Wealth and Risk Implications of the Dodd-Frank Act on the U.S. Financial Intermediaries*

Kostas Andriosopoulos[a], Ka Kei Chan[b], Panagiotis Dontis-Charitos[a,†], Sotiris K. Staikouras[c]

[a] *ESCP Europe Business School, 527 Finchley Road, NW3 7BG, London, UK*
[b] *Westminster Business School, University of Westminster, 35 Marylebone Road, London, NW1 5LS, UK*
[c] *Cass Business School, City University, 106 Bunhill Row, London, EC1Y 8TZ, UK*

ABSTRACT

We contribute to the current regulatory debate by examining the wealth and risk effects of the Dodd-Frank Act on U.S. financial institutions. We measure the effects of key legislative events of the Act by means of a multivariate regression model using the seemingly unrelated regression (SUR) framework. Our results indicate a mixed reaction by financial institutions during the various stages of the Act's legislative process. Further tests reveal that any positive reactions are driven by small and/or low risk institutions, while negative ones are consistent across subsets; except for investment banks. We also find market risk increases for most financial institutions that are dominated by small and/or low risk institutions. The cross-section results reveal that large institutions fare better than their smaller counterparts and that large investment banks gain value at the expense of others. Overall, the Dodd-Frank Act may have redistributed value among financial institutions, while not necessarily reducing the industry's riskiness.

JEL classification: G21; G22; G32; G34

Keywords: Banks; Financial institutions; Dodd-Frank Act; Event study; SUR.

---

* Former title: The wealth and risk effects of U.S. financial reform: The case of financial institutions. We thank the editor (Iftekhar Hasan), and two anonymous referees for their very useful comments and suggestions. We are also grateful to Elena Kalotychou, Spyros Mesomeris and Harilaos Harrisis for their insightful comments. The paper was presented at the 2015 Financial Engineering and Banking Society conference, and the 2015 Multinational Finance Society conference. We would like to thank the session participants, and in particular, Jakob Bosma, Artashes Karapetyan, George Leledakis, Charilaos Mertzanis, and Shuxing Yin, for their feedback. All errors are our own.
† Corresponding author. Tel.: +44 (0) 20 7443 8866
E-mail addresses: kandriosopoulos@escpeurope.eu (K. Andriosopoulos), k.chan1@westminster.ac.uk (K. K. Chan), pdontischaritos@escpeurope.eu (P. Dontis-Charitos), sks@city.ac.uk (S. Staikouras).

1. Introduction

Over the last two decades, globalization, technological advances and increased competition fuelled an intense phase of consolidation in the financial services industry that resulted in the formation of universal banks and financial conglomerates[1]. These hybrid institutions come as a result of key regulatory reforms such as the U.S. Financial Services Modernization Act (FSMA) of 1999 and the EU Second Banking Directive (SBD) of 1989. These reforms removed restrictions on Bank Holding Company (BHC) activities and, thus, paved the way for cross-sector integration in the financial services arena via mergers and acquisitions (Elyasiani et al., 2016).

The recent financial crisis has caused renewed concerns regarding the effects of bank diversification on financial stability. In a global coordinated fashion, authorities have put together a number of regulatory initiatives. When developing these initiatives, the Financial Stability Forum (2008), the Basel Committee on Banking Supervision (2008), and the Council of the European Union (2008) refer to transparency and rely to some extent on the disciplinary role of markets (Praet and Nguyen, 2008). In the aftermath of the crisis, a number of regulatory reforms have been introduced, such as Basel III, the Dodd-Frank Act (DFA) of 2010 in the U.S., and the Financial Services (Banking Reform) Act of 2013 in the UK, whereas a set of proposals for the European Union were released by the European Commission in 2014. In particular, Basel III delivers a set of reform measures aiming to strengthen the regulation, supervision, and risk management of the banking sector. The DFA (formally, the Dodd-Frank Wall Street Reform and Consumer Protection Act) implements the Volcker rule, which forbids the co-existence of

[1] This paper adopts the definition of financial conglomerates/universal banks provided by Vander Vennet (2002). A similar definition is used by the Basel Committee on Banking Supervision (BCBS) and the Joint Forum on Financial Conglomerates.

predefined investment banking activities in different subsidiaries within the same banking group. The Banking Reform Act of 2013 implements the Vickers proposals, allowing for subsidiarization of investment activities in separately capitalised legal entities. In January 2014, the European Commission published its proposal for a 'Volcker-Vickers style' reform, which deviates somewhat from the recommendations of the Liikanen report of 2012.[2] Though different in their approaches to achieve functional separation between commercial and investment banking, these reforms are based on the premise that bank diversification into non-banking, and, specifically, banks' securities activities have a negative impact on financial stability.

The merits of bank diversification have long been debated by academics and regulators. At the theoretical level, proponents contend that financial conglomerates a) benefit from cost, revenue, and operational synergies (Saunders and Walter, 1994; Vander Vennet, 2002), b) have less volatile profit streams through the coinsurance effect (Boot and Schmeits, 2000), c) exhibit superior resource allocation through effective internal markets (Stein, 1997), d) have lower bankruptcy risk due to revenue diversification (Benston, 1994; Saunders, 1994), and e) can adapt more easily to changing economic conditions, due to their diversity (Herring and Santomero, 1990). At the public policy level, large financial conglomerates may be able to extract benefits associated with their increased market power, wider political influence and greater access to the safety net (Kane, 2000).

On the other hand, opponents argue that bank diversification propagates risk and increases social costs (Black, et al., 1978), and leads to conflicts of interest, allocative distortions, concentration of power, expansion of the safety net, and inefficiencies (Flannery, 1999; Herring and Santomero, 1990; Santomero and Eckles, 2000). Others argue that although it might reduce

[2] For details on these reforms, the interested reader is referred to Mayer Brown (2014).

firm-specific risk, it exacerbates systemic risk due to the increased interconnectedness among financial institutions (Acharya, 2009; Ibragimov et al., 2011; Wagner, 2010). Herring and Santomero (1990) highlight the importance of the potential market impact of the failure of large and complex financial institutions, the greater cost of supervising them, and the moral hazard issues associated with the access of nonbanks to the safety net. Similarly, Santomero and Eckles (2000) highlight the social costs related to reduced competition, reduced consumer choices, and conflicts of interest; whereas, Kane (2000) argues that the largest banks tend to reap most benefits due to their market power, political influence and their greater access to the safety net.

The empirical evidence is also largely inconclusive.[3] One strand looks into the effects of bank acquisitions of nonbanks on the risk and returns of financial institutions. For example, Fields et al. (2007) find no evidence of risk changes when banks acquire insurance companies, while Elyasiani et al. (2016) report a decline in risk for bank acquirers and their peers. In contrast, Vallascas and Hagendorff (2011) show that low-risk European banks diversifying into nonbanking activities experience a marked increase in default risk. Casu et al. (2016) find that bank combinations with securities firms yield higher risks than combinations with insurance companies, yet provide evidence that size may be responsible, as opposed to diversification per se. Similarly, Weiß et al. (2014) find an increase in systemic risk following M&A activity that is not associated with income diversification, but related to managerial hubris and the existence of deposit insurance guarantees. This is corroborated in Molyneux et al. (2014), who find that safety net subsidies derived from M&A are positively associated with rescue probability.

Another strand looks into the relationship between measures of bank diversification, performance and risk. For example, Stiroh (2004) finds diversification is associated with more

[3] We refer the interested reader to Casu et al. (2016) for a more detailed discussion of the bank diversification literature.

volatile and lower risk-adjusted returns at banks, while Stiroh (2006), Stiroh and Rumble (2006) and Mercieca et al. (2007) find that diversification benefits are offset by the greater exposure to more volatile activities. Baele et al. (2007) find that while bank diversification reduces idiosyncratic and total risks, it increases systematic risk. Finally, Brunnermeier et al. (2012) and De Jonghe (2010) report a positive relationship between banks' non-interest income and systemic risk.

We argue that recent banking reforms are based on inconclusive evidence on the effects of bank diversification into non-banking. Entering another round of re-regulation may be ineffective as institutions will figure out how to circumvent rules (Kane, 1988). New regulations might introduce unnecessary costs to financial institutions, the taxpayer and the consumer, with no guarantees that they will succeed in their objectives. In addition, consistent with contestable markets theory (Baumol, 1982), these reforms might shift economic rents from commercial banks to other financial institutions – the latter benefiting from reduced competition, thus altering the industry's competitive landscape. The above may ignite regulatory arbitrage, whereby affected banks relocate their activities to less regulated geographical locations, which, in turn, can reduce tax revenues, lead to job reductions and impact on economic activity. We draw evidence in support of these theoretical arguments from a strand of literature that examines the effects of regulatory changes on the wealth and/or risk of FIs. In particular, Carow (2001) reports positive excess returns around court rulings allowing banks to sell annuities. Others, examine the market reaction to the Financial Services Modernization Act (FSMA) of 1999 and generally point to positive wealth effects for insurers (Carow and Heron, 2002; Hendershott et al., 2002; Neale and Peterson, 2005), except for Yildirim et al. (2006), who report positive wealth effects and risk reductions for all FIs. Consistent with these studies, Carow and Kane's

(2002) survey concludes that the relaxation of long-standing restrictions on the U.S. FIs may have redistributed, rather than created, value.

A limited number of recent studies attempt to gauge the impact of the DFA on the wealth and/or risk of U.S. FIs, yet offer inconclusive results. For example, Gao et al. (2013) report negative (positive) excess (bond) returns for a sample of 45 systemically important institutions, and conclude that the market expects the DFA to reduce FI risk taking. In contrast, Turk and Swicegood (2012) use a sample of banks and report positive excess returns that are mainly driven by large institutions. Elsewhere, Akhigbe et al. (2016) report risk reductions for a large sample of FIs, with the exception of market beta increases when shorter event windows are considered. One potential issue with the above studies is the aggregated reporting of excess returns and/or risk changes across a) different bank types and BHCs (Turk and Swicegood, 2012), and b) depository and non-depository institutions (Akhigbe et al., 2016; Gao et al., 2013). To the extent that the DFA's provisions exert differential effects across different types of FIs – potentially altering the competitive landscape of the industry (Baumol, 1982) – sample over-aggregation may realize a loss of sector specific information and, thus, provides an incomplete picture of the DFA's implications. Fier and Liebenberg (2013) overcome this potential issue by focusing solely on the insurance industry. They report negative excess returns for insurance companies, which they attribute to regulatory uncertainty. Nevertheless, their study does not control for the problem of cross-sectional correlations among the stock returns of the various firms examined.

This paper contributes to the literature and to the current regulatory debate in a number of ways: First, it extends previous work on the DFA, while overcoming the potential issues related to the aggregation of results across different types of FIs. Specifically, the paper examines the

wealth and risk effects of the DFA across distinct groups of U.S. FIs[4], and thus offering a better understanding of the impact of the Act on the financial services industry. Second, it offers broader results by assessing the presence of any differential effects based on the institutions' size and risk profile. Third, it examines the presence of cross-sectional variations in wealth and risk effects caused by institutional characteristics, such as industry type, profitability, leverage, operating efficiency, growth opportunities, distance to default, and size. To the best of our knowledge, this is the first study embracing all these elements using a diverse sample of FIs.

In what follows, Section 2 provides an overview of the evolution of the U.S. regulatory environment, analyses the DFA, and develops our hypotheses. Section 3 summarizes our event identification and sample selection processes, as well as presents the methodology employed. Section 4 provides a discussion of the empirical results, while Section 5 concludes.

2. Regulatory landscape and hypotheses

The majority of the legislative barriers between banks and non-bank financial companies were imposed by Section 24 of the National Banking Act of 1864. That is, banks were permitted to exercise "*all such incidental powers as shall be necessary to carry on the business of banking*". As such, all the activities that were considered as 'non-incidental' to banking were prohibited. In the aftermath of the 1929 stock market crash, forty percent of the banks had either failed or been forced to merge (Benston, 1990). Banks were considered to be the culprits of the financial turmoil because they were engaging in speculative activities through their securities subsidiaries

[4] The focus is on the U.S. since it was the first market to introduce reforms and it is well represented by large and diversified financial institutions. In the aftermath of the 2007-2009 crisis, it was widely anticipated that the U.S. Congress would consider bills to reform the financial sector. One might argue that any expectations would have been discounted in the market and, hence, question the validity of any empirical exercise. Following the rationale provided in Carow and Heron (2002), this paper focuses on the extent to which the DFA's legislative process resolved uncertainties regarding the details of the Act, as well as updated expectations with respect to the probability that the Act would be signed into law. It is also worth noting that the results in this study reflect the stock market's perceptions regarding the impact of the DFA on FIs.

(Flannery, 1985).[5] Some studies, however, suggest that the concerns in the aftermath of the crash were unfounded (Kroszner and Rajan, 1994; Puri, 1994), while Ang and Richardson (1994) argue that the bad underwriting practices of two banks may have condemned the industry.

The Banking Act of 1933 (Section 20) opted to reintroduce stabilisation and public trust in the financial system by prohibiting commercial banks from affiliating with companies that were "*principally engaged*" in the issue, flotation, underwriting, sale or distribution of securities.[6] The establishment of BHCs, however, allowed banks to circumvent the restrictions imposed by the aforementioned Acts. BHCs were not explicitly forbidden to own a commercial bank, investment bank or insurance company. The Bank Holding Company Act of 1956 closed this loophole by confining holding company affiliates to activities that were "*closely related to banking*".

Although these pieces of legislation were introduced to safeguard the financial system, it is worth noting that at the time when players in other industries were consolidating at a torrid pace, the financial services industry remained fragmented. During the following years, competitive pressures increased the need for consolidation in the financial services arena. Financial companies started to press regulators to eliminate most of the barriers that hampered their efforts to consolidate. As a result, the majority of the barriers, imposed by the previous Acts, were removed by the FSMA of 1999. Under the FSMA, banks could affiliate with investment banks, insurers and securities firms through a holding company structure. What is more, the passage of the Act targeted one of the anomalies observed, whereby, commercial banks were allowed to acquire investment banks and insurance companies, whereas the opposite was not permitted. The

[5] The Senate Banking and Currency Committee (SBCC) undertook an investigation into the role of large banks and securities firms. In 1933, SBCC counsel Ferdinand Pecora documented a considerable number of ill practices between these institutions and their customers that took place prior to the crisis.
[6] Sections 16, 20, 21, and 32 of the Banking Act (1933) are designated as the Glass-Steagall Act.

FSMA also consolidated the supervision of BHCs, with the Federal Reserve being the 'umbrella' regulator and the Securities and Exchange Commission regulating the banks' securities activities.

The financial meltdown in 2007-2009 triggered another round of regulatory debates. Once again, the consensus that banks' securities activities were the main contributor to the crisis has dominated these debates. As a result, the U.S. government introduced the DFA aiming to alleviate systemic risk, end implicit guarantees and, ultimately, promote better market discipline (Balasubramnian and Cyree, 2014).[7] The Act attempts to deal with financial institutions in the following ways.[8]

First, commercial banks are subject to heavy restrictions on securities activities, and face limits on asset securitization and on the issuance of excess credit to mortgage loan borrowers (Sanders, 2013). In particular, the Act bans banks from proprietary trading (subject to certain exceptions), which will have an impact on their profitability. In addition, it limits bank investment in (or sponsorship of) hedge funds and private equity funds to no more than 3% of their equity. Banks will be forced to divest impermissible ownership interests and, thus, face additional costs, experience reduced income streams, and lose any related diversification benefits. Moreover, the Act requires that securitizers and collateral originators retain a minimum economic interest in the related Asset Backed Securities (ABS).[9] This is likely to increase banks'

[7] To address these issues, the Act establishes the Financial Stability Oversight Council (FSOC) and the Office of Financial Research (OFR). The FSOC aims to (a) identify financial institutions capable of creating systemic risk, (b) shield taxpayers from SIFI losses, and (c) to deal with threats to the stability of the U.S. financial system. The FSOC relies on the judgement of a panel chaired by the Secretary of the Treasury and whose membership comprises the heads of the various financial regulatory bodies. The OFR's primary role is to provide technical assistance by collecting and analysing data on systemic risk.

[8] The DFA is a very comprehensive structural reform, influencing nearly all financial market participants and financial institutions nationally and internationally. To better address the key objectives of this article, the focus here is placed on the parts of the Act, which might have a direct impact on the different types of U.S. financial institutions. The interested reader is referred to Acharya et al. (2010) for a detailed analysis and evaluation of the DFA; Krainer (2012) offers a review of Acharya's et al. (2010) work.

[9] This provision is informally known as "skin in the game". It obliges originators and ABS securitizers to retain an unhedged economic interest of "not less than 5% of the credit risk" for any securitized asset.

credit risk and/or affect their profitability. Banks also face an increased cost of securitization, given enhanced disclosure requirements for information concerning the underlying assets and the analysis of their quality. The new lending limit includes the credit exposure from derivative transactions; this reduces the amount of lending from banks and lowers the profit from lending activities. For larger commercial banks and savings institutions, the Act introduces stronger rules for the requirements on capital, leverage, liquidity, risk management, and systemic risk imposed to the financial systems. These new rules are likely to introduce additional costs and further cut into bank profits. The aforementioned discussion can form the basis for the following set of null hypotheses:

Hypothesis 1: Commercial banks' wealth and risk remain unaffected by the passage of the DFA.

Hypothesis 2: Savings banks' wealth and risk remain unaffected by the passage of the DFA.

Second, the effect of the DFA on investment banks can be either positive or negative. Larger and systemically important institutions are now regulated by the Federal Reserve due to their potential impact on the wider economy. In addition, the DFA introduces stricter rules on the risk-taking practices in OTC derivatives.[10] Such actions may reduce profits in investment banking. Nonetheless, the Volcker Rule should improve their competitive position (especially for large institutions) in proprietary trading activities, asset management as well as investments in private equity and hedge funds. The above can form the basis for the following null hypothesis:

[10] These activities are now monitored by the Securities Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC).

Hypothesis 3: Investment banks' wealth and risk remain unaffected by the passage of the DFA.

Finally, the DFA has limited coverage in finance companies and insurance companies. It establishes the new Federal Insurance Office (FIO), which has the responsibility to gather information about the insurance industry and assigns the regulation of systemically important insurers to the Federal Reserve. Thus, the following null hypothesis can be assumed:

Hypothesis 4: Finance and insurance companies' wealth and risk remain unaffected by the passage of the DFA.

Finally, the existing literature on FI regulation documents that wealth and/or risk effects vary with institutional characteristics, such as their type and size. These variations are typically caused by regulatory-driven shifts in the FIs competitive environment, thereby creating winners and losers during the process of institutional adjustment to the new rules. As noted previously, the DFA introduces rules that are likely to exert differential effects to different sectors of the financial services industry. Regardless of sectoral differences, the process of institutional adjustment to the new regulatory regime is also likely to be driven by institutional characteristics. The above can form the basis for the following null hypothesis.

Hypothesis 5: The wealth and risk effects of FIs do not vary based on the type of institution and/or firm characteristics.

3. Legislative dates, sample and methodology

3.1. Legislative dates and sample selection

Our analysis focuses on the equity reaction (risk and return) of U.S. financial firms around key legislative events leading to the passage of the DFA. We extract the list of major congressional actions on the DFA from the THOMAS database of the Library of Congress.[11] The date the Conference Committee began reconciling the House and Senate versions of the Bill (June 25, 2010), as well as the date Senator Scott Brown backed the Act (July 12, 2010), are also included, as these events might have conveyed information to the market regarding the details of the Act, and/or partially removed uncertainty regarding its passage. Table 1 presents a list of the events.

[TABLE 1 ABOUT HERE]

Using Bloomberg, the financial institutions traded on the New York Stock Exchange (NYSE), the American Stock Exchange (ASE) or NASDAQ, are grouped on the basis of the standard industrial classification (SIC) system. Sample firms must have continuous daily equity returns from June 12, 2009 to January 11, 2011 and trade at least 70% of the time. This amounts to 400 trading days, allowing for 120-trading days before and 120-trading days after the legislative process[12] to test for shifts in risk following the day the Act was passed into law. The sample consists 360 financial institutions; specifically, 67 national commercial banks (SIC 6021), 92 state commercial banks (SIC 6022), 27 Federal savings institutions (SIC 6035), 8 savings institutions – not federally chartered (SIC 6036), 36 finance companies (SIC 61), 4 security brokers (SIC 6200), 22 security brokers and dealers (SIC 6211), 18 investment advisors (SIC

[11] See https://www.congress.gov/bill/111th-congress/house-bill/4173/actions. Note the THOMAS database was retired on July 5, 2016 and replaced by Congress.gov.
[12] The legislative process involving key events spans 160 trading days, from December 2, 2009 to July 22, 2010.

6282), 12 life insurers (SIC 631), 19 health insurers (SIC 632), and 55 P/C insurers (SIC 633).[13] Table 2 provides descriptive statistics.

[TABLE 2 ABOUT HERE]

Looking at Table 2, a number of observations can be made. In terms of size, national banks are larger than all other institutions, with average assets of $134 billion, followed by insurance companies and investment banks with average assets of $57 and $54 billion, respectively. State banks, savings institutions, and finance firms are much smaller, with average assets between $11 and $14 billion. In terms of average profitability, all types of banks exhibit negative return on equity ratios (ROE – net income-to-total equity). Specifically, the ROE for national banks is -0.2%, while state banks and savings banks exhibit ratios of -9.7% and -8.4%, respectively. In contrast, non-banks exhibit positive ROE ratios with finance firms leading the way (35.6%), followed by insurance companies (10.1%) and investment banks (5.1%). Banks and finance firms share relatively similar capital structures (LEV – total assets-to-total equity) and have higher LEV than insurance companies and investment banks. In terms of the average cost ratio (CR - operating expenses-to-total assets), banks and insurance companies exhibit lower operational costs than investment banks and finance firms. Looking at the proxy for growth opportunities (M/B – market-to-book ratio), the average investment bank trades at around 4 times its book value, while the respective multiple for all other types of institution is around 1. Finally, in terms of average risk (DD – distance to default)[14], finance companies, state banks, and

[13] Note we exclude foreign banks (SIC 6029) as they were not the focus of Congress during the DFA's legislative process. In addition, given their limited coverage by the DFA, and to keep results comparable with the wider literature on the wealth/risk effects of FI regulation (see Section 1), we also exclude credit unions (SIC 606), branches and agencies of foreign banks (SIC 607), functions related to depository banking (SIC 608), security and commodity exchanges (SIC 623), insurance agents, brokers and services (SIC 64), and real estate firms (SIC 65).

[14] For this measure the paper uses the Bloomberg credit risk function. The original concept coined by Merton (1974) assumed that zero-coupon debt can default only at maturity. The Bloomberg function overcomes this limitation by treating equity as a one-year barrier call option (*i.e.* that a firm can default prior to maturity) and creating a mapping

investment banks are almost two times riskier than national banks, insurance companies, and savings banks.

3.2. Methodology

To measure the effects of legislative events of the DFA on the equity returns and risk of financial intermediaries, the paper employs the Seemingly Unrelated Regression (SUR) framework. The SUR approach provides more efficient estimates since it accounts for the cross-equation residual correlations (Carow and Heron, 2002; Johnston and Madura, 2000; Schipper and Thompson, 1985).[15] The system of *n* equations, representing the *n* firms within a sector, is estimated separately for each group of FIs. The algebraic representation of the system is as follows[16]:

$$\begin{aligned} R_{1t} &= \alpha_1 + \beta_1 R_{mt} + \gamma_1 \Delta I_t + \textstyle\sum_{k=1}^{8} \delta_{1,k} D_k + \theta_1 D_A R_{mt} + \lambda_1 D_A \Delta I_t + \varepsilon_{1t} \\ &\vdots \\ R_{nt} &= \alpha_n + \beta_n R_{mt} + \gamma_n \Delta I_t + \textstyle\sum_{k=1}^{8} \delta_{n,k} D_k + \theta_n D_A R_{mt} + \lambda_n D_A \Delta I_t + \varepsilon_{nt} \end{aligned} \quad (1)$$

where,

α_i = the intercept coefficient;

between distance to default (DD) and actual default rates. In addition, Bharath and Shumway (2008) show that while DD is a significant predictor of default, it is not a sufficient statistic. Consistent with this study, the Bloomberg function supplements the information in DD with sector specific metrics that are related to the credit health of firms (*i.e.* non-performing loans for banks, claims reserves for insurance companies), and thus providing an accurate default probability. Technical details can be obtained via the Bloomberg terminal.

[15] As noted in Bhargava and Fraser (1998), the problem of cross-sectional correlation among residuals is more pronounced for industry-wide regulatory changes in the FI industry, given its heavily regulated nature. As regulatory changes typically trigger changes in both the risk and returns of FIs, the traditional event study methodology is deemed inappropriate.

[16] To correct for non-synchronous data, we also estimate an alternative model, which incorporates lagged market returns and lagged interest rate changes. In addition, for robustness, we also estimate the model using alternative market proxies, such as the S&P 500, the MSCI index, and the MSCI Financials index, as well as alternative interest rate proxies, such as the change in the 3-month Treasury bill rate, and the change in the 1-month Treasury bill rate. The results are qualitatively similar and are available upon request. We check residual autocorrelations for up to 10 lags (two trading weeks) to test our specification. Most autocorrelation coefficients are lower than 0.05.

R_{it} = the logarithmic return on stock *i* on day *t*;

R_{mt} = the logarithmic return on the NYSE Composite index on day *t*;

ΔI_t = the change in the rate of the U.S. 10-year constant maturity Treasury;

β_i = the market beta before and during the legislative process;

γ_i = the interest rate coefficient before and during the legislative process;

$\delta_{i,k}$ = the shift in the intercept (abnormal return) due to the legislative event *k*;

θ_i = the shift in the market beta after the legislative process;

λ_i = the shift in the interest rate coefficient after the legislative process;

D_k = a dummy variable equal to one on the three trading days around the k^{th} regulatory event [-1, +1], and zero otherwise;

D_A = a dummy variable equal to one after the last legislative event and zero otherwise;

ε_{it} = the error term with the usual properties

The system can also be generalized using matrix notation as:

$$R = X\beta + \varepsilon \tag{2}$$

or

$$\begin{bmatrix} R_{1t} \\ \vdots \\ R_{nt} \end{bmatrix} = \begin{bmatrix} X & \dots & 0 \\ \vdots & \dots & \vdots \\ 0 & \dots & X \end{bmatrix} \begin{bmatrix} \beta_1 \\ \vdots \\ \beta_n \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \vdots \\ \varepsilon_{nt} \end{bmatrix} \tag{3}$$

where,

$R = (R_{1t} \dots R_{nt})$ a $1 \times n$ vector;

$X =$ a $T \times N$ matrix of explanatory variables;

$\beta =$ a $T \times 1$ vector of coefficients;

ε = a $T \times 1$ vector of residuals

We expect the average abnormal return $\overline{\delta_k} = \frac{1}{n}\sum_{i=1}^{n} \delta_{i,k}$ to be statistically significant if legislative event *k* has a significant impact on the stock prices of each group of FIs. Similarly, we expect the risk shift operators $\bar{\theta} = \frac{1}{n}\sum_{i=1}^{n} \theta_i$ and $\bar{\lambda} = \frac{1}{n}\sum_{i=1}^{n} \lambda_i$ to be statistically significant if there is a significant shift in the market and interest rate sensitivity of each group of FIs, following the passage of the DFA.

4. Empirical Findings

4.1. Excess returns

4.1.1. Full sample

The analysis focuses on certain parts of the Act, which are assumed to have a direct impact on the U.S. FIs. We anticipate the impact of these regulatory changes to differ across types of institutions. Table 3 presents the results of the SUR estimation for the full sample. The first column identifies the type of financial institution, while the subsequent columns present estimates for each of the events analysed.

[TABLE 3 ABOUT HERE]

The results show that the FIs in our sample exhibited negative and insignificant excess returns when the Bill was introduced to the House of Representatives (Event 1), as well as when it was passed/agreed to in the House (Event 2). Similar findings are reported in Turk and Swicegood (2012) and Fier and Liebenberg (2013) for their sample of banks, and insurance companies, respectively. Gao et al. (2013) obtain a negative coefficient on the first event and a positive on the second event, yet do not report tests of statistical significance for individual dates. The sign tests reveal that the number of FIs exhibiting positive excess returns is significantly lower than

the expected (50%), under the null hypothesis; the exceptions are state banks and finance companies, when the Bill was passed/agreed to in the House. The finding that a significantly higher number of FIs exhibit negative returns may suggest that individual FI characteristics could be underlying. Consistent with prior evidence (Fier and Liebenberg, 2013; Gao et al., 2013; Turk and Swicegood, 2012) we also obtain insignificant results when the Bill was passed/agreed to in the Senate (Event 3). The only exception is savings institutions, which exhibit a negative and significant excess return of -0.9%. Once again, the signs tests show that the number of negative excess returns significantly differs from the expectation of 50% under the null hypothesis for all financial institutions, except for investment banks.

Shifting our attention to the date when the Conference Committee began reconciliation of the House and Senate versions of the Bill (Event 4), we observe positive and significant reactions for national banks (1.2%), finance companies (0.9%) and insurance companies (0.5%). The result on banks is consistent with Turk and Swicegood (2012), yet the magnitude of our reported excess return is greater. This difference can be attributed to the fact that they aggregate excess returns across national banks, state banks, and savings institutions; our finding of insignificant excess returns for the latter two groups lend further support to this argument. One potential explanation for the positive reaction by national banks is that the reconciled version of the Bill represented a much watered-down version of its predecessors. In particular, industry lobbying led to important victories for banks, including the right to retain control of hedge funds and private equity firms, and the ability to continue trading most derivatives. As far as finance firms and insurance companies are concerned, the positive excess returns could be associated with analogous concessions. In particular, finance firms, which are involved in consumer credit, may have welcomed exceptions on consumer rules related to automobile financing. Similarly, insurance

companies avoided a ban on certain risky trading activities. The insignificant reaction by investment banks could be due to the fact that larger and more systemic institutions a) would be eventually forced to shed part of their substantial hedge funds and private-equity activities, b) are likely to face a ban in proprietary trading, as well as c) endure additional oversight of their trading activities. Finally, the insignificant reaction by state banks and savings institutions could be related to the fact that the majority are small and low risk and, therefore, less affected by the Bill, which imposes stronger rules on the capital, leverage, liquidity, risk management, and systemic risk of the largest institutions.

Furthermore, all FIs show insignificant reactions when the Conference report was passed/agreed to in the House of Representatives (Event 5), except for investment banks and insurance companies that experience a negative and significant cumulative excess return of -0.9% and -0.6%, respectively. Whilst our result on banks may be consistent[17] with Gao et al. (2013), it is not consistent with Turk and Swicegood (2012) who report a positive and significant wealth effect. Nevertheless, as noted earlier, this difference could be attributed to the aggregation of excess returns across different types of banks, and/or the inclusion of banks with non-Federal or State charter in their study. For investment banks, the negative result could be associated with the aforementioned uncertainty regarding their a) involvement in hedge funds and private equity, b) proprietary trading activities, and/or c) exposure to increased regulatory oversight. Our result on insurance companies, although not consistent with the insignificant coefficient obtained in Fier and Liebenberg (2013), could be associated with increased uncertainty regarding the selection process for enhanced federal regulation, or the '*modus operandi*' of the newly formed

[17] Note we use the term 'may be' to indicate that although our result on the sign of the excess return is consistent with Gao et al. (2013), we are unable to comment on the significance as they do not report statistical tests for individual dates. In addition, they report aggregate excess returns for systemically important commercial banks, investment banks and insurance companies.

FIO and FSOC. Complementing the above results, the sign tests reveal a significant deviation from the expectation of equally distributed positive and negative returns for all FIs except savings institutions.

We find no significant reaction by FIs when Senator Scott Brown backed the Bill (Event 6). This could be due to the fact that the market already anticipated this development. In contrast, our results show that national banks, state banks, and investment banks experience significant negative excess returns of -1.5%, -1.4% and -0.6%, respectively, when the Conference report was passed/agreed to in the Senate (Event 7). As above, our result on banks may be consistent with Gao et al. (2013), but is in contrast with the insignificant coefficient in Turk and Swicegood (2012). This negative reaction by commercial and investment banks may be indicative of the broader regulatory uncertainty regarding the final shape of the regulatory framework and its impact on their activities. Our negative but insignificant result on insurance companies is not consistent with Fier and Liebenberg (2013) who find a negative and significant excess return. As noted earlier, one potential explanation for this difference is the fact that the traditional event study approach in their study does not account for cross-sectional correlations among residuals. Finally, the sign tests clearly support this negative reaction by the majority of financial institutions in our sample.

Taking a closer look at the above results, we observe that national and state banks experience lower excess returns than investment banks. To the extent that FI reactions on this date reflect updated expectations regarding its impact on FIs, this result may indicate that the markets expect commercial banks to experience a loss of competitive strength vis-à-vis investment banks. Specifically, commercial banks may experience additional costs and reduced profits, as a result of DFA imposed restrictions in proprietary trading, and the limits in the ownership (or

sponsorship) of hedge funds and private equity funds. It could be argued that although the market expects that investment banks will be affected by the stricter rules on the risk-taking practices in OTC derivatives, this is partially offset by the benefits accruing from the reduced competition by commercial banks. To contextualize this argument, it is likely that commercial banks will scale down any impermissible securities activities and/or divest ownership in hedge funds and private equity funds to comply with the DFA. In turn, some of these activities might shift to investment banks, thus increasing investment in them, and, potentially, leading their returns to higher levels.[18]

Finally, we find no significant abnormal returns around the time the President signed the Bill (Event 8), since the market had already discounted the effects of the Act and it is likely investors expected it to be signed by the President.

4.1.2. Sample subsets

One may argue that FI characteristics, such as their size and risk, may trigger differential reactions to the DFA. In what follows, we determine if excess returns vary according to these characteristics. To achieve this, we segment the FIs in each subset by size and risk profile (Table 4).[19]

[TABLE 4 ABOUT HERE]

Looking at the excess returns of national banks across all legislative events, some interesting patterns emerge. Specifically, we note a negative and significant excess return of -1.5% for large

[18] The cross-section results in Section 4.3. lend further support to this argument.

[19] We follow Carow and Heron (2002) and define large (small) FIs as those with total assets greater (lower) than $10 billion. For robustness, we also use the median value of total assets to segment the sample. The results are qualitatively similar and are available upon request. We define high (low) risk institutions as those with an above (below) median distance-to-default (DD) figure (Vallascas and Hagendorff, 2011). Note the reduction in the total number of institutions for some subsets is due to the unavailability of accounting data. To conserve space, we only report figures for events 1, 4, 7 and 8. The remaining events are discussed in the paper, while figures are available upon request.

national banks (Panel A) when the Bill was introduced to the House (Event 1). In addition, the difference between the excess returns of large and small national banks is statistically significant, indicating that large institutions exhibit lower excess returns. Although the risk segmentation for the same event (Panel B) does not yield significant excess returns for either high risk or low risk institutions, the t-statistic indicates that high risk institutions experience significantly lower excess returns. In addition, the results show that the previously observed positive excess return for national banks when the Conference committee began reconciling the House and Senate versions (Event 4) is driven by small (Panel A) and/or low risk (Panel B) national banks. All other legislative events yield insignificant coefficients, except for the date when the conference report was passed/agreed to in the Senate (Event 7), where both large and small (Panel A) and/or high and low risk (Panel B) national banks exhibit negative and significant excess returns.

Looking at state banks, the results are generally consistent with those reported in Table 3, indicating a uniform reaction across large and small institutions (Panel A). The risk segmentation (Panel B) produces similar conclusions, except for the date when the Conference committee began the reconciliation process (Event 4), with low risk state banks exhibiting positive and significant excess returns that are significantly higher than those of high risk state banks. Similar observations can be made for savings institutions; the only exception is the negative excess return when the Bill was passed/agreed to in the Senate (Event 7), which is driven by small institutions (Panel A). Finally, this event produces a uniform reaction by high risk and low risk institutions (Panel B).

The results on finance companies reveal that the full sample's positive and significant reaction when the Conference committee began the reconciliation process (Event 4) is driven by small institutions (Panel A), similar to national banks. The segmentation into high risk and low risk

finance firms (Panel B) does not yield any significant coefficient on that date. Unlike the full sample results, Table 4 indicates that small and/or low risk finance companies also exhibit a negative and significant reaction when the Bill was signed by the President (Event 8).

The results on investment banks show that the two negative and significant reactions observed for the full sample are driven by small institutions, with their larger counterparts experiencing significantly higher excess returns (Panel A). The risk segmentation (Panel B) shows a uniform negative reaction when the Conference report was passed/agreed to in the House (Event 5), whereas only high risk investment banks exhibit negative excess returns when the Conference report was agreed to in the Senate (Event 7). Nevertheless, the results show that the differences between the excess returns of high risk and low risk investment banks are insignificant.

Finally, Table 4 shows that size and/or risk variations are also evident in the excess returns of insurance companies. Specifically, only large and/or high risk insurers exhibit positive and significant excess returns when the Conference committee began the reconciliation process (Event 4). The difference in excess returns is, however, only significant for the risk segmentation. Nonetheless, the negative excess return observed in the full sample when the Conference report was passed/agreed to in the House (Event 5), is driven by small and/or low risk insurers.

Overall, the evidence is consistent with the view that large and/or risky banks will be more affected by the DFA, given their greater involvement in riskier activities. As noted earlier these activities are more likely to shift to investment banks. The results on the latter are consistent with this view, whilst highlighting that the largest investment banks might capture the bulk of this activity. The result on insurers also highlights that benefits (losses) will accrue to large/risky (small/less risky) companies. In particular, large insurers are more likely to gain from

concessions made on a ban of risky trading activities, while small and less risky insurers are more likely to be affected by compliance costs and the uncertainty regarding their post-DFA operations.

4.2. Changes in risk

Table 5 presents the estimates of the market risk coefficients[20] and shifts in these estimates following the passage of the DFA. Columns 2 to 3 present the results for the full sample, columns 4 to 8 present estimates for high risk vs. low risk institutions, while columns 9 to 13 present the results for large vs. small institutions.[21]

[TABLE 5 ABOUT HERE]

We begin by examining the market risk shifts reported in Panel A. The full sample results for national banks reveal a significant increase in their market risk following the passage of the DFA. Segmenting the sample into subsets reveals that this increase is only evidenced in low risk and/or small institutions. Moreover, the differences in risk shifts among institutions in each of the two subsets are statistically significant. Looking at state banks, the full sample results also document a significant increase in risk following the passage of the Act. Unlike national banks, both high risk and low risk state banks experience risk increases. Nevertheless, the size segmentation reveals that significant risk increases are only documented for small state banks, which exhibit significantly higher risk shift coefficients. Positive and significant risk shifts are also documented for savings institutions, the latter being driven by low risk institutions that

[20] In general, the changes in yield (interest rate shifts) do not seem to produce any significant results. This could be attributed to the low and stable interest rate environment and/or any balance sheet restructuring of the banking firms (mainly) to avoid exposure to duration and convexity mismatches. For the sake of brevity, we do not report the estimates of the interest rate coefficients and shifts in these estimates. These are available upon request.

[21] Following from the previous section, we define large (small) institutions as those with total assets greater (lower) than $10 billion. For robustness, we also use the median value of total assets to segment the sample. Results remain largely consistent and are available upon request.

experience significantly higher risk shifts than their high risk peers. Unlike national banks, the size segmentation does not reveal any variations for savings institutions. Furthermore, the results show that finance companies do not experience any significant risk shifts. The only exception is the negative and significant risk shift coefficient for large finance companies – albeit, we need to be cautious in generalizing from this result as this subset contains only 3 firms. Shifting our attention to investment banks, we also observe a positive and significant increase in their market risk, which is consistent among high risk and low risk institutions. Nevertheless, the size segmentation reveals that only small investment banks experience risk increases. What's more, their risk shift coefficient is significantly higher than the corresponding figure of large investment banks. Finally, insurance companies do not seem to experience any significant risk shifts following the passage of the DFA. Nonetheless, a closer look at the two subsets reveals significant risk increases for low risk and/or small insurers.

For commercial banks, two opposing underlying forces are in place. On the one hand, one might reasonably expect commercial banks to exhibit lower systematic risk as a result of a gradual exodus from risky activities such as proprietary trading and ownership of hedge funds and private equity funds. Specifically, it can be argued that a return to more traditional banking activities should reduce the exposure of bank returns to the market. On the other hand, commercial banks are likely to experience an increase in their systematic risk due to investor uncertainty regarding a transfer of competitive strength to investment banks. This effect could be especially pronounced for smaller commercial banks, which could find themselves in a less favorable competitive position. The above results are consistent with the competitive strength of investment banks being the dominant force. The increase in the systematic exposure of investment banks is largely consistent with the view that their increased involvement in

securities activities and their greater exposure to hedge funds and private equity will render their returns more susceptible to wider market shocks. Nevertheless, the finding that only small investment banks experience significant increases in their market risk highlights the possibility that the DFA might be placing smaller investment banks at a competitive disadvantage vis-à-vis their larger peers when dealing with regulators. The insignificant shift in the market risk of insurance companies is somewhat expected as the DFA has limited coverage of insurers. Nevertheless, the fact that small and/or low risk insurers experience a significant market risk increase may reflect investor concerns regarding the future of smaller and/or riskier insurers. Compared to the literature, our results are somewhat consistent with Akhigbe et al. (2016). Specifically, whilst they report risk reductions for their full sample, they do find market beta increases for event windows up to 100 days following the DFA's passage. In addition, as noted earlier, the aggregation of banks, securities and insurers could realize a loss of detail regarding sectoral differences.[22] Overall, it is worth noting that the results raise concerns that the DFA may be inadequately addressing the issue of systematic risk, as suggested by the increased market risk for the majority of financial institutions. Even more so, the Act does not seem to enable the transferring of market risk from deposit taking institutions to investment banks.

4.3. Cross-section analysis of excess returns

This section employs a cross-section analysis to examine the relationship between wealth effects, market risk shift, and financial institution characteristics, such as institution type, profitability (ROE), leverage (LEV), growth opportunities (M/B), operating efficiency (CR), risk

[22] The aggregation issue is also present when their sample is split into depository (SIC 60) and non-depository institutions (SIC codes 62 and 63). SIC 60 includes, but is not limited to, Federal Reserve banks, central depository institutions, national banks, state banks, savings banks, credit unions, and foreign banks. These institutions as well as their operations are distinct enough to warrant different reactions to the DFA. Similarly, the DFA has different provisions for investment banks and insurers.

(DD), and size. Table 6 presents the results of the cross-section analysis of excess returns. Panel A presents OLS regressions of excess returns from different dates during the DFA's legislative process, while Panel B presents OLS regressions of the market risk shift coefficients. The first column identifies the independent variables, while each of the subsequent columns presents their coefficient estimates.

[TABLE 6 ABOUT HERE]

Model 1 (Panel A) presents OLS regressions of cumulative excess returns across all legislative events of the DFA. The first model indicates that all FIs except investment banks and life insurance companies experience significantly lower excess returns. Furthermore, the model suggests that FI characteristics, such as their profitability, growth opportunities, and size are not associated with excess returns. Nevertheless, the coefficients on leverage, operating efficiency and risk are negative and significant. This indicates that more levered, less operationally efficient (higher CR ratio), and riskier firms experience lower excess returns; these institutions are more likely to incur greater compliance costs in order to adapt to the DFA's increased capital requirements and new leverage limits. Model 2 introduces size interactions with the type of financial institution. In this specification, the institutional dummies now account for small FIs (total assets < $10b). The coefficients on all small FIs are negative and significant, suggesting that small FIs experience lower excess returns. We also note that the coefficient on profitability is negative and significant, while the coefficient on growth opportunities is positive and significant. The above indicate that more profitable and higher-growth firms experience lower abnormal returns. One potential explanation is the fact that these firms tend to be involved in those activities mostly affected by the DFA. Shifting our attention to large FIs (L x institutional dummies), their coefficients can be interpreted as the incremental excess return over that of small

institutions within the same subset. In addition, the average abnormal return on large institutions within each subset can be determined by adding three coefficients: the intercept, the coefficient on small FIs, and the coefficient on large FIs. The results indicate the large national banks also experience lower excess returns, while their average excess return is -2.7% (1.8% - 2.6% - 1.9%). The coefficients on large state banks, savings banks and P/C insurers are insignificant, indicating they do not experience higher or lower returns. In contrast, the coefficients on large investment banks, and large life and health insurers are positive and significant. The average abnormal return for large investment banks is 1.5% (1.8% - 4.1% + 3.8%). The corresponding average excess return for large life insurers is 1.7%. These results suggest that large investment banks and large life insurers benefit at the expense of their smaller counterparts. The result on large investment banks is consistent with the view that the Volcker Rule may improve their competitive position in proprietary trading activities, asset management as well as investments in private equity and hedge funds. As far as life insurers are concerned, the positive excess return could be related to the view that larger life insurers generally favoured the idea of Federal regulation. The corresponding average excess return for large health insurers is -0.8%, which implies the former were less harmed by the DFA than small health insurance companies.

Models 3 and 4 (Panel A) present OLS regressions of cumulative excess returns for June 25, (Conference Committee begins reconciliation). The variable coefficients on Model 3 are generally consistent with those reported in Model 1. What's more, the size dummy is negative and significant, indicating that larger (smaller) institutions experience lower (higher) excess returns. This confirms our previous finding (see Table 4) that the observed positive FI reaction on that date was generally driven by smaller FIs. Model 4 introduces large institution interactions and points to some interesting conclusions. First, the negative coefficients on small state and

savings banks, and small health and P/C insurers indicate these institutions experience lower abnormal returns. The size interactions reveal that large national banks and large investment banks experience lower returns than their smaller counterparts. This lends further support to the argument that any benefits associated with concessions made in the reconciled version of the Bill may have accrued to smaller FIs.

Models 5 and 6 (Panel A) present OLS regressions of cumulative excess returns for July 15, (Conference report passed/agreed to in the Senate). The institutional dummies in Model 5 show that national banks, state banks, savings banks and life insurers experience lower abnormal returns. The coefficients on all accounting variables are insignificant, except for leverage that yields a negative and significant coefficient. As expected, more levered FIs experience lower abnormal returns, possibly reflecting market concerns that the Act will mostly affect those institutions. Complementing the findings in Table 4, the size dummy is positive and significant indicating that large FIs experience higher abnormal returns. The size interactions in Model 6 show that large investment banks and large life insurers experience higher excess returns than their smaller peers. The average excess return on investment banks is 0.7% (-0.3% - 1.0% + 2.0%), indicating that they experience positive excess returns. In contrast, large life insurers experience a negative average abnormal return of -0.6% (-0.3% -1.2% + 0.9%).

Models 7 and 8 (Panel B) present OLS regressions of market risk shifts following the passage of the DFA. Consistent with our univariate results, Model 7 reveals that national banks, state banks, and investment banks experience higher risk increases. Even though none of the accounting variables are significant, the large institutions dummy is negative and significant, implying that large FIs experience significantly lower increases in risk. Model 7, which includes large institution interactions, points to some interesting conclusions. In particular, large national

banks, state banks, investment banks, life and P/C insurers experience lower risk shifts than their smaller peers. This is consistent with the view that large FIs might gain from the DFA at the expense of their smaller counterparts.[23]

Overall the results indicate that the DFA might have redistributed value from banks and other financial institutions to investment banks and is consistent with the notion of value re-distribution around de-regulatory events (Carow and Kane, 2002), due to changes in the competitive structure of the financial services industry.

5. Concluding Remarks

The familiar sequence of financial crises and ensuing regulatory reforms is anything but new, and can be traced back to the Wall Street's history of financial innovation (Hilt, 2009). Financial crises have been examined thoroughly in the academic literature, while the resemblance of crises to hurricanes (Bruner and Carr, 2007) has simplified the myth about crises' individuality. Yet, regulatory failures are rarely discussed, since regulatory frameworks are reactive to financial crises rather than being proactive before the turmoil erupts. Revisiting the U.S. financial regulation history, one realises the cyclical pattern of regulating, deregulating and reregulating financial intermediaries (Gart, 1994). This process, fuelled by the weakness of policy makers to codify the understanding of regulatory failures and convey it over time, has been central to the financial intermediaries' wealth and risk profile.

Almost two decades ago, deregulation in the U.S. has enabled the formation of financial conglomerates or universal banks. The latter managed to diversify across products, generate

[23] We also perform a number of F-tests to examine if the coefficients across different groups of FIs are different. The majority of tests reveal significant differences among pairs of institutions of different sectors and size groups. To conserve space, these results are available upon request.

efficiencies at various fronts, accommodate clients' needs, and offer social benefits to the society (Saunders, 1985). Nevertheless, the 2007 financial crisis has highlighted a number of regulatory failures in areas including, but not limited to, crisis management, regulatory discipline, capital adequacy, liquidity risk management, prompt corrective action, moral hazard, and the form of deposit insurance (Goodhart 2008). The consensus that banks' securities activities were the main contributor to the crisis has dominated most post-crisis debates, thereby triggering a new cycle of reregulation. In 2010, the U.S. government introduced the DFA in order to alleviate systemic risk, end implicit guarantees and, promote better market discipline. A prominent question is whether the DFA will succeed in these objectives. Nonetheless, another question that is often overlooked is whether the Act will alter the industry's competitive landscape, creating new winners and losers as FIs adapt to the new regulatory regime.

This paper aims to shed some light into the above questions by looking into the wealth and risk effects of the passage of the Dodd-Frank Act on the U.S. financial services industry. We measure the effects of key legislative events of the DFA Act by means of a multivariate regression model by employing the seemingly unrelated regression (SUR) approach. Our results indicate a mixed response by FIs during the various stages of the DFA's legislative process. In particular, national banks, finance companies and insurance companies seem to welcome concessions made to the industry when the House and Senate Bills were reconciled. Nonetheless, this reaction is driven by small and/or low risk national banks, small finance firms, and large and/or high risk insurance companies. In contrast, the negative reaction by national banks, state banks and investment banks when the conference report was passed/agreed to in the Senate is independent of their size and/or risk profile. The only exception are investment banks, where negative excess returns are only experienced by small and/or high risk institutions. The analysis

of risk effects reveals positive and significant increases in the market risk of national and state banks, savings institutions, and investment banks following the passage of the DFA, with small and/or low risk institutions dominating this trend. The cross-section results corroborate and extend the above, showing that large institutions fare better than small ones and that large investment banks may have gained at the expense of other FIs.

Overall, our evidence is consistent with the notion that the DFA redistributed wealth among FIs. Investor concerns about the reforms of the financial services industry represent the cornerstone of the current debate among policy makers and cross-continent regulatory bodies. Looking at the U.S. regulatory arena, one observes the unceasing struggle between regulators and regulatees, a process already known as regulatory dialectic (Kane, 1981, 1988). During this process the notion of regulatory arbitrage surfaces in today's capital markets dominated by globalization and financial innovation. Given the structure of modern capital markets, the question raised is how to implant a pro-active device into the regulatory regime that foresees and reacts to financial innovation and regulatory avoidance. The continued interface among governments, lobbyists, and regulators shapes the structure of financial services industry, which in turn alters the statutory definition of financial intermediaries – predominantly banks. The danger in this process is the creation of partnership between financially important institutions and governments. Under this partnership, the former may enjoy various benefits (size, wealth, implicit government guarantees, etc.) while the latter may deploy these institutions as conduits of their own ambitions. Unbeknownst to them, such deals pave the way for the next economic crisis.

This paper informs the debate on bank regulation and can be useful to regulators and managers in shaping the future path of the financial services industry. As more data becomes

available, future research could examine the impact of the DFA at the firm- or public policy-levels. For example, future studies can look into the long-term effects of the Act on the FIs efficiency, profitability, and risk, or examine the Act's impact on the level of systemic risk in the economy.

References

Acharya, V.V., 2009. A theory of systemic risk and design of prudential bank regulation. Journal of Financial Stability 5, 224-255.

Acharya, V.V., Cooley, T., Richardson, M., Walter, I., 2010. Regulating Wall Street: The Dodd–Frank Act and the new architecture of global finance. NJ: John Wiley and Sons.

Akhigbe, A., Martin, A.D., Whyte, A.M., 2016. Dodd-Frank and risk in the financial services industry. Review of Quantitative Finance and Accounting 47, 395-415.

Ang, J.S., Richardson, T., 1994. The underwriting experience of commercial bank affiliates prior to the Glass-Steagall Act: A reexamination of evidence for passage of the Act. Journal of Banking and Finance 18, 351-395.

Baele, L., De Jonghe, O., Vander Vennet, R., 2007. Does the stock market value bank diversification? Journal of Banking and Finance 31, 1999-2023.

Balasubramnian, B., Cyree, K.B., 2014. Has market discipline on banks improved after the Dodd–Frank Act? Journal of Banking and Finance 41, 155-166.

Bharath, S., Shumway, T., 2008. Forecasting default with the Merton distance to default model. Review of Financial Studies 21, 1339–1369.

Baumol, W.J., 1982. Contestable markets: An uprising in the theory of industry structure. The American Economic Review 72, 1-15.

Benston, G.J., 1990. The separation of commercial and investment banking: The Glass-Steagall act revisited and reconsidered. NY: Oxford University Press.

Benston, G.J., 1994. Universal Banking. Journal of Economic Perspectives 8, 121-143.

Bhargava, R., Fraser, D.R., 1998. On the wealth and risk effects of commercial bank expansion into securities underwriting: An analysis of Section 20 subsidiaries. Journal of Banking and Finance 22, 447-465.

Black, F., Miller, M.H., Posner, R.A., 1978. An approach to the regulation of bank holding companies. Journal of Business 51, 379-412.

Boot, A.W.A., Schmeits, A., 2000. Market discipline and incentive problems in conglomerate firms with applications to banking. Journal of Financial Intermediation 9, 240-273.

Bruner, R., Carr, S., 2007. The panic of 1907: Lessons learned from the market's perfect storm. Hoboken, NJ: John Wiley and Sons.

Brunnermeier, M., Dong, G., Palia, D., 2012. Bank's non-interest income and systemic risk. Presented at the American Finance Association Annual Meetings, Chicago.

Carow, K.A., 2001. Citicorp-Travelers group merger: Challenging barriers between banking and insurance. Journal of Banking and Finance 25, 1553-1571.

Carow, K.A., Heron, R.A., 2002. Capital market reactions to the passage of the Financial Services Modernization Act of 1999. Quarterly Review of Economics and Finance 42, 465-485.

Carow, K.A., Kane, E.J., 2002. Event-study evidence of the value of relaxing long-standing regulatory restraints on banks, 1970-2000. Quarterly Review of Economics and Finance 42, 439-463.

Casu, B., Dontis-Charitos, P., Staikouras, S.K., Williams, J., 2016. Diversification, size and risk: The case of bank acquisitions of nonbank financial firms. European Financial Management 22, 235-275.

De Jonghe, O., 2010. Back to the basics in banking? A micro-analysis of banking system stability. Journal of Financial Intermediation 19, 387-417.

Dontis-Charitos, P., P. Molyneux, Staikouras S.K., 2011. Does the stock market compensate banks for diversifying into the insurance business? Financial Markets, Institutions and Instruments 20, 1-28.

Elyasiani, E., Staikouras, S.K., Dontis-Charitos, P., 2016. Cross-industry product diversification and contagion in risk and return: The case of bank-insurance and insurance-bank takeovers. Journal of Risk and Insurance 83, 681-718.

Fields, L.P., Fraser, D.R., Kolari, J.W., 2007. Is bancassurance a viable model for financial firms? Journal of Risk and Insurance 74, 777-794.

Fier, S.G., Liebenberg, A.P., 2013. Market reaction to potential federal regulation in the insurance industry. Journal of Insurance Issues 36, 1-34.

Flannery, M.J., 1985. An economic evaluation of bank securities activities before 1933. In: I. Walter, Deregulating Wall Street. NY: John Wiley and Sons, 67–87.

Flannery, M.J., 1999. Modernizing financial regulation: The relation between interbank transactions and supervisory reform. Journal of Financial Services Research 16, 101-116.

Gao, Y., Liao, S., Wang, X., 2013. The economic implications of the Dodd-Frank Act on systemically important financial firms: Evidence from market reactions. Working paper, April (http://ssrn.com/abstract=1919630).

Gart, A., 1994. Regulation, deregulation, reregulation: The future of the banking, insurance, and securities industries. NY: John Wiley and Sons.

Goodhart, C.A.E., 2008. The regulatory response to the financial crisis. Journal of Financial Stability 4, 351–358.

Hendershott, R.J., Lee, D.E., Tompkins, J.G., 2002. Winners and losers as financial service providers converge: Evidence from the Financial Modernization Act of 1999. The Financial Review 37, 53-72.

Herring, R.J., Santomero, A.M., 1990. The corporate structure of financial conglomerates. Journal of Financial Services Research 4, 471-497.

Hilt, E., 2009. Wall Street's first corporate governance crisis: The panic of 1826. NBER Working Paper No. 14892, April (http://www.nber.org/papers/w14892).

Ibragimov, R., Jaffee, D., Walden, J., 2011. Diversification disasters. Journal of Financial Economics 99, 333-348.

Johnston, J., Madura J., 2000. Valuing the potential transformation of banks into financial service conglomerates: Evidence from the Citigroup merger. The Financial Review 35, 17-36.

Kane, E.J., 1981. Accelerating inflation, technological innovation, and the decreasing effectiveness of banking regulation. The Journal of Finance 36, 355-367.

Kane, E.J., 1988. Interaction of financial and regulatory innovation. American Economic Review 78, 328-334.

Kane, E.J., 2000. Incentives for banking megamergers: What motives might regulators infer from event-study evidence? Journal of Money, Credit and Banking 32, 671-701.

Krainer, R.E., 2012. Regulating Wall Street: The Dodd-Frank Act and the new architecture of global finance: A review. Journal of Financial Stability 8, 121-133.

Kroszner, R.S., Rajan, R.G., 1994. Is the Glass-Steagall act justified? A study of the U.S. experience with universal banking before 1933. The American Economic Review 84, 810-832.

Mayer Brown, 2014. Does Volcker+Vickers=Liikanen? Legal Update (February). Available at: http://www.mayerbrown.com/Does-Volcker--Vickers--Liikanen-02-26-2014/

Mercieca, S., Schaeck, K., Wolfe, S., 2007. Small European banks: Benefits from diversification? Journal of Banking and Finance 31, 1975-1998.

Merton, R.C., 1974. On the pricing of corporate debt: The risk structure of interest rates. Journal of Finance 29, 449-470.

Molyneux, P., Schaeck, K., Zhou, T.M., 2014. Too systemically important to fail in banking – Evidence from bank mergers and acquisitions. Journal of International Money and Finance 49, 258-282.

Neale, F.R., Peterson, P.P., 2005. The effect of the Gramm-Leach-Bliley Act on the insurance industry. Journal of Economics and Business 57, 317-338.

Praet, P., Nguyen, G., 2008. Overview of recent policy initiatives in response to the crisis. Journal of Financial Stability 4, 368-375.

Puri, M., 1994. The long-term default performance of bank underwritten security issues. Journal of Banking and Finance 18, 397-418.

Sanders, B.C., 2013. Financial regulatory reform – benefits, costs, and challenges of the Dodd-Frank Act. NY: Nova Publishers.

Saunders, A., 1985. Securities activities of commercial banks: The problem of conflicts of interest. Business Review, Federal Reserve Bank of Philadelphia, July/August.

Saunders, A., Walter, I., 1994. Universal banking in the United States: What could we gain? What could we lose? NY: Oxford University Press.

Santomero, A.M., Eckles, D.L., 2000. The determinants of success in the new financial services environment: Now that firms can do everything, what should they do and why should regulators care? Federal Reserve Bank of New York, Economic Policy Review, 6, 11-23.

Schipper, K., Thompson, R., 1985. The impact of merger-related regulations using exact distributions of test statistics. Journal of Accounting Research 23, 408-415.

Stein, J.C., 1997. Internal capital markets and the competition for corporate resources. Journal of Finance 52, 111-133.

Stiroh, K.J., 2004. Diversification in banking: Is noninterest income the answer? Journal of Money, Credit and Banking 36, 853-882.

Stiroh, K.J., 2006. A portfolio view of banking with interest and noninterest activities. Journal of Money, Credit and Banking 38, 1351-1361.

Stiroh, K.J., Rumble, A., 2006. The dark side of diversification: The case of U.S. financial holding companies. Journal of Banking and Finance 30, 2131-2161.

Turk, G., Swicegood, P., 2012. Assessing the market's reaction to the Dodd-Frank Act. Journal of Business and Economic Research 10, 569-578.

Vallascas, F., Hagendorff, J., 2011. The impact of European bank mergers on bidder default risk. Journal of Banking and Finance 35, 902-915.

Vander Vennet, R., 2002. Cost and profit efficiency of financial conglomerates and universal banks in Europe. Journal of Money, Credit and Banking 34, 254-282.

Wagner, W., 2010. Diversification at financial institutions and systemic crises. Journal of Financial Intermediation 19, 373-386.

Weiß, G.N.F., Neumann, S., Bostandzic, D., 2014. Systemic risk and bank consolidation: International evidence. Journal of Banking and Finance 40, 165-181.

Yildirim, H.S., Kwag (Austin), S.W., Collins, M.C., 2006. An examination of the equity market response to the Gramm-Leach-Bliley Act across commercial banking, investment banking, and insurance firms. Journal of Business Finance and Accounting 33, 629-649.

Table 1.

Event Dates Leading up to the Passage Of Dodd-Frank Act.

Event Number	Event date	Action
1	December 2, 2009	Bill introduced in the House of Representatives
2	December 11, 2009	Bill passed/agreed to in the House (H.RES.964)
3	May 20, 2010	Bill passed/agreed to in the Senate (S.3217)
4	June 25, 2010	Conference Committee began reconciliation
5	June 30, 2010	Conference report passed/agreed to in the House
6	July 12, 2010	Sign of enough votes in the Senate for approval
7	July 15, 2010	Senate approved the bill
8	July 21, 2010	President Obama signed the bill

This table presents the list of major events leading up to the passage of the Dodd-Frank Act of 2010. Dates and information are sourced from the THOMAS database of the Library of Congress. Events 4 and 6 are not listed under major Congressional actions by the THOMAS database. However, we choose to include them as they might have conveyed information to the market regarding the details of the Act, and/or partially removed uncertainty regarding its passage.

Table 2

Summary Statistics.

	National Banks	State Banks	Savings Banks	Finance Companies	Investment Banks	Insurance Companies (All)	Health Insurance	Life Insurance	P/C Insurance
Sample Size	67	92	35	36	44	86	19	12	55
Assets									
Mean	134,477.515	14,189.403	11,119.495	14,346.354	57,402.886	53,861.370	31,397.099	120,740.242	47,030.00
Median	5,464.03	3,545.356	4,047.760	879.527	971.412	9,947.525	25,249.501	22,949.102	7,666.694
S.D.	445,627.94	35,081.593	15,614.295	40,953.139	188,876.137	128,386.387	35,414.812	189,121.481	130,470.664
ROE									
Mean	-0.002	-0.097	-0.084	0.356	0.051	0.101	0.109	0.016	0.116
Median	0.039	0.050	0.022	0.102	0.052	0.103	0.105	0.049	0.113
S.D.	0.187	0.586	0.314	2.037	0.203	0.087	0.066	0.115	0.077
LEV									
Mean	9.801	11.866	10.116	10.387	3.651	5.529	4.834	13.575	4.014
Median	9.662	10.286	8.259	2.448	2.064	3.613	3.066	15.633	3.410
S.D.	1.885	9.402	6.486	22.033	3.733	5.186	4.753	7.625	2.462
CR									
Mean	0.032	0.031	0.026	0.125	0.366	0.055	0.211	0.002	0.010
Median	0.029	0.029	0.025	0.080	0.322	0.002	0.169	0.000	0.001
S.D.	0.011	0.011	0.012	0.165	0.263	0.146	0.252	0.003	0.019
M/B									
Mean	1.091	1.103	0.953	1.042	4.471	0.968	1.110	0.758	0.967
Median	1.115	1.085	0.973	0.866	2.222	0.900	1.090	0.670	0.893
S.D.	0.537	0.791	0.288	0.722	10.308	0.464	0.733	0.329	0.351
DD									
Mean	0.048	0.082	0.035	0.087	0.061	0.044	0.042	0.079	0.037
Median	0.035	0.037	0.029	0.067	0.050	0.036	0.030	0.075	0.032
S.D.	0.035	0.144	0.015	0.053	0.044	0.029	0.028	0.029	0.023

This table presents summary statistics for our sample of financial institutions. Assets are expressed in USD millions. ROE is the return on equity, calculated as the ratio of net income-to-total equity. LEV is the ratio of total assets-to-total equity, known as the equity multiplier. CR is the ratio of operating expenses-to-total assets. M/B is the market-to-book ratio. DD is the 5-year default probability measure provided by the Bloomberg credit risk function (see fn. 14). We source all variables from Bloomberg at the 2009 fiscal year-end, except for DD, where the December 2009 figure is used.

Note: S.D. represents the standard deviation.

Table 3.

SUR results by industry type: Full sample.

		Event 1: 2 December 2009				**Event 2: 11 December 2009**				**Event 3: 20 May 2010**				**Event 4: 25 June 2010**			
	N	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*
National banks	67	-0.007	1.409	19	-3.543[a]	-0.003	0.293	19	-3.543[a]	-0.004	0.533	21	-3.054[a]	0.012	4.507[b]	63	7.208[a]
State banks	92	-0.004	0.635	22	-5.004[a]	-0.003	0.227	41	-1.043	-0.005	0.823	27	-3.962[a]	0.004	0.594	76	6.255[a]
Savings institutions	35	-0.003	0.433	12	-1.859[b]	-0.002	0.272	11	-2.197[b]	-0.009	3.943[b]	4	-4.564[a]	0.003	0.316	24	2.197[b]
Finance companies	36	0.000	0.000	11	-2.333[b]	-0.001	0.037	17	-0.333	-0.004	0.712	12	-2.000[b]	0.009	4.382[b]	28	3.333[a]
Investment banks	44	-0.005	1.798	11	-3.317[a]	-0.004	1.431	10	-3.618[a]	-0.003	0.501	22	0.000	0.006	2.388	33	3.317[a]
Insurance companies	86	-0.005	2.538	21	-4.745[a]	0.002	0.482	56	2.804[a]	-0.005	2.396	18	-5.392[a]	0.005	2.865[c]	68	5.392[a]
		Event 5: 30 June 2010				**Event 6: 12 July 2010**				**Event 7: 15 July 2010**				**Event 8: 21 July 2010**			
	N	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*	$\overline{\delta_k}$	χ^2-*stat*	+*ve*	*z-stat*
National banks	67	-0.006	1.046	14	-4.765[a]	0.006	1.108	51	4.276[a]	-0.015	6.772[a]	4	-7.208[a]	-0.004	0.394	26	-1.833[b]
State banks	92	-0.004	0.616	33	-2.711[a]	0.005	0.766	75	6.047[a]	-0.014	6.321[a]	7	-8.132[a]	-0.002	0.140	37	-1.877[b]
Savings institutions	35	-0.001	0.054	17	-0.169	0.004	0.738	24	2.197[b]	-0.005	1.162	7	-3.550[a]	-0.004	0.560	14	-1.183
Finance companies	36	-0.003	0.374	13	-1.667[b]	0.004	0.774	28	3.333[a]	-0.005	1.473	7	-3.667[a]	-0.007	2.282	13	-1.667[b]
Investment banks	44	-0.009	6.228[b]	10	-3.618[a]	0.005	2.004	35	3.920[a]	-0.006	3.081[c]	10	-3.618[a]	0.001	0.025	24	0.603
Insurance companies	86	-0.006	3.675[c]	14	-6.254[a]	0.001	0.025	49	1.294	-0.005	2.473	17	-5.607[a]	-0.002	0.367	33	-2.157[b]

This table presents the excess returns of financial institutions on key legislative events leading up to the passage of the Dodd-Frank Act. Abnormal returns are estimated using equation (1) where the effect of each legislative event is captured by a dummy variable that equals one on the three trading days around the k_{th} regulatory event [-1, +1], and zero otherwise. On December 2, 2009 the Bill was introduced in the House of Representatives. On December 11, 2009 the Bill was passed/agreed to in the House of Representatives. On May 20, 2010 the Bill was passed/agreed to in the Senate. On June 25, 2010 the Conference Committee began reconciliation of the House and Senate versions. On June 30, 2010 the conference report was passed/agreed to in the House of Representatives. On July 12, 2010 Senator Scott Brown backed the Bill. On July 15, 2010 the Conference Report was agreed to in Senate, cleared for White House and presented to the President. On July 21, 2010 President Barack Obama signed the Bill. Note: On June 29, 2010 the House-Senate conference committee finalized negotiations and filed the conference report to accompany the Dodd-Frank Wall Street Reform and Consumer Protection Act.

N is the total number of institutions within each group. The $\overline{\delta_k}$ figures represent the average abnormal return per event k and averaged across each category of firms. The χ^2-*stat* is derived from a Wald coefficient restrictions test; the null hypothesis is, $\sum_{i=1}^{n} \delta_{i,k} = 0$, where, i is the financial institution within each group, and k the event. $+ve$ shows the number of positive abnormal returns per event within each group. The z-statistic (z-stat) is calculated as, $\left(V - N_p\right)/\sqrt{N_p(1-p)}$, where, V is the number of positive parameter estimates, N is the number of parameter estimates, and $p = 0.50$ the probability of a positive estimate. a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.

Table 4.

SUR results by industry type: Sample subsets.

Panel A: Large vs. Small		**Event 1: 2 December 2009**			**Event 4: 25 June 2010**			**Event 7: 15 July 2010**			**Event 8: 21 July 2010**		
		LA	**S**	**LA-S**	**LA**	**S**	**LA-S**	**LA**	**S**	**LA-S**	**LA**	**S**	**LA-S**
	N_{LA}/N_S	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$
National banks	24/43	-0.015	-0.002	-0.013	0.009	0.014	-0.005	-0.013	-0.016	0.003	-0.007	-0.002	-0.005
χ^2-*stat*		4.840[b]	0.119	(-4.924)[a]	1.715	5.078[b]	(-2.104)[b]	3.677[c]	6.592[b]	(1.114)	0.917	0.097	(-1.322)
State banks	20/71	-0.010	-0.003	-0.007	0.001	0.005	-0.004	-0.011	-0.015	0.004	-0.007	0.000	-0.007
χ^2-*stat*		1.805	0.263	(-2.295)[b]	1.225	0.749	(-0.668)	1.814	6.452[b]	(2.022)[b]	0.385	0.007	(-2.665)[b]
Savings institutions	8/18	-0.006	-0.002	-0.004	0.004	0.002	0.002	-0.005	-0.004	-0.001	-0.011	-0.003	-0.008
χ^2-*stat*		0.716	0.093	(-1.192)	0.370	0.143	(0.500)	0.531	0.521	(-0.144)	2.842[c]	0.307	(-1.474)
Finance companies	3/22	-0.007	0.004	-0.011	0.006	0.009	-0.003	-0.012	-0.004	-0.008	-0.013	-0.009	-0.004
χ^2-*stat*		0.756	0.495	(-0.775)	0.551	3.074[c]	(-0.503)	2.011	0.598	(-2.419)[c]	2.413	3.354[c]	(-0.272)
Investment banks	8/28	-0.006	-0.004	-0.002	0.006	0.005	0.001	0.006	-0.011	0.016	0.002	0.002	0.000
χ^2-*stat*		2.038	0.840	(-0.598)	1.776	1.604	(0.216)	1.590	6.335[b]	(3.490)[a]	0.176	0.234	(-0.050)
Insurance companies	43/43	-0.006	-0.004	-0.002	0.006	0.005	0.002	-0.005	-0.005	0.001	-0.001	-0.003	0.001
χ^2-*stat*		2.674	1.283	(-0.872)	2.957[c]	1.490	(0.941)	1.597	2.149	(0.483)	0.118	0.499	(0.667)

Panel B: High vs. low risk		**Event 1: 2 December 2009**			**Event 4: 25 June 2010**			**Event 7: 15 July 2010**			**Event 8: 21 July 2010**		
		H	**LO**	**H-LO**	**H**	**LO**	**H-LO**	**H**	**LO**	**H-LO**	**H**	**LO**	**H-LO**
	N_H/N_{LO}	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$	$\overline{\delta_k}$	$\overline{\delta_k}$	$\Delta\overline{\delta_k}$
National banks	33/34	-0.010	-0.004	-0.007	0.011	0.014	-0.003	-0.017	-0.013	-0.004	-0.007	0.000	-0.007
χ^2-*stat*		2.142	0.498	(-2.209)[b]	2.398	7.392[a]	(-0.954)	5.946[b]	6.741[a]	(-1.612)	1.033	0.002	(-1.740)[c]
State banks	45/46	-0.002	-0.007	0.006	-0.002	0.010	-0.012	-0.017	-0.012	-0.005	-0.001	-0.003	0.002
χ^2-*stat*		0.065	1.967	(1.982)[c]	0.067	3.799[c]	(-2.457)[b]	6.371[b]	5.005[b]	(-2.214)[b]	0.031	0.299	(0.544)
Savings institutions	13/13	-0.003	-0.003	0.000	0.003	0.002	0.001	-0.002	-0.006	0.004	-0.006	-0.006	0.000
χ^2-*stat*		0.190	0.410	(-0.085)	0.192	0.295	(0.175)	0.116	2.040	(0.878)	0.598	1.773	(0.077)
Finance companies	12/12	0.010	-0.004	0.015	0.010	0.008	0.002	-0.003	-0.007	0.004	-0.001	-0.019	0.018
χ^2-*stat*		2.596	0.793	(1.041)	2.412	2.647	(0.479)	0.224	1.946	(1.191)	0.024	16.315[a]	(0.977)
Investment banks	18/18	-0.005	-0.004	-0.001	0.007	0.004	0.003	-0.009	-0.005	-0.003	0.003	0.001	0.002
χ^2-*stat*		1.130	0.951	(-0.433)	2.140	1.051	(0.924)	3.308[c]	1.929	(-0.844)	0.366	0.083	(0.443)
Insurance companies	43/43	-0.005	-0.005	0.001	0.009	0.002	0.007	-0.006	-0.005	-0.001	-0.002	-0.002	0.000
χ^2-*stat*		1.389	3.076[c]	(0.271)	4.626[b]	0.445	(3.783)[a]	1.793	2.241	(-0.544)	0.172	0.504	(0.238)

This table presents the excess returns of, and differences between sample subsets on key legislative events leading up to the passage of the Dodd-Frank Act. Panel A presents results for large (LA – total assets > $10b) and small (S – total assets < $10b) financial institutions, while Panel B presents results for high risk (H – above median DD) and low risk (LO – below

median DD) financial institutions. Abnormal returns are estimated using equation (1) where the effect of each legislative event is captured by a dummy variable that equals one on the three trading days around the k_{th} regulatory event [-1, +1], and zero otherwise. On December 2, 2009 the Bill was introduced in the House of Representatives. On June 25, 2010 the Conference Committee began reconciliation of the House and Senate versions. On July 15, 2010 the Conference Report was agreed to in Senate, cleared for White House and presented to the President. On July 21, 2010 President Barack Obama signed the Bill.

N_{LA}, N_S, N_H, and N_{LO} represent the total number of large, small, high risk, and low risk institutions within each group, respectively. The $\overline{\delta_k}$ figures represent the average abnormal return per event k and averaged across each category of firms and size profile. $\Delta\overline{\delta_k}$ is the difference between the excess returns of large and small institutions (LA-S), or high risk and low risk institutions (H-LO). The χ^2-*stat* is derived from a Wald coefficient restrictions test; the null hypothesis is, $\sum_{i=1}^{n} \delta_{i,k} = 0$, where, i is the financial institution within each group, and k the event. Figures in parentheses show t-values. a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.

Table 5.

Risk shifts following the passage of the Dodd-Frank Act.

Market risk	Full Sample		High Risk		Low Risk		High-Low	Large		Small		Large-Small
	Before $(\bar{\beta})$	Shift $(\bar{\theta})$	Before $(\bar{\beta})$	Shift $(\bar{\theta})$	Before $(\bar{\beta})$	Shift $(\bar{\theta})$	ΔShift $\Delta(\bar{\theta})$	Before $(\bar{\beta})$	Shift $(\bar{\theta})$	Before $(\bar{\beta})$	Shift $(\bar{\theta})$	ΔShift $\Delta(\bar{\theta})$
National banks	1.091	0.216	1.235	0.141	0.950	0.290	-0.150	1.208	0.119	1.025	0.271	-0.153
χ^2-*stat*	416.753[a]	3.659[c]	361.454[a]	1.043	421.410[a]	8.759[a]	(-1.933)[c]	353.283[a]	0.757	316.976[a]	4.945[b]	(-2.339)[b]
State banks	0.990	0.287	1.098	0.256	0.887	0.330	-0.074	1.186	0.124	0.939	0.339	-0.214
χ^2-*stat*	374.487[a]	6.983[a]	322.817[a]	3.913[b]	347.204[a]	10.695[a]	(-0.918)	385.668[a]	0.943	292.994[a]	8.490[a]	(-2.001)[c]
Savings institutions	0.866	0.168	1.096	0.025	0.757	0.159	-0.134	0.943	0.144	0.920	0.069	0.075
χ^2-*stat*	381.916[a]	3.201[c]	273.410[a]	0.032	338.212[a]	3.341[a]	(-0.771)	224.351[a]	1.165	298.925[a]	0.378	(0.517)
Finance companies	1.088	0.048	1.182	0.131	1.069	-0.045	0.176	1.478	-0.395	1.017	0.127	-0.523
χ^2-*stat*	676.570[a]	0.294	401.321[a]	1.106	583.131[a]	0.227	(1.082)	368.135[a]	5.872[b]	485.214[a]	1.695	(-2.215)
Investment banks	1.112	0.223	1.174	0.227	1.008	0.268	-0.041	1.105	-0.043	1.087	0.331	-0.373
χ^2-*stat*	1055.028[a]	9.435[a]	688.750[a]	5.760[a]	804.611[a]	12.676[a]	(-0.284)	716.156[a]	0.239	765.225[a]	15.786[a]	(-3.684)[a]
Insurance companies	0.961	0.069	1.238	-0.057	0.685	0.195	-0.253	1.122	-0.029	0.801	0.167	-0.197
χ^2-*stat*	1030.649[a]	1.189	1048.814[a]	0.499	568.539[a]	10.329[a]	(-4.824)[a]	1064.400[a]	0.160	535.865[a]	5.222[b]	(-3.564)[a]

This table presents the market risk $(\bar{\beta})$ and market risk shift $(\bar{\theta})$ coefficients estimated using equation (1). The risk shift is captured by the coefficient $(\bar{\theta})$ on a dummy variable that equals one on all trading days following the passage of the Dodd-Frank Act (July 21, 2010), and zero otherwise. Results are presented for the full sample (columns 2 to 3), high risk vs. low risk institutions (above or below median DD – columns 4 to 7), and large vs. small institutions (above or below $10 billion total assets – columns 9 to 12). Columns 8 and 13 present the differences between the respective subsets.

The $(\bar{\beta})$, $(\bar{\gamma})$, and $(\bar{\theta})$ figures represent averages across each category of firms. The χ^2-*stat* is derived from a Wald coefficient restrictions test; the null hypothesis is, $\sum_{i=1}^{n} X_i = 0$, where, i is the financial institution within each group, and X the coefficient being tested β, γ, or θ. Figures in parentheses show t-values. a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.

Table 6.
Cross section analysis of abnormal returns and market risk shifts.

	Panel A: Excess Returns						Panel B: Market Risk	
	All Events		Event 4: June 25		Event 7: July 15		Post DFA Shift	
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Constant (Finance companies)	0.019	0.018	0.016	0.016	-0.003	-0.003	0.096	0.078
	(1.781)[c]	(1.863)[c]	(5.770)[a]	(5.497)[a]	-(1.685)[c]	-(1.617)	(1.206)	(0.943)
National Banks	-0.036	-0.026	-0.004	-0.003	-0.011	-0.011	0.233	0.239
	-(3.143)[a]	-(2.212)[b]	-(1.362)	-(0.894)	-(4.123)[a]	-(3.614)[a]	(2.384)[b]	(2.132)[b]
State Banks	-0.033	-0.025	-0.010	-0.009	-0.009	-0.009	0.291	0.318
	-(2.971)[a]	-(2.339)[b]	-(3.124)[a]	-(2.638)[a]	-(3.639)[a]	-(3.457)[a]	(2.979)[a]	(3.084)[a]
Savings Banks	-0.039	-0.029	-0.015	-0.016	0.000	0.001	0.107	0.039
	-(2.748)[a]	-(2.101)[b]	-(4.215)[a]	-(3.906)[a]	-(0.113)	(0.340)	(0.831)	(0.247)
Investment Banks	-0.022	-0.041	-0.004	-0.002	-0.004	-0.010	0.211	0.315
	-(1.544)	-(2.472)[b]	-(1.250)	-(0.499)	-(1.121)	-(3.177)[a]	(1.803)[c]	(2.062)[b]
Life Insurance	-0.010	-0.037	0.003	0.007	-0.008	-0.012	-0.070	0.150
	-(0.700)	-(2.650)[a]	(0.822)	(2.221)[b]	-(2.469)[b]	-(5.202)[a]	-(0.637)	(1.534)
Health Insurance	-0.037	-0.071	-0.009	-0.011	0.002	0.006	0.088	0.141
	-(2.824)[a]	-(3.634)[a]	-(2.447)[b]	-(2.070)[b]	(0.730)	(1.434)	(0.808)	(0.870)
P/C Insurance	-0.028	-0.027	-0.011	-0.012	-0.003	-0.002	0.109	0.087
	-(2.745)[a]	-(2.710)[a]	-(4.162)[a]	-(4.054)[a]	-(1.240)	-(1.036)	(1.218)	(0.911)
ROE	-0.032	-0.037	-0.003	-0.003	0.004	0.004	-0.086	-0.082
	-(1.515)	-(1.874)[c]	-(0.699)	-(0.742)	(1.259)	(1.258)	-(0.583)	-(0.519)
LEV	-0.001	-0.001	0.000	0.000	0.000	0.000	-0.005	-0.004
	-(1.732)[c]	-(2.543)[b]	-(0.697)	-(0.712)	-(1.661)[c]	-(2.229)[b]	-(1.219)	-(1.114)
M/B	0.000	0.001	0.000	0.000	0.000	0.000	-0.002	-0.005
	(1.507)	(2.564)[a]	(0.937)	(0.489)	(0.999)	(1.911)[c]	-(0.666)	-(1.146)
CR	-0.048	-0.006	-0.026	-0.027	-0.002	0.005	0.019	-0.115
	-(1.723)[c]	-(0.201)	-(3.349)[a]	-(2.819)[a]	-(0.221)	(0.716)	(0.063)	-(0.339)
DD	-0.191	-0.184	-0.107	-0.107	-0.013	-0.011	0.202	0.214
	-(2.318)[b]	-(2.320)[b]	-(3.721)[a]	-(3.703)[a]	-(0.744)	-(0.637)	(0.399)	(0.410)
L	-0.005		-0.004		0.003		-0.175	
	-(1.149)		-(2.544)[b]		(2.531)[b]		-(3.952)[a]	
L x National Banks		-0.019		-0.005		0.003		-0.153
		-(2.355)[b]		-(2.027)[b]		(1.053)		-(2.182)[b]
L x State Banks		-0.016		-0.005		0.003		-0.229
		-(1.437)		-(1.354)		(1.485)		-(2.072)[b]
L x Savings Banks		-0.018		0.001		0.000		0.075
		-(1.031)		(0.273)		-(0.048)		(0.497)
L x Investment Banks		0.038		-0.008		0.020		-0.385
		(2.384)[b]		-(1.719)[c]		(3.840)[a]		-(2.469)[b]
L x Life Insurance		0.036		-0.008		0.009		-0.423
		(1.997)[b]		-(1.578)		(3.409)[a]		-(4.458)[a]
L x Health Insurance		0.045		0.001		-0.005		-0.204
		(2.489)[b]		(0.173)		-(1.135)		-(1.267)
L x P/C Insurance		0.004		0.000		0.003		-0.095
		(0.988)		(0.016)		(1.905)[c]		-(1.713)[c]
N	320	320	320	320	320	320	320	320
Adjusted R-squared	0.193	0.224	0.306	0.298	0.204	0.244	0.121	0.117
F-statistic	6.874	5.835	11.801	8.122	7.270	6.411	4.376	3.221

This table presents OLS regressions of excess returns (Panel A) and market risk shifts (Panel B) of financial institutions on a number of exogenous factors captured by various accounting and dummy variables. The dependent variable in Models 1 and 2 is the cumulative excess return across all legislative events of the DFA. The dependent variable in models 3 and 4 is the estimated excess return for June 25 (Conference Committee began the reconciliation process). The dependent variable in models 5 and 6 is the estimated excess return for July 15 (Conference report passed/agreed to in the Senate). The dependent variable in models 7 and 8 is the estimated market risk shift coefficient. The first column identifies the independent variables, while each of the subsequent columns present the OLS coefficient estimates. National Banks, State Banks, Savings Banks, Investment Banks, Health Insurance, Life Insurance, and P/C Insurance are dummy variables capturing the type of institution. ROE is the return on

equity, calculated as the ratio of net income-to-total equity. LEV is the ratio of total assets-to-total equity, known as the equity multiplier. M/B is the market-to-book ratio. CR is the ratio of operating expenses-to-total assets. DD is the 5-year default probability measure provided by the Bloomberg credit risk function (see fn. 14). Large is a dummy variable equal to one for financial institutions with total assets greater than USD 10 billion and zero otherwise. In cases where independent variables are correlated with one another, we use auxiliary regressions to make them orthogonal. We source all variables from Bloomberg at the 2009 fiscal year-end, except for DD, where the December 2009 figure is used.

Figures in brackets are t-values (White errors). a/b/c denote statistical significance at the 1%, 5% and 10%, respectively.