Market Reaction and Structural Risk Shifts of Financial Services Firms: The Sarbanes-Oxley Act of 2002

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Abstract

This paper examines the market reaction of financial services firms to Sarbanes Oxley legislation. We test for the presence of financial services sector related abnormal returns in the event window surrounding Sarbanes Oxley legislation. In addition, we test for a shift in systematic risk in the period following the imminent passage of Sarbanes Oxley. We use event study methodology to determine if financial sector firms experience abnormal returns at various dates associated with the passage of the legislation. We find that some financial services sectors have significant positive abnormal returns and find that one financial services sector, brokerage firms, has negative abnormal returns at one point in the legislative process. We find a shift in systematic risk of life insurance companies but no systematic risk shift in any other financial services sector.

Introduction

The early years of the new decade saw the unwinding of the financial bubble and several financial scandals that many market observers link to the financial excesses of the last century. As a result of these financial scandals such as Enron and WorldCom, Congress started hearings into financial reporting issues. Legislation soon followed with the most prominent of the legislative packages being the Sarbanes Oxley Act (SOX) of 2002 (H.R.3763). From the initial evolution of the legislation it was apparent that the legislation will require more disclosure and transparency.

The extent of the implementation cost of the legislation could only be observed as the bill progressed through the legislative process. We extend the growing body of research that examines the market impact of Sarbanes Oxley by examining systematic risk.

Since the passage of SOX, several academic papers have examined its influence on shareholder wealth. Most of these studies have examined the influence of abnormal returns surrounding the legislation's passage using random samples of stocks across industry groups. Zhang (2005) examined abnormal returns surrounding some events related to passage of the Sarbanes Oxley legislation. He found significant negative abnormal returns. Jain, Kim, and Rezaee (2003) found that equity bid-ask spreads showed higher liquidity following the legislation's passage. Beneish, Billings and Holder (2005) study how disclosures of financial information influence stock's abnormal returns. They interpreted a significant negative price response associated with a financial disclosure as an indication of the resolution of uncertainty.

Li, Pincus, and Rego (2004) used a sample of 902 firms in the Standard & Poor's 1500 index and raw stock returns to examine the influence of the legislation on shareholder wealth. They found positive returns following the legislation's passage and negative returns prior to the legislation's approval. Jain and Rezaee (2004) found positive abnormal returns at events prior to the legislation's passage that increased the possibility of the legislation's passage. In our own study looking at abnormal returns we found statistically significant abnormal returns for banks of 1.06% and for brokers of -2.03% on the date of passage by the United States House of Representatives. Abnormal returns for financial services firms in the property and casualty and life insurance businesses, the savings & loan business, and the accident & health insurance business were statistically insignificant.

The purpose of this paper is to expand on the earlier examinations of abnormal returns and the legislation's passage. This paper looks to see if the legislation's passage influences the systematic risk of companies in the financial services sector. We look specifically at commercial banks, investment banking firms and insurance companies. Since these companies are expected to have a high level of fiduciary responsibility, can greater transparency and disclosure reduce systematic risk for these companies? Systematic risk discovery is important due to the importance of risk in the pricing of financial assets.

Financial service firms' systematic risk might be impacted by SOX in several ways. Their systematic risk might be decreased due to increased regulations. Increased regulatory inquiry might force financial services firms to avoid accounting missteps. Financial services firm's systematic risk might be increased due to the possibility that increased scrutiny might reveal items of uncertainty about a company. Finally, smaller financial services companies might be influenced differently than larger financial services companies due to the high fixed cost of implementation.

The eleven main points of the Sarbanes Oxley Act of 2002 show the importance congress placed on the issue of financial reporting.[1]

Title I	Public Company Accounting Oversight Board
Title II	Auditor Independence
Title III	Corporate Responsibility
Title IV	Enhanced Financial Disclosures
Title V	Analyst Conflicts Of Interest
Title VI	Commission Resources and Authority
Title VII	Studies and Reports
Title VIII	Corporate and Criminal Fraud Accountability
Title IX	White-Collar Crime Penalty Enhancements
Title X	Corporate Tax Returns
Title XI	Corporate Fraud and Accountability

Hypotheses

The passage of Sarbanes Oxley offers the possibility of testing several hypotheses. We first test hypotheses relating to abnormal returns surrounding the event day. We then test hypotheses relating to a change in the systematic risk before and after the imminent passage of legislation into law.

Abnormal returns hypotheses

The first hypothesis examines abnormal returns generated as a result of the legislation's passage at various stages. One hypothesis that might explain the abnormal returns on the legislation's passage day is the

[1] Public Law 107-204 107th Congress [H.R. 3763]

increased transparency and disclosure hypothesis. Financial services firms will benefit with the passage of the Sarbanes Oxley legislation due to increased transparency and disclosure. This increased transparency and disclosure should increase the importance of legislation that requires companies to be more transparent, and offer more disclosure.

A second hypothesis that might explain the abnormal returns on the legislation's passage day is financial problems and implementation cost hypothesis. Financial services firms will be harmed by the passage of Sarbanes Oxley legislation because increased scrutiny of financial firms might result in disclosure of financial problems at portfolio companies. Also the implementation cost of the legislation will be harmful to firms.

Systematic risk hypotheses

The next hypothesis relates to a change in the systematic risk before and after the imminent passage of legislation into law. Passage of significant legislation that focuses on corporate regulation might change the systematic risk to all domestic companies as well as financial services sector firms. Commercial banks, brokerages, and insurance companies underwrite a significant amount of funding for business. Legislation requiring transparency, as well as disclosure of financial information by clients of financial service companies, might serve to reduce the industry specific underwriting risk.

More transparency and disclosure by underwritten firms might make investments in these firms less risky. Alternatively, legislation requiring transparency, as well as disclosure of financial information by clients of financial service companies, might increase the likelihood of uncovering financial shenanigans of underwritten companies and increase the industry specific underwriting risk. More transparency and disclosure by underwritten firms might make investments in these firms more risky.

Data and Methodology

We use the event study methodology of Brown and Warner (1985) in the calculation of cumulative abnormal returns. The abnormal returns methods are similar to those used by Goff, Hulburt, Keasler and Walsh (2008). The COMPUSTAT® Research Insight database is used to obtain Standard Industrial Classification (SIC) codes for firms in various financial sectors. The event day is the date, according to the Congressional Record, of Sarbanes Oxley legislation passage. We follow the methodology of

Marlett (2003) and use an event window of (-1, +1) days relative to the event (announcement day) 0. Daily stock returns were obtained from the center for Research in Security Prices (CRSP). The CRSP value-weighed NYSE/ASE/NASD index is used in the calculation of abnormal returns. We used an estimation period of 100 days ending 40 days before the event day. The nonparametric Generalized Sign Z statistic is developed and described in Cowan (1992).

To test for a shift in regression statistic estimates in the periods before and after the time when the passage of Sarbanes Oxley appeared imminent, we initially employ the methods of Chow (1960). As a robustness test for structural risk change, as well as a test that targets specifically the identification of changes in the slope and intercept of a regression, we use the methods of Fabozzi and Francis (1979).

Abnormal Returns Analysis

The results in Panel A of Table 1 show the abnormal returns on the day Sarbanes Oxley passes the United States House of Representatives. Firms in the bank and brokerage financial services sector experienced statistically significant event window (-1, +1) cumulative average abnormal returns (CAAR). Banks experienced significant positive CAAR and brokers significant negative CAAR. Investors believed that passage of Sarbanes Oxley legislation in the House and Senate would result in increased transparency and disclosure that would result in less underwriting risk.

Brokers experienced significant negative CAAR on the day Sarbanes Oxley passed the United States House of Representatives. This result supports the financial problems and implementation cost hypothesis. At House passage, investors appear to have been concerned about the possibility of bad news coming from the businesses with which brokerages had relationships.

As the Sarbanes Oxley legislation made its way through the legislative process the most significant reaction to the passage occurred at the Senate passage. At this stage of the legislative process, and with what turned out to be only a few days until signature by the President, the House/Senate compromise legislation was in all likelihood virtually known. The significant CARR attendant to Senate passage of Sarbanes Oxley

legislation is why we use the Senate passage date as the event day for tests of a shift in systematic risk.

The results in Panel C of Table 1 indicate that the legislation's passage had been largely discounted by financial market participants. By the time of the President's signature on the bill financial services companies had largely anticipated the bill going into law.

Accident and Health insurers and Fire, Marine, and Casualty insurers reacted positively at the Senate passage and the President's signing of the Sarbanes Oxley legislation. These results support the increased transparency and disclosure hypothesis.

Table 1
Table 1 shows the cumulative abnormal returns (CAAR), the number of company returns that are were positive and negative, the Z statistic, and the nonparametric Generalized Sign Z statistic for the event window from one day before the passage or signing to one day following the passage or signing. The results in Panel A of Table 1 show the abnormal returns on the day Sarbanes Oxley passes the United States House of Representatives. The results in Panel B of Table 1 show the abnormal returns on the day Sarbanes Oxley passes the United States Senate. The results in Panel C of Table 1 show the abnormal returns on the day Sarbanes Oxley is signed in to law by the President of the United States. The CAAR represent the risk adjusted market response to the event. The CRSP value-weighed NYSE/ASE/NASD index is used in the calculation of abnormal returns. We used an estimation period of 100 days ending 40 days before the event day. The nonparametric Generalized Sign Z statistic is developed and described in Cowan (1992). Financial services sector SIC codes are found using the COMPUSTAT® Research Insight database.

Panel A

United States House of Representatives Passed - 4/24/2002

ncial Sector	Event Window	N	Mean Cumulative Abnormal Return	Positive Negative	Z	Generalized Sign Z
ks SIC 6000 -6022	(-1,+1)	323	1.06%	210:113	5.990***	6.160***
‹ers SIC 6211	(-1,+1)	27	-2.03%	7:20	-3.608***	-2.237*
rance SIC 6321-6324	(-1,+1)	18	0.48%	8:10	0.704	-0.264
rance SIC 6331	(-1,+1)	32	-0.67%	8:24	-1.054	-2.563**
rance SIC 6311	(-1,+1)	23	0.02%	11:12	0.323	-0.178
ngs & Loans SIC 6035-6036	(-1,+1)	44	0.59%	25:19	0.527	1.322$

Panel B

United States Senate Passed - 7/25/2002

ncial Sector	Event Window	N	Mean Cumulative Abnormal Return	Positive Negative	Z	Generalized Sign Z
ks SIC 6000 -6022	(-1,+1)	325	1.97%	203:122	14.680***	5.746***
‹ers SIC 6211	(-1,+1)	28	-1.82%	13:15	-0.796	-0.234
rance SIC 6321-6324	(-1,+1)	18	4.01%	16:02	5.414***	3.576***
rance SIC 6331	(-1,+1)	32	3.92%	26:06	8.500***	3.730***
rance SIC 6311	(-1,+1)	23	4.94%	18:05	8.371***	2.736**
ngs & Loans SIC 6035-6036	(-1,+1)	44	2.02%	28:16	4.284***	2.208*

Panel C

President Bush Signed - 7/30/2002

ncial Sector	Event Window	N	Mean Cumulative Abnormal Return	Positive Negative	Z	Generalized Sign Z
ks SIC 6020 -6022	(-1,+1)	325	0.18%	172:153	2.088*	2.283*
‹ers SIC 6211	(-1,+1)	28	-1.74%	10:18	-1.482$	-1.456$
rance SIC 6321-6324	(-1,+1)	18	3.91%	15:03	6.070***	3.098***
rance SIC 6331	(-1,+1)	32	4.19%	26:06	7.761***	3.708***
rance SIC 6311	(-1,+1)	23	-0.11%	12:11	0.354	0.242
ngs & Loans SIC 6035-6036	(-1,+1)	44	0.08%	25:19	1.169	1.302$

Risk Shift Analysis

To test for a shift in regression statistic estimates in the periods before and after the time when the passage of Sarbanes Oxley appeared imminent, we initially employ the methods of Chow (1960). As a robustness test for structural risk change, as well as a test that targets specifically the identification of changes in the slope and intercept of a regression, we use the methods of Fabozzi and Francis (1977).

In an attempt to determine the stability of beta, the systematic component of risk, in bull and bear markets, Fabozzi and Francis (1977) formulate a regression model. This single index model, when used with the methodology of Gujarati (1970), lets researchers independently test for shifts in intercept and slope coefficients in two periods.

The equation for the Blume (1971), Sharpe (1963) single index model is:

$$R_{it} = \alpha_i + \beta_i R_{Mt} + \upsilon_{it} \quad (1)$$

R_{it} = The daily return, capital gain or loss pulls dividends for stock i on day t.

α_i = Regression intercept coefficient for a single stock i

β_i = Regression slope coefficient for a single stock i

R_{Mt} = Daily return on the market index with dividends as well as capital gains and losses considered

υ_{it} = Error term associated with stock i in period t.

Equation (2) is the regression model used by Fabozzi and Francis (1979). This model is used to determine if the systematic risk, as well as the regression intercept, changed following the legislation announcement relative to the period before the legislation's announcement. The equation is:

$$R_{it} = A_{1i} + A_{2i} D_t + B_{1i} R_{Mt} + B_{2i} R_{Mt} D_t + \upsilon_{it} \ldots\ldots E(\upsilon_{it}) = 0 \quad (2)$$

R_{it} = The daily return, capital gain or loss pulls dividends for stock i on day t

A_{1t} = Intercept term in the model.

D_t = Dummy variable equal to 1 in the period following the legislation announcement period and 0 prior to the legislation announcement period

$A_{2i} D_t$ = The coefficient A_{2i} of this term captures the influence of any change in the intercept in the period following the legislation announcement relative to the period before the legislation's announcement.

$B_{1i} R_{Mt}$ = The coefficient B_{1i} of this term is the slope in the model.

$B_{2i} R_{Mt} D_t$ = The coefficient B_{2i} of this term captures the influence of any change in the systematic risk in the period following the legislation announcement relative to the period before the legislation's announcement.

$E(\upsilon_{it})$ = This is the error term for stock i in time period t and is assumed to be zero.

Table 2 presents the results of the Chow (1960) test. This is a joint test for changes in the intercept as well as the slope. The Chow test is for a change in all parameter estimates. The degrees of freedom for the Chow test are 5 for the numerator and 188 for the denominator. The critical value of F at the .05 level is 2.21.

Table 2 shows that Life Insurance companies experienced a statistically significant shift in the estimated parameters of a regression of the cumulative average abnormal returns in event window (-1, +1) on the CRSP market-value index. This indicates that there has been a systematic risk shift for these companies. Levy (1974) indicates that researchers should use different systematic risk measures for bull and bear markets. Researchers calculating abnormal returns in the insurance industry should be cognizant of these findings.

Both the Chow tests and the Fabozzi and Francis tests look at a period of 99 days before and after the event date. The event date used for the study is the day of approval by the Joint Committee of the House and Senate, July 25, 2002. For a robustness check on the results of the Chow test we run a regression that uniquely tests for shifts in the slope and intercept following the methods of Fabozzi and Francis (1977). These results are reported in Table 3.

Table 2

Event Date 07/25/2002	Chow F Statistic
Financial Sector	
Banks SIC 6020 -6022	0.569
Brokers SIC 6211	0.042
Accident & Health Insurance SIC 6321-6324	0.959
Fire Marine & Casualty Insurance SIC 6331	1.137
Life Insurance SIC 6311	2.889*
Savings & Loans SIC 6035-6036	0.563

* Significant at .05

Table 3 shows coefficient estimates, and associated *t*-statistics in parenthesis, from the Fabozzi and Francis regressions for each financial service sector. $B_{2i}\ R_{MT}\ D_t$ is a term where the coefficient B_{2i} captures the influence of any change in the systematic risk in the period following the legislation announcement relative to the period before the legislation's announcement. This slope term, $B_{2i}\ R_{MT}\ D_t$, is statistically significant for firms in the Life Insurance and Fire, Marine & Casualty insurance sectors at the .01 level. None of the other financial services sectors experienced a shift in systematic risk as a result of the Sarbanes Oxley legislation imminent passage into law. This test confirms the results of the Chow (1960) test for the Life Insurance sector and supports the hypothesis that a systematic risk shift occurred in the insurance related financial services sector in the period following the passage of Sarbanes Oxley legislation.

We attribute this risk shift we find in insurance companies to the increased federal regulatory burden. Since insurance companies were, prior to the passage of Sarbanes Oxley, primarily regulated at the state level, the introduction of a increased federal regulatory burden has increased the systematic risk of these companies.

The intercept in the model is $A_{1t.}$ D_t is a dummy variable equal to 1 in the period following the legislation announcement period and 0 prior to the legislation announcement period. In the term $A_{2i}\ D_t$ the coefficient A_{2i} captures the influence of any change in the intercept in the period following the legislation announcement relative to the period before the legislation's announcement. B_{1i} is the slope in the model. In the term $B_{2i}\ R_{MT}\ D_t$ the coefficient B_{2i} captures the influence of any change in the systematic risk in the period following the legislation announcement relative to the period before the legislation's announcement. Two asterisks denotes statistical significance at the .01 level and one asterisk denotes statistical significance at the .05 level. We attribute this risk shift to increased federal regulatory scrutiny on insurers relative to the extant federal regulatory burden placed on existing depository financial institutions and brokerages.[1]

[1] Insurers are primarily regulated at the state level.

Table 3

Event Date 07/25/2002	A_i	A_{2i}	B_{1i}	B_{2i}
Financial Sector				
Banks SIC 6020 -6022	0.002	-0.001	0.68	0.157
N = 325	*(3.43)***	*(-1.26)*	*(11.37)***	*(2.12)**
Securities Brokers SIC 6211	0.00	0.00	1.02	0.01
N = 28	*(0.54)*	*(0.46)*	*(14.6)***	*(0.12)*
Accident & Health Insurance SIC 6321-6324	0.001	-0.002	0.616	0.161
N = 18	*(1.28)*	*(-1.35)*	*(7.47)***	*(1.59)*
Fire Marine & Casualty Insurance SIC 6331	0.00	0.13	0.50	0.20
N = 32	*(-0.49)*	*(-0.41)*	*(8.83)***	*(2.90)***
Life Insurance SIC 6311	0.000	-0.000	0.701	0.275
N = 23	*(0.42)*	*(-0.73)*	*(11.46)**	*(3.67)***
Savings & Loans SIC 6035-6036	0.00	-0.00	0.37	0.036
N = 44	*(2.82)**	*(-1.40)*	*(10.01)***	*(0.80)*

Conclusion

This paper examined the market reaction of financial services firms to Sarbanes Oxley legislation. We found the presence of abnormal returns in the event window surrounding Sarbanes Oxley legislation. In addition, we found a shift in systematic risk in the period following the imminent passage of Sarbanes Oxley for life insurance companies. We find that some financial services sectors have significant positive abnormal returns and find that one financial services sector, brokerage firms, has negative abnormal returns at one point in the legislative process. We find a shift in systematic risk of life insurance companies but no systematic risk shift in any other financial services sector.

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