunders and Cornett 2001). If the returns of these various lines of businesses are less than perfectly positively correlated, the potential to reduce risk through diversification should be significant. Because these companies have a customer base that naturally benefits from each other's services, they should benefit from the ability to cross-sell a variety of financial services. This may insulate them from shocks to any particular sector and potentially reduce risk in the financial services industry. Furthermore, regulatory oversight may deter the institutions from assuming excessive risk.

On the other hand, risk may actually increase in the wake of the passage of the GLBA if some institutions choose to increase their risk levels given the increased scope of permissible activities. This increase in risk is more likely to be apparent for banks because the securities business is inherently more risky than traditional banking (Boyd, Graham, and Hewitt 1993). Furthermore, Gande, Puri, and Saunders (1999) show that banks tend to underwrite riskier, lower rated debt, which would increase the likelihood that bank risk may increase with expanded underwriting powers. Insurance companies may also experience an increase in risk to the extent that they enter the more risky securities business. Boyd, Graham, and Hewitt (1993) show that insurance companies and BHCs are comparable in terms of various accounting measures of risk. In contrast, they show that securities firms are among the most risky. Thus, bank and insurance company expansion into the securities business may actually increase risk.² Indeed, Boyd, Graham, and Hewitt argue that if the objective of regulatory policy is to minimize bank risk, banks should be permitted to acquire insurance companies that are comparable in terms of risk, but not securities firms. Furthermore, Herring and Santomero (1990) argue that the formation of financial conglomerates (which is likely to occur following the passage of the GLBA) may increase systemic risk—the risk that default by a

²We note that Boyd, Graham, and Hewitt (1993) point out that although the risk level of firms from different industries may give some indication of the risk of combined firms, the risk level of merged firms from different industries depends on the correlations of the returns among the combined firms.

few large borrowers will endanger the financial system. They also contend that financial conglomerates increase the social costs of maintaining stability in the financial system when disruptions occur. To the extent that the market perceives the financial system as being more risky in the new environment, risk may increase.

III. Data and Methods

We test the hypotheses by constructing separate samples of banks, securities firms, and insurance companies. We construct the sample of 340 banks using Standard & Poor's Compustat database using Standard Industrial Classification (SIC) codes 6021 and 6022. We then partition the sample into two subsamples: 46 relatively large banks and 294 relatively small banks. Large banks have total assets greater than \$10 billion, and relatively small banks have total assets less than or equal to \$10 billion. Following Johnston and Madura (2000), we use the primary SIC codes to identify insurance companies (SIC 6311) and securities firms (SIC 6211). This results in a final sample of 29 insurance companies and 37 securities firms. We require that firms have continuous return data for 300 days before the first event date and 300 days after the last event date on the Center for Research in Securities Prices (CRSP) files. We obtain financial statement data from the Compustat database.

We follow the method outlined by Amihud, DeLong, and Saunders (2002) when conducting the risk shift analysis. We estimate three capital market measures of risk over 300 trading days before the event period and 300 trading days after the event period. Our primary objective is to capture any changes in total risk because this is important to regulators. However, we also estimate changes in systematic and unsystematic risks, the two components of total risk. We define the pre-event period as the interval preceding the first announcement on July 2, 1999, that the House had approved legislation designed to overhaul the financial services industry. We define the post-event period as the interval following the announcement that President Clinton had signed the bill into law on November 15, 1999. We identify the event dates and descriptions in Table 1.

We estimate the first risk measure, total risk, using the variance of returns ($Var(R_i)$) for each firm i . We then calculate the change in total risk ($\Delta Var(R_i)$) as follows:

$$\Delta Var(R_i) = Var(R_i)_{Post} - Var(R_i)_{Pre}, \quad (1)$$

where *Pre* is the 300-day period before the first event and *Post* is the 300-day period after the last event.

We estimate the second risk measure, systematic risk, using the dummy variable approach recently used by Amihud, DeLong, and Saunders (2002). This

TABLE 1. Events Surrounding the Passage of the Gramm-Leach-Bliley Act.

Event	Date	Event Description
1	07/02/99	House approves legislation to revamp financial services industry.
2	10/20/99	Glass-Steagall overhaul may face veto because of disagreements on provisions related the Community Reinvestment Act.
3	10/25/99	House, Senate, and the White House reach compromise.
4	11/05/99	Congress approves financial services overhaul bill.
5	11/15/99	President Clinton signs financial services bill.

Note: This table shows the major event dates and a brief description of each event leading up the passage of the Gramm-Leach-Bliley Act. We obtain the event dates and descriptions from Lexis-Nexis and Akhigbe and Whyte (2001).

approach extends the market model by adding a dummy variable term to the market model regression. We estimate the model using ordinary least squares (OLS) using firm returns over the 300 trading days before the event period and the 300 trading days after the event period, as follows:

$$R_{it} = \beta_{0i} + \beta_{1i} R_{mt} + \beta_{2i} \delta_t R_{mt} + e_{it}, \quad (2)$$

where R_{it} is the return on firm i on day t ; R_{mt} is the return on the CRSP equally weighted market index on day t ; δ_t is equal to 1 on the final event day (November 11, 1999) and all days following this event, and 0 otherwise; β_{0i} is the intercept term for firm i ; and β_{1i} captures the systematic risk of the firm. The change in beta, $\Delta\beta_{1i}$, is obtained as:

$$\Delta\beta_{1i} = \beta_{1i}Post - \beta_{1i}Pre = \beta_{2i}. \quad (3)$$

We obtain the third risk measure, unsystematic risk, as follows:

$$R_{it} = \beta_{0i} + \beta_{1i} R_{mt} + e_{it}. \quad (4)$$

We then estimate the variance of the residuals ($Var(e_{it})$) in both the pre- and post-event periods. The change in residuals (unsystematic risk) is given as:

$$\Delta Var(e_i) = Var(e_i)Post - Var(e_i)Pre. \quad (5)$$

For each of the risk measures, we compute the t -statistic and signed rank test. The t -statistic tests whether the change in risk is significantly different from zero. The signed rank test measures the significance of the percentage of positive changes in the risk measure, under the assumption that the probability of observing a positive change is half.

TABLE 2. Descriptive Statistics.

Financial Services Firms	Total Assets		Total Equity		Sample Size
	Mean	Median	Mean	Median	
All banks	9.28	0.71	0.67	0.06	340
Relatively large banks	74.19	33.20	5.21	2.75	46
Relatively small banks	1.35	0.58	0.11	0.05	294
Banks with Section 20 subsidiaries	138.06	72.79	9.07	5.34	16
Banks without Section 20 subsidiaries	4.05	0.65	0.32	0.06	324
Banks with FHCs	17.27	1.38	1.28	0.12	100
Banks without FHCs	6.43	0.59	0.45	0.05	240
Securities firms	23.43	0.26	1.05	0.06	37
Insurance companies	62.44	10.72	4.20	0.87	29

Note: This table shows the mean and median total assets (in billions of dollars) and total equity (in billions of dollars) for all banks, subsamples of relatively large banks and relatively small banks, securities firms, and insurance companies. Relatively large banks have total assets greater than \$10 billion and relatively small banks have total assets less than or equal to \$10 billion. The sample includes all banks, securities firms, and insurance companies for which return data are available on Center for Research in Security Prices for the full sample period and for which financial statement data are available on Compustat for the year-end before the first event. FHC refers to financial holding company.

We estimate the risk measures separately for banks, securities firms, and insurance companies. We also estimate the risk measures for banks that are already operating Section 20 subsidiaries before the passage of the GLBA and banks that are not already operating Section 20 subsidiaries.³ The rationale for this analysis is that beginning in 1987 the Fed made several decisions that permitted banks to underwrite certain securities on a limited basis. Thus, we hypothesize that banks that are already engaged in some degree of securities underwriting may experience a less pronounced change in risk compared with banks without Section 20 subsidiaries. Finally, we estimate the risk measures for banks that have already created FHCs, the regulatory structure required by the GLBA, and banks that have not yet formed FHCs. We expect that the former subgroup should experience more dramatic risk changes relative to the latter.

IV. Results

We report descriptive statistics in Table 2. The mean total assets for all banks is \$9.28 billion, whereas the subgroup of relatively large (small) banks has

³Data on banks operating Section 20 subsidiaries as of September 1998 are obtained from the Federal Reserve Bank of New York's Web site.

TABLE 3. Changes in Total Risk.

Financial Services Firms	Mean $\Delta Var(R_i)$ (<i>t</i> -statistic)	Median $\Delta Var(R_i)$	% Positive (Signed Rank Test)
All banks (<i>N</i> = 340)	0.0249 (3.48)***	0.0105	65.29% (52.00)***
Relatively large banks (<i>n</i> = 46)	0.0216 (6.62)***	0.0233	84.78% (16.00)***
Relatively small banks (<i>n</i> = 294)	0.0254 (3.08)***	0.0093	62.25% (36.00)***
Banks with Section 20 subsidiaries (<i>n</i> = 16)	0.0193 (3.74)***	0.0244	93.75% (7.00)***
Banks without Section 20 subsidiaries (<i>n</i> = 324)	0.0252 (3.35)***	0.0101	63.89% (45.00)***
Banks with FHCs (<i>n</i> = 100)	0.0188 (5.02)***	0.0146	68.00% (18.00)***
Banks without FHCs (<i>n</i> = 240)	0.0274 (2.74)***	0.0094	64.17% (34.00)***
Securities firms (<i>n</i> = 37)	-0.3071 (-2.66)***	-0.0168	37.84% (-4.5)
Insurance companies (<i>n</i> = 29)	0.0191 (1.78)*	0.0094	62.07% (3.5)

Note: This table shows the mean and median change in total risk $Var(R_i)$ for banks, securities firms, and insurance companies. We measure the mean change in total risk ($\Delta Var(R_i)$) as: $Var(R_i)_{Post} - Var(R_i)_{Pre}$, where R_i is the return on firm i , Pre is the 300-day period before the first event day, and $Post$ is the 300-day period following the final event. The *t*-statistic tests whether the change in total risk is significantly different from zero. The signed rank test measures the significance of the percentage of positive changes in the total risk measure, under the assumption that the probability of observing a positive change is half. Relatively large banks have total assets greater than \$10 billion and relatively small banks have total assets less than or equal to \$10 billion. FHC refers to financial holding company.

*** Significant at the 1% level.

* Significant at the 10% level.

mean total assets of \$74.19 (\$1.35) billion respectively. As expected, banks with Section 20 subsidiaries are much larger (both in terms of total assets and total equity) than those without Section 20 subsidiaries. Similarly, banks with FHCs are considerably larger than banks without FHCs. Securities firms have average total assets of \$23.43 billion compared with \$62.44 billion for insurance companies.

Table 3 shows changes in total risk, which is of interest to policy makers because it is more directly related to the risk of failure. The sample of all 340 banks experiences an average increase in the variance of portfolio returns of 0.0249, significant at the 1% level. Similar results are documented across the two size categories, banks with and without Section 20 subsidiaries, and banks with and without FHCs. The finding that banks experience an increase in risk regardless

of whether they have actually taken steps to participate actively in the investment banking business (either by forming Section 20 subsidiaries or FHCs) is interesting. It suggests that the market does not discriminate on the basis of actual participation; rather, the mere potential to participate appears to have increased the volatility of bank stocks. The overall findings are consistent with the hypothesis that the ability of banks to expand more completely into the securities business, which is inherently more risky than traditional banking, has increased bank risk. The results are consistent with the assertions of Herring and Santomero (1990) that the formation of financial conglomerates may increase the risk that default by a few large borrowers will endanger the financial system and may increase the social costs of maintaining stability in the financial system when disruptions occur. To the extent that the market perceives an increase in financial system risk, our results suggest that this has translated into an increase in bank risk.

The results are an important extension of the findings of Boyd, Graham, and Hewitt (1993) and Bhargava and Fraser (1998). Boyd, Graham, and Hewitt argue that bank entry into the securities business would likely increase bank risk, whereas Bhargava and Fraser find that several decisions by the Fed permitting banks to operate Section 20 subsidiaries resulted in “statistically significant and economically meaningful” increases in total and firm-specific risk. Our results suggest that the significantly expanded opportunity set provided by the passage of the GLBA has further increased the risk of both large and relatively small banks. The results are, however, counter to the finding of Cornett, Ors, and Tehranian (2002) that the creation of Section 20 subsidiaries had no effect on bank risk. Perhaps the difference in results is attributable to the fact that even with the formation of these subsidiaries banks were still limited in their ability to engage in investment banking during their sample period. In our sample period, however, the scope and scale of permissible activities had been vastly expanded.

Table 3 also shows that securities firms experience a significant decline in total risk. This finding suggests that the ability of securities firms to expand more fully into the banking and insurance businesses, which are traditionally less risky than the securities business, has reduced their risk. The finding also suggests that the ability to cross-sell a variety of financial services to an expanded customer base has provided additional diversification for securities firms and decreased their risk.

As in the case of banks, insurance companies experience an increase in total risk. This increase is probably related to the fact that the securities business is more risky than the insurance business companies. This finding is consistent with Boyd, Graham, and Hewitt’s (1993) argument that, although insurance companies and banks are comparable in terms of various accounting measures of risk, securities firms are among the most risky.

Table 4 shows the results for changes in systematic risk. The risk shift coefficient estimate is negative and statistically significant for all the samples considered. Because systematic risk is of primary concern to well-diversified

TABLE 4. Changes in Systematic Risk.

Financial Services Firms	Mean $\Delta\beta_{1i}$ (<i>t</i> -statistic)	Median $\Delta\beta_{1i}$	% Positive (Signed Rank Test)
All banks (<i>N</i> = 340)	-0.3476 (-18.57)***	-0.2897	15.29% (-118.00)***
Relatively large banks (<i>n</i> = 46)	-0.7788 (-22.82)***	-0.7624	0.00% (-23.00)***
Relatively small banks (<i>n</i> = 294)	-0.2801 (-15.52)***	-0.2469	17.69% (-95.00)***
Banks with Section 20 subsidiaries (<i>n</i> = 16)	-0.7802 (-9.20)***	-0.8634	6.25% (-7.00)***
Banks without Section 20 subsidiaries (<i>n</i> = 324)	-0.3262 (-17.71)***	-0.2751	15.74% (-111.00)***
Banks with FHCs (<i>n</i> = 100)	-0.3914 (-10.33)***	-0.3334	12.00% (-38.00)***
Banks without FHCs (<i>n</i> = 240)	-0.3293 (-15.37)***	-0.2822	16.67% (-80.00)***
Securities firms (<i>n</i> = 37)	-0.2058 (-1.97)**	-0.3731	24.32% (-9.50)***
Insurance companies (<i>n</i> = 29)	-0.3689 (-3.47)***	-0.5261	20.69% (-8.50)***

Note: This table shows changes in systematic risk, measured using the dummy variable approach used by Amihud, DeLong, and Saunders (2002). We estimate the model using ordinary least squares (OLS) using daily returns for 300 days before the first event and 300 days after the last event as follows: $R_{it} = \beta_{0i} + \beta_{1i}R_{mt} + \beta_{2i}\delta_t R_{mt} + e_{it}$, where R_{it} is the return on firm i on day t ; R_{mt} is the return on the equally weighted market index obtained from the Center for Research in Security Prices on day t ; δ_t is equal to 1 on the final event day (November 11, 1999) and all days following this event, and 0 otherwise; and β_{0i} is the intercept term for the firm. We define the change in beta, $\Delta\beta_{1i}$ as follows: $\Delta\beta_{1i} = \beta_{1i}Post - \beta_{1i}Pre = \beta_{2i}$. The t -statistic tests whether the change in systematic risk is significantly different from zero. The signed rank test measures the significance of the percentage of positive changes in the systematic risk, under the assumption that the probability of observing a positive change is half. Relatively large banks have total assets greater than \$10 billion and relatively small banks have total assets less than or equal to \$10 billion. FHC refers to financial holding company.

*** Significant at the 1% level.

** Significant at the 5% level.

shareholders, our results suggest that their required returns should decline in the wake of the passage of the GLBA.

Table 5 shows the changes in unsystematic risk. The full portfolio of banks experiences an average increase in unsystematic risk of 0.0284, significant at the 1% level. The other bank portfolios, as well as the portfolio of insurance companies, also experience significant increases in unsystematic risk. However, securities firms experience a significant decline in unsystematic risk. These results parallel those reported for total risk and confirm the initial finding that both banks and insurance companies experience an increase in risk because the securities business is more risky, whereas securities firms experience a decline in risk.

TABLE 5. Changes in Unsystematic Risk.

Financial Services Firms	Mean $\Delta \text{Var}(e_i)$ (<i>t</i> -statistic)	Median $\Delta \text{Var}(e_i)$	% Positive (Signed Rank Test)
All banks (<i>N</i> = 340)	0.0284 (3.98)***	0.0163	69.41% (65.50)***
Relatively large banks (<i>n</i> = 46)	0.0332 (11.57)***	0.0339	97.82% (22.00)***
Relatively small banks (<i>n</i> = 294)	0.0277 (3.36)***	0.0111	64.97% (43.50)***
Banks with Section 20 subsidiaries (<i>n</i> = 16)	0.0311 (7.13)***	0.0358	93.75% (7.00)***
Banks without Section 20 subsidiaries (<i>n</i> = 324)	0.0283 (3.78)***	0.0146	68.21% (58.50)***
Banks with FHCS (<i>n</i> = 100)	0.0229 (6.58)***	0.0202	75.00% (25.00)***
Banks without FHCS (<i>n</i> = 240)	0.0308 (3.07)***	0.0139	67.08% (40.50)***
Securities firms (<i>n</i> = 37)	-0.3183 (-2.72)***	-0.0064	43.24% (-2.50)
Insurance companies (<i>n</i> = 29)	0.0207 (2.10)***	0.0162	65.52% (4.50)

Note: This table shows changes in unsystematic risk. We estimate the unsystematic risk measure as follows: $R_{it} = \beta_{0i} + \beta_{1i}R_{mt} + e_{it}$, where R_{it} is the return on the firm on day t , R_{mt} is the return on the equally weighted market index obtained from the Center for Research in Security Prices on day t , β_{0i} is the intercept term for the firm, β_{1i} captures the systematic risk of the firm, and e_{it} is the unsystematic risk for the firm on day t . We measure the mean change in unsystematic risk as follows: $\text{Var}(e_i)_{\text{Post}} - \text{Var}(e_i)_{\text{Pre}}$, where *Pre* is the 300-day period before the first event day and *Post* is the 300-day period following the final event. The *t*-statistic tests whether the change in unsystematic risk is significantly different from zero. The signed rank test measures the significance of the percentage of positive changes in the unsystematic risk, under the assumption that the probability of observing a positive change is half. Relatively large banks have total assets greater than \$10 billion and relatively small banks have total assets less than or equal to \$10 billion. FHC refers to financial holding company.

*** Significant at the 1% level.

V. Conclusions

We examine changes in risk in the financial services industry following the passage of the GLBA of 1999. We find evidence of a significant decline in systematic risk for banks, securities firms, and insurance companies. In contrast, we find evidence of a significant increase in total and unsystematic risks for banks and insurance companies. Banks experience an increase in risk regardless of whether they have actually taken steps to participate actively in the investment banking business (either by forming Section 20 subsidiaries or FHCs). This suggests that the market does not discriminate on the basis of actual participation in investment banking; rather, the mere potential to participate appears to have increased the volatility of bank stocks. Securities firms, however, experience a significant decline

in both total and unsystematic risks. We attribute the finding of a significant increase in risk for banks and insurance companies to the fact that the securities business is generally more risky than these two lines of businesses. Thus, bank and insurance company expansion into the securities business is likely to increase risk. On the other hand, the decline in risk for securities firms can be explained by their ability to diversify into less risky banking and insurance activities.

Our results suggest that regulators should carefully monitor and supervise bank activities in this new era of financial modernization to mitigate adverse effects from the increase in risk. Indeed, the new regulatory structure with the Fed serving as the umbrella supervisor emphasizes the importance of protecting the safety and soundness of the banking system in particular and the financial system as a whole. Our results suggest that regulators must be vigilant to ensure that the safety of the financial system is not compromised.

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