The Market Impact of the Financial Services Modernization Act of 1999: Differences Between Life Insurers and Property-Liability Insurers

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Abstract: Recent research has examined the effect of the passage of the Financial Services Modernization Act of 1999, more commonly known as the Gramm-Leach-Bliley Act, on the market value of insurers, commercial banks, securities firms, thrifts, and finance companies. This study differs from previous research in that it examines life insurers and property-liability insurers as separate industries rather than treating them as a single industry. This study also analyzes trading volume in addition to share price reactions. Finally, this study features two variables in a cross-sectional analysis of insurer stock returns not considered in prior research.

Using a generalized least squares portfolio approach and Corrado’s rank statistic, we find significant share price reactions to certain legislative announcements surrounding the passage of the GLB. Trading volume reactions corroborate the significant share price reactions. Our results indicate that life insurers and property-liability insurers reacted differently to enactment of the GLB. Smaller life insurers with high liquidity and high leverage had the most positive (or least negative) share price reactions of all insurers.

INTRODUCTION

The enactment of the Financial Services Modernization Act of 1999 (FSMA), also known as the Gramm-Leach-Bliley Act (GLB), reduced the barriers between insurance, commercial banking, and investment banking. These barriers originated with the National Bank Act of 1938.
(referred to as Glass-Steagall), and were a consequence of the Great Depression. Glass-Steagall segmented the financial industry and led to the development of separate and unique insurance, banking, and investment sectors. Additional legislation enacted after Glass-Steagall—namely, the McCarran-Ferguson Act, the Bank Holding Company Act of 1956, and the Garn–St. Germain Act—created an awkward system of regulation among the sectors. The regulatory barriers restricting financial integration have been challenged in the courts and in the legislature for much of the past two decades. The 105th Congress nearly succeeded in repealing Glass-Steagall in 1998 when the House narrowly passed HR 10; however, the Senate was unable to negotiate a compromise before the session ended. In the following year, both the House and Senate were able to reach an agreement and pass the GLB.

The GLB allows the creation of financial holding companies that can underwrite and sell both insurance and securities, engage in commercial and merchant banking, and develop real estate through subsidiaries. The new law also provides for expedited review of conflicts between state and federal regulators regarding insurance issues. States, however, remain as the functional regulators of insurance activities.

We report the results of an analysis of the market impact of the GLB on insurers. There are compelling reasons to undertake a study of the market impact of the GLB. First, the GLB provides an environment for comprehensive financial services integration that has not existed since Glass-Steagall was enacted. It is important for regulators, investors, insurers, and academics to have information regarding the changes in market values and trading volumes of life and property-liability insurers during the enactment of the GLB. The enactment of the GLB allows an analysis of investors' evaluations concerning scale economies, information sharing powers, and risk reduction through diversification for life and property-liability insurers. Second, our study focuses on insurers and analyzes factors not considered by other researchers. Most significantly, this study examines life insurers and property-liability insurers as separate industries. Existing studies aggregate the two types of insurers into one industry group. Our results indicate that the two insurer groups reacted differently to the passage of the GLB.

This study identifies eight key events, starting with the reintroduction of HR 10 in October 1998 and ending with the disclosure that President Clinton would sign the legislation in November 1999. The dates and a description of the events are provided in Table 1. We find significant negative share price reactions for insurers as a group to three key events leading up to the enactment of the GLB. Moreover, for some of these events, we document significantly different market reactions for life insurers.
Table 1. Financial Services Modernization Act Legislative Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D₁</td>
<td>Oct. 26, 1998 (Mon)</td>
<td>Several House Republicans, led by James Leach, re-introduced HR10, last weekend, in the 106th Congress (which starts in 1/99). HR10 is a financial services modernization bill. An array of leading financial services firms signed a joint statement promising to work together for enactment (National Underwriter).</td>
</tr>
<tr>
<td>D₂</td>
<td>April 26, 1999 (Mon)</td>
<td>The NAIC indicated that it opposes the House Banking Committee version of HR10 as hostile to the nation’s insurance consumers. Serious flaws the NAIC wants corrected are: (1) HR10 flatly prohibits states from regulating the insurance activities of banks except for certain sales practices; (2) HR10 totally eliminates state consumer protection powers; (3) HR10 prohibits states from doing anything that might prevent banks from affiliating with traditional insurers or engaging in insurance activities other than sales; (4) HR10 uses an “adverse impact test” to determine if state laws are preempted because they discriminate against banks; and (5) HR10 does not guarantee that state regulators will always have equal standing in federal court in disputes with federal regulators (PR Newswire).</td>
</tr>
<tr>
<td>D₃</td>
<td>May 6, 1999 (Thurs)</td>
<td>The Senate passed Senator Gramm’s financial services modernization bill after defeating two amendments that would have addressed concerns of President Clinton. One amendment would have allowed bank holding companies to engage in insurance underwriting. The second amendment would have strengthened Community Reinvestment Act evaluations. The measure passed on a 54–44 vote and was supported by all three financial services industries (The Houston Chronicle).</td>
</tr>
<tr>
<td>D₄</td>
<td>July 1, 1999 (Thurs)</td>
<td>The House passed HR10—a financial services modernization bill. HR10 is now headed for a House–Senate conference committee, so differences between the two bills can be worked out. Various parties in the banking and insurance industries are voicing concerns over HR10. The NAIC blasted HR10 saying it would leave insurance consumers without protection (National Underwriter).</td>
</tr>
<tr>
<td>D₅</td>
<td>Oct. 13, 1999 (Wed)</td>
<td>Republican House and Senate committee chairmen hammered out a compromise version of financial services reform but the White House said the proposed legislation inadequately protected consumers and would result in a presidential veto. Democrats criticized the bill for what they said are inadequate protections for consumer privacy. The issue many congressional aides and lobbyists say is most contentious is whether the Federal Reserve or Treasury will be the top bank regulator (The Washington Post).</td>
</tr>
<tr>
<td>D₆</td>
<td>Oct. 23, 1999 (Sat)</td>
<td>A deal crafted in the predawn hours yesterday between the White House and Congress appears solid enough to ensure that a landmark bill to overhaul banking law will pass both the House and Senate and be signed into law by President Clinton within two weeks. The legislation is a compromise version of bills that earlier this year passed the House and Senate. The bill repeals the Glass-Steagall Act and a 1956 law that separates commercial banking from insurers. The legislation allows the Federal Reserve and Treasury to split oversight over banks entering new financial activities (The Washington Post).</td>
</tr>
<tr>
<td>D₈</td>
<td>Nov. 11, 1999 (Thurs)</td>
<td>President Clinton will sign the Financial Services Modernization Act of 1999 on Friday, November 12 (U.S. Newswire).</td>
</tr>
</tbody>
</table>
versus property-liability insurers. On the date of a key legislative compromise, we find significant positive share price reaction for both insurer groups. Significant share price reactions were corroborated by abnormal rises in trading volume on the four key event dates. In a cross-sectional analysis, we document varying relationships between firm size, liquidity, leverage, risk, and insurer type.

In the next section we outline the history leading up to passage of the GLB. A literature review is followed by the study’s hypotheses and a description of our sample and methodology. We then discuss the results and close with a conclusion.

**HISTORICAL OVERVIEW**

In 1916, Congressional passage of the National Banking Act prohibited national banks from selling insurance in any location where the population exceeded 5,000 inhabitants. Further separation between banking and insurance followed the passage of Glass-Steagall in 1938. The Bank Holding Company Act of 1956 limited bank holding companies to ownership of bank-related businesses, but failed to answer the question of whether insurance was “incidental” to banking. In 1968, the Fifth Circuit Court of Appeals held that insurance was not “incidental” to banking but banks were allowed to sell credit life, title, and mortgage insurance (Hendershott, Lee, and Tompkins, 2002). In 1982, enactment of the Garn–St. Germain Act yielded additional exceptions to the prohibition of banks’ engaging in insurance activities.

During the early to mid-1990s, commercial banks made further inroads into insurance through favorable court rulings. For example, the U.S. Supreme Court decision in *Nations Bank v. Variable Annuity Life Insurance* allowed commercial banks to underwrite and sell annuities. A year later, in *Barnett Bank of Marion County v. Nelson,* the U.S. Supreme Court limited the ability of states to restrict bank sales of insurance products and empowered the Office of the Comptroller of the Currency (OCC) to expand bank powers. This latter ruling added to the momentum to repeal Glass-Steagall barriers and create “financial supermarkets” to provide banking, insurance, and securities products to consumers and businesses.

Another event that propelled the movement to dismantle Glass-Steagall was the 1998 Citicorp–Travelers Group merger. Although the resulting entity, Citigroup, was required by the Federal Reserve to divest insurance underwriting and other subsidiaries, many commentators regard the merger as having been completed in anticipation of financial services modernization legislation.
After numerous failed attempts to repeal Glass-Steagall, the 105th Congress nearly succeeded in 1998. Legislation narrowly passed the House, but the Senate was unable to negotiate a compromise and failed to pass a bill before the session ended. Our study begins with the introduction of financial services modernization legislation in the 106th Congress.

**LITERATURE REVIEW**

Previous research indicates that new regulation has an impact on the value of financial services firms, including insurers. Cornett and Tehranian (1989) find that the passage of the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) of 1980 had positive wealth effects for large commercial banks and a negative impact on savings and loans. Carow and Heron (1998) find that the passage of the Interstate Banking and Branch Efficiency Act (IBBEA) of 1994 resulted in positive wealth effects for large bank holding companies. Amoako-Adu and Smith (1995) document that financial services deregulation in Canada between 1984 and 1991 had a positive impact on insurance firms. Pacini and Marlett (2001) find that the legislative creation of the Florida Hurricane Catastrophe Fund had negative wealth effects for property-liability insurers.

Research also reveals that new laws have asymmetric effects across different types of firms. Allen and Wilhelm (1988) find positive wealth effects for banks in the Federal Reserve System around passage of the DIDMCA and negative wealth effects for banks and thrifts that are not in the system. Liang, Mohanty, and Song (1996) find that well-capitalized banks benefit from the Federal Deposit Insurance Corporation Improvement Act, but undercapitalized banks have negative abnormal returns. Brook, Hendershott, and Lee (1998) find that likely takeover targets earned larger returns around the passage of the IBBEA. Pacini and Marlett (2001) report that property-liability insurers with greater Florida hurricane exposure had more positive returns around creation of the Florida Hurricane Catastrophe Fund.

Asymmetric effects also exist among different types of firms relative to the passage of the GLB. Hendershott, Lee, and Tompkins (2002) find that large banks, insurers, and investment banks had the most positive returns in response to certain GLB event disclosures. Akhigbe and Whyte (2001) report the same findings for large banks but find insignificant results for large insurers and brokerage firms. Carow and Heron (2002) report different share price reactions to the GLB among finance companies, investment banks, commercial banks, thrifts, and insurers. However, existing event
studies involving the GLB do not separate life insurers from property-liability insurers.

Extant research supports the proposition that life insurers and property-liability insurers may have asymmetric reactions to the same event(s). Carow (2001a) finds that property-liability insurers had less negative market reactions than life insurers to three U.S. Supreme Court rulings allowing banks to sell annuities and other insurance products. Carow (2001b) shows that life insurers had positive share price reactions to the Citicorp–Travelers Group merger while returns of property-liability insurers were not significantly different from zero. Such a finding is consistent with Saunders and Walter (1994), who claim that greater synergistic gains are available for combinations of banks and life insurers than for combinations of banks and property-liability insurers. Also, life insurers, with their limited underwriting risk and wider variety of products, would be more attractive targets for banks than other types of insurers (Johnston and Madura, 2000).

New regulation affects not only firm share prices but also trading volume. Trading volume reflects changes in the expectations of individual investors, while price reflects changes in the expectations of the market as a whole (Karpoff, 1986). Since public disclosures, including regulatory ones, convey relevant information about a firm, they will cause investors to revise their expectations about those attributes (Lobo and Tung, 1997). Investors’ belief revisions should be more diverse around public announcements of unanticipated information (Kim and Verrechia, 1991). Trading volume should increase at the time of announcement of unanticipated information (Bamber, Barron, and Stober, 1999). Tkac (1999) supports this finding by reporting a link between increased trading volume and the information content of events such as earnings announcements, dividend policy changes, additions to the Standard & Poor’s Index, and corporate control events.

These studies suggest that the GLB’s passage likely had an impact on insurers and the impact may have been different for life and property-liability insurers. We rely on these studies to formulate hypotheses regarding the impact of the GLB on the share price and trading volume reactions of life and property-liability insurers.

**IMPLICATIONS OF THE GLB FOR INSURERS**

The stated purpose of the GLB is to “enhance competition in the financial services industry by providing a prudential framework for the affiliation of banks, securities firms, and other financial services providers, and for other purposes.” If diversification and synergies from selling
different financial service products represent a benefit to insurers, then insurance firm equity values should increase. Insurers that are better positioned to capture scale economies and risk reduction through diversification from entering new markets should also benefit from the GLB.

However, if the law increases regulatory scrutiny and adds costs to comply with cumbersome requirements, stock prices for less competitive insurers should decrease. Although banks had already gained partial entry into insurance, the GLB increased the threat of additional competition from the removal of protective regulatory barriers. On the other hand, the GLB now permits insurers to enter commercial banking. Thus, it is unclear whether insurers would experience expected net gains or losses in profits and cash flows from passage of the GLB. This leads to the first hypothesis, stated in the null:

H1: The abnormal returns of insurers during the legislative enactment process of the GLB were not significantly different from zero.

We also examine trading volume reaction to provide additional evidence from which to draw inferences. Since unanticipated disclosures concerning regulatory changes often convey relevant information about a firm, they may lead investors to revise their expectations, and trading volume should increase. This suggests the second hypothesis, stated in the null:

H2: The trading volume of insurers on legislative announcement days involving the GLB was not significantly different from trading volume on non-announcement days.

Although previous research suggests asymmetric share price reactions to passage of the GLB among different types of financial service firms, that research does not separate life insurers from property-liability insurers. Life insurers, which already hold policyowners’ assets in the form of cash values of policies, should be better positioned to manage other financial assets of customers. Alternatively, GLB may be viewed as providing an opportunity for property-liability insurers to gain control over additional assets and to compete in markets that were previously unavailable to them. Although various empirical studies suggest that life insurers may react differently than property-liability insurers to enactment of the GLB, it is not clear which type of insurer may have the advantage in the minds of investors. This reasoning suggests the third hypothesis, stated in the null:

H3: The abnormal returns of life insurers were not significantly different from those of property-liability insurers on GLB announcement days.
New laws may have different effects on insurers depending on their firm-specific characteristics. Asymmetrical effects may be identified by separating insurers on the basis of various operating characteristics such as size, liquidity, leverage, and risk. To examine any asymmetrical effects of the GLB, we test the following hypothesis, stated in the null:

H4: The GLB legislative enactment process had no differential effect on the abnormal returns of insurers possessing different firm-specific characteristics.

**METHODOLOGY**

**Sample Selection**

We collected our sample of publicly traded property-liability and life insurers by first identifying all firms in the Research Insight file that have SIC Codes of 6311, 6321, 6331, and 6351. We selected from this initial sample of 213 firms only those insurers that are both listed in the 1999 edition of Best’s Insurance Reports—Property/Casualty or Best’s Insurance Reports—Life and have requisite data on Research Insight. Next, insurers were excluded from the sample if firm daily stock return data were not available on the University of Chicago’s Center for Research on Security Prices (CRSP) database for all 476 trading days covered by this study.

The last step entailed searching the Lexis-Nexis Academic Universe database for confounding events on days –1, 0, and +1 related to any of the eight legislative events noted in Table 1. Any firm with a confounding event was eliminated from the sample (in this case, 50 firms) (Cornett and Tehranian, 1990). Earnings announcements, acquisitions, tender offers, bankruptcy filings, and income-tax-related events were those included as potential confounding events (Thompson, Olson, and Dietrich, 1987). The final sample of 107 publicly traded insurers consists of 69 property-liability insurers and 38 life insurers. Panels A and B of Table 2 provide a summary of sample information.

**Hypothesis One**

We employ two methodologies to measure share price reactions associated with GLB legislative event disclosures: a generalized least squares (GLS) portfolio approach and a nonparametric technique, Corrado’s rank statistic (Corrado, 1989). Since sample firms share common event dates and constitute only two industries, their stock returns may be subject to cross-sectional correlation (Bernard, 1987). GLS and Corrado’s rank statistic are
Table 2. Sample Analysis

Panel A. Sample Breakdown

Property-liability and life insurers on Research Insight 213
less: Insurers without complete financial data (39)
less: Insurers with CRSP data unavailable (17)
less: Insurers with confounding events (50)
Final sample size 107
Life insurer subsample 38
P&L insurer subsample 69

Panel B. Sample Firms by Stock Exchange

<table>
<thead>
<tr>
<th>Exchange</th>
<th>NYSE</th>
<th>AMEX</th>
<th>NASDAQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>58</td>
<td>4</td>
<td>45</td>
</tr>
</tbody>
</table>

Panel C. Descriptive Statistics for Cross-Sectional Independent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Entire sample</th>
<th>Life</th>
<th>P&amp;L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (SIZE)</td>
<td>$3,707,542</td>
<td>$2,671,111</td>
<td>$4,262,252</td>
</tr>
<tr>
<td>(in thousands of $)</td>
<td>$566,163</td>
<td>$680,508</td>
<td>$483,581</td>
</tr>
<tr>
<td></td>
<td>$7,661 to 86,297,040</td>
<td>$7,661 to 16,751,990</td>
<td>$25,656 to 86,297,040</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liquidity (LIQ)</th>
<th>Entire sample</th>
<th>Life</th>
<th>P&amp;L</th>
</tr>
</thead>
<tbody>
<tr>
<td>(cash flow from operations to total assets ratio)</td>
<td>.025</td>
<td>.013</td>
<td>.032</td>
</tr>
<tr>
<td></td>
<td>.023</td>
<td>.015</td>
<td>.029</td>
</tr>
<tr>
<td></td>
<td>-.249 to .163</td>
<td>-.179 to .084</td>
<td>-.249 to .163</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leverage (LEV)</th>
<th>Entire sample</th>
<th>Life</th>
<th>P&amp;L</th>
</tr>
</thead>
<tbody>
<tr>
<td>(premiums-written-to-surplus ratio)</td>
<td>.762</td>
<td>.883</td>
<td>.697</td>
</tr>
<tr>
<td></td>
<td>.742</td>
<td>.906</td>
<td>.707</td>
</tr>
<tr>
<td></td>
<td>.47 to .983</td>
<td>.58 to .983</td>
<td>.47 to .957</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk (RISK)</th>
<th>Entire sample</th>
<th>Life</th>
<th>P&amp;L</th>
</tr>
</thead>
<tbody>
<tr>
<td>(variance of abnormal returns)</td>
<td>.000805</td>
<td>.001030</td>
<td>.000684</td>
</tr>
<tr>
<td></td>
<td>.000496</td>
<td>.000622</td>
<td>.000479</td>
</tr>
<tr>
<td></td>
<td>.000128 to .009078</td>
<td>.000169 to .009078</td>
<td>.000128 to .003533</td>
</tr>
</tbody>
</table>
both robust to cross-sectional dependence (Bernard, 1987; Corrado and Zivney, 1992).

Following Baber, Kumar, and Verghese (1995) and Pacini and Marlett (2001), we employ a GLS portfolio approach that involves an expanded version of the market model with a zero-one dummy variable appended to reflect the occurrence or non-occurrence of each event:

\[
R_{pt} = \beta_0 + \beta_1 R_{mt} + \beta_2 INS_t + \sum_{j=1}^{n} \gamma_j D_{jt} + e_t
\]

where:
\( R_{pt} \) = the equally weighted portfolio return for day \( t \);
\( R_{mt} \) = the market return for day \( t \), computed as the return for an equally weighted portfolio of NYSE, AMEX, and NASDAQ stocks;
\( INS_t \) = a dummy variable coded 1 if the firm is a life insurer, 0 otherwise;
\( D_{jt} \) assumes the value 1 for day \( t \) if it is the \( j \)th event day and 0 otherwise;
\( \beta_0, \beta_1, \beta_2, \) and \( \gamma_j \) are parameters to be estimated; and \( e_t \) is a disturbance term.

The test for hypothesis one focuses on dummy variable \( D_{jt} \), which distinguishes days when each of the legislative event disclosures occur. We set the dummy variable \( D_{jt} \) equal to one for the announcement day(s) and the preceding day (Cornett and Tehranian, 1990; Burton, Lonie, and Power, 1999; and Grammatikos and Yourougou, 1990). This allows the model to capture significant changes in market expectations across the various two-day event windows. The parameters represented by \( \gamma_j \) are estimates of average abnormal portfolio returns. The forecast error of each \( \gamma_j \) considers the contemporaneous correlation between the residuals (Henderson, 1990).

For several compelling reasons, we also utilize a nonparametric technique (Corrado’s rank statistic) in lieu of the traditional parametric t-statistic. First, normality of abnormal returns is a key assumption in event studies (Brown and Warner, 1985; Campbell and Wasley, 1993). A series of abnormal return distributions were tested for normality and found to be non-normal. Second, cross-sectional dependence exists because all sample firms share common event dates and the sample contains only two industries (Bernard, 1987; Corrado, 1989). Third, some stocks listed on the AMEX and NASDAQ tend to be thinly traded; thin trading may cause parametric t-tests to be misspecified (Maynes and Rumsey, 1993). NASDAQ stocks are the most susceptible to this problem and they comprise over 40 percent of this study’s sample. Fourth, parametric t-tests on abnormal or standard-
ized abnormal returns are vulnerable to misspecification caused by an increase in the variance of event-day abnormal return distributions (Corrado, 1989; Boehmer, Musumeci, and Poulsen, 1991). In sum, we conclude that the assumptions required for the use of traditional parametric tests are sufficiently violated to preclude their use.

In the application of Corrado’s rank statistic, each sample firm’s series of abnormal returns is transformed into ranks (from 1 to 476). Ranks are then standardized to prevent Corrado’s rank statistic from being misspecified in the presence of missing returns and to serve as a cross-sectional variance adjustment to improve specification in tests for abnormal performance (Corrado and Zivney, 1992). Corrado’s rank statistic has the power and specification of the Wilcoxon two-sample rank test (Corrado, 1989).

Hypothesis Two

Unlike measuring abnormal returns, there is no generally accepted method of measuring unexpected trading volume (Bamber, Barron, and Stofer, 1999). Current accounting and finance literature includes many different measures of trading volume (Tkac, 1999). Consistent with Bamber, Barron, and Stofer (1999) and Lobo and Tung (1997), we use the percentage of a firm’s outstanding shares traded on a given day in our analysis of trading volume. Abnormal volume for combined days –1 and 0 for each of the eight event disclosures is computed as the deviation of an insurer’s event-day volume from its mean daily volume for nonannouncement days (Lobo and Tung, 1997). We use one-tail t-tests to assess whether daily abnormal volume on days –1 and 0 for each event is significantly different from that on nonannouncement days (Lobo and Tung, 1997).

Hypothesis Three

The test for hypothesis three involves a comparison of the share price reactions of life insurers and property-liability insurers to the eight legislative event disclosures. We perform a t-test on the differences in the test statistics (or parameter γ estimates) obtained for life and property-liability insurers using the GLS portfolio approach. Parameter γ estimates represent average abnormal portfolio returns.

Hypothesis Four

McWilliams and Siegel (1997) advise researchers using event study analysis to follow-up tests of significance of share price reactions with a cross-sectional regression analysis of abnormal returns on the hypothesized predictors. We use a GLS rank regression model to test whether stock returns are related to certain firm-specific characteristics: size, liquidity,
leverage, and risk. Descriptive data on these four variables are contained in Panel C, Table 2.

**Size.** Research is inconsistent regarding the relation between insurer size and the likely benefit from the passage of the GLB. Large insurers may benefit if consolidation, due to deregulation, results in increased market power or leads to improved economies of scale (Kane, 2000). It appears that the advantages a large diversified insurance firm may enjoy may be offset by the increased costs of operating a more complex organization (Schellhorn and Scordis, 2002). Other studies suggest that smaller insurers may benefit more from the passage of the GLB. Various studies show that the majority of gains from acquisitions accrue to the shareholders of target firms (Jarrell, Brickley, and Netter, 1988; Jensen and Ruback, 1983) and smaller insurers are more likely takeover targets than larger insurers (Stevens, 1973; Cummins, Tennyson, and Weiss, 1999). Moreover, Katrishen and Scordis (1998) and Cummins, Tennyson, and Weiss (1999) found scale economies and efficiency gains primarily for small insurers. Given these conflicting arguments and varying results, we do not predict the direction of the relationship between insurer size and abnormal returns.

**Liquidity.** Liquidity (cash flow from operations to total assets ratio) measures an insurer’s ability to meet its anticipated short- and long-term obligations to policyholders and other creditors. A low level of liquidity may be an early warning indicator of financial difficulties. An insurer with a lower level of liquidity would be a less desirable takeover target than an insurer with a higher level of liquidity. Moreover, an insurer with less liquidity would be less able to take advantage of opportunities to enter new markets (i.e., begin depository and lending operations), make acquisitions, and capture scale economies. Liquidity increases the probability that an insurer will be able to undertake positive net present value projects (e.g., acquire other financial institutions) when they arise. In sum, we anticipate a positive relationship between liquidity and stock returns.

**Leverage.** Leverage (premiums-written–to–surplus ratio) measures the exposure of a company’s surplus to various operating and financial practices. A conservative, or lower, ratio enables an insurer to better withstand unexpected losses and fluctuating investment returns or losses. Insurers with a higher ratio should benefit more from additional contributed capital potentially provided by an acquiring institution. Cummins, Tennyson, and Weiss (1999) find that financially vulnerable life insurers (e.g., those with higher leverage) are more likely to become acquisition targets. Akhigbe and Whyte (2001), however, did not find leverage (proxied by the equity-to-assets ratio) to be significant in explaining insurer reaction to GLB event disclosures. Although prior empirical results are
mixed regarding a relationship, we predict, based on theory, a positive relationship between leverage and abnormal returns.

Risk. Insurers face numerous and varied risks. Total firm risk may be separated into numerous components: (1) the risk that premiums may be insufficient to cover future claims (pricing risk); (2) the risk of financial instability associated with high leverage (leverage risk); (3) the risk associated with the sensitivity of certain assets to interest rate changes (interest rate risk); (4) the risk from excess geographic, industry, or line concentration (concentration risk); (5) the risk that a reinsurer may be financially unsound (reinsurer risk); (6) the risk associated with the covariance of the firm’s cash flows with that of a market portfolio (systematic risk); and (7) the risk associated with poor or fraudulent management (management risk) (Borde, Chambliss, and Madura, 1994). We proxy total risk with the variance of abnormal returns, a market measure that captures many facets of uncertainty and is less subject to manipulation (Borde, Chambliss, and Madura, 1994). Panel C, Table 2 indicates that both the mean and median levels of the total risk metric are higher for life insurers.

Passage of the GLB represents both new opportunities and risks for insurers. One possibility is an increased likelihood of being a takeover target of a bank, especially for life insurers (Carow and Heron, 2002). A targeted higher-risk insurer would benefit more than a lower-risk insurer because of improved credit standing (Carow, 2001b). Another possibility of financial services integration is risk reduction through diversification (Schellhorn and Scordis, 2002). In this regard, Boyd and Graham (1988) and Lown et al. (2000) find that mergers of bank holding companies (BHCs) and life insurers lower risk, but mergers of BHCs and property-liability insurers raise risk. Thus, we anticipate a positive relationship between abnormal returns and insurer risk, especially for life insurers.

We derive the following GLS cross-sectional rank regression model:

\[ \text{CARR}_i = b_0 + b_1 \text{SIZE}_i + b_2 \text{LIQ}_i + b_3 \text{LEV}_i + b_4 \text{RISK}_i + e_i \quad (2) \]

where:
- \( \text{CARR}_i \) = cumulative abnormal return ranks for firm \( i \) for respective event days;
- \( \text{SIZE}_i \) = the standardized rank of firm \( i \)’s market value of equity as of 10/26/98 (event day for announcement \( D_1 \));
- \( \text{LIQ}_i \) = the standardized rank of firm \( i \)’s ratio of cash flow from operations to total assets;
- \( \text{LEV}_i \) = the standardized rank of firm \( i \)’s net premiums-written-to-surplus ratio for 1998;
RISK\textsubscript{i} = the standardized rank of firm i’s variance of abnormal returns (Borde, Chambliss, and Madura, 1994) for the 476-day sample period; and
\[ e_i = \text{error term}. \]

**EMPIRICAL RESULTS**

**Hypotheses One and Two Results**

Table 3 summarizes the results for the GLS portfolio approach and Corrado’s rank statistic for share price reactions and trading volume reactions. Events D1, D2, and D8 produced significant negative abnormal returns under both statistical techniques. Event D6 generated significant positive share price reactions under both approaches. Trading volume results corroborate the inferences drawn from the analysis of abnormal returns.

The introduction of HR 10 on October 26, 1998 (D1) generated significant negative share price reactions for the entire sample (GLS, \( t = -3.25 \), \( p < .01 \); Corrado, \( t = -2.81 \), \( p < .01 \)). The significant share price reaction is supported by the significant trading volume for event D1 (\( t = 2.83 \), \( p < .01 \)). The announcement that the NAIC opposed HR 10 in April 1999 (D2) is associated with significant negative insurer abnormal returns (GLS, \( t = -1.83 \), \( p = .034 \); Corrado, \( t = -2.19 \), \( p = .015 \)). The share price reaction is corroborated by the significant rise in trading volume (\( t = 1.64 \), \( p = .055 \)). Both the GLS portfolio approach (\( t = 4.91 \), \( p < .01 \)) and Corrado’s rank statistic (\( t = 2.26 \), \( p = .012 \)) indicate positive shareholder reaction to D6. These results are consistent with Carow and Heron (2002), Hendershott, Lee, and Tompkins (2002), and Akhigbe and Whyte (2001). The significant rise in trading volume (\( t = 2.98 \), \( p < .01 \)) confirms that investors realigned their portfolios in response to D6, the event indicating that passage of the bill was all but assured. The GLS portfolio approach (\( t = -2.73 \), \( p < .01 \)) and Corrado’s rank statistic (\( t = -1.97 \), \( p = .024 \)) indicate negative shareholder reaction to the announcement that President Clinton would sign the GLB (D8). These results are inconsistent with those reported by Akhigbe and Whyte (2001), Hendershott, Lee, and Tompkins (2002), and Carow and Heron (2002). The difference in findings may be explained by the fact that the D8 event date in our study is November 11 (capturing trading activity on November 10 and 11), while it is November 15, November 12, and November 12 in the other studies, respectively. Table 3 also reports that trading volume increased significantly for event D8 (\( t = 1.97 \), \( p = .024 \)).

Overall, we conclude that the results shown in Table 3 lead to the rejection of the first and second hypotheses. GLB legislative event disclo-
Table 3. Abnormal Return and Trading Volume Analysis

<table>
<thead>
<tr>
<th>Variable (Event)</th>
<th>Abnormal Returns</th>
<th>Trading Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corrado's rank statistic</td>
<td>GLS est'd coefficient (portfolio avg. abnormal return)</td>
</tr>
<tr>
<td>D1 Oct. 26, 1998</td>
<td>Several House Republicans, led by James Leach, reintroduced HR10 last weekend in the 106th Congress (which starts in 1/99).</td>
<td>$-3.25^* &lt;.01$</td>
</tr>
<tr>
<td>D2 Apr. 26, 1999</td>
<td>The NAIC indicated that it opposed the House Banking Committee's version of HR10 as hostile to the nation's insurance consumers.</td>
<td>$-1.83^*.034$</td>
</tr>
<tr>
<td>D3 May 6, 1999</td>
<td>The Senate passed Senator Gramm's financial services modernization bill.</td>
<td>$0.25 .401$</td>
</tr>
<tr>
<td>D4 July 1, 1999</td>
<td>The House passed HR10. It is now headed for a Senate/House conference committee.</td>
<td>$-0.61 .271$</td>
</tr>
<tr>
<td>D5 Oct. 13, 1999</td>
<td>Republican House and Senate committee chairmen hammered out a compromise version of financial services reform but the White House threatened a veto over privacy and regulatory issues.</td>
<td>$0.70 .242$</td>
</tr>
<tr>
<td>D6 Oct. 23, 1999</td>
<td>A deal crafted in the predawn hours yesterday between the White House and Congress appears solid enough that a landmark bill to overhaul banking law will pass Congress and be signed by the President. The legislation is a compromise version of bills that earlier this year passed the House and Senate.</td>
<td>$2.26^* .012$</td>
</tr>
<tr>
<td>D7 Nov. 4, 1999</td>
<td>The Financial Services Modernization Act passed both the House and Senate.</td>
<td>$-0.07 .472$</td>
</tr>
<tr>
<td>D8 Nov. 11, 1999</td>
<td>President Clinton will sign the Financial Services Modernization Act of 1999 on Friday, November 12, 1999.</td>
<td>$-1.97^* .024$</td>
</tr>
<tr>
<td>INS</td>
<td>Coded 1 if a life insurer; 0 otherwise.</td>
<td>n/a n/a</td>
</tr>
</tbody>
</table>

*One-tailed p-value

* Significant at a p-value of .05 or less

**Significant at a p-value of .10 or less
sures that were unanticipated by investors are associated with various positive and negative share price reactions and a rise in trading volume consistent with the predictions in Table 3.

**Hypothesis Three Results**

Table 4 shows that the negative share price reaction to D1 is driven by life insurers (t = −2.83, p < .01). Property-liability insurers display an insignificant negative reaction (t = −.71, p = .239). Table 4 also indicates that the difference in reactions between the two insurance groups is statistically significant (t = 1.89, p = .029). Arguably, the significant negative reaction of life insurers is linked to the uncertainty engendered by the repeated failures of Congress to enact a modernization law over many years. Life insurers, rather than property-liability insurers, were perceived by investors as having more to gain from modernization legislation (or more to lose from a failure to enact). Life insurers are more attractive targets for banks because more synergistic gains and greater reductions in bankruptcy risk are available in bank-life insurer combinations than for bank–property-liability insurer combinations (Boyd and Graham, 1988; Johnston and Madura, 2000).

Life insurers had a significant negative share price response (t = −1.90, p = .029) to D2 while property-liability insurers had a negative but insignificant market reaction (t = −.81, p = .209). The NAIC opposition may have increased the level of investor uncertainty over passage of the GLB. As life insurers had more to lose from the potential failure of enactment, their share prices experienced a more substantial decline in value.

Table 4 reveals that both life and property-liability insurers had significant positive reactions to D6. The reaction of life insurers (t = 4.54, p < .01) was significantly more positive than that of property-liability insurers (t = 2.97, p < .01). One potential explanation is that investors perceived new market and financial product opportunities for both types of insurers but considered life insurers to possess a higher likelihood of being takeover targets for banks or expanding into untapped financial service or product markets. As previously suggested, life insurers may be better positioned to manage additional financial assets (e.g., deposits) of customers because they already hold policyowners’ assets in the form of cash values. This reasoning is consistent with that of Saunders and Walter (1994), Johnston and Madura (2000), and Boyd and Graham (1988).

Property-liability insurers had a significant negative share price reaction (t = −3.15, p < .01) to event D8 while life insurers had a statistically insignificant market response (t = −.81, p = .208). The difference in reactions between the two groups of insurers is marginally significant (t = 1.46, p = .072). These results suggest that in the final analysis, property-liability
### Table 4. Analysis of Event Day Reactions of P&L and Life Insurers

<table>
<thead>
<tr>
<th>Variable (Event)</th>
<th>P&amp;L est'd GLS coefficient</th>
<th>T-stat</th>
<th>Life est'd GLS coefficient</th>
<th>T-stat</th>
<th>Z-stat on difference in t-statistics</th>
<th>p-value&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D&lt;sub&gt;1&lt;/sub&gt; Oct. 26, 1998</strong></td>
<td>Several House Republicans, led by James Leach, re-introduced HR10 last weekend in the 106th Congress (which starts in 1/99).</td>
<td>-0.00167</td>
<td>-0.71 (0.239)</td>
<td>-0.00940</td>
<td>-2.83* (&lt;0.01)</td>
<td>1.89* .029</td>
</tr>
<tr>
<td><strong>D&lt;sub&gt;2&lt;/sub&gt; Apr. 26, 1999</strong></td>
<td>The NAIC indicated that it opposes the House Banking Committee version of HR10 as hostile to the nation's insurance consumers.</td>
<td>-0.00191</td>
<td>-0.81 (0.209)</td>
<td>-0.00630</td>
<td>-1.90* (0.029)</td>
<td>1.08 .140</td>
</tr>
<tr>
<td><strong>D&lt;sub&gt;3&lt;/sub&gt; May 6, 1999</strong></td>
<td>The Senate passed Senator Gramm's financial services modernization bill.</td>
<td>-0.0027</td>
<td>-0.11 (0.460)</td>
<td>-0.0006</td>
<td>-0.02 (0.492)</td>
<td>-0.05 .480</td>
</tr>
<tr>
<td><strong>D&lt;sub&gt;4&lt;/sub&gt; July 1, 1999</strong></td>
<td>The House passed HR10. It is now headed for a House-Senate conference committee.</td>
<td>0.00181</td>
<td>0.77 (0.221)</td>
<td>-0.00437</td>
<td>-1.32** (0.099)</td>
<td>1.52** .064</td>
</tr>
<tr>
<td><strong>D&lt;sub&gt;5&lt;/sub&gt; Oct. 13, 1999</strong></td>
<td>Republican House and Senate committee chairmen hammered out a compromise version of financial services reform, but the White House threatened a veto over privacy and regulatory issues.</td>
<td>-0.0035</td>
<td>-0.28 (0.391)</td>
<td>0.00344</td>
<td>1.98* (0.024)</td>
<td>-1.76* .039</td>
</tr>
<tr>
<td><strong>D&lt;sub&gt;6&lt;/sub&gt; Oct. 23, 1999</strong></td>
<td>A deal crafted in the predawn hours yesterday between the White House and Congress appears solid enough that a landmark bill to overhaul banking law will pass Congress and be signed by the President. The legislation is a compromise version of bills that earlier this year passed the House and Senate.</td>
<td>0.00700</td>
<td>2.97* (&lt;0.01)</td>
<td>0.01500</td>
<td>4.54* (&lt;0.01)</td>
<td>-1.97* .024</td>
</tr>
<tr>
<td><strong>D&lt;sub&gt;7&lt;/sub&gt; Nov. 4, 1999</strong></td>
<td>The Financial Services Modernization Act of 1999 passed both the House and the Senate.</td>
<td>0.00070</td>
<td>0.30 (0.383)</td>
<td>0.00045</td>
<td>0.13 (0.447)</td>
<td>0.06 .476</td>
</tr>
<tr>
<td><strong>D&lt;sub&gt;8&lt;/sub&gt; Nov. 11, 1999</strong></td>
<td>President Clinton will sign the Financial Services Modernization Act of 1999 on Friday, November 12, 1999</td>
<td>-0.00606</td>
<td>-3.15* (&lt;0.01)</td>
<td>-0.00217</td>
<td>-0.81 (0.208)</td>
<td>-1.46** .072</td>
</tr>
</tbody>
</table>

<sup>a</sup>The sign of the t-statistic for the difference in t-statistics for the two samples is not meaningful.
The sign is strictly a function of the parameter estimate from the P&L sample appearing first in the numerator.
<sup>b</sup>One-tailed p-value.
* Significant at a p-value of .05 or less.
** Significant at a p-value of .10 or less.
insurer investors might have had second thoughts about the value of GLB to them.

In sum, we conclude that the results displayed in Table 4 lead to the rejection of H3. GLB event disclosures led to significantly different share price reactions for life and property-liability insurers.

Hypothesis Four Results

We analyze the cross-sectional variation of the stock price impact of legislative events by estimating the GLS rank regression model in equation (2). We further examine cross-sectional variation of share price reaction for the subsamples of life insurers and property-liability insurers.

Table 5 shows that SIZE is negatively significant for all insurers (t = −1.92, p = .027). This finding indicates that smaller insurers had more positive (or less negative) share price reactions. Table 5 also reveals that the overall results were driven by life insurers (t = −2.08, p = .019). SIZE has a negative but insignificant relationship to property-liability insurer CARRs.

The negative relationship between CARRs and SIZE for life insurers is consistent with several explanations. First, smaller life insurers are more likely takeover targets than larger life insurers (Stevens, 1973; Cummins, Tennyson, and Weiss, 1999) and the majority of gains from acquisitions accrue to shareholders of target firms (Carow and Heron, 2002; Jarrell, Brickley, and Nutter, 1988). Second, smaller life insurers are more apt to benefit from scale economies and efficiency gains (Katrishen and Scordis, 1998; Cummins, Tennyson, and Weiss, 1999). Third, the differential information hypothesis indicates that security price reactions to disclosures of unanticipated information are more substantial for smaller firms (Atiase, 1985). Investors in smaller property-liability insurers apparently fail to recognize these possible advantages.

According to Table 5, leverage (LEV) (premiums-written-to-surplus ratio) is significantly positively related to share price reaction for all insurers as a group (t = 1.67, p = .049). This result means that insurers with higher leverage experienced a more positive share price response. As previously mentioned, insurers with higher leverage are more vulnerable to takeovers and thus are better positioned to benefit from possible capital infusions from acquiring banks, thrifts, brokers, and other insurers or expanding into untapped financial services markets. The leverage variable is positive but insignificant for the subsamples of life insurers and property-liability insurers.

Insurer liquidity (LIQ) (cash flow from operations to total assets ratio) is significantly positively related to firm share price response for all insurers as a group (t = 2.59, p < .01). Insurers with higher liquidity levels (i.e., property-liability insurers) had more positive share price reactions. An


**Table 5. Results for GLS Cross-Sectional Rank Regression Model**

This table shows regressions that use size, leverage, liquidity, and risk variables to explain the cumulative abnormal stock reactions of life insurers and property-liability insurers to the unexpected October 22 announcement concerning the Financial Services Modernization Act (Hendershott, Lee, and Tompkins, 2002).

<table>
<thead>
<tr>
<th>Independent Insurers Variables</th>
<th>Prediction</th>
<th>All insurers $(n = 107)^b$</th>
<th>Life insurers $(n = 38)^a$</th>
<th>P&amp;L $(n = 69)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>n/a</td>
<td>1.385**</td>
<td>1.029*</td>
<td>1.37*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.66)</td>
<td>(2.97)</td>
<td>(5.73)</td>
</tr>
<tr>
<td>SIZE</td>
<td>n/a</td>
<td>−.293**</td>
<td>−.647**</td>
<td>−.083</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(−1.92)</td>
<td>(−2.08)</td>
<td>(−.42)</td>
</tr>
<tr>
<td>LEV</td>
<td>+</td>
<td>.257**</td>
<td>.260</td>
<td>.137</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.67)</td>
<td>(9.3)</td>
<td>(.70)</td>
</tr>
<tr>
<td>LIQ</td>
<td>+</td>
<td>.460*</td>
<td>.916**</td>
<td>.540*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.59)</td>
<td>(2.14)</td>
<td>(2.53)</td>
</tr>
<tr>
<td>RISK</td>
<td>+</td>
<td>.253***</td>
<td>.731**</td>
<td>.177</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.41)</td>
<td>(2.00)</td>
<td>(.83)</td>
</tr>
<tr>
<td>F-stat</td>
<td></td>
<td>2.66</td>
<td>2.58</td>
<td>1.92</td>
</tr>
<tr>
<td>p-value</td>
<td></td>
<td>.026</td>
<td>.055</td>
<td>.117</td>
</tr>
<tr>
<td>R-squared</td>
<td></td>
<td>.114</td>
<td>.238</td>
<td>.104</td>
</tr>
</tbody>
</table>

* Indicates statistical significance at the .01 level.
** Indicates statistical significance at the .05 level.
*** Indicates statistical significance at the .10 level.

*One-tail p-values.

For evaluation purposes, additional tests of the general model were performed. The OLS regression model was tested for multicollinearity using partial correlation coefficients, variance inflation factors, and condition indices. No pair of independent variables had a partial correlation coefficient greater than .25 or less than −.55. Also, each independent variable had a VIF <2 and a condition index <11. Multicollinearity is a problem when a VIF exceeds 10, a condition index exceeds 30, or a partial correlation coefficient >.7 or <−.7 (Kennedy, 1992).

An insurer with greater liquidity would be better able to expand its financial services product offerings, begin depository and lending operations, and capitalize on scale economies. An insurer with better liquidity is also a more desirable takeover target. LIQ is positive and significant for life insurers $(t = 2.14, p = .016)$ and for property-liability insurers $(t = 2.53, p < .01)$.

Firm risk (RISK) is marginally significantly positive for insurers as a group $(t = 1.41, p = .079)$. Insurers with a higher variance of abnormal returns (i.e., life insurers) tend to have a more positive share price response.
Table 5 reveals that life insurers had a significant positive share price reaction \( (t = 2.00, p = .023) \) while property-liability insurers had an insignificant market reaction \( (t = .83, p = .203) \). These findings are consistent with the higher risk possessed by life insurers as a group (see Table 2, panel C).

The results for RISK are consistent with life insurers being more likely takeover targets of banks and other financial institutions. Mergers of BHCs and life insurers offer the opportunity to reduce risk through diversification without lowering returns (Schellhorn and Scordis, 2002). Acquired, higher risk insurers may experience greater financial gains from lower funding costs, improved credit standing, and additional contributed capital.

In sum, the results permit us to reject H4 and suggest that GLB had a greater impact on life insurers (in the expected direction) than on property-liability insurers.

**CONCLUSION**

The GLB was enacted by a series of negotiations involving insurers, bankers, securities firms, investment bankers, legislators, and regulators. The legislative process provided new information to the market concerning the future of financial services integration. We document significant share price reactions for insurers to certain legislative events leading up to and including the disclosure that President Clinton would sign the bill into law. Significant positive market reaction occurred when investors revised their expectations of GLB enactment with perceived gains for insurers, especially life insurers. Significant market reactions were accompanied by abnormal increases in trading volume. Moreover, life insurers had significantly different share price reactions than property-liability insurers to a majority of GLB events.

Results indicate, in general, that smaller life insurers experienced more positive (or less negative) share price reactions than larger life insurers. Our results also indicate that more highly leveraged insurers experienced more positive share price responses. Also, evidence shows that more liquid insurers had more positive (or less negative) share price reactions than less liquid insurers. Moreover, life insurer risk levels show a significant positive relationship with stock returns, while property-liability insurer risk levels had an insignificant relationship with share prices. Investors were able to discriminate between the impact of GLB enactment on life insurers and property-liability insurers on an individual event and industry basis. In
sum, smaller life insurers with high liquidity and more leverage seemed to have the most positive share price reactions.

The external validity of this study is limited to the series of legislative events analyzed. The results cannot be generalized to other industries, mutual insurers, or different situations. This study is also subject to limitations applicable to event studies in general.

ENDNOTES

1 Saxon v. Georgia Association of Independent Insurance Agents, Inc., 399 F.2d 1010 (5th Cir. 1968).
4 Grammatikos and Yourougou (1990) use a 14-day event window in a regulatory event study. In an event study involving the market impact of the Garn–St. Germain Depository Institutions Act of 1982, Cornett and Tehranian (1990) use a two-day event window including the announcement day (day 0) and the preceding day (day –1). Burton, Lonie, and Power (1999) also use a two-day announcement period in a study of UK stock market reaction to the announcement of capital expenditure projects.
5 The skewness and kurtosis coefficients and the Shapiro-Wilk statistic were calculated for a random sample of 25 days from the 476-day sample period. A perfectly symmetrical distribution has a kurtosis coefficient of three. The mean kurtosis coefficient across the 25 days is 5.62. Large kurtosis values, as here, indicate leptokurtic distributions or ones with “heavy tails.” Kurtosis has been shown in both univariate and multivariate analyses to have an effect on power (Stevens, 1992). The abnormal returns are also positively skewed (mean skewness of .56). The Shapiro-Wilk statistic can assume a value of between 0 and 1. The statistic must be extremely close to 1 (e.g., .99) for a distribution to be considered normal (Scholtzhauer and Littell, 1987). The abnormal return distributions tested have a mean S-W statistic of .859. Given these statistical results, we conclude that the abnormal return distributions are non-normal.

REFERENCES


FINANCIAL SERVICES ACT OF 1999


