
Market Reaction to Potential Federal Regulation in the Insurance Industry

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Abstract: The effect of federal insurance regulation has been a perennial topic of debate. Proponents have argued that federal regulation would result in a variety of benefits, including greater product innovation, increased speed-to-market, reduction of regulatory costs, and additional cost efficiencies. However, opponents have argued that federal regulation could prove harmful to both insurance companies and policyholders due to federal regulators' inability to meet the diverse needs of policyholders across the country, difficulties with the operation of state guaranty funds, and potential "stickiness" of federal regulation. We investigate investor perceptions of the net effect of potential federal regulation in the U.S. insurance industry by studying the market response to the passage of the Dodd-Frank Act. Our results suggest that the market viewed the passage of the Act as a negative event for the U.S. insurance industry and that investor responses were primarily driven by increased regulatory uncertainty. [Key words: Dodd-Frank Act, insurance, regulation]

INTRODUCTION

The economic crisis of 2008 exposed the level of interconnectedness that had developed across the U.S. financial system. As the financial and operational relationships between some of the largest financial institutions became apparent, the potential for these relationships to wreak havoc on the entire economy approached the forefront of political and social

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discourse. In an effort to prevent future crises similar to the events of 2008, the executive and legislative branches of the U.S. government began to examine the negative externalities associated with systemic risk and proposed legislative solutions to these problems.³ The final product of this legislative focus is the Dodd-Frank Act of 2010, which has been described as “the biggest expansion of government power over banking and markets since the Depression” (Paletta and Lucchetti, 2010).

Although much of the financial crisis was attributed to the actions of commercial and investment bankers, the insurance industry did not escape from the provisions of the Act. The corporate failings of AIG and the over \$122 billion bailout that followed prompted legislators to express concern that the state regulatory regime created by the McCarran-Ferguson Act of 1945 was not sufficient to ensure the financial stability of insurers (e.g., Sununu, Johnson, Bean, and Royce, 2008). Ultimately, the Dodd-Frank Act does not eliminate state insurance regulation, but it does allow for *potential* federal regulation of insurance companies.

The Act has created two bodies that portend some form of federal regulation: the Financial Stability Oversight Council (FSOC) and the Federal Insurance Office (FIO). While the former is charged with identifying firms that are viewed as “systemically important” for purposes of additional regulation, the latter will be responsible for investigating the potential costs and benefits of a national regulator. Given that passage of the Dodd-Frank Act is the closest that legislation has recently come to moving toward the federal regulation of insurance, the passage of the Act provides an ideal environment for testing investor perceptions to federal insurance regulation.

While the argument of whether a federal regulator should oversee the insurance industry has continued for well over a decade (e.g., Baranoff and Baranoff, 2003), the passage of the Dodd-Frank Act represents increased federal involvement in insurance regulation and suggests the potential for future federal regulation. For some time, there has been a debate as to whether federal regulation of the insurance industry would be beneficial or harmful to industry participants. Some scholars have argued that federal regulation would result in a variety of benefits, including increased competition, greater product innovation, increased speed-to-market, reduction of regulatory costs, and additional cost efficiencies (e.g., Grace and Scott, 2008; Harrington, 2006; Pottier, 2011; Leverty, 2012). Others have argued that federal regulation of the insurance industry could prove harmful to both insurance companies and policyholders due to federal regulators’

³See Harrington (2009) for an overview of the financial crisis and the insurance industry’s (particularly AIG’s) role in the crisis.

inability to meet the diverse needs of policyholders across the country, difficulties with the operation of state guaranty funds, and potential “stickiness” of federal regulation (e.g., Harrington, 2002; Grace and Scott, 2008). To the extent that the Dodd-Frank Act represents the potential for future federal regulation, the market response to events associated with the passage of the Act will represent the market’s perception of the net effect of federal insurance regulation.

In this study, we investigate the market’s perception of (or attitude toward) the potential of federal regulation in the U.S. insurance industry by studying the market response following the passage of the Dodd-Frank Act. This analysis is conducted for the insurance industry as a whole as well as across various segments of the market. In addition to testing the market’s response to potential regulation in the aggregate, we also test the cross-sectional relation between important firm-specific characteristics and the response to the legislation. This additional analysis allows us to determine (1) whether the response was greater for those firms that are most likely to be affected by the legislation and (2) whether industry participants that have generally been viewed as being in favor of federal regulation experienced a different response than those that have historically been opposed to such regulation.

As a preview to our findings, our results suggest that, in general, the market responded negatively toward the passage of the Dodd-Frank Act. We also find that while the majority of publicly traded insurance companies experienced negative abnormal returns upon the passage of the Act through the U.S. Senate, life insurers generally experienced negative abnormal returns that were larger than other insurers in the sample. These results could be driven in part by the level of uncertainty surrounding the Act or could suggest a contagion effect. Postal (2010) notes that, even for those in favor of optional federal charters (OFCs), the Act may suggest that federal regulation would not be optional, and that there are concerns that the federal regulation could occur in addition to state regulation that is already in place. Additionally, our results suggest that those insurers writing financial guaranty insurance experienced a greater negative response to the passage of the Act than did other insurers. This finding may be driven in part by the potential of financial guaranty insurance to be treated as a swap derivative transaction. Overall, our results indicate that investors viewed the passage of the Dodd-Frank Act and its regulatory implications as a negative event for the insurance industry.

The remainder of the paper is organized as follows. We first provide an overview of the Dodd-Frank Act, with particular attention on the creation of the Financial Stability Oversight Council and the Federal Insurance Office. Next, we discuss the role of regulation in the insurance

industry and examine the insurance regulatory literature. We then discuss our hypothesis as it relates to the potential market response following the passage of the Dodd-Frank Act of 2010. Data and methodology are then presented, followed by the results of both the event study and the cross-sectional analysis. Finally, we discuss our findings and the implications of our findings and then conclude.

Overview of the Dodd-Frank Act⁴

The eventual passage of the Dodd-Frank Act was the result of two years of legislative action (see Table 1). The first hint of impending changes to the U.S. financial sector's regulatory landscape came on June 17, 2009 in the form of a report released by the U.S. Treasury titled "Financial Regulatory Reform: A New Foundation." In general, one of the primary purposes of the proposed reform was the reduction of potential future losses associated with systemic risk (i.e., interconnectedness) that existed in the U.S. financial markets.⁵ The recommendations contained in the U.S. Treasury's report subsequently served as the base text for the legislation (Webel, 2010b).

Nearly six months after the release of the aforementioned Treasury report, the U.S. House's version of what would eventually become the Dodd-Frank Act was introduced, and four months after the House introduced its version, the U.S. Senate introduced its own version. While some important differences existed between the two pieces of legislation, they also contained many similarities. By the end of June 2010, the U.S. House passed a final amended version of the Act, and on July 15, 2010, the U.S. Senate passed the Act by a vote of 60 to 39.

On July 21, 2010, President Barack Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act into law. The stated purpose of the Act that was signed into law was:

To promote the financial stability of the United States by improving accountability and transparency in the financial system, to end "too big to fail," to protect the American taxpayer by ending bailouts, to

⁴Much of the overview of the Dodd-Frank Act and the implications of the Act come from the language contained in the Act and from Harrington (2011).

⁵Although systemic risk was a central theme of the legislation and is typically associated with risk of loss due to interconnectedness, it is not directly defined in the Act, and often there is disagreement as to what the exact definition of "systemic risk" is. The European Central Bank defines systemic risk as "The risk that the inability of one institution to meet its obligations when due will cause other institutions to be unable to meet their obligations when due," adding, "Such a failure may cause significant liquidity or credit problems and, as a result, could threaten the stability of or confidence in markets" (European Central Bank, 2004).

Table 1. Important Dates Associated with the Dodd-Frank Legislation^a

Date	Event
June 17, 2009	The U.S. Treasury released a report titled "Financial Regulatory Reform: A New Foundation." This document discusses the goal of enhanced oversight of the insurance sector, which includes a goal aimed at "increased national uniformity through either a federal charter or effective action by the states" (U.S. Department of the Treasury, 2009).
December 2, 2009	H.R. 4173, "The Wall Street Reform and Consumer Protection Act of 2009," is introduced in the U.S. House.
December 11, 2009	The House passes H.R. 4173, "The Wall Street Reform and Consumer Protection Act of 2009." H.R. 4173 contains H.R. 2609, which allows for the creation of a federal insurance office.
April 15, 2010	S. 3217, the "Restoring American Financial Stability Act of 2010," is introduced to the U.S. Senate.
May 20, 2010	The U.S. Senate passes S. 3217, the "Restoring American Financial Stability Act of 2010."
June 29, 2010	The "Dodd-Frank Wall Street Reform and Consumer Protection Act of 2009" is approved by the House-Senate Conference.
June 30, 2010	The amended "Wall Street Reform and Consumer Protection Act of 2009" legislation is agreed to by the U.S. House with 237 "Yeas," 192 "Nays" and 4 non-voting members. ^a
July 15, 2010	The amended "Restoring American Financial Stability Act of 2010" legislation is agreed to by the U.S. Senate with 60 "Yeas" and 39 "Nays."
July 21, 2010	President Obama signs the new Dodd-Frank Wall Street Reform and Consumer Protection Act into law. The Act establishes the Federal Insurance Office and creates a series of new regulations aimed at reducing systemic economic risk, which would effectively affect financial firms, including insurance companies.

^aVoting information for the House and Senate is obtained from the following locations: <http://clerk.house.gov/evs/2010/roll413.xml>; http://www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=111&session=2&vote=00208

Dates and bill information in this table are obtained primarily from Carpenter (2010) and Webel (2010a).

protect consumers from abusive financial services practices, and for other purposes.

The Act contains a number of provisions that could either directly or indirectly affect the regulation of the U.S. insurance industry and could

suggest the potential of future federal regulation of some insurers. Of particular importance for this study is the creation of the Financial Stability Oversight Council (FSOC) and the Federal Insurance Office (FIO).

Financial Stability Oversight Council

One of the most important components of the Dodd-Frank Act is the creation of the FSOC. Under Section 111 of the Act, the FSOC was created for the purpose of monitoring the U.S. financial system to ensure the stability of the system (U.S. Department of the Treasury, 2011). By and large, the purpose of the FSOC is to identify entities that are “systemically important” (i.e., firms representing significant systemic risk), which will result in those firms receiving greater regulatory supervision under the Federal Reserve’s Board of Governors. Under the Act, insurance companies are included under the definition of “nonbank financial companies,” where “nonbank financial companies” can fall under the authority of the FSOC (Harrington, 2011). The insurance companies could thus face the prospect of enhanced regulation (discussed below) if the insurer is deemed to be systemically important. The specific duties of the FSOC, as described by the Act, include:

- (1) Identification of potential systemic risks to the U.S. financial system;
- (2) Promotion of market discipline and reduction of the expectation of future government bailouts;
- (3) Response to “emerging threats to the stability of the United States financial system.”

As part of the FSOC’s responsibility to identify potential systemic risks, the Council is given the authority to identify nonbank financial companies (including insurance companies) for additional regulation under Section 113 of the Act. U.S. nonbank financial corporations can face “enhanced regulation” if the company is deemed to “pose a threat to the financial stability of the United States” given “material financial distress.” Section 113 of the Act provides the Council with specific considerations to take into account when determining if a company should be supervised by the Federal Reserve’s Board of Governors, including: (1) leverage, (2) off-balance sheet exposures, (3) “the extent and nature of the transactions and relationships of the company with other significant nonbank financial companies and significant bank holding companies,” (4) the importance of the company to U.S. households, businesses, low-income/underserved communities, and state and local governments with respect to both credit and liquidity, (5) the amount and nature of financial assets and liabilities, (6) the degree of regulation the company also faces, (7) “the nature, scope, size, scale, concentration, interconnectedness, and mix of the activities of

the company,” and (8) other risk factors that the Council believes to be appropriate.

Section 115 of the Act provides some additional detail on enhanced supervision/regulation for firms deemed to require such regulation. The new regulations that a firm would be required to follow under the Board of Governors would be “more stringent than those applicable to other nonbank financial companies and bank holding companies that do not present similar risks to the financial stability to the U.S.” The Act specifies that the enhanced regulations may affect the financial operations of the firm as well as the reporting standards of the firm.⁶

Federal Insurance Office

In addition to the creation of the FSOC, Title V of the Act (which explicitly pertains to the area of insurance) creates the Federal Insurance Office (FIO). While the FIO has the ability to collect data from insurers and provide recommendations to the FSOC and Congress, the FIO by itself does not have authority to supervise or regulate insurers (U.S. Department of the Treasury, 2010). While the FIO is not charged with regulating the U.S. insurance industry (keeping the current state-based regulatory system in place), a number of responsibilities are explicitly stated for the Office. The responsibilities of the FIO include:

- (1) Monitoring the insurance industry and identifying gaps that could contribute to a systemic crisis;
- (2) Monitoring the access that low-income, underserved, and minority communities have to affordable insurance;⁷
- (3) Making recommendations to the FSOC for insurers that should be designated for additional regulation;
- (4) Assisting in the administration of the terrorism insurance program that was created via the Terrorism Risk Insurance Act of 2002 (TRIA);
- (5) “Consult[ing] with the States (including State insurance regulators) regarding insurance matters of national importance and prudential insurance matters of international importance.”

⁶More specifically, the Act states: “The recommendations of the Council ... may include (A) risk-based capital requirements; (B) leverage limits; (C) liquidity requirements; (D) resolution plan and credit exposure report requirements; (E) concentration limits; (F) a contingent capital requirement; (G) enhanced public disclosures; (H) short-term debt limits; and (I) overall risk management requirements” (Dodd-Frank Wall Street Reform and Consumer Protection Act, 2010, p. 28).

⁷This responsibility excludes health insurance.

As detailed in the Act, the FIO is also required to conduct a study that discusses methods to modernize and improve the current U.S. insurance regulatory system. The Act specifies the topics that must be addressed within the report to Congress, of which a number address the topic of not only improving and modernizing insurance regulation, but more specifically the feasibility and ramifications of having a single national regulator. Some of the specific topics that are to be discussed within the report are:

- (1) The degree of national uniformity of State insurance regulation;
- (2) The costs and benefits of potential Federal regulation of insurance across various lines of insurance (except health insurance);
- (3) The feasibility of regulating only certain lines of insurance at the Federal level, while leaving other lines of insurance to be regulated at the State level;
- (4) The ability of any potential Federal regulation or Federal regulator to provide robust consumer protection for policyholders.⁸

It is clear that the passage of the Dodd-Frank Act represents potentially significant changes in regulation for financial services firms, including insurance companies. As discussed above, the Act created the FSOC, which could require federal regulation of those insurers identified as “systemically important.” Additionally, the FIO is responsible for investigating the potential costs and benefits of a federal regulator and has the ability to recommend to the FSOC that certain insurers face more stringent regulation. Given the potential ramifications of some of the provisions contained in the Dodd-Frank Act, it is plausible that this legislation was perceived as a move toward federal regulation. This perception was manifest in a number of different media outlets following the passage of the Act. For instance, Schwartzman and Ross (2010) note that while the legislation does not take regulatory authority from the states, it does represent some movement toward federal regulation. Similarly, the vice president for federal relations for the American Council of Life Insurers (ACLI) (which has actively pushed for the passage of OFC legislation) stated, “We knew that OFC wasn’t in the offing anywhere in Dodd-Frank, so we saw Title V

⁸Additional primary topics of discussion required by the Act include: systematic risk regulation with respect to insurance; capital standards and the relationship between capital allocation and liabilities, including standards related to liquidity and duration risk; consumer protection for insurance products and practices, including gaps in State regulation; the regulation of insurance companies and affiliates on a consolidated basis; and international coordination of insurance regulation.

as a starting point, a building block for representation of the insurance industry at the federal level” (O’Donnell, 2011). Finally, Financial Services Committee Chairman Barney Frank stated that Congress would see a “major push” on optional federal charter legislation following the passage of the Act by the U.S. House (Carr, 2010). If the Act was viewed by investors as a precursor to impending federal regulation and if investors anticipated that such regulation would have a material impact on the operations and cash flows of those in the insurance industry, one would expect the markets to react to news of the passage of the Act.

Overview of Federal Regulation in Prior Literature

Since the passage of the Gramm-Leach-Bliley Act in 1999 and the Terrorism Risk and Insurance Act of 2002, there has been a movement by some legislators for the adoption of some form of federal regulation in the insurance industry (Baranoff and Baranoff, 2003).⁹ The push for the federal regulation of insurance has been in large part due to the argument that state regulation of insurance results in increased costs and the cross-subsidization of risk (Harrington, 2006). The primary issues that have led to the call for an optional federal charter are discussed by Harrington (2006) and include: (1) increased costs and the potentially slow speed it takes to approve policy forms, (2) increased cost and delays associated with the state regulatory rate approval process, (3) state mandates that impact policy coverage, and (4) restrictions on insurer underwriting and risk classification.¹⁰ In addition to some of the reasons why insurers may favor the existence of a single federal regulator, some lawmakers have also publicly pushed for federal regulation. The federal bailout of AIG prompted several lawmakers to call for federal regulation to ensure adequate financial regulation of insurers (Whoriskey, 2008).¹¹

⁹While the passage of the Gramm-Leach-Bliley Act of 1999 has been cited as an additional reason for the need for the federal regulation of the insurance industry, the Gramm-Leach-Bliley Act of 1999 specifically reaffirmed the role of the individual states to regulate insurance (Webel, 2007).

¹⁰Over the last fifteen-plus years there has been a concerted effort to move toward a greater degree of uniformity across states (Klein, 1995). One result of this “harmonization” is the creation of The Interstate Insurance Compact, which was developed to create a more efficient and effective environment to file, review, and approve new products in a state-regulated system.

¹¹Although lawmakers argued that insurers should be federally regulated to reduce systemic risk (i.e., the potential that the failure of one firm could have a negative impact on other healthier firms), Harrington (2011) argues that systemic risk is typically low for insurers (particularly when compared to banks).

Arguments have been made both for and against the existence of either a single federal regulator or an OFC system. Grace and Scott (2008) discuss a number of costs and benefits of implementing such a system. The authors argue that OFC could result in reduced costs that could be passed to consumers, improved competition, improved efficiency, and a reduction of negative externalities that result from the current state regulatory system.¹² On the other hand, OFC could lead to a number of important costs, such as difficulty in returning from a federally regulated firm to a state regulated firm (i.e., “stickiness”), reduced responsiveness to consumers, and difficulties regarding guaranty funds. Additionally, Harrington (2009) notes that the existence of a federal regulator could reduce market discipline and actually encourage risk taking rather than reduce risky behavior on the part of insurers and consumers.¹³

Pottier (2007, 2011) argues that costs could be reduced by approximately \$5.7 billion as a result of improved efficiencies associated with federal regulation. His results indicate that life insurer cost efficiency declines as insurers obtain a greater number of state licenses and as insurers increase in size. He also finds that the increased costs associated with multiple regulators are ultimately passed on to consumers through higher premiums.

Leverly (2012) uses efficiency analysis to examine the impact of multiple regulators on insurer costs by comparing standard insurers (which are licensed in each state in which they write business) to risk retention groups (which can write business nationally with only a single license). He finds that costs are higher for standard insurers that are licensed in more than one state than for RRGs.¹⁴ More specifically, he estimates that the typical standard insurer has a 26 percent higher expense ratio due to the existence of multiple regulators associated with the state regulation of insurance, and that these costs are passed on to insureds via higher premiums.

Given that part of the expense associated with a state regulatory system involves the state-specific licensing of individual life insurance agents, prior research has also examined the impact that a national federal regulator could have on licensing costs. Bair (2004) uses survey data to measure regulatory costs for the life insurance industry and reports

¹²Grace and Phillips (2007) find evidence of negative externalities in the form of a free-rider problem, where states with a small number of domestic insurers allow states with larger markets (and greater resources) to regulate for them.

¹³For a discussion on market discipline in the insurance market, see Harrington (2004).

¹⁴Born, Boyer and Barth (2009) argue that the only advantage of an RRG over a state-regulated insurer comes from the regulatory side, in that they are only required to be regulated in a single state while writing business nationally.

estimated regulatory costs ranging from \$893 million to \$961 million, with 28 percent of total costs attributed to producer licensing costs.¹⁵ Prior estimates also suggest that the implementation of an optional federal charter (created through the National Insurance Act of 2007) could reduce agent licensing costs, with savings ranging from \$268 to \$377 million each year, representing savings of approximately 62 to 87 percent (Regan, 2007).

Prior literature suggests that state regulation of insurance results in reduced competition in addition to increasing costs for insurers. Levery (2012) finds that insurer competition decreases as a result of costs associated with the duplicative state regulatory system. Examining the life insurance marketplace, Grace and Klein (2007) find that while the life insurance market is competitive, the use of an optional federal charter system would most likely increase the level of competition in the industry. Born, Boyer, and Barth (2009) show that RRGs in the medical malpractice liability market reduce market concentration (i.e., increased competition), which should ultimately result in greater availability of insurance and reduced prices.

While evidence suggests that there are both possible costs and benefits associated with a move toward federal regulation, participants in the insurance industry also differ in opinion with respect to the merits of federal regulation. These differences are generally based on size dimensions as well as factors associated with the segment of the insurance market that the firm is predominantly involved in. Typically, larger insurers view a move toward federal regulation as more favorable than do smaller insurers (Webel, 2007). Larger insurers often favor federal regulation (or OFCs) over state-based regulation because it has been argued that such a system could allow for the elimination of duplicative regulatory costs and increased speed-to-market, whereas smaller insurers may prefer state-based regulation that is more responsive to their needs.

Opinions regarding potential insurance regulation reform also differ by industry segment. Life insurers are typically viewed as being in favor of federal regulation to a greater extent than property-casualty insurers.¹⁶ Because life insurers now must compete both with other life insurance companies and with other financial institutions following the passage of

¹⁵The remaining 72% of total costs were allocated accordingly: market exams and regulation (17%); financial exams and regulation (18%); product approval (16%); and company licensing (21%).

¹⁶The ACLI released a joint study with CSC Financial Group in 2005 examining the economic impact of an OFC and concluded that the implementation of an OFC regulatory system would greatly reduce costs for the life insurance industry (American Council of Life Insurers and CSC, 2005). This recommendation is consistent with the ACLI's continued support for the implementation of an OFC system.

the Gramm-Leach-Bliley Act of 1999, it is generally argued that life insurers would benefit the most from a move toward some form of federal regulation (Webel, 2007). Under federal regulation, speed-to-market should improve and product innovation would be encouraged in the life insurance marketplace (Grace and Klein, 2007). By contrast, Harrington (2002) argues that federal regulation for the property-casualty industry would not be beneficial to either insureds or taxpayers due to necessary changes in the guaranty fund system, restrictions on pricing and underwriting, and increased cross-subsidization of risk. While potential benefits do exist for the property-casualty market, Harrington (2002) states that such benefits would be fairly modest compared to the costs, uncertainty, and risk associated with federal regulation. The National Association of Mutual Insurance Companies (NAMIC, date unknown) has lobbied against federal regulation for property-casualty insurers, arguing that state regulation is more appropriate given that local factors have a greater influence on property lines of coverage and that federal regulation could possibly result in greater duplication of costs. Following the passage of the Dodd-Frank Act, the NAMIC stated that it supported the existence of the FIO for the purpose of providing information and expertise to Congress, but that it opposed any recommendation for the FIO to expand its currently stated role for the purpose of becoming a federal regulator (NAMIC, 2011).

Hypothesis

The events leading up to the eventual passage of the Dodd-Frank Act are described in Table 1. In order to assess the market's perception of the impact of the legislation on insurers, we present the following null hypothesis:

H₀: The stock prices of publicly traded U.S. insurance companies were unaffected by the events leading up to the passage of the Act.

Rejection of the null hypothesis would thus suggest that publicly traded insurers experienced either a positive or a negative reaction to the events leading up to the passage of the Act. The Dodd-Frank Act includes a number of provisions with ambiguous implications for investors. For instance, the Act results in the creation of the FIO, which could foreshadow future federal regulation. As has been discussed previously, life insurance companies typically view the potential of federal regulation in a more favorable light than do property insurers because it could allow them greater flexibility in competing with other financial service organizations. On the other hand, property-casualty insurers and those firms that do not write business in a large number of states may view potential impending federal regulation as unnecessary and competitively less advantageous.

Similarly, the creation of the FSOC could result in either positive or negative market responses, depending on the specific characteristics of the insurer. The potential to be classified as “systemically important” by the FSOC could introduce an additional (more stringent) layer of federal regulation that could arguably reduce a firm’s ability to effectively compete. For smaller insurers that are less likely to fall into the “systemically important” category, a positive market response could be exhibited if there is a belief that the classification of large insurers as “systemically important” could allow smaller insurers to better compete in the insurance marketplace.

While the aggregate market response provides some evidence of investor perceptions regarding potential federal regulation, it is instructive to examine the response for individual sectors for which the anticipated market reaction is less ambiguous. Accordingly, we measure the stock price reaction to the passage of Dodd-Frank for both the overall U.S. insurance market and its individual sectors (property-casualty, life, health, and reinsurance). In addition to providing these disaggregated measures of investor reactions, we develop and estimate a model that explains variation in the market reaction in terms of firm-specific characteristics. Our cross-sectional regression analysis enables us to more directly test the stock market’s response to specific features of the legislation.

Data and Methodology

Publicly traded U.S. insurers were identified in Compustat using Standard Industrial Classification (SIC) codes. Only those insurers identified with SIC codes ranging from 6311 through 6399 are initially included in the sample. In order to ensure that we include only those firms that primarily derive revenue from insurance activities, we use Compustat Segment data to identify and remove firms from our sample that do not earn at least 50 percent of revenue from insurance business. Non-U.S. insurers and firms with missing data are also removed from our sample. Finally, we remove firms that are missing National Association of Insurance Commissioners (NAIC) annual statement data and those that do not have stock price data available throughout the sample period. The final sample has a total of 97 publicly traded U.S. insurance companies. A list of all publicly traded insurance companies included in the final sample is provided in Appendix A.

In order to examine the impact of the proposed regulatory legislation on the U.S. insurance industry, we use the Event Parameter Approach to measure the stock price reaction around the various legislative events listed in Table 1. Similar to Neale and Peterson (2005), we estimate a variation of the market model by using ordinary least squares and including binary variables to estimate the abnormal returns for each of the events in our

sample, as well as for the days surrounding each of the events. The model is given as:

$$R_{i,t} = \alpha_i + \beta_i R_{mt} + \sum_{k=-w}^w \gamma_{ik} D_{kt} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ is the stock return for firm i at time t , R_{mt} is the return on a value-weighted market portfolio at time t , K denotes the event windows, $-w$ denotes the beginning of the event window, w denotes the end of the event window and the error term, $\varepsilon_{i,t}$, is assumed to have a mean of zero. D_{kt} is a binary variable that is equal to one during the event day and zero otherwise. Abnormal returns are given by the coefficient γ_{ik} . Cumulative abnormal returns (CARs) for insurer i for a given event window are given as:

$$\gamma_i = \sum_{k=-w}^w \gamma_{ik} \quad (2)$$

Cumulative average abnormal returns (CAARs) are calculated across all firms and are given as:

$$\bar{\gamma} = \frac{1}{N} \sum_{i=1}^N \gamma_i \quad (3)$$

For our initial analysis, we estimate each of our models for two primary event windows: $(0, 0)$ and $(-1, 0)$. We use the $(0, 0)$ event window to determine the abnormal returns associated only with the event day, while we use the $(-1, 0)$ event window to ascertain if investors had information regarding the event the day prior to the occurrence of the event.¹⁷ We estimate abnormal returns for each of the events for the full sample of insurers and for specific industry segments.¹⁸

We model the relation between abnormal returns and firm characteristics in order to investigate investor perceptions of the relative importance of specific provisions contained in the Act. We include the following firm-specific characteristics in our model: insurer size (*Size*); a binary variable denoting firms that generate the majority of revenue from life insurance

¹⁷Our focus on the event day $(0, 0)$ is consistent with other studies where the exact date and time of news releases is known, e.g., Egginton et al. (2010).

¹⁸An insurer is classified as a specific type of insurer (property, life, health, and reinsurance) if the proportion of revenue derived from a given line of insurance business (as reported in the Compustat Segments database) is 50 percent or greater.

(*Life*); the natural logarithm of total expenditures associated with state licenses and fees (*StateExp*); the proportion of total net premiums written that are written in financial guaranty lines of business (*FinGuar*); the proportion of total net premiums written that are written in mortgage guaranty lines of business (*MortGuar*); the proportion of premiums from the “Other Liabilities—Claims Made” lines of business (*OthLiab*); a binary variable denoting financial holding companies (*FINHold*); and the natural logarithm of the insurer’s total notional value of swap positions as of December 31, 2009. As discussed below, we also estimate a version of model in which the *Size* variable is replaced by a binary variable denoting firms with total assets exceeding \$50 billion. The general model is given in Equation (4) as:

$$AR_{i,t} = \alpha + \beta_1 Size_{i,t-1} + \beta_2 Life_{i,t-1} + \beta_3 StateExp_{i,t-1} + \beta_4 Swaps_{i,t-1} + \beta_5 FinGuar_{i,t-1} + \beta_6 MortGuar_{i,t-1} + \beta_7 OthLiab_{i,t-1} + \beta_8 FINHold_{i,t-1} + \varepsilon_{i,t-1}. \quad (4)$$

One of the objectives of this study is to determine if there were particular components to the Dodd-Frank legislation that investors were responding to. The Dodd-Frank Act includes a number of provisions that could be viewed in either a positive or negative light, depending on the characteristics of the insurer and the manner in which the legislation was interpreted. We examine the relation between a variety of insurer characteristics and the market response to passage of the Act by the U.S. Senate. We discuss each of the variables included in the model below.

Independent Variables

Size. Insurer size may be one factor that is directly related to the market’s response to the Dodd-Frank legislation. Size may be positively related to abnormal returns if it is viewed that the legislation would allow a larger firm to reduce costs (possibly through the future implementation of federal regulation). On the other hand, size may be negatively related to abnormal returns if the market believes that the legislation could benefit smaller insurers, or if there is a concern that large insurers could face enhanced regulation as a result of being identified by the FSOC as “systemically important.” Such a concern could exist, as the Act gives the FSOC the ability to recommend an asset threshold greater than \$50 billion for the purpose of identifying systemically important companies. If size is not related to the market reaction, such a finding may suggest that (1) investors did not expect that insurance companies would ultimately be classified as being “systematically important” on the basis of size, or (2)

that the Act does not contain enough information to lead to a size-specific response. We proxy for insurer size using the natural logarithm of total firm assets, as reported in Compustat.

Large. In addition to the *Size* variable, we also estimate a version of the model that accounts for insurers that may be classified as being “systemically important.” As discussed previously, the Act provides a recommended asset threshold of \$50 billion for the purpose of identifying firms as “systemically important.” Given that firms that are identified as “systemically important” could face greater regulatory requirements (which could impact overall firm operations and the firm’s ability to compete), those firms with assets exceeding the \$50 billion threshold may have experienced a different market response than those firms below the \$50 billion threshold. To account for particularly large insurers, we incorporate a binary variable that denotes those firms with total assets that are equal to or greater than \$50 billion (as reported in Compustat).

Life. Anecdotal evidence suggests that industry segment may relate to the preference for or against federal regulation. It is often argued that life insurers would prefer federal regulation for competitive reasons, suggesting a positive relation between the passage of the Dodd-Frank Act and abnormal market returns. However, such an argument assumes that federal regulation would take the place of state regulation and would not act as an *additional* layer of regulation (Postal, 2010). Under the Dodd-Frank Act, federal regulation could represent an additional layer of regulation that could potentially increase regulatory costs and decrease a federally regulated insurer’s ability to compete. A negative relation could also exist if the life insurance industry is viewed as being more closely related to the financial services industry than property-casualty insurers. In such a case, life insurers may experience a negative market reaction as a result of contagion. Thus, the potential exists for either a positive or negative response, depending on investor expectations. A binary variable denoting whether the majority of revenues come from life insurance lines of business is included in the model. Insurer revenue data are obtained from the Compustat Segments database.

StateExp. Insurer expenditures on state regulation may also be related to the market’s response to legislative events related to the Act. We posit that if investors view the legislation as a signal of potential future federal regulation, those insurers that report greater expenditures on licenses and fees should experience a positive market return when compared to those firms reporting lower license and fee expenditures. This positive return would presumably be driven by the expectation that federal regulation would effectively reduce the costs associated with duplicative regulation (e.g., Leverty, 2012; Pottier, 2011). On the other hand, if the cost

of duplicative state regulation is simply passed on to consumers (as suggested by Pottier, 2007), a statistically significant relation between abnormal returns and regulatory expenditures may not be present as premiums would be expected to be reduced by the value of the reduction from the elimination of duplicative regulation. A non-significant relation may imply that either (1) any form of federal regulation would not be optional and would thus not reduce regulatory costs or (2) increased costs from duplicative regulation are already passed on to consumers (i.e., Pottier, 2007) and that any savings would just result in a reduction in premiums and would not ultimately benefit the insurer.

The natural logarithm of total insurer expenditures for state insurance department licenses and fees is included in the model to account for insurer expenditures on state regulation. Data on license and fee expenditures are obtained from the National Association of Insurance Commissioners (NAIC) annual statements.

Swaps. One component of the Dodd-Frank legislation that was expected to affect insurance companies (particularly life insurance companies) is the regulation of swap transactions. As discussed by Schwartzman and Ross (2010), swaps are often utilized by life insurers for the purpose of hedging risk. The Act provides the Securities Exchange Commission (SEC) and the Commodity Futures Trading Commission with regulatory oversight authority of over-the-counter swap transactions and also requires that many over-the-counter swap transactions be traded on an exchange or cleared through a clearinghouse. Additionally, the Act also allows for users to be classified as "Major Swap Participants," which could require insurers to adhere to greater regulatory requirements regarding capital requirements, record keeping, and disclosure (Schwartzman and Ross, 2010). We account for the potential impact of swap regulation on insurers by incorporating the natural logarithm of total notional values for swaps that are open as of December 31, 2009. Notional values for all swap transactions are obtained from NAIC Schedule DB, Part C, Section 1.

FinGuar. While part of the Dodd-Frank Act focuses on the regulation of swap transactions, there were concerns that financial guaranty insurance could be classified as a swap transaction, which could result in greater regulation of these insurance products.¹⁹ If the market believed that financial guaranty insurance could ultimately become classified as swap transactions, issuers of financial guaranty insurance products would face more

¹⁹The Dodd-Frank Act defines a swap as any contract "that provides for any purchase, sale, payment, or delivery ... that is dependent on the occurrence, nonoccurrence, or the extent of the occurrence of an event or contingency associated with a potential financial, economic, or commercial consequence."

stringent regulatory requirements (as discussed above). If such a belief were held by the market, we would anticipate a negative relation between abnormal returns associated with the passage of the Act and participation in financial guaranty insurance. We measure financial guaranty participation as the proportion of total net premiums written attributed to financial guaranty insurance.

MortGuar. Although the potential exists for financial guaranty insurers to face additional regulatory scrutiny under the Dodd-Frank legislation, mortgage guaranty insurers may experience increased demand resulting from the passage of the Act. Section 941 of the Dodd-Frank Act (titled "Regulation of Credit Risk Retention") requires that regulators "jointly prescribe regulations to require any securitizer to retain an economic interest in a portion of the credit risk for any asset that the securitizer, through the issuance of an asset-backed security, transfers, sells, or conveys to a third party." However, the Act allows for exemptions from the risk retention requirement for "qualified residential mortgages," where exemptions are expected to "ensure sound underwriting and lower risk of default" (Mortgage Bankers Association, 2010). The Act explicitly states that evidence of mortgage guarantee insurance may be used to avoid the risk retention component of Section 941. If this is the case, one may expect that the passage of the Act could result in an increased demand for mortgage guaranty insurance, which could lead to a positive market response following the passage of the Act. Mortgage guaranty insurance participation is measured as the proportion of total net premiums written attributed to mortgage guaranty insurance.

OthLiab. Some have suggested that language in the Act could prove lucrative for writers of D&O insurance (Levick, 2011). The Dodd-Frank Act includes a whistleblower provision (Section 748: Commodity Whistleblower Incentives and Protection) that provides monetary incentives to individuals to provide the SEC with information regarding violations of federal security law.²⁰ It is argued that the incentives from Section 748 should increase the number of tips and complaints provided to the SEC, which would increase costly internal investigations and ultimately increase the demand for coverage for such investigations.²¹ Because insurers are not required to report premiums collected from writing D&O insurance, we use the proportion of premiums written for "other liability" lines of business, which includes D&O insurance.²² If investors anticipated

²⁰The provision provides the whistleblower with ten to thirty percent of what is collected from monetary sanctions imposed on the offending party.

²¹Levick (2011) states that the cost of stand-alone coverage is quite high, with estimates ranging from \$40,000 to \$70,000 for \$1 million in coverage.

that the whistleblower provision will increase the demand for D&O insurance coverage (and related coverages), we expect that the market would react positively to the passage of the Dodd-Frank Act. *OthLiab* is measured as the proportion of premiums collected for “other liability” lines of business to total premiums collected.²³

FINHold. Because much of the legislation’s focus is on large financial conglomerates, one may anticipate a relation between a firm’s involvement with other parts of the financial services sector and the market response to the Act. Given that much of the Act was directed toward increased regulation on the part of non-insurance financial service firms, we predict a negative relation between abnormal returns and the *FINHold* binary variable. Similar to Egginton, Hilliard, Liebenberg, and Liebenberg (2010), we identify financial holding companies using the Compustat Segments database. Firms that have at least one business segment with an SIC code denoting a non-insurance financial services are coded as financial holding companies using a binary variable. Summary statistics, correlations, and variable definitions for each for each of the independent variables included in our model are provided in Table 2.

RESULTS

Market Response to Dodd-Frank

In order to examine the impact that each event had on the industry as well as on individual segments of the U.S. insurance industry, we present the results for the entire sample as well as for insurers with revenue primarily from life insurance, property insurance, health insurance, and reinsurance. The results for each of the events leading up to the passage of the Dodd-Frank Act are reported in Table 3.^{24,25} The results suggest that the majority of the events leading up to the passage of the Dodd-Frank Act were not associated with statistically significant abnormal returns. For the

²²“Other Liability” typically includes the following coverages: construction and alteration liability; contingent liability; contractual liability; elevators and escalators liability; errors and omissions liability; environmental pollution liability; excess stop loss, excess over insured, or self-insured amounts and umbrella liability; liquor liability; personal injury liability; premises and operations liability; completed operations liability; nonmedical professional liability (NAIC, 2007).

²³While the “Other Liabilities—Claims Made” portion of the NAIC Annual Statements represents the best available proxy for D&O business, this variable also captures other lines of business. The fact that other lines of business are incorporated in this measure biases us against finding a significant relation between this variable and abnormal returns, given the additional “noise” created by the non-D&O lines of business.

Table 2. Summary Statistics and Correlations

Variable	Definition	Mean	Std. dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) <i>Size</i>	Natural logarithm of total firm assets as reported in Compustat	8.994	1.998	1.00								
(2) <i>Large</i>	Binary variable equal to 1 if the firm has total assets in excess of \$50 billion, and zero otherwise	0.186	0.391	0.71	1.00							
(3) <i>Life</i>	Binary variable denoting, if the majority of revenues come from life insurance lines of business, where 1 denotes that the majority of revenues come from life insurance, and zero otherwise	0.175	0.382	0.36	0.27	1.00						
(4) <i>StateExp</i>	Natural logarithm of total insurer expenditures attributed to state insurance department licenses and fees	14.21	3.048	0.38	0.25	-0.01	1.00					
(5) <i>Swaps</i>	Natural logarithm of the notional value of open swaps as of December 31, 2009	5.163	9.165	0.67	0.54	0.40	0.19	1.00				
(6) <i>FinGuar</i>	The proportion of total net premiums written attributed to financial guaranty insurance	0.001	0.007	0.00	-0.03	-0.03	0.02	-0.05	1.00			
(7) <i>MortGuar</i>	The proportion of total net premiums written attributed to mortgage guaranty insurance	0.044	0.197	0.07	0.03	0.04	0.07	0.01	0.59	1.00		
(8) <i>OtherLiab</i>	The proportion of total net premiums written attributed to "Other Liability-Claims Made" lines of business	0.047	0.115	0.10	-0.01	-0.10	0.14	-0.05	-0.06	-0.09	1.00	
(9) <i>FINHold</i>	Binary variable denoting if an insurer is a financial holding company, where 1 denotes that a firm is a financial holding company, and zero otherwise	0.052	0.222	0.44	0.34	0.36	0.01	0.48	-0.04	-0.06	-0.07	1.00

full sample, insurers did not experience abnormal returns until the U.S. Senate passed the amended version of the Act on July 15. On that day, the full sample of insurers experienced negative abnormal returns of -0.62 percent, equating to an average loss in market value of \$30.2 million per firm on the day of the event.²⁶ When expanding the event window to include the day prior to the Senate's passage of the Act, the cumulative average abnormal return (CAAR) increases to -1.32 percent. The results contained in Table 3 suggest that the decline in market value is primarily driven by life and property-casualty insurers, with life insurers experiencing a 1.36 percent decline in stock price on the day of the event (3.37 percent when including the prior day) and property insurers experiencing a 0.59 percent decline in price on the day of the event (-1.15 percent when including the prior day).²⁷ Overall, our event-study results suggest that investors viewed the Dodd-Frank Act as a negative event for both life and property insurers.

While there does appear to be a strong negative response to the passage of the Act through the U.S. Senate, such a response is not evident on the day the Act was signed by President Obama (July 21, 2010). This finding is not surprising, as it was all but certain that the president would sign the Act once it had passed through the Senate. Therefore, the market response on July 15 most likely represented the acknowledgement that the Act would be signed into law once the Senate voted for passage. Following the Senate's passage of the Act, the president stated, "The American people will never again be asked to foot the bill for Wall Street's mistakes," and it was reported that the president would sign the bill at some point the following week (Wolf, 2010).

The overwhelmingly negative reaction to the passage of the Act may be attributed to uncertainty associated with scope of the legislation and the potential for additional or duplicative regulation. While the Act provides a framework for the regulation of "systemically important" firms, it does not specify how insurers are to be selected for enhanced federal regulation or how the newly created FIO and FSOC will operate. Moreover, the

²⁴Because House-Senate Conference approval on June 29 occurred only one day prior to the passage of the Act through the U.S. House of Representatives, we do not include the events of June 29, 2010 in the analysis.

²⁵Results obtained using the market model rather than the event parameter approach are presented in Appendix B.

²⁶The average market value of the insurers contained in the sample is \$4.87 billion.

²⁷A standard t-test indicates a statistically significant difference between life insurer abnormal returns and the abnormal returns experienced by all other firms in the sample on the day the legislation was passed by the U.S. Senate.

Table 3. Insurer Abnormal Stock Returns to the Dodd-Frank Legislation

Event date	Window	Full sample (n = 97)		Life (n = 17)		Property (n = 63)		Health (n = 12)		Reinsurance (n = 5)	
		CAAR	Prob > F	CAAR	Prob > F	CAAR	Prob > F	CAAR	Prob > F	CAAR	Prob > F
7/21/2010	(-1, 0) (0, 0)	-0.38%	0.3089	-0.75%	0.3939	-0.09%	0.8570	-1.46%	0.1235	-0.24%	0.7147
		-0.22%	0.4047	0.34%	0.5874	-0.26%	0.4558	-0.85%	0.2068	-0.13%	0.7783
7/15/2010	(-1, 0) (0, 0)	-1.32%	0.0005***	-3.37%	0.0001***	-1.15%	0.0209**	0.50%	0.6041	-0.93%	0.1543
		-0.62%	0.0196**	-1.36%	0.0283**	-0.59%	0.0942*	0.38%	0.5703	-0.99%	0.0325**
6/30/2010	(-1, 0) (0, 0)	0.05%	0.9076	0.62%	0.4914	0.01%	0.9886	-0.15%	0.8819	-0.96%	0.1576
		-0.13%	0.6424	-0.21%	0.7328	-0.14%	0.7035	-0.02%	0.9788	0.03%	0.9436
5/20/2010	(-1, 0) (0, 0)	0.52%	0.2020	1.97%	0.0418**	0.16%	0.7620	0.51%	0.6343	0.19%	0.8010
		1.25%	0.8901	1.30%	0.0593*	-0.20%	0.5989	-0.01%	0.9848	-1.08%	0.0432**
4/15/2010	(-1, 0) (0, 0)	0.16%	0.7204	0.40%	0.7210	0.50%	0.3913	-1.88%	0.1234	-0.02%	0.9835
		-0.31%	0.3434	-0.93%	0.2431	-0.12%	0.7639	-0.35%	0.6853	-0.37%	0.5701
12/11/2009	(-1, 0) (0, 0)	-0.21%	0.7519	-2.26%	0.2195	0.12%	0.8804	0.75%	0.6912	0.40%	0.7443
		0.45%	0.3239	-0.65%	0.6157	0.96%	0.0843*	-0.74%	0.5789	0.72%	0.4053
12/2/2009	(-1, 0) (0, 0)	-0.47%	0.4863	-0.80%	0.6726	-0.49%	0.5508	0.15%	0.9393	-0.56%	0.5441
		0.28%	0.5588	0.40%	0.7668	0.27%	0.6368	0.21%	0.8788	0.10%	0.9062
6/17/2009	(-1, 0) (0, 0)	0.51%	0.5289	-0.36%	0.8816	0.55%	0.5802	1.80%	0.4104	0.02%	0.9884
		0.04%	0.9499	0.03%	0.9876	0.04%	0.9566	-0.04%	0.9791	0.20%	0.8676

* **, and *** denote statistical significance at the .10, .05, and .01 levels, respectively. The column titled "CAAR" reports cumulative average abnormal returns for each time period, where t = 0 represents the day of the specific event being examined.

burden of additional regulation could be large enough to offset the cost-savings and competitive benefits that were expected by proponents of a single national regulator.

Cross Sectional Analysis

The results reported in the previous section suggest that investors responded negatively toward the passage of the Dodd-Frank Act. However, the event study results only reflect the market reaction to the legislation in its entirety and do not capture the differential response to specific provisions contained in the Act. By evaluating the relation between firm characteristics and abnormal returns as per equation (4), we are able to examine the reasons for the market response exhibited in Table 3. We focus on the abnormal returns associated with the Senate's passage of the Act on July 15, 2010, as the results presented in Table 3 suggest that the majority of the market's response occurred at that time. Results from our multivariate analysis are reported in Table 4.

We estimate equation (4) using abnormal returns for the day that the legislation was passed (Window (0, 0)) and using cumulative abnormal returns for the day of the event as well as the day prior to Senate's passage of the legislation (Window (-1, 0)).²⁸ In general, we find two firm-specific factors that are statistically and significantly associated with insurer abnormal returns: the percentage of premiums from financial guaranty lines of business and classification as a life insurance company. First, we report a negative and significant relation between the percent of business written in financial guaranty insurance (*FinGuar*) and abnormal returns. As discussed previously, insurers writing financial guaranty insurance have been viewed as contributors to the systemic failures experienced by the U.S. economic system in 2008 and 2009. One component of the Dodd-Frank Act is the regulation of how swaps are traded and regulated, and there was some uncertainty at the passage of the Act as to whether financial guaranties on swaps could be treated as swaps under the legislation. The negative reaction suggests at the very least some uncertainty with respect to how financial guaranty products would be viewed in a post-Dodd-Frank regulatory environment, and may imply that investors anticipated that financial guaranty products would be treated in a manner similar to swap instruments. However, it is interesting to note that while a stronger negative response was exhibited on behalf of those insurers writing a greater

²⁸Variance inflation factors (VIFs) are checked for each model to ensure that collinearity does not bias the results. The VIFs for the models reported in Table 4 do not exceed a value of three.

Table 4. The Relation Between Abnormal Returns and Firm Characteristics

Variable	Window (0, 0)		Window (-1, 0)	
	(1)	(2)	(3)	(4)
<i>Size</i>	0.0005 (0.001)		0.0021 (0.002)	
<i>Large</i>		0.0053 (0.005)		0.0072 (0.007)
<i>Life</i>	-0.0106*** (0.004)	-0.0105*** (0.004)	-0.0258*** (0.007)	-0.0248*** (0.007)
<i>StateExp</i>	-0.0001 (0.000)	-0.0002 (0.000)	-0.0016 (0.001)	-0.0014 (0.001)
<i>Swaps</i>	0.0000 (0.000)	-0.0000 (0.000)	-0.0001 (0.000)	0.0000 (0.000)
<i>FinGuar</i>	-0.7796*** (0.109)	-0.7700*** (0.119)	-0.0467 (0.173)	-0.0317 (0.180)
<i>MortGuar</i>	0.0065 (0.006)	0.0064 (0.007)	0.0020 (0.011)	0.0027 (0.011)
<i>OthLiab</i>	0.0077 (0.008)	0.0088 (0.008)	0.0082 (0.010)	0.0128 (0.009)
<i>FINHold</i>	0.0008 (0.005)	0.0006 (0.005)	-0.0077 (0.009)	-0.0062 (0.009)
Constant	-0.0072 (0.009)	-0.0031 (0.004)	-0.0040 (0.017)	0.0094 (0.016)
Observations	97	97	97	97
R-squared	0.210	0.222	0.230	0.225
Prob > F	0.0000	0.0000	0.0006	0.0008

*, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent level, respectively. Robust standard errors are presented below coefficients in parentheses. *Size* = the natural logarithm of total firm assets; *Large* = binary variable where 1 denotes if total firm assets are greater than or equal to \$50 billion, zero otherwise; *Life* = binary variable denoting if the majority of revenues come from life insurance lines of business, where 1 denotes that the majority of revenues come from life insurance, zero otherwise; *StateExp* = natural logarithm of total insurer expenditures related to state licenses and fees; *Swaps* = the natural logarithm of the notional value of open swaps as of December 31, 2009; *FinGuar* = the proportion of total net premiums written attributed to financial guaranty lines of business; *MortGuar* = the proportion of total net premiums written attributed to the mortgage guaranty lines of business; *OthLiab* = the proportion of total net premiums written attributed to "Other Liability – Claims Made" lines of business; *FINHold* = binary variable denoting if a firm is a financial holding company, where 1 denotes a financial holding company, zero otherwise.

proportion of financial guaranty insurance, no statistical significance is found with regards to the level of derivatives usage among insurance companies (*Swaps*).²⁹ While we report a negative and significant relation between the *FinGuar* variable and abnormal returns, this relation only holds for abnormal returns generated on the day of the event and does not exist when considering the day prior to the Senate's passage of the Act.

In addition to the finding of statistical significance on the *FinGuar* variable, the binary variable denoting a firm as a life or non-life insurer (*Life*) is negative and statistically significant in each of our models. This finding suggests that those firms classified as life insurance companies experienced abnormal returns that were statistically significantly lower than the abnormal returns experienced by all other insurers in the sample. Given that life insurers have generally favored the idea of federal regulation, one may anticipate that the market would respond positively to the passage of the Act. The negative response (above that experienced by all other insurance companies contained in the sample) suggests that either (1) the market anticipated that life insurers would be more negatively impacted by the legislation than other insurers or (2) firms in the life insurance industry experienced greater negative abnormal returns as a result of contagion. The potential that life insurers could be more likely than other insurance companies to suffer negative consequences resulting from the legislation seems unlikely. The legislation does not explicitly result in different levels of regulation for life insurers versus other insurers, nor does it specifically single out the life insurance industry. Given that the legislation does not explicitly treat life insurers differently from other insurers, the results suggest that the greater negative response to the legislation for life insurers may very well be a result of contagion. The life insurance industry is generally viewed as being more similar to the financial services industry than the other segments of the U.S. insurance industry. As detailed by Gao, Liao, and Wang (2011), large financial institutions experienced significantly negative abnormal returns in response to the events leading up to the passage of the Dodd-Frank Act. Similar to the contagion effect discussed by Egginton, Hilliard, Liebenberg, and Liebenberg (2010), it is possible that the Dodd-Frank Act represented a negative shock to commercial and investment banks, and that negative shock carried over to similar competitors (i.e., life insurers).

While we do report a significant relation between abnormal returns and (1) the percent of financial guaranty insurance business written and

²⁹We re-estimate each model and replace the natural logarithm of the notional values of swaps with the notional value of swaps scaled by total insurer assets. The results from these versions of the models are qualitatively similar to those presented in Table 4.

(2) classification as a life insurer, we find little statistical relation between the other independent variables and the market's reaction. First, we find that the size of the insurer (*Size*) is not statistically related to the market response to the passage of the Dodd-Frank legislation. To further explore this issue, we re-estimate the model and replace the *Size* variable with the *Large* variable, which denotes firms with total assets greater than \$50 billion.³⁰ As discussed previously, the legislation offered a potential \$50 billion threshold for the purpose of identifying "systemically important" firms. However, the inclusion of this variable does not appear to affect the results, suggesting that those firms that would seemingly be most likely to fall under a non-optional federal regulatory system did not experience abnormal returns that were significantly different from those for other firms that fell below that threshold. Similar to the *Size* and *Large* variables, we do not find evidence of a statistical relation between the *FINHold* binary variable and abnormal returns.

The coefficient on the *StateExp* variable indicates that insurer-specific expenditures on state licenses and fees are also unrelated to abnormal returns following the passage of the Dodd-Frank Act. These results are not consistent with the notion of expected federal regulation reducing duplicative costs of state regulation as discussed by Pottier (2011) and Leverty (2012).³¹ Furthermore, we fail to report a significant relation between the *MortGuar* and *OthLiab* variables and abnormal returns, even though industry press implied the potential for an increase in the demand for mortgage guaranty insurance and D&O insurance following the passage of the Act.

The results for each of the models presented in Table 4 indicate that while investors did respond negatively to the passage of the Act, it does not appear that the response was strongly related to firm-specific factors beyond the writing of business in financial guaranty lines of business. The negative reaction may thus suggest that investors were responding in large part to the uncertainty generated by the legislation rather than to specific pieces of regulation contained within the Act. Furthermore, the stronger negative reaction experienced by life insurers in the full sample appears to be driven in large part by a contagion effect more than any particular feature attributed to the life insurance industry. In other words, the mere

³⁰Additional versions of the model were estimated in which the *Size* and *Large* variables were replaced by the natural logarithm of the insurer's market value. The coefficient on the market value variable was statistically insignificant, and all other results were qualitatively similar.

³¹We also estimate a version of the model in which we proxy for the cost of writing business in multiple states using the total number of states the insurer is licensed to write business in as an explanatory variable. This variable is statistically insignificant in all versions of the model, and results are otherwise qualitatively similar to those presented in Table 4.

association that many life insurers have with the financial services industry appears to be the driving force for the negative reaction to the passage of the Act through Congress. Overall, the results suggest that the market viewed the passage of the Act as a negative event for the U.S. insurance industry and that investor responses were primarily driven by increased regulatory uncertainty rather than by specific components of the legislation.

CONCLUSION

The potential negative consequences of systemic risk within the U.S. financial system were highlighted during the financial crisis of 2008 and 2009. With large corporate failures and even bigger government bailouts, the U.S. Congress took drastic measures in an attempt to reduce the likelihood of future financial calamity resulting from increased corporate risk-taking, reduced corporate risk management, and an overall greater level of interconnectedness. Ultimately a large majority of these measures were assembled into a single piece of financial reform legislation—the Dodd-Frank Act. The Act touches on many different pieces of the U.S. financial system, including the insurance industry. Given that the insurance industry has operated under a state-regulatory regime since the passage of the McCarran-Ferguson Act, the prominent role of federal regulation in the Act suggests potential important ramifications for the insurance industry as a whole. By investigating the market response to the passage of the Dodd-Frank Act, we gain some insight into investor expectations regarding the impact of the legislation on the insurance industry and whether investors anticipate potential future federal regulation of insurance.

We find that investors reacted negatively to Senate's passage of the Dodd-Frank Act. In particular, our results suggest that our sample as a whole experienced significantly negative abnormal returns of -1.3 percent on the day that the legislation was passed by the U.S. Senate. The results of the event-study also suggest that while the majority of publicly traded insurers in our sample experienced negative abnormal returns on the day of the Senate's passage of the legislation, life insurer equity was most greatly affected by the negative market response, with a 3.37 percent decline in equity value on the day of the passage. To further investigate the market's response to the legislation, we attempt to identify firm-specific characteristics that are associated with the abnormal returns. Consistent with the results of the event-study, we find that life insurers experienced greater negative abnormal returns than did other insurers in the sample.

This result could indicate evidence in support of a contagion effect, where investors responded negatively to the passage of the Act in a manner similar to what was seen among other financial institutions (i.e., Gao, Liao, and Wang, 2011). The results also suggest that the proportion of financial guaranty business written by the insurer was also strongly (negatively) related to abnormal returns, which may indicate that investors anticipated the Act would result in financial guaranty products being treated in a manner similar to swap instruments. In light of our conclusion that the Act resulted in considerable regulatory uncertainty, we recommend further research testing market and insurer responses to subsequent clarifications to the legislation.

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Appendix A. Full Sample of Publicly Traded Insurers Included in the Study (n = 97)

Company name	Ticker	Market value (\$ millions)	Company name	Ticker	Market value (\$ millions)
21ST CENTURY HOLDING CO	TCHC	32	ASSURANT INC	AIZ	3439
ACE LTD	ACE	17000	ATLANTIC AMERICAN CORP	AAME	29
AEGON NV	AEG	10900	AXIS CAPITAL HOLDINGS LTD	AXS	3754
AETNA INC	AET	13700	BALDWIN & LYONS	BWINB	363
AFFIRMATIVE INS HOLDINGS INC	AFFM	63	BERKLEY (WR) CORP	WRB	3857
AFLAC INC	AFL	21700	CENTENE CORP	CNC	914
ALLEGHANY CORP	Y	2445	CHUBB CORP	CB	16300
ALLIED WORLD ASSURANCE CO	AWH	2291	CIGNA CORP	CI	9673
ALLSTATE CORP	ALL	16100	CINCINNATI FINANCIAL CORP	CINF	4251
AMERICAN EQTY INVT LIFE HLDG	AEL	414	CITIZENS INC	CIA	324
AMERICAN FINANCIAL GROUP INC	AFG	2829	CNA FINANCIAL CORP	CNA	6457
AMERICAN INTERNATIONAL GROUP	AIG	20000	CNO FINANCIAL GROUP INC	CNO	1254
AMERICAN NATIONAL INSURANCE	ANAT	3203	DELPHI FINANCIAL GROUP INC	DFG	1208
AMERICAN SAFETY INS HLDG LTD	ASI	149	DONEGAL GROUP INC	DGICA	396
AMERISAFE INC	AMSF	340	EASTERN INSURANCE HDLGS INC	EIHI	84
AMTRUST FINANCIAL SERVICES	AFSI	701	EMC INSURANCE GROUP INC	EMCI	282
ARCH CAPITAL GROUP LTD	ACGL	3918	EMPLOYERS HOLDINGS INC	EIG	658

Appendix A. (continued)

Company name	Ticker	Market value (\$ millions)	Company name	Ticker	Market value (\$ millions)
ENDURANCE SPECIALTY HOLDINGS	ENH	2052	INFINITY PROPERTY & CAS CORP	IPCC	549
EVEREST RE GROUP LTD	RE	5082	KANSAS CITY LIFE INS CO	KCLI	344
FBL FINANCIAL GROUP INC	FFG	564	KINGSWAY FINANCIAL SVCS INC	KFS	90
FIDELITY NATIONAL FINANCIAL	FNF	3099	LINCOLN NATIONAL CORP	LNC	7519
FIRST ACCEPTANCE CORP	FAC	94	MANULIFE FINANCIAL CORP	MFC	34000
FPIC INSURANCE GROUP INC	FPIC	261	MARKEL CORP	MKL	3338
GAINSCO INC	GANS	44	MEADOWBROOK INS GROUP INC	MIG	411
GENWORTH FINANCIAL INC	GNW	5546	MERCURY GENERAL CORP	MCY	2151
HALLMARK FINANCIAL SERVICES	HALL	160	METLIFE INC	MET	28900
HANOVER INSURANCE GROUP INC	THG	2110	MGIC INVESTMENT CORP/WI	MTG	723
HARLEYSVILLE GROUP INC	HGIC	878	MOLINA HEALTHCARE INC	MOH	586
HARTFORD FINANCIAL SERVICES	HIG	8909	NATIONAL SEC GROUP INC	NSEC	27
HCC INSURANCE HOLDINGS INC	HCC	3190	NATIONAL WESTERN LIFE	NWLI	630
HEALTH NET INC	HNT	2402	NAVIGATORS GROUP INC	NAVG	794
HOMEOWNERS CHOICE INC	HCI	50	OLD REPUBLIC INTL CORP	ORI	2416
HORACE MANN EDUCATORS CORP	HMN	490	ONEBEACON INSURANCE GROUP	OB	1311
INDEPENDENCE HOLDING CO	IHC	89	PARTNERRE LTD	PRE	6165

Appendix A. (continued)

Company name	Ticker	Market value (\$ millions)	Company name	Ticker	Market value (\$ millions)
PHOENIX COMPANIES INC	PNX	322	STATE AUTO FINANCIAL CORP	STFC	736
PMI GROUP INC	PMI	208	SUN LIFE FINANCIAL INC	SLF	17100
PRESIDENTIAL LIFE CORP	PLFE	271	TORCHMARK CORP	TMK	3641
PROASSURANCE CORP	PRA	1741	TOWER GROUP INC	TWGP	1053
PROGRESSIVE CORP-OHIO	PGR	12100	TRAVELERS COS INC	TRV	25900
PROTECTIVE LIFE CORP	PL	1416	UNICO AMERICAN CORP	UNAM	55
PRUDENTIAL FINANCIAL INC	PRU	23000	UNITED FIRE & CAS CO	UFCS	484
RADIAN GROUP INC	RDN	605	UNITEDHEALTH GROUP INC	UNH	35000
REINSURANCE GROUP AMER INC	RGA	3478	UNITRIN INC	UTR	1375
RENAISSANCERE HOLDINGS LTD	RNR	3282	UNIVERSAL INSURANCE HLDGS	UVE	222
RLI CORP	RLI	1132	UNUM GROUP	UNM	6477
SAFETY INSURANCE GROUP INC	SAFT	546	WELLPOINT INC	WLP	26200
SEABRIGHT HOLDINGS INC	SBX	249	WHITE MTNS INS GROUP LTD	WTM	2947
SELECTIVE INS GROUP INC	SIGI	876	XL GROUP PLC	XL	6271
STANCORP FINANCIAL GROUP INC	SFG	1911			

Appendix B. Market Model Event-Study Results

Event date	Window	Full sample (n = 97)		Life (n = 17)		Property (n = 63)		Health (n = 12)		Reinsurance (n = 5)	
		CAAR	Patell Z	CAAR	Patell Z	CAAR	Patell Z	CAAR	Patell Z	CAAR	Patell Z
7/21/2010	(-1, 0)	-0.38%	-1.833**	-0.75%	-1.519*	-0.09%	-0.561	-1.46%	-1.866**	-0.24%	-0.395
	(0, 0)	-0.22%	-2.383***	0.34%	-0.100	-0.26%	-2.097**	-0.85%	-1.624*	-0.13%	-0.349
7/15/2010	(-1, 0)	-1.32%	-5.437***	-3.37%	-4.604***	-1.15%	-4.256***	0.50%	0.689	-0.93%	-1.420*
	(0, 0)	-0.62%	-3.659***	-1.36%	-2.609***	-0.59%	-2.929***	0.38%	0.821	-0.99%	-2.184**
6/30/2010	(-1, 0)	0.05%	-0.542	0.62%	1.215	0.01%	-0.878	-0.15%	-0.062	-0.96%	-1.417*
	(0, 0)	-0.13%	-0.727	-0.21%	-0.140	-0.14%	-0.925	-0.02%	0.115	0.03%	0.160
5/20/2010	(-1, 0)	0.52%	2.127*	1.97%	2.647***	0.16%	0.779	0.51%	0.941	0.19%	0.266
	(0, 0)	1.25%	-0.558	1.30%	2.434***	-0.20%	-1.489*	-0.01%	0.250	-1.08%	-2.047**
4/15/2010	(-1, 0)	0.16%	0.589	0.40%	-0.100	0.50%	1.534*	-1.88%	-1.678*	-0.02%	-0.050
	(0, 0)	-0.31%	-0.815	-0.93%	-1.214	-0.12%	0.025	-0.35%	-0.499	-0.37%	-0.664
12/11/2009	(-1, 0)	-0.21%	0.255	-2.26%	-1.262	0.12%	0.466	0.75%	0.970	0.40%	0.294
	(0, 0)	0.45%	1.496**	-0.65%	-0.542	0.96%	2.162**	-0.74%	-0.578	0.72%	0.810
12/2/2009	(-1, 0)	-0.47%	-1.573*	-0.80%	-0.209	-0.49%	-1.314*	0.15%	-0.054	-0.56%	-0.535
	(0, 0)	0.28%	0.860	0.40%	0.265	0.27%	0.847	0.21%	0.134	0.10%	0.019
6/17/2009	(-1, 0)	0.51%	1.647**	-0.36%	-0.209	0.55%	1.420*	1.80%	1.682**	0.02%	0.028
	(0, 0)	0.04%	1.239	0.03%	0.265	0.04%	1.207	-0.04%	0.305	0.20%	0.227

*, **, and *** denote statistical significance at the .10, .05, and .01 levels, respectively. The column titled "CAAR" reports cumulative average abnormal returns for each time period, where t = 0 represents the day of the specific event being examined.