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The effect of the Dodd-Frank act on risk in the financial sector

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The Effect of the Dodd-Frank Act on Risk in the Financial Sector

An Honors Program Project Presented to
the Faculty of the Undergraduate
College of Business
James Madison University

by Beatrix Shreve Haddon

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Accepted by the faculty of the Department of Finance and Business Law, James Madison University, in partial fulfillment of the requirements for the Honors Program.

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Abstract

The Dodd-Frank Wall Street Reform and Consumer Protection Act, commonly known as the Dodd-Frank Act, was passed in 2010 in an attempt to increase transparency and accountability in the financial system. The purpose of this thesis is to discover what effect, if any, the Dodd-Frank Act had on both systematic risk and total volatility in the financial sector. My study shows that while the legislation significantly reduced systematic risk in only one out of the seven industries within the financial sector in the time period I analyzed, it successfully reduced total volatility in all seven industries.

I. Introduction

On July 21st, 2010, President Barack Obama signed into law the Dodd-Frank Wall Street Reform and Consumer Protection Act, commonly known as the Dodd-Frank Act. The most sweeping financial reform since the Securities Act of 1933 and the Securities Exchange Act of 1934, the Dodd-Frank Act was passed in response to the severe recession of 2008. The legislation aims to increase transparency and accountability in the financial system.

There are two major objectives of this thesis. The first is to provide an overview of the Dodd-Frank Act with supporting literature review. The second is to determine what effect, if any, the act has had on systematic risk and total volatility in the U.S. financial sector. Specifically, I examine changes in systematic risk as measured by the betas of firms in affected industries within the financial sector, as well as changes in total volatility as measured by the variance of returns of firms in the affected industries. The study reveals that while systematic risk decreased in only one of the seven industries in the financial sector following passage of the law, total volatility decreased in all seven industries.

In Section II, broken into three subsections, I present a literature review. The first subsection discusses the financial crisis and how the Dodd-Frank Act attempted to address it; the second provides a summary of each title of Dodd-Frank; and the third explains the positive and negative effects of regulation in general.¹ In Section III, including two subsections, I present my research question, methodology, data, and results. Section IV presents a discussion of the results, and Section V offers a conclusion.

¹ Section II intends to provide background information surrounding the legislation to ensure familiarity with the topic of research. The reader may skip to Section III if desired; this will not affect the continuity of the paper.

II. Literature Review

A. The Financial Crisis and Dodd-Frank

There is plenty of debate over what caused the financial collapse in 2008. Some believe the main cause was government intervention in the housing crisis, while others think Wall Street and unethical bankers took advantage of homeowners and mortgage investors. However, a more complex analysis takes into account factors including the following: the credit bubble and housing bubble in late 1990s; an increase in potentially deceptive nontraditional mortgages arising from excess liquidity, rising house prices, and an ineffectively regulated primary mortgage market; failures in credit-rating and securitization; and miscalculation of risk in the housing market. In addition, the failure of ten firms as well as mergers and restructurings in September 2008 caused financial panic, causing confidence to plummet. (Thomas, Hennessey, & Holtz-Eakin, 2014)

Kuotsai Liou (2013), in “The Financial Crisis and the Challenge of Government Regulation,” identifies four major causes of the crisis: moral hazard and unethical behavior; weaknesses of financial corporations; negative effects of systemic risk; and government policy failure. These factors include, more specifically, financial risk management weaknesses; corporate executives taking on high levels of risk in order to profit in the short run; and financial contagion, which involves the widespread repercussions of financial shocks. Financial contagion also results from systemic risk, which Liou defines as individual market participants attempting to avoid risk but ultimately creating risk in the market. John C. Coffee (2015), in “Systemic Risk After Dodd-Frank: Contingent Capital and the Need for Regulatory Strategies Beyond Oversight,” more specifically defines systemic risk as the risk that small economic shocks can lead to global repercussions because of how integrated financial institutions are with each other.

Coffee agrees with Liou about executives taking on too much risk. He writes that problems with executive compensation plans, added on to the fact that higher leverage increases profitability,

may have encouraged financial firms to take on more leverage and thus increase risk. Coffee believes that shareholders could have influenced which executive compensation systems companies used and that they could have pressured managers into accepting more leverage and risk. This excess risk could have contributed to the collapse of systemically significant financial institutions.

Among a number of outcomes, the crisis contributed to the United States losing almost an entire year's worth of economic activity, nearly \$14 trillion, during the recession from 2007 to 2009. The real estate market suffered, foreclosures increased, oil prices rose, and poor job growth still exists because of the crisis. Wages for all workers have exhibited a downward trend since the beginning of the recession, which is a reversal of the trend from before the recession. The recession forced states to cut spending, and public workforces overall have decreased. (Grofum, 2014) In addition, according to Liou, investors lost confidence in the stock market and in major financial institutions, there was a decline in international trade, and economic recovery has been slow.

The purpose of Dodd-Frank is to counteract the problems that caused the recession in order to prevent such a catastrophe from occurring in the future. It focuses on reducing systemic risks that contribute to economic crises. Its many new regulations attempt to monitor financial companies and prevent unethical and deceptive behavior in the market. One major goal of the act is to end “too big to fail” bailouts by (among other methods) creating a safe way to liquidate failed financial firms and imposing strict new capital and leverage requirements that discourage a firm from becoming too big. The act creates the Financial Stability Oversight Council to reduce systemic risk by regulating large organizations, products and activities which may pose a threat to economic stability. The Act also revises or enforces some existing regulations.

To make sure clear communication exists among bankers and investors, the act aims to provide consumers with clear and accurate information about mortgages, credit cards, and other financial products, and to protect them from hidden fees, abusive terms, and deceptive practices.

The act aims to prevent loopholes for certain securities, allows shareholders more input in corporate affairs, and provides new rules for transparency for credit rating agencies to protect investors and businesses. The act creates an authority called the Consumer Financial Protection Bureau, which provides consumers with clear and accurate information regarding financial products and helps them avoid deceptive practices. (Liou)

Many believe that the Dodd-Frank Act has the potential to be successful in that it will cause the following long-term effects. It will prevent the excessive risk-taking that led to the financial crisis; provide protections for American families, including creating a new consumer watchdog to prevent mortgage companies and lenders from exploiting consumers; and build a safer and more stable financial system. (“Wall Street Reform: The Dodd-Frank Act”) It will provide accurate information to consumers when buying financial products and protect them from deceptive practices. It may address systemic risks that threaten the stability of the economy, end too-big-to-fail bailouts by creating a safe liquidation method for failed financial firms, and bring transparency and accountability to derivatives markets to close regulatory gaps. It could empower regulators to pursue financial fraud, conflicts of interest, and manipulation of the system. (Liou) Hopefully, it will help prevent a future crisis with the Financial Stability Oversight Council (“A Major Transformation,” 2014).

On the other hand, many others believe the act will cause more harm than good. Ed Yingling, president of the American Bankers Association, believes the act may be “haphazard and dangerous.” Some think chaos will ensue long term and will have a negative impact on the world. Others simply think the act could be beneficial but goes too far. Wharton finance professor Jeremy Siegel suggests that the Financial Stability Oversight Council could become “overbearing” and that “new innovations in finance might not be fully understood by council representatives.” Another professor, Franklin Allen, is not confident the act will prevent future crises. Some bring up the point

that while increased capital requirements for financial institutions may make the system safer, if regulations are too tight, they might prevent banks from lending during an economic crisis.

(Appelbaum & Dennis, 2009)

In addition, a survey by RIMES of senior investment banking figures in the US and UK showed that 86% expect Dodd-Frank to significantly increase the cost of their data operations (“RIMES Survey,” 2013). An editorial in the Wall Street Journal from 2010, “Angels Out of America: How the Dodd Bill Harms Start-ups,” predicted that the law would make it more expensive for startups to raise capital and create new jobs. Other opinion pieces suggest that such an impact would be due to a reduction in fraud or other misconduct (Bearman, 2011). John A. Allison (2013) writes in *The Financial Crisis and the Free Market Cure* that “the Durbin amendment on debit card fees is price fixing. It will reduce the availability of banking services to low-income consumers and increase costs for middle-income consumers. This is a government-mandated redistribution of wealth from bank shareholders and consumers to large retailers, such as Walgreens.” Allison also writes that Dodd-Frank does not deal with “too big to fail” like it claims. Instead, it identifies companies that are “too big to fail” and ensures they will be protected by the government.

Others are also skeptical of the too-big-to-fail proposition. In prohibiting the use of public funds to bail out a financial institution and creating new authorities that monitor for future shocks, the Dodd-Frank Act essentially aims to prevent future situations where a firm must be bailed out. John Coffee argues that this approach is unreliable because economic shocks are usually unpredictable, and they occur too suddenly for organizations to react. In addition, Coffee points out that many people doubt that the government would actually refrain from bailing out a bank in the event of another crisis. This attitude may cause banks to continue borrowing at lower rates than are necessary for their risk levels because the market believes these banks are still protected by the government.

Mehrsa Baradaran (2014), in “Regulation by Hypothetical,” agrees that predicting future economic shocks may be ineffective. She refers to this method as “regulation by hypothetical,” where the government regulates banks through hypothetical risk modeling. She states that hypothetical predictions cannot be completely accurate, and that this type of regulation is thus “built on a precarious foundation.” She also believes that “reliance on this regulatory tool can exacerbate governmental sponsorship of private financial risk taking.”

B. Titles of the Act

In this section I attempt to summarize the titles of the act, presenting the major components of each but not going into complete detail. Title I of the Dodd-Frank Act brought into existence two government agencies: the Financial Stability Oversight Council (FSOC) and the Office of Financial Research. The Office of Financial Research gathers information about market risk in order to help the FSOC reduce this systemic risk. Both agencies fall under the U.S. Treasury Department and can request information from companies to better understand factors contributing to systemic risk.

The FSOC can determine whether nonbank financial companies are systemically significant and can decide that one of these companies needs supervision by the Federal Reserve Board. The FSOC recommends to financial regulatory agencies standards and practices that might improve financial stability. The Federal Reserve Board orders companies to shut down activities that threaten stability, oversees how the company conducts those activities, and restricts the offer of financial products. The FSOC also comes up with suggestions for risk management standards and other recommendations for the Federal Reserve Board to implement.

The Office of Financial Research, which helps the FSOC accurately collect and analyze data, consists of a data center and a research and analysis center. After the data center collects

information, the research and analysis center interprets this data and keeps track of systemic risk. The OFR also works to develop risk measurement tools and to make information available for various regulatory agencies. The OFR is allowed to subpoena and request the information it needs.

Title II has to do with the liquidation of bankrupt financial institutions that are not covered by the Federal Deposit Insurance Corporation (FDIC) or the Securities Investor Protection Corporation (SIPC). It requires that an Orderly Liquidation Fund be created, funded by various financial companies. It also prevents taxpayer funds from being used to bail out a financial company.

Title III eliminates the Office of Thrift Supervision and transfers its powers to the Federal Reserve, the FDIC, and the Office of the Comptroller of the Currency. It also increases the maximum amount of deposits insured by the FDIC to \$250,000 and aims to increase diversity among financial regulatory agencies. This title improves the safety of financial institutions and makes sure depository institutions and their holding companies are adequately supervised.

Everything that was part of the OTS that related to savings associations is given to the OCC. Anything having to do with savings and loan holding companies and their subsidiaries is now in the hands of the Board of Governors (FRB). Under the Home Owners Loan Act (HOLA), The Federal Reserve Board now has the authority to create rules relating to transactions with affiliates and extensions of credit to executive officers, directors, and principal shareholders. The Federal Reserve Board also now regulates thrift holding companies. The OCC, FDIC, and FRB have the power to enforce regulations by issuing assessments, fees, or something similar. Title III also requires the creation of an office for minority and women inclusion in every bank regulatory agency.

Title IV aims to increase transparency. It establishes reporting requirements for investment advisors and requires studies from the Government Accountability Office (GAO) and the Securities and Exchange Commission (SEC). It enacts the Private Fund Investment Advisers Registration Act of 2010, which introduces stricter registration and reporting requirements for certain private

advisers. It also requires private advisers to keep records. Investment advisers should keep information about each private fund, including documentation of the amount of assets, use of leverage, exposure to counterparty credit risk, trading and investment positions, valuation policies of the fund, types of assets held, grading practices, and other information by request.

Title V establishes the Federal Insurance Office (FIO) within the U.S. Treasury. The purpose of the FIO is to oversee the insurance industry, administer the Terrorism Insurance Program, and look for existing regulatory problems that might contribute to a financial crisis. The FIO focuses on all areas except health insurance, most long-term care insurance, and crop insurance. The FIO has the responsibility to collect information, supervise the insurance industry, and offer suggestions to Congress about how to modernize insurance regulations. Title V also creates various protections for consumers and a way to allocate premium taxes among individual states.

Title VI introduces the Volcker Rule, which creates a distinction between banking and other types of financial services, such as hedge funds and private equity funds. It also mandates higher capital requirements and greater transparency about proprietary trading. The Volcker Rule establishes more severe regulations against insider trading and increases restrictions on thrifts that are not qualified thrift lenders. The rule creates new requirements for dividend waivers by mutual holding companies. It also affects regulation of banking entities including insured depository institutions, their holding companies, and others. Title VI of Dodd-Frank also bans placement agents, initial purchasers, underwriters, and sponsors of an asset-backed security from participating in transactions that could result in a conflict of interest with an investor.

Title VII addresses the regulation of over-the-counter swaps and removes the regulatory exemption that was part of the Gramm-Leach-Bliley Act. This title orders the Commodity Futures Trading Commission, the SEC, and the Federal Reserve to clarify security swap terminology and mandates the creation of a group to supervise the carbon market, spot markets, and derivative

markets. The title creates new capital and margin requirements and reporting obligations on over-the-counter swap traders. It requires that swap dealers and participants clear swaps in a clearinghouse and carry out transactions on a centralized exchange.

Title VIII requires the Federal Reserve to establish uniform standards for risk management for “too big to fail” financial institutions and to improve liquidity of market utilities. A financial market utility (FMU) is an entity that runs a system for clearing, transferring, or settling payments, securities, or other financial transactions. The Federal Reserve Board and other federal regulators can label an FMU as systemically significant. The FSOC can change the regular designation process using its emergency powers if it believes this will reduce threats to financial stability. Federal regulators can impose risk management standards on the FMU.

Title IX works to protect investors and mandates that a variety of studies be conducted. It establishes the Office of the Investor Advocate, orders the SEC to develop point-of-sale disclosure rules for investors, and establishes a whistleblower reward program. It also regulates asset-backed securities, requires that shareholders approve of executive compensation, and requires that incentive-based compensation be revealed. It makes sure information about publicly held companies is accessible and understandable. To protect security investors, this title allows the SEC to treat brokers and dealers who provide investment advice similarly to investment advisers.

Title IX establishes ways to increase the reliability of ratings and rating agency operations. It creates the Office of Credit Ratings within the SEC, which prevents conflicts of interests from affecting ratings. The SEC is also directed to establish an Investor Advisory Committee to help the SEC increase investor confidence and market stability. Changes are also made to the SEC’s management and organization, and the SEC must make rules that increase the transparency of public information about securities lending. Additionally, the SEC must order the Nationally Recognized Statistical Rating Organization to include a description of representatives, warranties,

and enforcement procedures available to investors. This information must be included in reports that come with credit ratings.

Title X establishes an independent Bureau of Consumer Financial Protection (BCFP) to supervise mortgage reform, with support from the Federal Reserve. This federal independent agency provides funding, conducts research, participates in the community, advocates for fair lending and financial literacy, and records complaints. The BCFP oversees agencies including the Office of Fair Lending and Equal Opportunity. The Consumer Advisory Board, which exists under the BCFP, provides services relating to consumer protection, financial services, community development, and fair lending. The BCFP has the power to supervise, look into, and act against banks, thrifts, and credit unions, and it can also regulate service providers.

Title XI revises the Federal Reserve Act. It allows the president to appoint, with Senate confirmation, the New York Federal Reserve president, and it forms the position of vice chairman for supervision on the Board of Governors. It also allows the Government Accountability Office to audit Federal Reserve emergency lending during financial crises and requires the Federal Reserve to create standards for institutions under its supervision. Such standards may include risk management and capital requirements.

Title XII allows organizations to issue incentives for more people to take advantage of conventional financial services. It creates programs for microloans, financial education, and other endeavors, and encourages low- and moderate-income individuals to start accounts in FDIC-insured banks. Title XII makes mainstream financial institutions more accessible and offers alternatives to payday loans. This title allows for the development of programs that provide low-cost loans of \$2,500 or less.

Title XIII cuts funding for the Troubled Asset Relief Program and modifies the Housing and Economic Recovery Act of 2008, Emergency Economic Stabilization Act of 2008, and the

American Recovery and Reinvestment Act of 2009. This title includes various changes to existing programs that reduce the deficit. It reduces the amount allowed from TARP from \$700 billion to \$475 billion and forbids the Treasury from introducing any new programs under TARP.

Title XIV focuses on increasing consumer protections with respect to mortgages and lending. It regulates mortgage originators, establishes underwriting requirements for residential loans, defines “high-cost mortgages,” creates an Office of Housing Counseling within the Department of Housing and Urban Development, modifies the Real Estate Settlement Procedures Act, explains property appraisal requirements, and directs the Department of Housing and Urban Development to develop a program for mortgage resolution and modification.

To regulate mortgage lending, this title prevents mortgage lenders from using financial incentives to lead customers to high-cost mortgages. It also requires confirmation that a borrower is likely to repay his or her loan before being granted a residential loan. These requirements apply to mortgage lenders and depository institutions. According to the Mortgage Act, mortgage lenders must follow certain origination standards in the underwriting of residential mortgage loans. Each mortgage originator must be registered as a mortgage loan originator according to state and federal laws. They should all use the unique identification number given by the Nationwide Mortgage Licensing System and Registry on all loan documents.

Title XV contains various rules relating to areas such as mine safety, the International Monetary Fund, natural resource licensing, and the effectiveness of Inspectors General. The GAO is required under this title to analyze and report the independence, efficiency, and capabilities of inspectors general appointed by the president. This title also prohibits the United States from lending to certain countries that are in significant debt.

Finally, Title XVI alters Section 1256 of the Internal Revenue Code so that marked to market trades in such contracts no longer include derivatives and futures contracts or options other

than dealer securities future contracts. Section 1256 does not apply to certain derivative contracts on exchanges. (Anand)

C. The Idea of Regulation

There are many arguments for the idea of government regulation in general. Many believe regulation addresses ineffective supervision, questionable investments, and poor operations of financial institutions; protects against market failure; and ensures fair competition among businesses (Liou, 2013). Robert Nowak, in discussing different viewpoints on regulation, explains that advocates of regulation believe the excessive risk-taking caused by lack of regulation harms the economy and society (Nowak, 2011). They argue that regulation is necessary for consumer protection and that, in the absence of regulation, businesses become too competitive and put profit before the safety of the general public. Unnecessary poverty may also ensue because of an imbalance in wealth distribution. With regulation, on the other hand, consumer safety is a priority, the safety and health of the general public, and the environment, are protected, and there is greater economic stability. (Seabury, 2008)

There are also those who believe regulation does more harm than good. The role of government in the modern economic system is highly debated in the first place. Huge costs can be associated with regulations. There is a direct cost to the government of administering the regulatory system, and there are compliance costs to businesses and citizens, such as administrative and paperwork costs, capital costs, and production costs. The outcome of regulations can vary depending on the effectiveness of public employees and their operations. There are also implementation hurdles, such as ensuring that public managers develop the administrative skills for financial regulation to promote transparency and manage risk. In addition, some researchers have found that regulation actually prevents stability as opposed to increasing it. (Liou, 2013)

Those who are not proponents of strict regulation also believe that regulation prevents growth, creates monopolies that increase costs for consumers, and discourages innovation (Seabury, 2008). They believe that a free-market system helps the economy by allowing companies to be more profitable (Nowak, 2011). In the study *Deregulation and Risk*, Elias Semaan and Pamela Peterson Drake argue that while security risk in the market tends to increase following deregulation, this effect is temporary because firms learn to adapt to the unregulated environment. Some people argue that history points to regulation causing financial problems. John Allison writes, “one of the fundamental myths being promulgated is that the banking industry was deregulated during the Bush administration, and that this was a major cause of the financial crisis. Nothing could be further from the truth. The regulatory burden was increased significantly during the Bush years. In fact, regulatory cost was at an all-time high (until the current period) during the peak of the bubble (2005-2007).”

III. Research, Methodology, and Results

A. Research and Methodology

The central research question driving this thesis is to discover the effect, if any, the Dodd-Frank Act had on both systematic risk and total volatility, or total variance, in the financial sector. The effect that the act has had on risk in the market is unclear at this point because existing research focuses on systemic risk. Because there is no proven way to measure systemic risk, these studies require a simultaneous test of methodologies, meaning that the method for determining systemic risk is tested at the same time as systemic risk itself is tested. My research, on the other hand, focuses on systematic risk and total variance.

The methodology of this thesis is based on that used in “Deregulation and Risk” by Elias Semaan and Pamela Peterson Drake in 2011. I used the Center for Research in Security Prices (CRSP) database, as part of the University of Pennsylvania’s Wharton Research Data Services (WRDS), to collect daily stock returns of firms from seven industries within the financial sector. I divide the returns into two time periods, one before the passage of the Act and one after, and identify the two-digit standard industrial classification (SIC) codes of the firms. Table I provides descriptions of the seven industries. Table II provides the number of firms in each industry per year from 2009 to 2011.

Table I.
Descriptions of SIC Codes in the Financial Sector

SIC Code	Industry Title	Description
60	Depository Credit Institutions	Deposit banking institutions or those with similar functions, including fiduciary activities. Commercial banks, central reserve depository institutions, savings institutions, credit unions, institutions engaged in foreign banking or functions related to depository banking.
61	Non-depository Credit Institutions	Institutions that extend credit through loans. Federal and federally-sponsored credit agencies, personal credit institutions, business credit institutions, mortgage bankers and brokers.
62	Security and Commodity Brokers, Dealers, Exchanges, and Services	Organizations involved in the underwriting, purchase, sale, or brokerage of securities and other financial contracts. Security brokers and dealers, commodity brokers and dealers, security and commodity exchanges, services related to securities exchange.
63	Insurance Carriers	Insurance carriers and agents and brokers of insurance, including life, accident, health, medical, fire, marine, casualty, surety, and title insurance; and pension, health, and welfare funds.
64	Insurance Agents, Brokers, and Services	Agents and brokers of insurance as well as establishments providing services to insurance companies and to policy holders.
65	Real Estate	Real estate operators except developers; buyers, sellers, developers, agents, managers, brokers, owners, and lessors of real estate; title abstract offices; land subdividers and developers.
67	Holding and Other Investment Offices	Investment trusts, investment offices, holding companies, and miscellaneous investment companies.

("SIC Division Structure")

Table II.
Number of Firms in Each Industry per Year

SIC Code	Industry Title	Year	Number of Firms
60	Depository Credit Institutions	2009	528
		2010	515
		2011	492
61	Non-depository Credit Institutions	2009	60
		2010	60
		2011	59
62	Security and Commodity Brokers, Dealers, Exchanges, and Services	2009	84
		2010	88
		2011	119
63	Insurance Carriers	2009	151
		2010	148
		2011	148
64	Insurance Agents, Brokers, and Services	2009	16
		2010	15
		2011	16
65	Real Estate	2009	40
		2010	46
		2011	49
67	Holding and Other Investment Offices	2009	1751
		2010	1890
		2011	1967

The procedure that I use involves two steps. First, I analyze shifts in systematic risk, as measured by beta, for each of the seven portfolios through the following test performed for the entire sample, which allows firms to enter and exit the industry. Second, I analyze changes in total variance in each portfolio. In both steps, changes are measured across three different time periods around the enactment – one year before and after enactment, six months before and after, and three months before and after. I provide the results of both tests in Subsection B.

1. Measuring Shifts in Beta

In order to measure shifts in beta, I build a daily time-series on the value-weighted portfolio excess returns (R_{pt}) for each selected two-digit SIC portfolio of securities for one year before and one year after enactment of Dodd-Frank, as well as six months before and after, and three months before and after:

$$R_{pt} = \frac{\sum_{i=1}^{n_t} v_{it} r_{it}}{v_{pt}} \quad (1)$$

where v_{it} and r_{it} are the market value and the excess return of the i th stock in the two-digit SIC portfolio at time t , respectively, and v_{pt} is the total portfolio value at time t . The total number of stocks in the portfolio at time t is n .

The next step of my procedure is the estimation of the following multivariable equation for each of the seven value-weighted portfolio returns in the study:

$$R_{pt} = \alpha_p + \beta_p R_{Mt} + \lambda_p D_p + \beta_S (D_p R_{Mt}) \quad (2)$$

where α_p is the average daily abnormal return in the period preceding the enactment date for portfolio p , β_p is the beta of the portfolio in the period preceding the enactment date, R_{Mt} is the Center for Research in Security Prices (CRSP) value-weighted index excess returns at time t , λ_p is the excess average daily abnormal return in the period following the enactment date for portfolio p , and

β_S is the average shift in the portfolio's beta from before to after the enactment date. I supplement the market model in Equation (2) with a dummy variable D_p that takes on the value one in the postenactment period and zero otherwise.

This equation allows me to test the effect of an individual event on stock betas. If beta increases following enactment, this should be reflected in the estimated β_S coefficients.

2. Measuring Changes in Variance

In order to analyze changes in variance over a time period, I compute the daily average variance of return on each stock in each of the seven industries. I use a 30-day moving window from one year before enactment to one year after enactment, as well as six months before and after, and three months before and after. The equally-weighted average of the individual variances of return in each portfolio is given by the following²:

$$\sigma_{R_{pt}}^2 = \frac{\sum_{i=1}^n \sigma_{R_{it}}^2}{n} \quad (3)$$

where $\sigma_{R_{pt}}^2$ is the equally-weighted average of individual variances at time t , $\sigma_{R_{it}}^2$ is the variance of return on the i th stock at time t , and n is the number of stocks in the portfolio.

I then estimate the following equation for each of the seven value-weighted portfolio returns:

$$\sigma_{R_{pt}}^2 = \alpha_p + \phi_p D_p \quad (4)$$

where α_p is the level of total variance in the period preceding the enactment date for portfolio p , D_p is the postenactment-period event dummy for portfolio p , and ϕ_p is the change in the level of total

² This methodology aligns with part of the methodology in *Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk* by Campbell et al. (2001).

variance in the period following the enactment date for portfolio p . A significant Φ_p would indicate a significant change in the average total variance of firms in each respective industry.

B. Data and Results

I provide the results relating to the shifts in beta in Table III and those for the temporal changes in variance in Figure I and Table IV.

As shown in Table III, I find that the change in the industry portfolio's beta is positive and significant at a level of 5% for all three of the time windows in one of the seven portfolios: Security and Commodity Brokers, Dealers, Exchanges, and Services. I find that the change is negative and significant for all three of the time windows in one of the seven portfolios: Holding and Other Investment Offices. These significant findings are shaded in gray in the table.

Figure I graphs changes in variance from one year before to one year after enactment using the 30-day moving window. These shifts in variance and their significance are then presented in Table IV. I find that the change in the industry portfolio's variance is negative and significant at a level of 5% for all three of the time periods in all seven portfolios.³

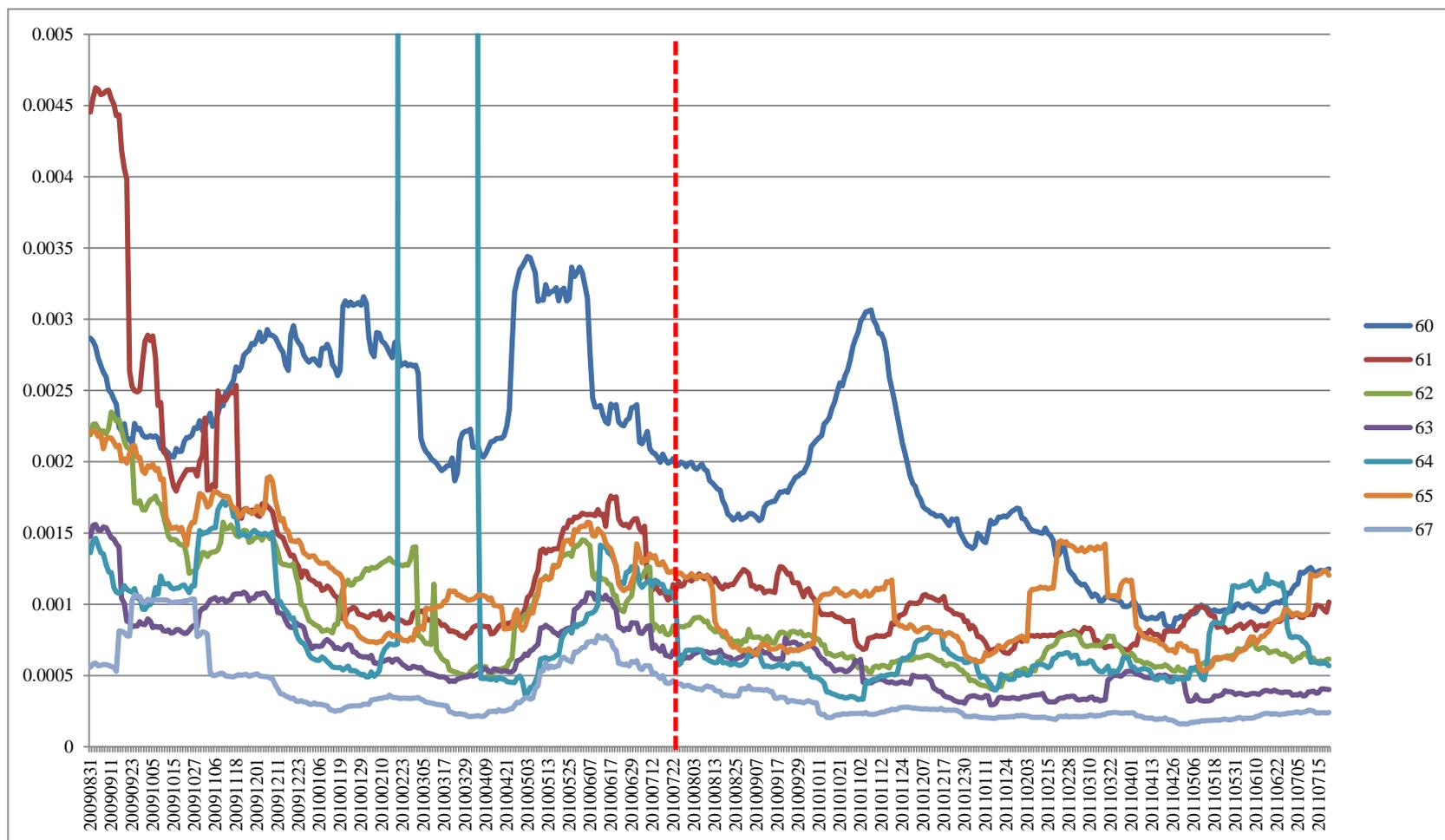
³ With the methodology used, there is a concern about autocorrelation. The high number of overlapping observations before the event could increase the significance of the results. In order to offset this potential problem, I ran a separate test in which I averaged days into months before running the regression, which reduced the number of observations to twelve. After running this regression, the results still held, indicating very significant results. These results are available upon request.

Table III.
Shifts in Beta Following Enactment of Dodd-Frank

Estimated Parameter	Portfolio						
	Depository Credit Institutions	Non-depository Credit Institutions	Security & Commodity Brokers, Dealers, Exchanges, & Services	Insurance Carriers	Insurance Agents, Brokers, and Services	Real Estate	Holding and Other Investment Offices
Panel A. 1 Year Before and After Enactment							
α_p	.00016957 (.6128)	.00065289 (.1514)	-.00034967 (.2743)	.00037207 (.1690)	.00123 (.1499)	.00087948 (.0233)	.00038542 (.0010)
β_p	.71333 (<.0001)	1.06117 (<.0001)	1.11745 (<.0001)	1.03990 (<.0001)	.95336 (<.0001)	.98034 (<.0001)	.65874 (<.0001)
λ_p	-.00040186 (.3966)	-.00047173 (.4635)	-.00013269 (.7692)	-.00066193 (.0838)	-.00131 (.2794)	-.00089500 (.1023)	-.00031758 (.0541)
β_s	.05891 (.2077)	-.01483 (.8150)	.12563 (.0050)	.00228 (.9518)	.04754 (.6900)	-.10469 (.0527)	-.06272 (.0001)
R ²	.6849	.7093	.8568	.8703	.3687	.7301	.9314
Panel B. 6 Months Before and After Enactment							
α_p	.00062080 (.2138)	.00029156 (.6001)	-.00090532 (.0353)	.00045022 (.1977)	.00228 (.1404)	.00051743 (.3297)	.00028022 (.1196)
β_p	.73815 (<.0001)	1.03277 (<.0001)	1.07379 (<.0001)	1.00334 (<.0001)	.96377 (<.0001)	.91426 (<.0001)	.64468 (<.0001)
λ_p	-.00076623 (.2772)	-.00008491 (.9139)	.00059066 (.3292)	-.00069569 (.1590)	-.00260 (.2327)	-.00022873 (.7602)	-.00029198 (.2504)
β_s	.11996 (.0705)	.09629 (.1923)	.25292 (<.0001)	.11815 (.0112)	.12847 (.5293)	.02115 (.7636)	-.04780 (.0455)
R ²	.7227	.7976	.8878	.9053	.3137	.7643	.9298
Panel C. 3 Months Before and After Enactment							
α_p	-.00035773 (.6350)	-.00114 (.1764)	-.00129 (.0548)	.00008901 (.8647)	-.00012206 (.8910)	-.00030034 (.6950)	.00037450 (.1641)
β_p	.79163 (<.0001)	1.06105 (<.0001)	1.08610 (<.0001)	1.04974 (<.0001)	.98569 (<.0001)	.94262 (<.0001)	.64911 (<.0001)
λ_p	-.00058728 (.5786)	.00130 (.2695)	.00068136 (.4675)	.00004086 (.9555)	.00002096 (.9866)	.00054297 (.6134)	.00009586 (.7988)
β_s	.07162 (.3898)	.07331 (.4291)	.27637 (.0003)	.08337 (.1500)	.06597 (.5025)	-.02309 (.6134)	-.06831 (.0224)
R ²	.7911	.8463	.9101	.9325	.8064	.8306	.9476

This table presents shifts in beta from before to after enactment of Dodd-Frank for each of the seven financial industry portfolios. Changes are measured across three different time periods around the enactment – one year before and after enactment, six months before and after, and three months before and after. Any shifts in beta following enactment are reflected in the estimated β_s coefficients. P-values are shown in parentheses. Significant findings are shaded in gray.

Figure I.
Changes in Variance Before and After Dodd-Frank with a 30-Day Moving Window



Above is a graph showing changes in the daily average variance of return on stocks in each of the seven industry portfolios. I use a 30-day moving window and a time period of one year before enactment of Dodd-Frank to one year after. The date of enactment, July 21st, 2010, is marked with a dashed vertical line.

Table IV.
Shifts in Variance Following Enactment of Dodd-Frank

Estimated Parameter	Portfolio						
	Depository Credit Institutions	Non-depository Credit Institutions	Security & Commodity Brokers, Dealers, Exchanges, & Services	Insurance Carriers	Insurance Agents, Brokers, and Services	Real Estate	Holding and Other Investment Offices
Panel A. 1 Year Before and After Enactment							
α_p	.00255 (<.0001)	.00161 (<.0001)	.00122 (<.0001)	.00081290 (<.0001)	.00487 (<.0001)	.00135 (<.0001)	.00050954 (<.0001)
Φ_p	-0.00101 (<.0001)	-0.00069817 (<.0001)	-0.00056192 (<.0001)	-0.00034604 (<.0001)	-0.00424 (<.0001)	-0.00044610 (<.0001)	-0.00025266 (<.0001)
R^2	.5069	.2270	.4562	.4483	.0894	.3116	.3410
Panel B. 6 Months Before and After Enactment							
α_p	.00250 (<.0001)	.00119 (<.0001)	.00092378 (<.0001)	.00071373 (<.0001)	.00752 (<.0001)	.00117 (<.0001)	.00045174 (<.0001)
Φ_p	-0.00053830 (<.0001)	-0.00019960 (<.0001)	-0.00025290 (<.0001)	-0.00017349 (<.0001)	-0.00694 (<.0001)	-0.00029130 (<.0001)	-0.00015081 (<.0001)
R^2	.2342	.1309	.2374	.2197	.1562	.3253	.2361
Panel C. 3 Months Before and After Enactment							
α_p	.00207 (<.0001)	.00148 (<.0001)	.00110 (<.0001)	.00088673 (<.0001)	.00116 (<.0001)	.00134 (<.0001)	.00061537 (<.0001)
Φ_p	-0.00039382 (<.0001)	-0.00036274 (<.0001)	-0.00032210 (<.0001)	-0.00023608 (<.0001)	-0.00056696 (<.0001)	-0.00044968 (<.0001)	-0.00025717 (<.0001)
R^2	.4672	.5482	.6075	.5996	.7947	.5322	.6908

This table presents shifts in the daily average variance of return on stocks from before to after enactment of Dodd-Frank for each of the seven financial industry portfolios. Changes are measured across three different time periods around the enactment – one year before and after enactment (Panel A), six months before and after (Panel B), and three months before and after (Panel C). α_p represents the level of variance in the period preceding enactment. Any shifts in variance following enactment are reflected in the estimated Φ_p coefficients. P-values are shown in parentheses. Significant findings are shaded in gray.

IV. Discussion

As described above, the purpose of my research is to analyze the effect that the Dodd-Frank Act had on risk in the financial sector in order to determine its effectiveness. My examination of changes in both beta and variance from before to after enactment reveals that while only one of the industries experienced a significant reduction in systematic risk in all three time periods, there was a highly significant reduction in total volatility in all seven industries in all three time periods.

The Dodd-Frank Act had a significant effect on all industries within the financial sector. Here I attempt to identify specific parts of the law that may have contributed to the risk reduction in each industry. There were many parts of the act directed at the Depository Credit Institutions industry (SIC code 60). Some of these include the creation of the Consumer Financial Protection Bureau to increase transparency about financial products; Title III, which aimed to improve safety of banks; the Volcker Rule, which affects regulation of banks; Title VIII, which addresses “too big to fail” institutions; and the ability of the Bureau of Consumer Financial Protection (BCFP) to regulate banks and credit unions.

Some parts of the act that may have affected the Non-depository credit institutions (SIC code 61) include the following: the Home Owners Loan Act (HOLA), which gives the Federal Reserve Board the right to regulate extensions of credit to executive officers, directors, and principal shareholders; Title XIV, which helps increase consumer protections surrounding mortgages and lending, including preventing mortgage lenders from incentivizing high-cost mortgages and making sure borrowers can repay their loans; the role of the Bureau of Consumer Financial Protection (BCFP) in encouraging fair lending; and the services of the Consumer Advisory Board relating to fair lending.

There are many areas in the legislation that address security and commodity brokers, dealers, exchanges, and services (SIC code 62). The following are some of the changes made by the act that

specifically target this industry: implementing regulations to prevent unethical behavior in the market; improving communication between bankers and investors; increasing accuracy of information about financial products and availability of information about publicly held companies; attempting to clarify security swap terminology; establishing reporting requirements for investment advisors; creating stricter regulations against insider trading; supervising the carbon, spot, and derivative markets; regulating asset-backed securities; allowing the SEC to treat brokers who give investment advice similarly to investment advisers; and helping increase the reliability of credit ratings.

A major component of the act that was directed towards insurance carriers, agents, brokers, and services (SIC codes 63 and 64) is the establishment of the Federal Insurance Office (FIO) to oversee the insurance industry. The FIO collects information, supervises the insurance industry, and offers suggestions to Congress about how to modernize insurance regulations. A component of the legislation that likely affected the Real Estate industry (SIC code 65) is the creation of an Office of Housing Counseling within the Department of Housing and Urban Development, which modifies the Real Estate Settlement Procedures Act, explains property appraisal requirements, and directs the Department of Housing and Urban Development to develop a program for mortgage resolution and modification.

Finally, the act addresses holding and other investment offices (SIC code 67). A holding company owns enough voting stock in another company to control that company's management ("Holding Company," 2015). The Dodd-Frank Act makes sure depository institutions and their holding companies are adequately supervised. It also creates new requirements for dividend waivers by mutual holding companies. Additionally, the Federal Reserve Board now regulates thrift holding companies, and anything having to do with savings and loan holding companies and their subsidiaries is now in the hands of the Board of Governors (FRB). The FRB can enforce regulations

by issuing assessments and fees. All of these changes were enough to significantly combat risk in every industry of the financial sector.

The only exceptional result is the significant increase in beta in the Security and Commodity Brokers, Dealers, Exchanges, and Services industry (SIC code 62). It could be that there was a reduction in the risk of individual stocks in the portfolio but that the portfolio as a whole became riskier in relation to the market. The increase in beta in this industry supports the ideas of some critics of the Dodd-Frank Act. Mehra Baradaran's belief that government reliance on hypothetical risk modeling to regulate banks may increase private risk-taking, as discussed in the Literature Review section, provides possible insight into the results. In addition, it could be that people have been skeptical that the government will actually refrain from bailing out financial institutions. John Coffee suggests that this attitude may cause banks to continue borrowing at lower rates than are necessary for their risk levels because the market believes these banks are still protected by the government. Finally, Dodd-Frank may have increased costs for investment bankers, as suggested by the RIMES survey mentioned earlier, which may have influenced risk in this industry.

V. Conclusion

The research question central to this thesis is to discover what effect, if any, the Dodd-Frank Wall Street Reform and Consumer Protection Act had on both systematic risk and total volatility (total variance) in the financial sector. My study shows that while the legislation caused a significant reduction in systematic risk in only one out of seven industries, it successfully created a significant reduction in total volatility in all seven industries in the time period I analyzed.

A further area of research to expand upon this insight could involve looking more deeply into the variance analysis. One could attempt to decompose total volatility into its systematic and idiosyncratic components and examine changes in each. Another possibility would be to extend the period of time surrounding the event for the analysis. Even without including those ideas in the study, it is clear from my research that volatility in the financial sector decreased following the Dodd-Frank Act, which may support the argument that the act has contributed to reducing the likelihood of a future financial crisis.

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