Financial Services Modernization Act of 1999: Market Assessment of Winners and Losers in the Insurance Industry

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Abstract: The Financial Services Modernization Act of 1999 repeals the Depression-era Glass-Steagall Act (1933) and the Bank Holding Company Act (1956) and allows insurance firms for the first time to merge with banks and cross sell non-traditional insurance products. Previous studies suggest that such an opportunity will lead to consolidation in the financial services industry. In this study we investigate whether the FSMA will lead to mergers between insurance companies and other firms in the financial services industry by analyzing the announcements leading to the FSMA. Our study shows that relaxation of merger barriers creates a wealth effect for firms in the industry. We also find a larger wealth effect for life and property/casualty insurers, which are predicted to generate the highest diversification benefit when combined with bank holding companies. Cross-industry merger opportunities and regulatory changes also reduce the systematic risk of firms in the insurance industry. The cross-sectional variation of the wealth effect can be explained by the type of insurance, size, and performance as well as the diversification benefit. As predicted by merger literature, larger and poorly performing firms a have higher wealth effect. [Keywords: insurance industry, wealth effects, Financial Modernization Act, cross-industry merger, systematic risk]

INTRODUCTION

The Financial Services Modernization Act (FSMA) is the most sweeping deregulation of the U.S. financial services industry in the last century.

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The FSMA repeals both the Depression-era Glass-Steagall Act of 1933, which separated banking and securities activities, and the Bank Holding Company Act of 1956, which prohibited bank holding companies from engaging in insurance-related activities. Gradual erosion of the Glass-Steagall Act has given U.S. banks increasing access to traditional insurance[1] and securities[2] business. The insurance industry has largely been regulated by the Depression-era regulations, and has thus been restricted to traditional insurance business and restricted from merging with other types of financial services firms. The FSMA allows cross-selling of non-traditional insurance products by insurance firms, and it also allows them to merge with banks. Thus, the FSMA gives us the unique opportunity to test whether these new deregulations are going to create value (wealth effects) for firms in the insurance industry. We are especially interested to know whether the FSMA will encourage cross-industry mergers. Previous studies (see Cyree, 2000; Ely and Robinson, 1998; Carow, 2001a) find that these deregulations have created a positive and significant wealth effect for shareholders in the banking industry. How this deregulation (FSMA) is going to affect shareholders' value in the insurance industry is an empirical question that we test in this paper. A few studies argue that the impact will be phenomenal (Hogan, 2001), while other studies argue it will be only marginal (Barth, Brumbaugh, and Wilcox, 2000). If there is any change in expected economic profit it should immediately be reflected in the stock price of firms in that industry (Fama and MacBeth, 1973).

Most of the studies that analyze deregulation find that not all firms in an industry are affected equally. We analyze whether firms across size, performance, and type of insurance have different wealth effect from this deregulation. Larger firms have more influence on government and more lobbying power, so whether these firms have gained more advantage from the deregulation is an interesting question to academics, regulators, and lobbyists. This question is also interesting in general, as regulatory changes quite often benefit larger firms more than smaller ones. We analyse the impact of this regulation across performance, size, and insurance business type because it is argued that the FSMA may lead to mergers between insurance firms and banks (Johnston and Madura, 2000). Merger literature predicts that poorly performing firms generally become targets in mergers.[3] We, therefore, test whether such firms in the insurance industry get higher wealth effect from this deregulation. The FSMA may create diversification benefits for the financial services industry by removing merger barriers. We test whether some lines of insurance business will benefit more from this relaxation than others.

In this study we analyze thirteen important events (Table 1), starting with Senator Gramm's taking over as the chairman of the Senate Banking

Table 1. Time Line of FSMA

Date	Event	Comments
11/4/98	1. Senator Alfonse D'Amato loses his re-election bid (11/03/98–night). 2. Senator Gramm to take over as a chairman of Senate Banking Committee. (11/04/98).	1. Close race; Alfonse D'Amato was leading by 41% to 40.7% over Charles Schumer (11/03/98). 2. White House wanted very badly to unseat D'Amato: Charles Schumer had two visits from President Clinton, two visits from Al Gore, and four visits from Mrs. Clinton. 3. Overall, the result was anyone's guess.
1/8/99	Financial Services Reform Bill is reintroduced in Congress.	1. A similar bill died in Congress (in 1998) when the Senate failed to bring up the legislation for vote. 2. Senator Phil Gramm (1998) blocked the bill over the privacy issue.
2/17/99	Draft bill is unveiled in the Senate.	1. Draft bill was in line with Greenspan's view. 2. Treasury didn't like it (in fact, Robert Rubin asked for a veto). 3. Insurance industry upset. 4. Expected.
4/12/99	Gramm's meeting with Senate Minority leader to work on the bill.	1. Gramm to meet Senate Majority Leader Trent Lott, Minority Leader Tom Daschle, and Senate Banking ranking Minority Leader Paul Sarbanes to work out a deal to pass Financial Services Reform. 2. Sarbanes and Gramm are at odds over Gramm's position on the Community Reinvestment Act.
4/28/99	Senate Banking Committee formally files the Financial Services Modernization Act in the Senate.	
5/4/99	Clinton insists that the privacy issue be included in the bill.	1. The industry didn't like it. 2. Senator Gramm was against it.

Table continues

Table 1. (*Continued*)

Date	Event	Comments
05/06/99–Midnight	Senate passes S. 900. (Senate version of the bill)	1. Bill passes by party-line vote (52–45). 2. Veto threat from the president still there. 3. Privacy issue is included in the bill. 4. Provisions of this bill were expected.
7/1/99	House version passes.	
10/15/99	Federal Reserve and Treasury announce agreement on the regulation.	1. Financial privacy included in this bill. 2. Bill passes by a wide margin 343–86. 3. Widely expected.
10/22/99	Gramm makes deal with White House on CRA.	White House veto threat on CRA still there.
11/02/99	Joint House Conference report signed by the majority of the conferees clears the way for the votes in both the House and the Senate.	1. CRA compromise with the administration made the bill move. Senator Phil Gramm finally made deal with the White House that would require banks to have satisfactory regulatory rating on community lending before they could expand into new financial business. 2. Happened quite unexpectedly.
11/4/99	Senate passes the bill (90–8) and House passes it (362–57).	1. Language regarding the CRA is agreed upon. 2. This announcement indicates that the bill is going to be passed.

Note: The first column, Date, is the event date. If the event occurred after trading closed for the day, then the next trading day is the event date. Event window is defined as the event date –1 day and +1 day. The second column, Event, describes the main event. The third column, Comments, provides additional information regarding the events.

Committee in April 1998 and ending with President Clinton's signing of the bill into law. Dates and descriptions of these events are provided in Table 1. We find significant positive wealth effects over five of these events, although, not all types of insurance businesses have significant wealth effects over the same events. Portfolios of life insurance firms have positive significant wealth effects from two of the events, while portfolios of property/casualty insurance firms have positive significant wealth effects from five of the events. Portfolio of all the other types of insurance firms in our sample have no effect from any of these events. We find that portfolios of property/casualty and life insurance firms have higher wealth effects from the FSMA and that these wealth effects are significantly different from each other. We also find that shifts to market beta are negative and significant for all the portfolios of the insurance firms.

Similar to Marlett, Pacini, and Hillison (2003), our study investigates life, property/casualty, and other lines of insurance as separate industries, as opposed to previous studies that treat all insurers as a single industry. Marlett, Pacini, and Hillison (2003) test predictions related to trading volume, the differential wealth effect of life and property/liability, and the differential wealth effect in connection to firms' specific characteristics (such as size, leverage, liquidity, and total risk). We concentrate on the insurance industry for our analysis because the FSMA allows the first opportunity for insurance companies to merge with other types of financial services. We test the predictions of Johnston and Madura (2000) and Saunders and Walter (1994) that life and property insurance make more suitable merger candidates than other lines of insurance businesses, thus firms in these lines of insurance business will become suitable targets. In addition, we also test predictions based on merger literature related to size and performance of individual firms.

In cross-sectional analysis, we find that firms in the property/casualty insurance and all the other insurance portfolio (except the life insurance firms) benefit from risk reduction under the FSMA. Our results also strongly support the general findings of the merger literature. We find that larger firms, irrespective of the business line, gain from this deregulation. Poorly performing firms in the life and property/casualty insurance industries benefit from the FSMA.

The rest of the study is organized as follows. The second section provides a historical overview. Section three provides a literature review. Section four introduces major hypotheses. Section five discusses methodology and data. Section six presents the empirical results, and a final section concludes.

HISTORY OF THE FINANCIAL SERVICES INDUSTRY REGULATION IN THE U.S.: GLASS-STEAGALL TO THE FSMA ACT

Before the Great Depression, banks were allowed to undertake securities business. Thousands of banks failed in the years 1930–1933 following the stock market crash of 1929. The Glass-Steagall Act was enacted to protect consumers and the economy from the conflict created by the involement of interest of banking conglomerates in the security business. It created a highly regimented financial industry, in which commercial banks were limited to lending and deposit gathering. Thrifts institutions were mortgage lenders, investment banks served as underwriters and brokers of both stocks and bonds, and insurance firms were providers of actuarial products. The Congress established the Federal Deposit Insurance Corporation (FDIC) during that period and also raised minimum capital requirements for national banks. The Bank Holding Company Act of 1956, on the other hand, prohibited banking firms from non-banking activities. In effect, it closed bank involvement in the insurance business.

The first deregulation of the Depression-era laws started in Maine, which permitted out-of-state branching. At the national level, deregulation began in 1980, when Congress allowed banks to offer competitive interest rates on deposits. The Garn–St. Germain Act of 1982 allowed banks to cross state boundaries to acquire troubled banks. In 1983, the Federal Reserve (FRB) allowed bank holding companies (BHCs) to acquire discount security brokers. In 1987, the FRB allowed BHCs to underwrite certain *bank-ineligible* securities through the Section 20 investment subsidiary with a cap on the revenue from *ineligible* activities to be 5 percent. The FRB increased the revenue limit from *ineligible* activities twice—once in 1989 (to 10 percent) and in 1997 (to 25 percent). Because of the restriction on revenue, only the largest of the banks (a total of forty) had a full line of investment banking. The 1994 Riegle-Neale Banking and Branching Efficiency Act removed constraints on bank holding company acquisitions across state lines, and also permitted banks to establish interstate branches if permitted by state law.

The entry of banks into the insurance business started in 1985 with the Office of the Comptroller of Currency (OCC) ruling that allowed banks to sell variable-rate annuities. The scope of bank activity in the insurance business widened further in 1986, under Section 92 of the National Banking Act. Through this act, the OCC ruled that a national bank, or any branch located in a place with a population of 5,000 or less, may sell insurance to existing and potential customers located anywhere. In 1990, the OCC permitted banks to sell fixed-rate annuities.

Under the new law (FSMA), insurance remains a state-regulated business (the McCarran-Ferguson Act remains in place). The FSMA repeals sections of the Banking Act of 1933 (including sections 20 and 32) that prohibit national banks from maintaining securities firms and bank officials from sitting on corporate boards of insurance companies. It also amends the Bank Holding Company Act of 1956 and creates a new entity known as a Financial Holding Company (FHC). The FHC is the centerpiece of this financial modernization. FHCs may engage in activities that are financial in nature, including banking, securities, insurance (underwriting as well as sales as an agent), and merchant banking. To qualify as an FHC, each subsidiary has to be well managed and well capitalized. In addition, the depository subsidiary of the FHC has to comply with the Community Reinvestment Act (CRA) rating requirement.

The FSMA also creates a new type of subsidiary, known as a *financial subsidiary*, through which banks can conduct many of the same activities as a subsidiary of an FHC (Broome and Markham, 2000). More specifically, banks may conduct primary agency activities in these subsidiaries, but not underwriting activities. To own such a financial subsidiary, however, the FSMA requires that the bank and each of its depository subsidiaries be well managed and well capitalized (Broome and Markham, 2000).

The FSMA also repeals Title VI of the Garn–St. Germain Act, which states that the sale or underwriting of insurance is "not closely related" to banking, effectively preventing bank holding companies from selling and underwriting insurance. The FSMA also pre-empts anti-affiliation laws. Any attempt by a state to deny a depository institution from trying to affiliate with an insurer can also be nullified, since states are forbidden from discriminating against such entities. Hence, the FSMA allows cross-industry mergers that were not previously allowed under the OCC rulings.

LITERATURE REVIEW

Current research has consistently found that the FSMA positively affects shareholder value in the insurance industry; however, depending on the sample size and number of events investigated, the results for other financial services industries have been mixed. Carow and Heron (2002) find that only the insurance industry gains (significant positive wealth effect) from this law. Akhigbe and Whyte (2001) find that all sectors of the financial services industry benefit from this law, while Hendershott, Lee, and Tompkins (2002) conclude that this law has no impact on the banking industry. Marlett, Pacini, and Hillison (2003) find that life and property/liability insurance have a differential wealth effect. They also find that smaller life insurers with high liquidity and leverage have the highest wealth effect.

Regulatory changes have asymmetric effects across firm sizes in the same industry. Larger firms generally benefit from financial regulations. Cornett and Tehranian (1989) find that shareholders of larger banks experience significantly larger abnormal excess return than do small banks and small savings and loan (S&L) institutions from the announcements leading up to the Depository Institutions Deregulation and Monetary Control Act of 1980. Cornett and Tehranian (1990) investigate the impact of the Garn–St. Germain Depository Institutions Act (GSGDI) of 1982 on the shareholder value of commercial banks and S&L institutions. They find that shareholders of larger banks and S&Ls benefit from the increased competition resulting from the passage of the GSGDI Act, while shareholders of smaller banks and S&Ls experience losses. Carow and Heron (1998) state that large bank holding companies have a significant positive wealth effect from the Interstate Banking and Branching Efficiency Act (IBBEA) of 1994.

The FSMA may create diversification benefits for the financial services industry by rethat which allows banks to sell variable- and fixed-rate annuities does not create diversification benefit for banks. Similarly, Bhargava and Fraser (1998) find that the FRB's decision to expand the revenue limit on Section 20 subsidiaries to 25 percent had no systematic impact on systematic risk, although the earlier decision of 1989 to increase the limit to 10 percent had resulted in a significant increase in systematic risk. Wall, Reichert, and Mohanty (1993) investigate whether combinations of bank and non-bank firms can reduce a banking organization's operating risk. They conclude that the best opportunity for diversification gains is for banks to merge with firms engaged in some aspects of the insurance industry. Allen and Jagtiani (2000) create synthetic universal banks to examine the impact of securities and insurance activities on the banking firms' risk. They find that non-bank activities reduce the overall risk of banking firms, but increase their systematic risk. Boyd, Graham, and Hewitt (1993), using simulated data, find that bank holding company (BHC) mergers with life and property/casualty insurance companies would reduce risk for BHCs. Lown et al. (2000) investigate the benefit from cross-industry mergers using simulated mergers. They find that the largest diversification benefits would result if bank holding companies combined with life insurance firms.

Lown et al. (2000) argue that "Gramm-Leach-Bliley sets the stage for another round of financial consolidation" (p. 50). Thus insurers with target characteristics may benefit from the FSMA. Houston and Ryngaert (1994) find that target firms typically sell at a premium and acquiring firms sell at a discount. Similarly, Carow and Lee (1997) find that banks with characteristics of an acquirer have lower returns than banks with characteristics of a target. Carow (2001b) and Johnston and Madura (2000), who investigate the only bank-to-insurance merger (merger between Citicorp and Travellers Group in 1998), find significant positive returns for insurance companies.

Generally, smaller firms become targets in mergers; smaller insurance firms will be likely targets for larger banks.[4] Hawawini and Swary (1990) find that acquirers are significantly larger than targets. Calem (1994) finds that after bank holding company branching reforms, large banks acquired small banks. In addition, Cheng, Gup, and Wall (1989) and Palia (1993) find that larger acquiring firms add more to the target bank's value.

There is evidence that poorly performing firms become potential targets for mergers. BarNiv and Hathorn (1997) find that timely mergers in the insurance industry serve as an alternative to insolvency in 20 percent to 46 percent of the mergers considered in their study. Similarly, Whiting (1997) argues that banking organizations with higher ROE (return on equity) or ROA (return on asset) are more likely to purchase insurers that have lower ROE or ROA. Swary (1986) shows that target banks with higher capital ratios than their bidder banks have greater abnormal returns. Thus, it seems that abolishing cross-industry merger barriers will create wealth effects for poorly performing firms.

The merger opportunities created by the FSMA will benefit some lines of the insurance business more than others. Johnston and Madura (2000) point out that those banks will be interested in cross-selling of insurance products that closely resemble banking product, such as mortgage and mortgage insurance, auto financing and auto insurance, and life insurance. Saunders and Walter (1994), on the other hand, conclude that greater synergistic gains are available for combinations of banks and life insurers than from combinations of banks and property/casualty insurers.

HYPOTHESES

We examine five hypotheses related to the effect of the passage of the FSMA on the insurance industry.

> H1—Barriers: The relaxation of merger barriers under FSMA will create a significant wealth effect for firms in the insurance industry.

The FSMA creates a unique opportunity for cross-industry mergers within the financial services industry. Prior to the FSMA, banks were allowed under OCC regulation to enter the insurance business, and mergers between banks and insurance companies were prohibited. We argue that the FSMA creates economies of scope for firms in the insurance industry by abolishing the merger barrier. Previous studies find a positive wealth effect for insurance firms on the announcement of the Citicorp and Travellers merger (Johnston and Madura, 2000). It may be interpreted that this reaction is in anticipation that the regulators will allow more mergers of this type in the future. Lown et al. (2000) argue that the FSMA sets the stage for consolidation in the financial services industry.

H2—Suitability: More suitable merger targets such as life and property/casualty insurance will have a higher abnormal return from FSMA.

Previous studies (Wall, Reichert, and Mohanty, 1993; Boyd, Graham, and Hewitt, 1993) hypothesize that banks will be interested in merging with firms that sell actuarial products, which can be easily marketed with traditional banking products and may help them to reduce their operating expenses. They further argue that only a few large banks may choose to underwrite the full line of risk. Prior research (Saunders and Walter, 1994) also suggests that banks will be more interested in life insurance, because greater synergistic gains are available for combinations of banks and life insurers than from combinations of banks and property/casualty insurers. Other studies have argued that the cross-marketing benefits with traditional banking products make property/casualty insurers more suitable as merger targets. In light of this literature, we hypothesize that life and property/casualty insurance will benefit more from deregulation.

H3—Risk reduction: Cross-industry merger opportunities and regulatory changes under FSMA will reduce systematic risk to stockholders.

FSMA for the first time allows insurance companies to merge with other entities in the financial services industry. It also allows insurance firms to cross-sell traditional banking products. We argue that these opportunities will reduce the systematic risk for firms in the insurance industry. Wall, Reichert, and Mohanty (1993) find that the best diversification benefit for banks is to be achieved through mergers with firms engaged in some aspects of the insurance industry. Allen and Jagtiani (2000), meanwhile, find that non-bank activities reduce the overall risk of banking firms, but increase their systematic risk.

Boyd, Graham, and Hewitt (1993) find that BHC mergers with life and property/casualty insurance companies reduce risk. Lown et al. (2000), argue that a larger diversification benefit would result if BHCs combined with life insurance firms, while a merger with property/casualty insurance firms will increase risk.

> H4—Size: Larger firms that have more resources to take advantage of merger opportunities, therefore, will have a higher wealth effect from the announcements leading to FSMA.

The FSMA's biggest innovation is the FHC. It allows institutions to offer an array of services (banking, insurance, and brokerage) under one roof. Larger institutions have more resources to exploit this opportunity for scope economies created by the FSMA. Furthermore, larger firms in the insurance industry are somewhat insulated from takeover pressure from the other sectors that we have examined. For example, Carow (2001b) investigates the impact of OCC rulings that let banks into the insurance business and finds that, following the enacting of Section 92 regulation, larger insurance companies had higher gains.

In addition, empirical regulation literature (Cornett and Tehranian, 1989, 1990; Carow and Heron, 1998) also find that regulatory changes generally benefit (create a larger wealth effect for) larger firms more than smaller firms. Thus, we expect that larger insurance companies will have a greater wealth effect.

> H5—Performance: Poorly performing firms are more attractive merger targets, therefore, having higher wealth effects from the announcements of FSMA.

Two findings of merger literature support the argument that poorly performing firms will have a significant effect from the announcements around FSMA. First, poorly performing firms generally become targets in mergers (Whiting, 1997; Swary, 1986). Second, target firms' shares sell at a premium following merger announcements. In addition, BarNiv and Hathorn (1997) find that insolvency is a major motivation on the part of target firms to enter into mergers (in the insurance industry). Under FSMA, cross-industry mergers are allowed, so we expect significant abnormal returns from poorly performing insurance firms from the announcements leading to FSMA.

METHODOLOGY AND DATA

Methodology: Event Study

HYPOTHESIS ONE:

In order to test hypotheses one and two, we create three Standard Industrial Classification (SIC)–based portfolios. They are:

1. Life insurance (SIC 6311)
2. Property/casualty insurance. (SIC 6331)
3. Other types of insurance (SIC 6321, 6351, and 6361)

Schwert (1981) argues that individual asset returns of firms in the same industry, measured over a common time period, are contemporaneously correlated because the firms will react similarly to any unanticipated event. So in events such as regulatory changes, the residuals will not be independently and identically distributed. If there is a contemporaneous correlation among the disturbances across equations, but not correlated over time, Seemingly Unrelated Regression (SUR) model estimates will be more efficient than Ordinary Least Squares (OLS) model estimates. Thus, in order to test for hypotheses surrounding such events we estimate the following model using SUR methodology:

$$R_{it} = \alpha_i + \alpha_i' D + \sum_{j=1}^{3} \beta_{ij} R_{m,\,t+j-3} + \sum_{j=1}^{3} \beta_{ij}' D R_{m,\,t+j-3} \qquad (1)$$

$$+ \delta_i R_{r,\,t} + \kappa_i R_{f,\,t} + \sum_{k=1}^{K} \gamma_{ik} D_{kt} + e_{it}$$

Where R_{it} is the return on portfolio i (i = (1, 2, 3), life insurance, property/casualty insurance, and all other insurance) on day t and $R_{m,t}$ is the return on the market index at day t.[5] D_{kt} is a dummy variable that is equal to 1 over the three-day event window of the kth announcement and zero otherwise, and γ_{ik} is the coefficient of a dummy variable that captures the impact of the kth event on the ith portfolio. D is a dummy variable that is equal to 1 after the enactment of the regulation and zero otherwise. $R_{f,t}$ represents the return on a foreign exchange index on day t, R_{rt} represents the return on a one-year T-bill on day t, and β'_{i1}, β'_{i2}, *and* β'_{i3} capture the shift in synthetic riskd between the pre-act and post-act period for portfolio i.

To test for Hypothesis 1 we use two tests. First, similar to Cornett and Tehranian (1990), we test whether all the abnormal returns for each portfolio are jointly equal to zero.

$$\gamma_{ik} = 0 \forall i, k \qquad (2)$$

The distribution under the null hypothesis is $\chi^2(39)$. Then we test whether the coefficient of the dummy variable (D_{kt}) is significantly different from zero. Cornett and Tehranian (1989, 1990) and Carow and Heron (1998) use the same methodology to test hypotheses surrounding regulatory events. Formally, this test is:

$$\gamma_{ik} = 0 \forall i \tag{3}$$

We utilize *t* statistics to test for the statistical significance.

HYPOTHESIS TWO

We modify the above model (Equation 1) to estimate the overall gain (wealth effect) of each line of insurance business from the passage of the FSMA.

$$R_{it} = \alpha_i + \alpha_i'D + \sum_{j=1}^{3} \beta_{ij} R_{m,\, t+j-3} + \sum_{j=1}^{3} \beta_{ij}' D R_{m,\, t+j-3} \tag{4}$$

$$+ \delta_i R_{r,\, t} + \kappa_i R_{f,\, t} + \gamma_i DG + e_{it}$$

Where the coefficient (γ_i) of the dummy variable DG[6] estimates the overall impact of the law on each of the portfolios. Other variables are defined as in Equation 1. This estimation allows us to formally test Hypothesis 2. We use the following hypothesis test in conjunction with the point estimate from Equation 4.

$$\gamma_i = \gamma_j \forall i, j \tag{5}$$

Following Theil (1971, p. 306), Equation 4 can be generalized as:

$$\overline{R} = \overline{X}\beta + \varepsilon \tag{6}$$

where $\overline{R}$ is the vector of return (1xT), $\overline{X}$ is a TxN matrix of independent variables (which are same for each equation), and β is a Nx1 vector of coefficients. Using the notations of Equation 6 we can express Hypothesis 2 as:

$$C\Theta = c \tag{7}$$

where C is a QxK matrix of the constants with rank Q and c is a $Kx1$ vector of the constants. According to Theil (1971), the test statistic is:

$$\frac{NT-NK}{Q} \times \frac{(\underset{\sim}{c} - C\underline{\Theta})'\left\{C[X'(\hat{\Sigma}^{-1} \otimes I)X]^{-1} - C'\right\}^{-1}(\underset{\sim}{c} - C\underline{\Theta})}{(\underline{R} - X\hat{\underline{\Theta}})(\hat{\Sigma}^{-1} \otimes I)(\underline{R} - X\hat{\underline{\Theta}})'} \tag{8}$$

where

Σ = variance covariance matrix;

$\otimes$ = the Kronecker product;

T = is the number of daily observations used in the estimation of Equation 4 ($T=756$);

K= the number of repressors plus one ($K=11$);

N = the number of portfolios tested ($N=3$); and

Q = the number of restrictions tested,

asymptotically distributed as $F(Q,NT–NK)$. Similar methodology was used by Allen and Wilhelm (1988) and Cornett and Tehranian (1989, 1990). One can also use the Wald test statistic to test the above hypothesis. Green (1997, p. 70) argued that F-distributions with large-denominator degrees of freedom (which is $NT–NK$ in this case) become infinite. The denominator of F converges identically to 1 so we can treat the variable as a $\chi 2$ with numerator degrees of freedom (which is Q). For example, in the case of the above three hypothesis tests, the denominator degrees of freedom is 2235 (for F (2, 2235)). So we instead used $\chi 2$ (2) to test the above hypothesis.

HYPOTHESIS THREE:

In Hypothesis 3 we are particularly interested in knowing whether the announcements leading to the FSMA have any significant impact on the systematic risk of insurance firms. Similar methodology is used by Akhigbe and Whyte (2001). We test whether the coefficient of $D \times R_{m,t+j-3}$ (β_{ij}') in Equation 4 is significant.

Methodology: Cross-Sectional Study

The general purpose of a cross-sectional analysis is to identify firm-specific characteristics that will help us to single out winners and losers from this law. Specifically, our goal is to test for hypotheses 3, 4, and 5.

In order to identify the firm-specific characteristics, we first generate the overall AR for each firm. We use Equation 4 to generate the wealth effects (i.e., gi for firm i gives the right-hand-side variable).

$$AR_i = \theta + \theta_{LIFE}LIFE + \theta_{OTHERS}OTHERS + \theta_{SIZE}SIZE + \theta_{SIZExLIFE}(SIZExLIFE) + \theta_{SIZExOTHERS}(SIZExOTHERS) + \theta_{ROA}ROA + \theta_{ROAxLIFE}(ROAxLIFE) + \theta_{ROAxOTHERS}(ROAxOTHERS) + \theta_{RISK}RISK + \theta_{RISKxLIFE}(RISKxLIFE) + \theta_{RISKxOTHERS}(RISKxOTHERS) + \xi \quad (9)$$

where θ is the intercept for property/casualty insurance firms, the difference in the coefficient estimate of the intercept for life insurance firms with property/casualty insurance firms is θ_{LIFE}, and the difference in the coefficient estimate of the intercept for other insurance firms with property/casualty insurance firms is θ_{OTHERS}. The *SIZE* variable is calculated by taking the log of the book value of total assets. *ROA* is a profitability indicator. *RISK* is the change in systematic risk, which we estimate using Equation 4 (β'_{i3}). θ_{SIZE} is the coefficient estimate of size for property/casualty insurance, while $\theta_{SIZExLIFE}$ is the difference in the coefficient estimate of size variable for life insurance firms with property/casualty insurance, and $\theta_{SIZExOTHERS}$ is the differnce in the coefficient estimate of *SIZE* variable for other insurance firms with property/casualty insurance. The coefficient estimates for *ROA* and *RISK* are defined likewise. We estimate Equation 9 using the OLS method.

We expect that the merger opportunities will create diversification benefits that will reduce the systematic risk for firms in the insurance industry. So we expect a negative significant coefficient estimate (θ_{RISK}).

HYPOTHESIS FOUR

We anticipate that larger firms will have a larger wealth effect from the announcements leading to the FSMA. Thus, the coefficient for *SIZE* will be positive and significant. We don't expect that larger firms across insurance types have different effects, so the anticipated coefficient estimate of *SIZEx LIFE* and *SIZExOTHER* will be insignificantly different from zero.

HYPOTHESIS FIVE

Our final hypothesis predicts that the performance of firms will be negatively related to the wealth effect. Thus, the anticipated sign of the coefficient estimate of *ROA* is negative. Previous research also predicts that banking firms may benefit from mergers with life and property/casualty insurance. Thus, we expect that poorly performing firms, especially the ones in the life and property/casualty insurance business, will benefit more. So we anticipate that the coefficient estimate of *ROAxLIFE* will be insignificantly different from zero.

Table 2: Descriptive Statistics of Sample

		Life insurance $n = 29$	Property/casualty insurance $n = 77$	All other insurance $n = 34$
Total asset value	Mean	61767	7757	8071
(millions of $)	Median	8816	1593	1153
	Minimum	81	36	16
	Maximum	463696	150632	122237
Return on asset	Mean	9.38	6.89	11.79
	Median	9.72	8.83	12.32
	Minimum	–8.97	–89.34	–10.70
	Maximum	15.79	28.03	27.15

Data

FIRM SELECTION

We use the SIC classifications from COMPUSTAT to create our portfolios. The return information for this study comes from the CRSP tapes, while the balance sheet information comes from COMPUSTAT. Firms in our sample have no missing trading data from August 1998 to March 2000. In order to match firms from COMPUSTAT and CRSP, we dropped all firms with exchange codes 4 through 10, since CRSP only has return information for firms trading on the NYSE, AMEX, and NASDAQ. We require the firms to have balance sheet information for both 1998 and 1999. Our final sample has 140 firms; the descriptive statistics are presented in Table 2.

We use returns data for the sample firms from January 1998 to December 2000 to estimate our models.

MACROECONOMIC VARIABLES

Data for the two macroeconomic variables that we use in our study are obtained from the Board of Governors of the Federal Reserve System.[7] For foreign exchange data, we use the Major Currencies Index.[8] The return is calculated using the following formula (from Wetmore and Brick, 1994; and Choi, Elyasiani, and Kopecky, 1992):

$$R_{f,t} = \frac{F_t - F_{t-1}}{F_{t-1}} \tag{10}$$

where F_t is the value of major currency index on date t. To be consistent with previous literature we use the one-year T-bill rate as a proxy for the interest rate (Kane and Unal, 1988; Flannery and James, 1984; and Wetmore and Brick, 1994). Interest rate returns are computed using the formula (Wetmore and Brick, 1994):

$$R_{\gamma,\,t} = \frac{R_t - R_{t-1}}{R_{t-1}} \tag{11}$$

where R_t is the yield at day t on one-year T-bill.

EMPIRICAL RESULTS

HYPOTHESIS ONE

The main advantage of using the Seemingly Unrelated Regression (SUR) methodology is the ability to do joint hypothesis testing. The following hypothesis tests are based on the estimation of Equation 1 (presented in Table 3). We use Equation 2 and Equation 3 to test Hypothesis 1.

First we test whether all thirteen events have a zero impact on the insurance industry (Equation 2). This hypothesis examines whether any event has an impact on the insurance industry. The null hypothesis is rejected at the 1 percent level (calculated value is 85.1).

Table 3 presents the SUR estimation results, average abnormal returns, and corresponding t-statistics for each of the thirteen events for the three portfolios. It also presents model parameter estimates for the market betas (current and lagged), the shift in market betas, the foreign exchange risk coefficient (δ), and the interest rate risk coefficient (κ). We find that current and lagged market betas are positive and significant at the 1 percent level for all three portfolios. The foreign exchange risk coefficient is significant for property/casualty insurance. The coefficient of β'_3 (the risk shift parameter) is negative and significant at the 1 percent level for all lines of insurance business. This implies that systematic risk reduced after the enactment of the FSMA.

Two events produce significant average abnormal returns (AR) for the life insurance industry. For the time when the draft bill was unveiled in the Senate (on February 17, 1999), life insurance has an AR return of 2.4 percent (significant at the 1 percent level). When Senator Phil Gramm (chairman of the Senate Banking Committee) agreed with the White House on the CRA provision (October 22, 1999), the AR is 1.4 percent and is significant at the 10 percent level.

Table 3. Estimation of Equation 1

The following table presents the estimation results of Equation 1:

$$R_{it} = \alpha_i + \alpha_i'D + \sum_{j=1}^{3} \beta_{ij} Rm_{t+j-3} + \sum_{j=1}^{3} \beta_{ij}' DRm_{t+j-3} + \delta_i Rt_t + \kappa_i Rf_t + \sum_{k=1}^{K} \gamma_{ik} D_{kt} + e_{it}$$

$$i = \{1, 2, 3\}$$

R_{it} is return on portfolio i on day t. Rm_t is return on market index at time t. α_i is the intercept coefficient for portfolio i. β_{i1}–β_{i3} are market risk coefficients for portfolio i. β'_{i1}–β'_{i3} captures the difference in the exposure to systematic market risk between pre-act and post-act for portfolio i, δ_i is foreign exchange risk coefficient for portfolio i, and κ_i is the interest rate risk coefficient for portfolio i. D_{kt} is a dummy variable that is equal to 1 in the event window of kth announcement and zero otherwise, while D is a dummy variable that is equal to 1 after the enactment of the regulation and zero otherwise. e_{it} are the random disturbances. In this model the coefficient of D_{kt} s—i.e., γs—estimates the AR over the event window. The table presents the average abnormal return and t-statistics for each of the thirteen events, as well as the model parameter estimates for the market betas (current and lag), foreign exchange risk coefficient, and interest rate risk coefficient.

Parameter	Life insurance estimate	t-stat	Property/casualty insurance estimate	t-stat	All other insurance estimate	t-stat
α	–0.027	–1.344	–0.047***	–2.986	–0.029	–1.591
α'	0.000	–0.186	0.002	1.261	0.000	0.234
β_1	–0.065	–1.104	–0.009	–0.200	–0.047	–0.885
β_2	0.177***	3.069	0.062	1.335	0.125**	2.386
β_3	1.119***	19.494	0.819***	17.727	0.699***	13.427
β'_1	0.045	0.548	–0.077	–1.157	–0.042	–0.558
β'_2	–0.288***	–3.509	–0.310***	–4.691	–0.229***	–3.086
β'_3	–0.544***	–6.637	–0.218***	–3.308	–0.234***	–3.142
δ	0.000	1.029	0.000***	2.841	0.000	1.392
κ	0.001	0.580	0.000	–0.184	0.000	0.225
γ_1	–0.001	–0.133	0.002	0.361	0.009	1.174
γ_2	0.001	0.138	0.001	0.162	–0.012	–1.535
γ_3	0.024***	2.837	0.013**	1.922	0.006	0.844
γ_4	0.001	0.156	0.000	0.068	0.007	0.931
γ_5	–0.006	–0.702	0.011*	1.624	0.010	1.336
γ_6	–0.001	–0.076	0.009	1.072	0.005	0.486
γ_7	0.003	0.288	0.013*	1.613	0.003	0.286
γ_8	0.008	0.752	0.000	0.058	0.001	0.108
γ_9	0.010	1.176	0.006	0.878	0.000	0.017
γ_{10}	0.014*	1.667	0.015**	2.201	0.011	1.416
γ_{11}	–0.009	–0.857	0.003	0.360	0.006	0.637
γ_{12}	0.012	1.123	0.021**	2.504	0.000	–0.025
γ_{13}	–0.006	–0.380	0.009	0.741	0.010	0.768
R^2	0.404		0.418		0.275	
N	38.000		89.000		42.000	

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

The portfolio of property/casualty insurance firms has significant stock price reactions on the same events as that of the life insurance firms. For the time when the draft bill was unveiled, the portfolio of life insurance firms has an AR of 1.3 percent (significant at the 5 percent level), and when Senator Gramm agreed with the White House on the CRA provision, the AR is 1.5 percent (significant at the 5 percent level). In addition, the property/casualty insurance industry has a significant stock market reaction on two other occasions. The first of these is when the Senate Banking Committee formally filed the Financial Services Modernization Bill in the Senate. For this occasion, the property/casualty portfolio has a 1.1 percent AR, significant at the 10 percent level. This insurance portfolio also has a 1.3 percent AR (significant at the 10 percent level) when the Senate passed the Senate version of the bill (S. 900), and when the Senate and the House passed the bill it has a 1.3 percent AR (significant at the 5 percent level). The portfolio of other insurance firms shows no significant impact for any single event.

HYPOTHESIS TWO

Table 4 presents the results from the estimation of Equation 4—the overall impact of the law (average impact of the law over the thirteen event windows). Property/casualty has an average AR[9] of 0.8 percent (significant at the 1 percent level), compared to 0.5 percent (significant at the 10 percent level) for life insurance. The portfolio of all other insurance firms has an average abnormal return of 0.4 percent (significant at the 10 percent level). We also perform a chi-squared test (Equation 5) to determine if the point estimates of average returns of any two industries are the same. These results are given in Table 5. The first null hypothesis, that the overall impact of the law is the same for the life and property/casualty insurance industries, is rejected at the 1 percent level. The results also indicate that the impact of the law is significantly different across the life insurance and all other insurance industries (significant at the 10 percent level), as well as across the property/casualty industry and all other insurance industries (significant at the 1 percent level). These results lend support to our second hypothesis.[10]

SPECIFICATION TEST

We use a Likelihood Ratio (LR) test, as suggested by Berndt and Savin (1977), to determine whether SUR estimates are more efficient than OLS estimates for our portfolio model.[11] The result of the specification test for our portfolio model shows that the null hypothesis $H{:}\theta = 0$ is rejected at the 1 percent level. This means that the variance-covariance matrix is non-

Table 4. Estimation of Overall Impact of the Law (Equation 4)

We estimated the following model to test for the overall impact of the law on each industry:

$$R_{it} = \alpha_i + \alpha_i'D + \sum_{j=1}^{3} \beta_{ij} Rm_{t+j-3} + \sum_{j=1}^{3} \beta_{ij}' DRm_{t+j-3} + \delta_i Rr_t + \kappa_i Rf_t + \gamma_i DG + e_{it}$$

R_{it} is return on portfolio i(=1,2,3) on day t. Rm_t is return on market index at time t. α_i is the intercept coefficient for portfolio i. β_{i1}-β_{i3} are market risk coefficient for portfolio i. β'_{i1}-β'_{i3} captures the difference in the exposure to systematic market risk between pre-act and post-act for portfolio i, δ_i is foreign exchange risk coefficient for portfolio i, and κ_i is the interest rate risk coefficient for portfolio i. D_{kt} is a dummy variable that is equal to 1 on the event windows and zero otherwise, while D is a dummy variable that is equal to 1 after the enactment of the regulation and zero otherwise. e_{it} are the random disturbances. In this model, the coefficient of DG s—i.e., γ_i—estimates the overall average abnormal return of the law for the ith portfolio.

	Life Insurance		Property/casualty insurance		All other insurance	
Parameter	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
α	–0.026	–1.297	–0.048***	–3.003	–0.031*	–1.706
α'	–0.001	–0.343	0.002	1.057	0.000	0.198
β_1	–0.074	–1.282	–0.019	–0.407	–0.046	–0.879
β_2	0.162***	2.821	0.056	1.219	0.123**	2.361
β_3	1.121***	19.489	0.821***	17.777	0.701***	13.480
β'_1	0.054	0.657	–0.068	–1.026	–0.043	–0.572
β'_2	–0.273***	–3.322	–0.304***	–4.610	–0.227***	–3.056
β'_3	–0.546***	–6.631	–0.220***	–3.333	–0.235***	–3.158
γ	0.005*	1.745	0.008***	3.598	0.004*	1.730
δ	0.000	0.904	0.001***	2.757	0.000	1.504
κ	0.001	0.805	0.000	0.101	0.000	0.256
R^2	0.394		0.411		0.268	
N	38		89		42	

***, **, and * denote significance at 1%, 5% ,and 10% levels, respectively.

Table 5. Test That No Two Industries Have Same Overall Impact from the Law

Column 2 of this table presents the Wald test that two industries have same overall impact from the law. The underlying distribution is a χ^2 with 2 degrees of freedom.

Hypothesis	$\chi^2(2)$
Overall impact of the law is same for life and property/casualty industry	13.119***
Overall impact of the law is same for life and all other industry	4.694*
Overall impact of the law is same for property/casualty and all other industry	12.942***

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

diagonal. Statistically, that means that SUR is the correct model to choose as opposed to the OLS.

HYPOTHESES THREE, FOUR, AND FIVE:

We estimate Equation 9 using the OLS method. The result of the estimation is presented in Table 6. The *t*-statistics are computed using the formulas suggested by MacKinnon and White (1985). As expected, the coefficient for the *SIZE* variable of the reference group (property/casualty insurance) is positive and significant at the 1 percent level. The difference in the coefficient estimates of the size variable for life insurance firms and other insurance firms from the reference group is insignificantly different from zero. Thus, we find that, consistent with the hypothesis, larger firms in the insurance industry, irrespective of the business line, gain from the FSMA.

Prior merger literature concludes that poorly performing firms become merger targets. Previous research also predicts that banking firms may benefit from mergers with life and property/casualty insurance. Thus, we expect that poorly performing firms, especially the ones in the life and property/casualty insurance business, will benefit more. The results in Table 6 show that the coefficient estimate of ROA for the reference group is negative and significant, and that the difference in the coefficient estimate for life insurance is insignificantly different from zero. These results are consistent with the hypothesis. We find, however, that the difference in the coefficient estimate for other insurance firms is positive and significant.

We expect that the merger opportunities will create diversification benefits that will reduce market risk for the firms in the insurance industry.

Table 6. Cross-Sectional Analysis of Wealth Effect on Each Firm in the Insurance Industry

The models are:

$$AR_i = \theta + \theta_{LIFE}LIFE + \theta_{OTHERS}OTHERS + \theta_{SIZE}SIZE + \theta_{SIZExLIFE}(SIZExLIFE)) + \theta_{SIZExOTHERS}(SIZExOTHERS) + \theta_{ROA}ROA + \theta_{ROAxLIFE}(ROAxLIFE) + \theta_{ROAxOTHERS}(ROAxOTHERS) + \theta_{RISK}RISK + \theta_{RISKxLIFE}(RISKxLIFE) + \theta_{RISKxOTHERS}(RISKxOTHERS) + \xi$$

Both models are estimated using OLS. Here AR_i is the abnormal return of firm *i*. ξ is the error term in the regression. θ is the intercept for property/casualty insurance firms; the difference in coefficient estimate of intercept for life insurance firms with property/casualty insurance firms is θ_{LIFE} and for other insurance firms with property/casualty insurance firms is θ_{OTHERS}. *SIZE* variable is calculated by taking the book value of total assets. *ROA* is a profitability indicator. *RISK* is the change in exposure to systematic risk, which we estimate using Equation 4 (β'_{i3}). θ_{SIZE} is the coefficient estimate of *SIZE* for property/casualty insurance, while $\theta_{SIZExLIFE}$ is the difference in coefficient estimate of *SIZE* variable for life insurance firms with property/casualty insurance and $\theta_{SIZExOTHERS}$ is the difference in coefficient estimate of *SIZE* variable for other insurance firms with property/casualty insurance. The coefficient estimates for *ROA* and *SHIFT* are defined likewise.

Parameter	Estimate	*t*-statistic
θ	–0.257**	–2.185
θ_{LIFE}	0.175	0.767
θ_{OTHERS}	0.096	0.541
θ_{SIZE}	0.049***	3.590
$\theta_{SIZE\ x\ LIFE}$	–0.024	–0.983
$\theta_{SIZE\ x\ OTHERS}$	–0.022	–0.947
θ_{ROA}	–0.003***	–6.070
$\theta_{ROA\ x\ LIFE}$	0.010	1.029
$\theta_{ROA\ x\ OTHERS}$	0.009***	4.115
θ_{RISK}	–0.140**	–1.997
$\theta_{RISK\ x\ LIFE}$	0.463**	2.038
$\theta_{RISK\ x\ OTHERS}$	0.055	0.465
R^2	0.320	
F	5.306***	

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

In addition, the FSMA also reduces risk by providing safeguards against excessive risk-taking. For both of these reasons, we expect that risk reduction will account for a part of the wealth effect. We find that for the reference group the coefficient estimate for risk is negative and significant, but that for firms in life insurance the difference in the coefficient estimate is positive and significant. For all other insurance firms, the difference in the estimate is insignificant. So shareholders of property/casualty insurance as well as other insurance firms (except life insurance firms) benefit from the diversification and new measures included in FSMA that safeguard against excessive risk-taking.

CONCLUSION

The FSMA allowed insurance companies to merger with banks for the first time, and also cross-sell some banking products. Banks were mandated to cross-sell some insurance products by the OCC regulations of 1985 and 1990. Thus, the FSMA gives us a unique opportunity to examine whether the wealth effects of firms in the insurance industry can be explained by merger motivation.

Our sample includes 140 firms. Unlike most of the previous studies on the FSMA, we treat life insurance, property/casualty insurance, and all other insurance as separate industries. We analyze 13 different announcements leading to the FSMA. To estimate the wealth effects from those announcements we utilize SUR methodology. We also employ cross-sectional analysis to investigate the merger-related hypothesis.

Consistent with previous studies, we find that the FSMA creates a significant wealth effect for firms in the insurance industry. The wealth effect varies across the business line in the industry. As predicted by inter-industry merger literature, we find that property/casualty and life insurance have statistically higher wealth effects than other insurers. We also find that cross-industry merger opportunities and regulatory changes also reduce the systematic risk of firms in the insurance industry. Merger literature predicts that size and firms' performance can explain the cross-sectional variation of wealth effect. Consistent with merger literature, we find strong evidence that large firms, irrespective of business lines, gain from the passage of this law. We also find that poorly performing firms in both the property/casualty and life insurance industries gain from the deregulation.

This study predicts more cross-industry mergers, like that of Citicorp and Travelers, between banks and insurers as a result of the FSMA. The results of this study are limited to the events analyzed. Whether the predictions of this study are valid is an empirical question that demands further study.

NOTES

[1] The Office of the Comptroller of the Currency (OCC) allowed banks entry into the insurance market. It granted national banks the right to sell fixed-rate annuities in 1985 and variable-rate annuities in 1990.

[2] By March 1997 commercial banks could earn up to 25 percent of a subsidiary's revenue from bank "ineligible"securities activity.

[3] Houston and Ryngaert (1994) find that target firms typically sell at a premium and acquiring firms sell at discounts.

[4] The presence of banking firms in the insurance business before the passage of the FSMA is also very strong. For example, Wells Fargo runs the seventh-largest insurance agency in the U.S., and 50 percent to 65 percent (depending on the method of calculation) of all banking organizations sell insurance products of one kind or another (LaRocco, 1999).

[5] Lagged values of market return are used to overcome the effects of nonsynchronous trading in the sample.

[6] *DG* is 1 for any of the event windows and 0 otherwise.

[7] All the information is available online from www.federalreserve.gov.

[8] The major currencies index is a weighted average of the foreign exchange values of the U.S. dollar against a subset of currencies in the broad index that circulates widely outside the country of issue. The weights are derived from those in the broad index.

[9] We call it an average abnormal return because it is a cumulative abnormal return over the thirteen events over the number of days in the event window (e.g., a three-day event window over thirteen events is the cumulative abnormal return over thirty-nine days). We also estimate this model for a two-day [–1,0] event window and the results remain similar.

[10] We also estimate the same model using data from January 1998 to December 2000, perform the same χ^2 test based on the estimation, and reach the same conclusion.

[11] This test determines whether the off-diagonal elements of the *variance covariance matrix (S)* of error terms are zero. Excluding the diagonal elements, there are *1/2m*(m–1)* unknown parameters in *S* that can be arranged in a vector, θ. Here *m* is the number of equations. The null hypothesis is: $H_0{:}\theta = 0$

This test is based on the following statistic: $\lambda_{LR} = T\left[\sum_{i-1}^{m} log\,\hat{\sigma}_i^2 - log\left|\hat{\Sigma}\right|\right]$

where $\hat{\sigma}_i^2$ is $(e_i{}'e_i)/T)$ from the individual least squares regression and $\hat{\Sigma}$ is the maximum likelihood estimator of Σ. This statistic has a limiting χ^2 distribution with *1/2m*(m – 1)* degrees of freedom under the null hypothesis.

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