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Key Stakeholders' Stock Returns and the Affordable Care Act

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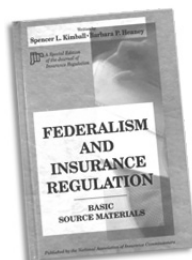
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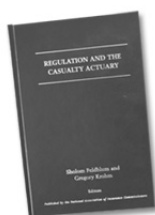
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Key Stakeholders' Stock Returns and the Affordable Care Act

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Abstract

The federal Affordable Care Act (ACA) is the most influential and sweeping health care reform of our generation. Within the ACA legislation, there are a number of key stakeholder industries that are affected by provisions in the law: health care providers, health insurance companies, medical/biotechnology companies and pharmaceutical companies. We investigate the effect of the passage of the ACA on the capital market response to the key stakeholder industries during the time period surrounding the date the final version of the bill was signed into law (March 23, 2010) and the date the law was upheld in the Supreme Court (June 28, 2012). These dates are particularly important as they convey new information to the market regarding the evidence the ACA would become law. Overall, we find that the passage of the ACA has a negative effect on health insurance companies, medical device companies, and companies that operate simultaneously in the health care and insurance industry, while having a positive influence on firms in the health care industry.

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1. Introduction

On June 28, 2012, the Supreme Court upheld critical provisions of the ACA, which aims to expand health insurance to many of the 50 million currently uninsured Americans. The ACA represents a sweeping health care reform that will change the health system in the U.S. and will have a profound impact in the years to come (Harrington, 2010). The final bill included numerous changes in the tax code to help fund its central doctrine, including an expansion of Medicaid and federal health insurance subsidies for low socio-economic individuals and families. Concurrently, a number of additional revenue streams were proposed and/or implemented, including the medical device excise tax, changes to the funding mechanisms and regulation of pharmaceutical companies, as well as taxes and restrictions on a number of health care plans and disbursements from health savings accounts. Given the ACA legislation is unlikely to be reversed, the various key stakeholders across the health care market are now focusing on its impact and implementation.

While many industries are subject to the effects of the health care regulations, the U.S. pharmaceutical, medical device/biotechnology, health care and health insurance industries have been particularly concerned about the passage of some type of health-reform legislation. These industries are inextricably linked to the provision of health care, and in recent years, there have been numerous questions and concerns about the potential impact any health care reforms would have on the structure and viability of these industries (Jayakumar and Kliff, 2012; Abelson, 2010; Kristof, 2012). As discussed in more detail below, these concerns appear to have been well founded, as provisions of the ACA potentially affect the operations of firms in each industry. However, the extent to which the ACA will have a significant and beneficial/detrimental impact on these industries is not well understood. While some have suggested the ACA will have a significantly positive impact on the pharmaceutical and health care provider industries and a significantly negative impact on the health insurance and medical device/biotechnology industries, there is little empirical evidence to validate this supposition. As such, the impact of the ACA on the capital market positions of these key industries is largely uncertain.

The uncertainty regarding the impact of the ACA on the capital market positions of these key stakeholder industries represents a large void in the literature. The overarching purpose of the ACA is to provide access to affordable health care and health insurance to all Americans, and this goal likely cannot be achieved without well-functioning pharmaceutical, medical device/biotechnology, health care and health insurance industries. As a result, if the provisions of the ACA have a significantly negative impact on the market's expectations of performance generated by these industries, regulators and public policymakers should be particularly concerned about the viability of the ACA and its long-term effects on health care-related industries. Conversely, if the ACA improves the capital market positions of key industries, this would suggest that the market

believes the new regulatory changes will increase future performance and ultimately benefit firms in those industries. Further, no change in capital market position would suggest that the market does not share the view of the ACA's detractors that it will significantly undermine the operations of certain aspects of the health care industry's infrastructure.

We attempt to fill this void by examining stock price reactions of firms that are members of the U.S. pharmaceutical, medical device/biotechnology, health care and health insurance industries. In particular, we focus on abnormal returns for these firms surrounding two dates that are most likely to provide new information about the likelihood of the ACA becoming law. While on March 21, 2010, the U.S. House of Representatives approved the U.S. Senate's version of the bill and paved the way for President Barack Obama to sign the bill, the bill was not signed into law until two days later on March 23, 2010 (henceforth, *Pass Date*). Since numerous studies have reported an association between the U.S. Supreme Court decisions and the capital market response (Abraham and Voos, 2005; Freedman and Stagliano, 1991; McWilliams, Turk and Zardkoohi, 1993; Mullin, Mullin and Mullin, 1995), we also examine abnormal returns around June 28, 2012, which is the date the U.S. Supreme Court upheld the constitutionality of the ACA (henceforth, *Supreme Court Date*). Examining two separate dates (March 23, 2010, and June 28, 2012), where the market received new information about the ACA, adds an important element of robustness to our analysis.

The results of our analysis suggest a significant capital market reaction surrounding the release of new information regarding the ACA, particularly as it relates to health insurers and health care-related companies. Our event study analysis suggest that in the days immediately surrounding the approval of the Senate bill, U.S. pharmaceutical, medical device/biotechnology, health care and health insurance industry firms, in aggregate, have significantly high returns. However, these results are short-lived and center on only the small window of time immediately surrounding the *pass date*. When examining the *Supreme Court date* (June 28, 2012), the returns are relatively normal in the three-day period surrounding the event date and the two-day period immediate after the event date. However, when extending the period out over the following 10-day period, returns are both positive and economically significant.

We also extend the univariate analysis to separately analyze returns in each of the four stakeholder industries, both when the company falls within a single industry or the company has cross over into multiple industries. We find that around the *Pass Date*, there are short-term positive returns for health care providers, medical device companies and companies that are classified as having operations as a combination of health care and device companies. However when looking at the *Supreme Court Date*, we find positive returns for health care providers and negative returns for health insurers and companies that are classified as having operations as a combination of health care and insurance companies. Recognizing the need to control for other factors that may influence returns, we also use a regression framework to examine the market response to our

stakeholder industries. Consistent with our univariate results, we find a significant negative relationship to returns in health insurers and medical device firms, as well as the combination of those types of companies, following both the *Senate and Supreme Court Pass Dates*.

Considered in their entirety, our analysis indicates that the market revised expectations of publicly traded health insurers and medical device companies downward following the Supreme Court's decision to uphold the constitutionality of the ACA. This suggests that the market believes the regulatory constraints imposed by the ACA will serve to lower the expected cash flows of health insurers and medical device companies and, to the extent that markets exhibit a degree of efficiency, is of relevance to regulators and policymakers as they evaluate the operations of the health insurance market in the post-ACA era. In addition, this result also suggests that the ACA influences aspects of health insurer operations such as capital costs and capital budgeting decisions, which have impactful consequences for the future financial health of the private health insurance market. We also find weaker evidence that the market has a more optimistic view of the effects of the ACA on health care firms, which should encourage regulators' and policymakers' outlook on the viability of the ACA. As a result, we conclude that, of the industries considered here, the health insurance industry, the medical device industry, and companies operating simultaneously in the health care and insurance market were the only to suffer negative and significant capital market response as a result of the ACA.

As this study is one of the first to consider capital market responses to the ACA, it represents a valuable contribution to the academic literature. While Dong (2014) and Ababneh and Tang (2013) provide evidence of market reactions surrounding the ACA, their analysis focuses on a different subsample of firms and considers a relatively short event window. In addition, their studies do not provide evidence using a multivariate analysis to control for other factors that influence returns. As a result, our analysis, which considers multiple event windows and multivariate models, both complements and extends these studies by examining market reaction to the ACA for a unique sample of stakeholder firms. The inclusion of medical device manufacturer firms and health care firms in our analysis also helps to further differentiate our study. As a result, we contribute to the underdeveloped area of the literature related to capital market reaction surrounding the ACA.

The remainder of this article is structured as follows. The next section provides background information on the stakeholder industries affected by the ACA. The third section develops our hypotheses and also describes our sample, data and methodology. The fourth describes our empirical methods and results. Finally, we provide conclusions in the last section.

2. Background

2.1 Stakeholder Industries

The ACA imposes a variety of provisions that alter many aspects of the health care industry.¹ The law creates health insurance exchanges, expands Medicaid, alters the tax code and imposes a variety of additional regulations that have the potential to affect key stakeholders in the health care industry. In particular, the literature suggests that health care providers (e.g. Kristof, 2012), health insurance companies (e.g. Jayakumar and Kliff, 2012), medical device manufacturers (e.g. Van de Water, 2013) and pharmaceutical companies (e.g. Abelson, 2010) are stakeholders that could potentially be significantly affected by the provisions of the ACA.

2.1.1 Health Care Providers

The consensus in the literature is that the ACA will positively influence the cash flows of health care providers. In fact, many suggest that health care providers are the principle beneficiary of the ACA and have even described the ACA as a dowry from the Supreme Court to health care providers and their shareholders (e.g. Kristof, 2012; Krantz, 2012). Other studies suggest that the expected increase in cash flow from the ACA has led parties such as health care provider executives and the American Hospital Association (AHA) to support the ACA (Brubaker, Burling, Sell, and Von Bergen, 2012; Rogoff and Yerramalli, 2012).

Various factors are cited as reasons for the increase in health care providers' cash flows following the ACA. The first is that the ACA's requirement that all citizens purchase insurance will reduce the expenses associated with treating uninsured patients and ultimately lead to higher profits for health care providers (Jayakumar and Kliff, 2012; Smith, 2012). Similarly, others suggest that due to higher health insurance coverage rates, health care providers will gain more customers who will be more willing to be receive treatment (e.g., Hamilton and Tangel, 2012). Still others suggest that the ACA's health care quality and efficiency incentives will ultimately reduce spending and improve the bottom line of health care provider organizations (e.g., Mukherjee, 2012.)

1. A detailed discussion of the ACA's provisions and their effects on the health care and health insurance industry is outside the scope of this paper, as the topic has been extensively considered in the literature. However, we rely on the literature to identify how the provisions of the ACA will affect stakeholder industries and summarize this evidence below.

2.1.2 Health Insurance Companies

Many suggest that health insurers face significant financial pressure under the ACA that will negatively affect cash flows for a variety of reasons. From a broad perspective, the new regulatory constraints imposed by the ACA will necessitate a fundamental change in the operational strategies of insurers when compared to the pre-ACA era (Jayakumar and Kliff, 2012). The resulting costs associated with this change will likely have an adverse effect on health insurer profits (Hamilton and Tangel, 2012). Similarly, it is argued that the ACA will result in higher tax liabilities for health insurers, which would also have a negative impact on income (Kavilanz, 2010).

Underwriting restrictions enacted by the new law also are expected to negatively affect health insurers' cash flows. As noted by Kristof (2012) and others, health insurers will not be permitted to deny coverage on the basis of preexisting conditions and also will not be permitted to set lifetime benefit ceilings. As a result, health insurers potentially will pay out significantly higher amounts in claims relative to the pre-ACA era, ultimately leading to lower profit margins. Further, another negative impact on health insurer profits is expected to come from the ACA's provisions on medical loss ratios (MLRs), which require plans to direct 85% of premium revenue in the employer market (80% in the individual market) toward medical costs (Young, 2012). This minimum MLR rule is expected to cost insurers billions of dollars (*Insurance Journal*, 2012) and represents another potentially adverse effect of the ACA on health insurer cash flows.

2.1.3 Medical Device Companies

The medical device industry has been prosperous in the U.S., with estimated sales of \$116 billion per year made up of as many as 460 public and 1,247 venture capital-backed companies (Nexon and Ubl, 2010). It is suggested that the 10 largest medical device makers will pay 86% of the revenue collected from the medical device excise tax implemented under the ACA (Van de Water, 2012). The tax is projected to generate \$29 billion over the next 10 years, and large companies are expected to shoulder additional tax burdens of as much as \$30 million and \$150 million per year, respectively² (Wall, 2013; Weaver, 2012). Companies with annual revenues of less than \$5 million are exempt from the tax (Torres, 2010). However, these small and startup medical device companies will not achieve profitability until they reach at least \$100 million to \$150 million in sales; this

2. A survey of 57 medical device companies performed by the *Massachusetts Medical Devices Journal* estimates that profits for small companies, such as Exactech and Theragenics, could be cut by as much as half, and even larger companies with annual revenues of more than \$300 million, such as Analogic and NuVasive, could be pushed from profitability into the red (Wall, 2013).

exemption threshold remains too low to protect these vulnerable companies³ (Nexon and Ubl, 2010).

Although the medical device excise tax is paid by the medical device manufacturer or importer, it may nonetheless have important implications for hospitals, physicians and their patients. Overall, it is suggested that while the medical device excise tax is a potential revenue stream, its unintended consequences may cause a barrier to entry and innovation (Van de Water, 2012). As a result, the ACA is expected to negatively influence the cash flows of medical device firms.

2.1.4 Pharmaceutical Industry

While the literature generally agrees that the ACA will have a significant effect on the pharmaceutical industry's profits, it is not clear whether the net effects will be positive or negative. More specifically, some have argued that the increased number of persons with health insurance coverage will lead to more doctors' visits and ultimately more prescription drug purchases (Abelson, 2010). A report by the federal Centers for Medicare & Medicaid Services (CMS) indicates prescription drug spending is expected to increase approximately 6.5% per year from 2015 through 2022 largely due to provisions of the ACA (CMS, 2012). As a result, there is sentiment in the literature that the pharmaceutical industry will benefit from the enactment of the ACA (Milne and Kaitin, 2010).

Others, however, have suggested that the ACA ultimately will have a negative influence on the cash flows of the pharmaceutical industry. Because the law requires pharmaceutical firms to provide discounts on drugs to prescriptions in the Medicare "donut hole" (Sebelius, 2010), there exists the potential for lower profit margins (e.g. Mellor, 2009; Drew and Burt, 2011). One study suggests that pharmaceutical firms will incur costs of approximately \$32 billion over the next decade as a result of efforts to close the donut hole (Favole, 2010). In addition, the law also influences generic drug manufacturers in ways that potentially disrupt the competitive dynamic between brand-name and generic drug manufacturers.

2.2 Capital Market Responses to Regulatory Action

Many previous studies find evidence of significant capital market reactions to regulatory events. For example, Fier and Liebenberg (2013) find evidence that the passage of the federal Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) was viewed by the market as a negative event for the U.S. insurance industry. Dumm, Liebenberg, Liebenberg and Ruhland (2010) find that the announcement of a special regulatory legislative session in Florida was associated with a negative stock price reaction for insurers with property exposure

3. Based on 2009 revenues, NxStage would have paid an estimated \$3.4 million in additional taxes despite posting losses of \$43.5million—a potentially profound effect for a company trying to achieve profitability (Weaver, 2012).

in Florida. In addition, Hendershott, Lee and Tompkins (2002) find that insurers and investment banks exhibited significantly positive price responses to the federal Financial Services Modernization Act of 1999. These and similar studies suggest that capital market responses to the ACA by key stakeholder industries would be consistent with previous literature.

There is also a breadth of literature that has examined the capital markets response to a Supreme Court decision. Abraham and Voos (2005) examine the effect of the Supreme Court decisions regarding the Health Care & Retirement Corporation of 1994 and Kentucky River of 2001 cases and provide evidence of a positive capital market reaction to the decisions. In addition, Mullin, Mullin and Mullin (1995) studied the capital market to the Supreme Court decision not to dissolve U.S. Steel and found evidence of a significant positive reaction. Another example is McWilliams, Turk and Zardkoohi (1993), who examine the impact of the Supreme Court's decisions on the capital market for companies involved in merger negotiation cases. Their results indicate that firms engaged in merger negotiations saw a negative price reaction to the decision. Considered in its entirety, the literature provides ample evidence that Supreme Court decisions often illicit market responses for firms with a stake in the outcome of the ruling.

To our knowledge, only two studies have extended the literature related to market reactions surrounding regulatory action and Supreme Court decisions to consider the ACA. The first is Dong (2014). Dong examines returns around the passage of the ACA of firms across 12 health care-related industries and finds the market appears to support the ACA. The other study is Ababneh and Tang (2013), who examine a series of reform events related to the ACA, including the passage of the law and the Supreme Court decision. When they examine the average cumulative abnormal stock returns (CARs) surrounding these reform events, they conclude that the ACA had a negative impact on health insurers but a positive impact on hospitals, while there were mixed findings related to drug manufacturers. While both studies represent valuable contributions, they consider few, short event windows and do not perform multivariate evidence to verify the robustness of their results. They also consider a relatively narrow sample of stakeholder industries.

3. Background and Data Description

When we jointly consider the evidence in the literature that the ACA potentially has meaningful implications for the key stakeholder industries of pharmaceutical, medical device/biotechnology, health care and health insurance and that regulatory actions illicit capital market responses for the affected industries, we believe that events that convey new information to the market regarding the ACA would be associated with stock price reactions of firms in the key stakeholder industries. More specifically, it has been suggested that the ACA will have a negative and significant impact on the cash flows of health insurers

and medical device companies, a positive and significant impact on the cash flows of health care providers, and a significant but ambiguous impact on pharmaceutical companies. As a result, new information regarding the certainty of the ACA's enactment should be reflected in the stock prices of the stakeholder firms. That is, we would expect to observe a stock price reaction in the time surrounding the release of new information regarding the likelihood of the ACA becoming law.

Because the ACA is expected to influence the cash flows in different ways for each of our shareholder industries, we are unable to hypothesize the direction of the stock price reaction for all four of these industries in aggregate. However, we do expect a statistically significant reaction. As it relates to each individual industry, evidence in the previously discussed prior studies lead us to expect a negative and significant reaction for health insurers and medical device companies, a positive and significant reaction for health care providers, and a significant but ambiguous reaction for pharmaceutical companies.

To test these expectations, we use data from the Center for Research on Security Prices (CRSP). We gather closing daily share prices, market capitalization, volume, shares outstanding, etc. from the CRSP. These market-specific variables are widely used in the market reaction literature. From the CRSP, we also obtain the Standardized Industry Code (SIC). We restrict our sample to the universe of CRSP firms that have SIC codes that capture pharmaceutical companies, health care providers, health insurers and medical device companies. Additionally, we classify companies as a combination of two of these company types if the company operates across multiple industries. The objective of our tests is to provide standard event studies around dates when information about passing of the ACA is made publicly available.

We select two dates that are most likely to provide new information about the likelihood of the ACA becoming law. The first date is March 23, 2010, which is the date U.S. House of Representatives approved the U.S. Senate's version of the bill and represents the first time that the market was certain that the bill would become law. This event, which we refer to this date as the *Pass Date*, therefore represents a significant change in the market's belief about the likelihood that the bill would become a law. The second date that we select is the date that the U.S. Supreme Court upheld the constitutionality of the ACA, which occurred on June 28, 2012. This event, which we refer to as the *Supreme Court Date*, effectively removed the market's uncertainty regarding the law's constitutionality conveyed important information regarding the long-term viability of the law.

Table 1 reports statistics that describe our sample. Panel A reports the summary statistics on the *Pass Date*, while Panel B shows the statistics on the *Supreme Court Date*. We note that there are 458 firms in our sample surrounding the *Pass Date* and 500 firms in our sample surrounding the *Supreme Court Date*.

Table 1 shows that average firm had a share price (*Price*) of \$18.95 and a market capitalization (*MktCap*) of \$3.83 billion on the *Pass Date*. These mean values of these variables were \$20.93 billion and \$4.08 billion on the *Supreme Court Date*. We calculate share turnover (*Turn*) by dividing daily volume by

shares outstanding (in percent). We note that on the *Pass Date*, the average firm had share turnover of 1.83%, while on the *Supreme Court Date*, the average firm had share turnover of 2.08%.

Table 1:
Summary Statistics

Panel A. Pass Date (N=458)					
	Mean	Median	Std. Dev.	Min.	Max.
	[1]	[2]	[3]	[4]	[5]
<i>Price</i>	18.95	8.34	26.18	0.26	348.13
<i>MktCap</i>	3833731.87	286634.54	14543388.24	8263.13	179708217.00
<i>Turn</i>	1.8317	1.4010	1.6788	0.0164	12.1972
<i>Spread</i>	0.0061	0.0014	0.0136	0.0001	0.0975
<i>Pvolt</i>	0.1351	0.0971	0.1729	0.0273	1.8596
<i>DRUG</i>	0.1441	0	0.3516	0	1
<i>HEALTH CARE</i>	0.4132	0	0.2231	0	1
<i>INSURER</i>	0.2306	0	0.1723	0	1
<i>DEVICE</i>	0.1288	0	0.3354	0	1
<i>DRUG-HC</i>	0.1245	0	0.3305	0	1
<i>HC-INS</i>	0.0175	0	0.1311	0	1
<i>HC-DEV</i>	0.1092	0	0.3122	0	1
<i>DRUG-INS</i>	0	0	0	0	0
<i>DRUG-DEV</i>	0	0	0	0	0
<i>INS-DEV</i>	0	0	0	0	0
Panel B. Supreme Court Date (N=500)					
	Mean	Median	Std. Dev.	Min.	Max.
	[1]	[2]	[3]	[4]	[5]
<i>Price</i>	20.93	9.36	35.48	0.56	553.79
<i>MktCap</i>	4078619.16	319130.70	15601528.31	14321.01	185544892.00
<i>Turn</i>	2.0833	1.4199	4.8676	0.0074	95.2366
<i>Spread</i>	0.0090	0.0018	0.0219	0	0.2063
<i>Pvolt</i>	0.2329	0.1593	0.6703	0.0612	0.2152
<i>DRUG</i>	0.1600	0	0.3670	0	1
<i>HEALTH CARE</i>	0.4202	1	0.2340	0	1
<i>INSURER</i>	0.2113	0	0.1708	0	1
<i>DEVICE</i>	0.1120	0	0.3299	0	1
<i>DRUG-HC</i>	0.1340	0	0.3410	0	1
<i>HC-INS</i>	0.0180	0	0.1331	0	1
<i>HC-DEV</i>	0.1040	0	0.3056	0	1
<i>DRUG-INS</i>	0	0	0	0	0
<i>DRUG-DEV</i>	0	0	0	0	0
<i>INS-DEV</i>	0	0	0	0	0

The table reports statistics that describe the sample of firms. Panel A reports the results for the statistics as of the *Pass Date*, which occurred on March 23, 2010. Panel B shows the results on the day the Supreme Court decision was made on June 28, 2012. *Price* is the closing share price according to the Center for Research on Security Prices (CRSP). *MktCap* is the firm's market capitalization. *Turn* is the share turnover or the daily volume scaled by shares outstanding. *Spread* is the bid-ask spread using closing bid and ask prices from CRSP. *Pvolt* is a measure of price volatility, which is the difference between the daily high price and the daily low price scaled by the daily high price. *DRUG* is an indicator variable equal to one if the particular firm is classified as a pharmaceutical company according to standard industry codes—zero otherwise. *HEALTH CARE* is an indicator variable capturing health care companies. *INSURER* is an indicator variable capturing whether the company is considered a health insurer. *DEVICE* is an indicator variable equal to one if the company is classified as a medical products company. *DRUG-HC*, *HC-INS*, *HC-DEV*, *DRUG-INS*, *DRUG-DEV* and *INS-DEV* are indicator variables capturing whether the companies have joint indications between multiple company types simultaneously.

We also calculate the security's bid-ask spread using closing ask and bid prices from the CRSP,⁴ and *Spread* is the difference between ask price and the bid price scaled by the spread midpoint. The mean value of this variable on the *Pass Date* (*Supreme Court Date*) is 0.006 (0.009). The final variable that will be used as an additional control variable below is price volatility (*Pvolt*), which is the difference between the highest price during a particular day and the lowest price during a particular day, scaled by the highest price.⁵ We find that the average stock had price volatility of 13.51% on the *Pass Date* and 23.29% on the *Supreme Court Date*.

We also calculate 10 indicator variables determining the type of firm, classified by SIC code, used in the analysis. *DRUG* is an indicator variable capturing pharmaceutical companies, while *HEALTH CARE* is a dummy variable categorizing health care providers. Similarly, the indicator variable *INSURER* identifies those firms that are considered health insurers, while *DEVICE* captures those firms that manufacture medical devices. Approximately 14% of companies are considered pharmaceutical companies, while nearly 41% of firms are considered health care providers. Only 23% of firms are health insurers, and nearly 12% are identified as medical device companies. We note that these percentages do not sum to 100%. The reason is because some firms are identified as two or more types of firms. As such, we classify firms as duplicate types across the four previously defined variables. *DRUG-HC* is a dummy for firms who are classified as having operations across pharmaceutical companies and health care providers. *HC-INS*, *HC-DEV*, *DRUG-INS*, *DRUG-DEV* and *INS-DEV* follow the same construction methodology. *DRUG-HC*, *HC-INS* and *HC-DEV* exist in our data, while *DRUG-INS*, *DRUG-DEV* and *INS-DEV* are not represented in the sample. For example, 113 of 458 firms have duplicate firm types for our *Pass Date* sample, and 124 of 500 firms have duplicate firm types for our *Supreme Court Date* sample.

4. Empirical Analysis and Results

In this section, we discuss our empirical analysis and the associated results. First, we conduct a univariate analysis, where we examine the performance of our sample firms using traditional event study techniques surrounding our two event dates. Second, we conduct a series of multivariate tests to determine the performance of the various types of companies used in our analysis.

4. Roll and Subrahmanyam (2010) and Chung and Zhang (2013) show that spreads that are calculated using closing ask and bid prices closely approximate more traditional measures of the bid-ask spread that are calculated using transaction data.

5. Diether, Lee and Werner (2009) contend that this measure of price volatility captures more volatile stocks.

Univariate Analysis

We begin by examining the stock performance of all firms in our sample surrounding both the *Pass Date* and the *Supreme Court Date*. Table 2 reports the results from the event study. We estimate CARs for various post-event time periods where CARs are estimated using a daily market model, and abnormal returns are defined as the residuals from the market model.

Panel A shows the results for the *Pass Date*. We report both parametric and non-parametric estimates of CARs for the three-day period surrounding the event date ($CAR(-1,1)$). We find mean CARs are positive and reliably different from zero in the three-day period surrounding the event date (column [1]), suggesting that in the period immediately surrounding the *Pass Date*, the entire sample of firms in our analysis have abnormally high returns. In column [1], the mean estimate for $CAR(-1,1)$ is not only statistically significant, but also the estimate is economically meaningful.

Since a contribution of our analysis is to examine longer-term effects, we also report the estimates of CARs for the two-day period ($CAR(0,1)$), the four-day period ($CAR(0,3)$), the six-day period ($CAR(0,5)$) and the 11-day period ($CAR(0,10)$) after the event date. The results of the two-day period immediately after the event date (column [2]) further suggest that firms in our sample have significantly higher returns in the period immediately surrounding the *Pass Date*. However, the mean CARs are not reliably different from zero in any of the other event window, suggesting that the information contained in the passage of the ACA is relatively short-lived as the information is quickly incorporated into the stock prices of our stakeholder firms.

Interestingly, when focusing on the median CARs, we find that these estimates are markedly lower than the mean CARs in column [1] and column [2]. A likely explanation for the difference between our parametric and non-parametric tests is that a small subset of firms are driving the positive relation between firm performance and the passage of the ACA. In an ensuing analysis, we further explore this possibility by separately examining the effects of the ACA on a given stakeholder industry.

Panel B of Table 2 shows the results surrounding the *Supreme Court Date*. Contrary to our findings in Panel A, results in Panel B show that returns are relatively normal in the three-day period surrounding the event date and the two-day period immediate after the event date. However, mean CARs in column [3] through column [6] are both positive and economically significant. Considered in their entirety, the mean CAR results in Panel B indicate that the effect of the Supreme Court's decision had a longer impact on the returns of the stakeholder firm relative to the *Pass Date*, suggesting that the market knew very little about the outcome of the Supreme Court decision on the day before the decision was made. Additionally, in Panel B of Table 2, we again find that median estimates of CARs in column [3] through column [6] are substantially lower than mean estimates of the CARs in the corresponding columns. These findings further

suggest that the mean CARs are likely driven by a subset of firms in our sample. We, therefore, explore this possibility next.

Table 2:
Cumulative Abnormal Returns for the Entire Sample

Panel A. <i>Pass Date</i> (March 23, 2010)						
	$CAR(-1,1)$	$CAR(0,1)$	$CAR(0,3)$	$CAR(0,5)$	$CAR(0,10)$	$CAR(0,30)$
	[1]	[2]	[3]	[4]	[5]	[6]
<i>Mean</i>	0.0093** (0.012)	0.0057* (0.058)	0.0017 (0.431)	-0.0098 (0.287)	-0.0056 (0.387)	-0.0201 (0.258)
<i>Median</i>	0.0052	0.0026	-0.0058	-0.0201	-0.0294	-0.0301
<i>Std. Dev.</i>	0.0811	0.0707	0.0814	0.1458	0.2864	0.1894
Panel B. <i>Supreme Court Date</i> (June 28, 2012)						
	$CAR(-1,1)$	$CAR(0,1)$	$CAR(0,3)$	$CAR(0,5)$	$CAR(0,10)$	$CAR(0,30)$
	[1]	[2]	[3]	[4]	[5]	[6]
<i>Mean</i>	-0.0016 (0.664)	0.0021 (0.312)	0.0058** (0.037)	0.0167*** (0.000)	0.0246*** (0.000)	0.0184** (0.049)
<i>Median</i>	0.0024	0.0019	0.0013	0.004	0.0064	0.0074
<i>Std. Dev.</i>	0.0604	0.0346	0.012	0.0478	0.1123	0.1113

The table reports cumulative abnormal returns (CARs) for various event windows. CARs are obtained from estimating a daily market model and summing the residual returns across the event window. $CAR(-1,1)$ measures the cumulative abnormal return from day $t-1$ to $t+1$, where day t is the event day. Similarly, $CAR(0,1)$ is the cumulative abnormal return from day t to $t+1$. $CAR(0,3)$ is the cumulative abnormal return from day t to $t+3$, and so on. We report the mean CAR along with a corresponding t-statistic testing for statistical significance from zero. We also report the median CAR and the cross-sectional standard deviation of the CARs. Panel A reports the results for the *Pass Date*, while Panel B shows the results for the *Supreme Court Date*. *, ** and *** denote statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Table 3, Panel A reports the mean CARs separately by the seven firm types for the *Pass Date*. Column [1] reports the results for pharmaceutical companies, while column [2] shows the CARs for health care providers. Similarly, column [3] and column [4] present the results for health insurers and medical device companies, respectively. Column [5] through column [7] present results for the combination firm types. Panel A shows that the positive abnormal returns during the period immediately surrounding the *Pass Date* (given in Table 2) are primarily driven by health care providers, medical device companies, and firms that have operations across health care providers and medical device companies. While, for health care providers, this result is consistent with our previously described expectations regarding the effect of the ACA on stakeholder cash flows, it is not consistent with our expectations for medical device firms. We do not find abnormal returns in pharmaceutical companies or in health insurers (column [1] and column [3]) in the event periods immediately surrounding the *Pass Date*.

Table 3:
Cumulative Abnormal Returns by Type of Company

Panel A. <i>Pass Date</i> (March 23, 2010)							
	DRUG	HEALTH CARE	INSURER	DEVICE	DRUG-HC	HC-INS	HC-DEV
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
<i>CAR(-1,1)</i>	0.006 (0.103)	0.012** (0.011)	0.018 (0.134)	0.012*** (0.000)	0.018 (0.121)	0.022 (0.303)	0.011** (0.044)
<i>CAR(0,1)</i>	0.004 (0.187)	0.008* (0.058)	-0.009 (0.216)	0.006*** (0.039)	0.007 (0.215)	0.019 (0.187)	0.021** (0.034)
<i>CAR(0,3)</i>	-0.004 (0.511)	0.006 (0.103)	-0.009 (0.302)	0.002 (0.521)	0.011 (0.229)	0.009 (0.117)	0.011 (0.213)
<i>CAR(0,5)</i>	-0.006 (0.512)	-0.009 (0.304)	-0.008 (0.303)	0.002 (0.511)	0.009 (0.121)	0.026 (0.156)	0.017 (0.206)
<i>CAR(0,10)</i>	-0.007 (0.612)	-0.008 (0.512)	-0.021 (0.164)	-0.002 (0.201)	0.013 (0.271)	0.019 (0.169)	0.007 (0.154)
<i>CAR(0,30)</i>	0.004 (0.402)	0.008 (0.206)	0.011 (0.203)	0.016 (0.132)	0.009 (0.339)	0.017 (0.411)	0.008 (0.226)
Panel B. <i>Supreme Court Date</i> (June 28, 2012)							
	DRUG	HEALTH CARE	INSURER	DEVICE	DRUG-HC	HC-INS	HC-DEV
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
<i>CAR(-1,1)</i>	-0.003 (0.411)	0.000 (0.664)	-0.027** (0.026)	-0.011 (0.432)	-0.009 (0.614)	-0.014** (0.015)	0.003 (0.235)
<i>CAR(0,1)</i>	0.005 (0.365)	0.001 (0.203)	-0.031** (0.016)	-0.001 (0.412)	0.002 (0.384)	-0.021** (0.042)	0.003 (0.165)
<i>CAR(0,3)</i>	0.006 (0.207)	0.007** (0.022)	-0.022** (0.018)	-0.007 (0.413)	0.009* (0.087)	-0.006 (0.214)	0.011** (0.035)
<i>CAR(0,5)</i>	0.026** (0.018)	0.018** (0.016)	-0.002 (0.444)	0.004 (0.663)	0.006 (0.346)	0.001 (0.321)	0.009** (0.022)
<i>CAR(0,10)</i>	0.003 (0.521)	0.0204** (0.009)	-0.013** (0.043)	-0.003 (0.542)	0.007 (0.231)	-0.023** (0.034)	0.016** (0.023)
<i>CAR(0,30)</i>	0.002 (0.401)	0.024** (0.007)	-0.013** (0.036)	-0.004 (0.123)	0.003 (0.264)	-0.021** (0.012)	0.014** (0.035)

The table reports cumulative abnormal returns (CARs) for various event windows. CARs are obtained from estimating a daily market model and summing the residual returns across the event window. *CAR(-1,1)* measures the cumulative abnormal return from day $t-1$ to $t+1$, where day t is the event day. Similarly, *CAR(0,1)* is the cumulative abnormal return from day t to $t+1$. *CAR(0,3)* is the cumulative abnormal return from day t to $t+3$ and so on. We report the mean CAR along with a corresponding t-statistic testing for statistical significance from zero. Further, we estimate mean CARs for each of the four types of firms used in the sample. *DRUG* captures firms that are classified as a pharmaceutical company according to standard industry codes. *HEALTH CARE* captures health care companies. *INSURER* specifies companies that are considered a health insurer. *DEVICE* determines whether the company is classified as a medical products company. *DRUG-HC*, *HC-INS* and *HC-DEV* are indicator variables capturing whether the companies have joint indications between multiple company types simultaneously. Panel A reports the results for the *Pass Date*, while Panel B shows the results for the *Supreme Court Date*. *, ** and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Table 3, Panel B reports the mean CARs separately by the seven firm types for the *Supreme Court Date*. We find that cumulative abnormal returns are significantly negative for health insurers and firms that operate across the health care and medical device area during the period surrounding the *Supreme Court Date*. For instance, the mean *CAR(-1,1)* for health insurers is -2.7%, while the

estimate for $CAR(0,1)$ is markedly larger (mean $CAR = -3.1\%$). These findings suggest that investors knew very little about the outcome of the Supreme Court decision on the day before the decision was made. Instead, the abnormally negative returns (as shown in $CAR(-1,1)$), are driven by the last two days of that event window. The mean $CAR(0,3)$ also is significantly negative. The reliability of these estimates is striking given that only 15 firms in our sample are considered health insurers. In fact, when examining the mean estimate for $CAR(0,1)$, we find that all 15 health insurers report negative CARs that range from 1% to -3.1%.

Panel B also reports that health care providers typically drive the positive abnormal returns given in column [4] and column [5] of Table 2. These results further suggest that while other types of firms had abnormal returns during the longer time windows examined in this analysis, health insurers had an almost immediate negative reaction in stock price after the Supreme Court decision.

Multivariate Analysis

We recognize that other factors might influence the post-event returns of the firms used throughout the analysis. In this subsection, we attempt to control for these factors in a number of multivariate tests. In particular, we estimate the following equation using cross-sectional data.

$$CAR(0,1)_i = \alpha + \gamma_1 DRUG_i + \gamma_2 HEALTH\ CARE_i + \gamma_3 INSURER_i + \gamma_4 DEVICE_i + \gamma_5 HC-INS_i + \gamma_6 HC-DEV_i + \beta_1 Ln(size)_i + \beta_2 Turn_i + \beta_3 Ln(price)_i + \beta_4 Spread_i + \beta_5 Volt_i + \varepsilon_i \quad (1)$$

The dependent variable is the two-day cumulative abnormal return for each stock i from day t to $t+1$, where day t is the event date of interest. The independent variables of interest are the six indicator variables.⁶ *DRUG* is an indicator variable for pharmaceutical companies. *HEALTH CARE* is an indicator variable capturing health care companies. *DEVICE* is an indicator variable equal to one if the particular firm is classified as a medical device company according to standard industry codes—zero otherwise. *INSURER* is an indicator variable capturing whether the company is considered a health insurer. *HC-INS* and *HC-DEV* are indicator variables for the combination types of firms. We omit the indicator variable *DRUG-HC* in order to avoid violating the full rank condition required for consistent estimates.⁷ We also include five control variables $Ln(size)$ in the natural log of market capitalization. $Turn$ is the share turnover for each stock, while $Ln(price)$ is the natural log of share price. $Spread$ is the bid-ask spread, and $Volt$ is

6. For robustness, we examined the influence of firms operating in a single industry sector and firms operating simultaneously across two industry sectors and found no significant difference between firm types. As such, we focus our analysis on the industry firm type Dummy variables.

7. We performed a number of scenarios to gauge any change in results. The results were robust to different combinations of company interactions as the omitted variable. We settled on *DRUG-HC* as the omitted variable as in table 3 column 5 for both senate and Supreme Court dates, the CARs were insignificant across all time stratifications.

the price volatility. *P*-values, which are obtained from robust standard errors that account for clustering across firms, are reported in parentheses.

Table 4:
Cross-Sectional Regressions – *Pass Date*

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
<i>Intercept</i>	0.0072 (0.206)	-0.032 (0.501)	-0.0014 (0.412)	0.0004 (0.436)	0.0064 (0.106)	0.0031 (0.411)	0.0142 (0.303)
<i>DRUG</i>	0.0021 (0.213)	0.0131 (0.119)	0.0241 (0.224)	0.0087 (0.185)	0.0356 (0.146)	0.0221 (0.357)	0.0451 (0.334)
<i>HEALTH CARE</i>	-0.0024 (0.438)	-0.0013 (0.504)	-0.0052 (0.313)	0.0016 (0.606)	-0.0006 (0.712)	-0.0201 (0.323)	-0.0014 (0.412)
<i>INSURER</i>	-0.0231 (0.203)	-0.0123* (0.081)	-0.0316*** (0.000)	-0.0203* (0.067)	-0.0112 (0.204)	-0.0146** (0.026)	-0.0223** (0.043)
<i>DEVICE</i>	-0.0003 (0.144)	-0.0026* (0.071)	-0.0013* (0.076)	-0.0017* (0.059)	-0.0016* (0.083)	-0.0058** (0.051)	-0.0024** (0.064)
<i>HC-INS</i>	-0.0997 (0.276)	-0.0209* (0.065)	-0.0321* (0.063)	-0.0141* (0.055)	-0.0312* (0.087)	-0.0113** (0.045)	-0.0126** (0.032)
<i>HC-DEV</i>	-0.0032 (0.341)	-0.0054* (0.071)	-0.0132* (0.076)	-0.0045* (0.075)	-0.0381* (0.066)	-0.0022* (0.054)	-0.0012** (0.021)
<i>Ln(size)</i>		0.0021 (0.216)	0.0031 (0.304)	0.0027 (0.213)	0.0034 (0.198)	-0.0072 (0.113)	-0.0061 (0.214)
<i>Turn</i>			0.0019* (0.072)	0.0034 (0.213)	0.0057 (0.119)	0.0081 (0.312)	0.0061 (0.303)
<i>Ln(price)</i>				0.0048* (0.064)	0.0121* (0.056)	0.0201* (0.076)	0.0261** (0.033)
<i>Spread</i>					-0.1123 (0.201)	-0.0986 (0.211)	-0.0142 (0.503)
<i>Volt</i>						0.3412 (0.303)	-0.0206 (0.471)
Adjusted R ²	0.0026	0.0019	0.0831	0.0026	0.0017	0.0059	0.1784

The table reports the results from estimating the following equation using cross-sectional data:

$$CAR(0,1)_i = \alpha + \gamma_1 DRUG_i + \gamma_2 HEALTH\ CARE_i + \gamma_3 INSURER_i + \gamma_4 DEVICE_i + \gamma_5 HC-INS_i + \gamma_6 HC-DEV_i + \beta_1 Ln(size)_i + \beta_2 Turn_i + \beta_3 Ln(price)_i + \beta_4 Spread_i + \beta_5 Volt_i + \varepsilon_i$$

The dependent variable is the two-day cumulative abnormal return (CAR) for each stock *i* from day *t* to *t+1*, where day *t* is the *Pass Date* (March 23, 2010). The independent variables of interest are the three indicator variables. *DRUG* captures firms that are classified as a pharmaceutical company according to standard industry codes. *HEALTH CARE* is an indicator variable capturing health care companies. *DEVICE* is an indicator variable equal to one if the particular firm is classified as a medical device company according to standard industry codes—zero otherwise. *INSURER* is an indicator variable capturing whether the company is considered a health insurer. *DRUG-HC* and *HC-INS* are indicator variables capturing whether the companies have joint indications between multiple company types simultaneously. We omit the indicator variable *DRU-HC* in order to avoid violating the full rank condition required for consistent estimates. We also include five control variables. *Ln(size)* is the natural log of market capitalization. *Turn* is the share turnover for each stock, while *Ln(price)* is the natural log of share price. *Spread* is the bid-ask spread, and *Volt* is the price volatility. *P*-values, which are obtained from robust standard errors that account for clustering across firms, are reported in parentheses. *, ** and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Table 5:
Cross-Sectional Regressions – Supreme Court Date

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
<i>Intercept</i>	0.0003 (0.234)	-0.0201 (0.112)	0.0023 (0.567)	-0.0099 (0.395)	0.0027 (0.256)	0.0012 (0.556)	-0.0032 (0.543)
<i>DRUG</i>	0.0017 (0.211)	0.0122 (0.321)	0.0287 (0.119)	0.0167 (0.206)	0.0106 (0.184)	0.0214 (0.266)	0.0306 (0.112)
<i>HEALTH CARE</i>	0.0036 (0.553)	0.0103 (0.406)	0.0067 (0.344)	0.0052 (0.461)	0.0106 (0.487)	0.0039 (0.336)	0.0049 (0.248)
<i>INSURER</i>	-0.0487*** (0.000)	-0.0386*** (0.000)	-0.0213*** (0.000)	-0.0506*** (0.000)	-0.0449*** (0.000)	-0.0345*** (0.000)	-0.0487*** (0.000)
<i>DEVICE</i>	-0.0213** (0.047)	-0.0168* (0.066)	-0.0089* (0.091)	-0.0054* (0.066)	-0.0197* (0.084)	-0.0101** (0.033)	-0.0084** (0.043)
<i>HC-INS</i>	-0.0154** (0.034)	-0.0201** (0.073)	-0.0044* (0.084)	-0.0102** (0.047)	-0.0154** (0.049)	-0.0129** (0.024)	-0.0043** (0.017)
<i>HC-DEV</i>	-0.0101 (0.302)	-0.0203 (0.416)	-0.0041* (0.084)	-0.0067 (0.223)	-0.0236 (0.164)	-0.0087* (0.073)	-0.0051* (0.061)
<i>Ln(size)</i>		0.0036*** (0.000)	0.0044 (0.145)	0.0056 (0.113)	0.0058 (0.155)	0.0101 (0.266)	-0.0007 (0.604)
<i>Turn</i>			-0.0011 (0.106)	0.0099 (0.434)	0.0187 (0.459)	0.0222 (0.298)	-0.0004* (0.074)
<i>Ln(price)</i>				0.0031*** (0.000)	0.0203* (0.067)	0.0087* (0.084)	0.0032* (0.063)
<i>Spread</i>					-0.0134*** (0.000)	-0.0442 (0.308)	-0.0947 (0.301)
<i>Volt</i>						0.0084 (0.211)	0.0057 (0.336)
Adjusted R ²	0.0311	0.0258	0.0266	0.0304	0.0387	0.0297	0.0378

The table reports the results from estimating the following equation using cross-sectional data:

$$CAR(0,1)_i = \alpha + \gamma_1 DRUG_i + \gamma_2 HEALTH\ CARE_i + \gamma_3 INSURER_i + \gamma_4 DEVICE_i + \gamma_5 HC-INS_i + \gamma_6 HC-DEV_i + \beta_1 Ln(size)_i + \beta_2 Turn_i + \beta_3 Ln(price)_i + \beta_4 Spread_i + \beta_5 Volt_i + \varepsilon_i$$

The dependent variable is the two-day cumulative abnormal return for each stock i from day t to $t+1$, where day t is the *Supreme Court Date* (June 28, 2012). The independent variables of interest are the three indicator variables. *DRUG* captures firms that are classified as a pharmaceutical company according to standard industry codes. *HEALTH CARE* is an indicator variable capturing health care companies. *DEVICE* is an indicator variable equal to one if the particular firm is classified as a medical device company according to standard industry codes—zero otherwise. *INSURER* is an indicator variable capturing whether the company is considered a health insurer. *DRUG-HC* and *HC-INS* are indicator variables capturing whether the companies have joint indications between multiple company types simultaneously. We omit the indicator variable *DRU-HC* in order to avoid violating the full rank condition required for consistent estimates. We also include five control variables. *Ln(size)* is the natural log of market capitalization. *Turn* is the share turnover for each stock, while *Ln(price)* is the natural log of share price. *Spread* is the bid-ask spread, and *Volt* is the price volatility. *P*-values, which are obtained from robust standard errors that account for clustering across firms, are reported in parentheses. *, ** and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Table 4 reports the regression results from estimating equation (1). We recognize the possibility that including all of the control variable might produce multicollinearity bias. In unreported tests, we estimate variance inflation factors for the full specification. We find that all variance inflation factors are below 3.15,

suggesting that the effects of multicollinearity do not bias our results. However, we estimate a variety of different specifications of equation (1) while including different combinations of independent variables to show that our results are unaffected by multicollinearity issues.

Table 6:
Cross Sectional Regressions – Pass Date

	CAR(0,3)	CAR(0,5)	CAR(0,10)	CAR(0,30)
<i>Intercept</i>	0.1456 (0.303)	0.1558 (0.254)	0.1874 (0.266)	0.1997 (0.312)
<i>DRUG</i>	0.0032 (0.324)	0.0222 (0.242)	0.0321 (0.554)	0.0223 (0.346)
<i>HEALTH CARE</i>	0.0087 (0.223)	0.0033 (0.306)	0.0101 (0.199)	0.0079 (0.345)
<i>INSURER</i>	-0.0236*** (0.000)	-0.0213*** (0.000)	-0.0224*** (0.000)	-0.0187*** (0.000)
<i>DEVICE</i>	-0.0104** (0.049)	-0.0066** (0.038)	-0.0024*** (0.000)	-0.0106*** (0.000)
<i>HC-INS</i>	-0.0086* (0.058)	-0.0034* (0.76)	-0.0111** (0.035)	-0.0237** (0.027)
<i>HC-DEV</i>	-0.0187 (0.312)	-0.0213 (0.118)	-0.0056 (0.321)	-0.0331 (0.431)
<i>Ln(size)</i>	-0.0046 (0.223)	-0.0204 (0.164)	-0.0041 (0.213)	-0.0101 (0.265)
<i>Turn</i>	0.0054 (0.378)	0.0102 (0.412)	0.0134 (0.289)	0.0044 (0.125)
<i>Ln(price)</i>	0.0216** (0.033)	0.0245** (0.041)	0.0187* (0.057)	0.0134** (0.026)
<i>Spread</i>	-0.0324 (0.235)	-0.0224 (0.211)	-0.0376 (0.323)	-0.0167 (0.268)
<i>Volt</i>	-0.0141 (0.246)	-0.0223 (0.455)	-0.0144 (0.256)	-0.0431 (0.266)
Adjusted R ²	0.187	0.213	0.221	0.187

The table reports the results from estimating the following equation using cross-sectional data:

$$CAR_i = \alpha + \gamma_1 DRUG_i + \gamma_2 HEALTH\ CARE_i + \gamma_3 INSURER_i + \gamma_4 DEVICE_i + \gamma_5 HC-INS_i + \gamma_6 HC-DEV_i + \beta_1 Ln(size_i) + \beta_2 Turn_i + \beta_3 Ln(price_i) + \beta_4 Spread_i + \beta_5 Volt_i + \varepsilon_i$$

The dependent variable is the cumulative abnormal return for each stock i from day t to $t+3, t+5 \dots t+180$, where day t is the *Pass Date* (March 23, 2010). The independent variables of interest are the three indicator variables. *DRUG* captures firms that are classified as a pharmaceutical company according to standard industry codes. *HEALTH CARE* is an indicator variable capturing health care companies. *DEVICE* is an indicator variable equal to one if the particular firm is classified as a medical

device company according to standard industry codes—zero otherwise. *INSURER* is an indicator variable capturing whether the company is considered a health insurer. *DRUG-HC* and *HC-INS* are indicator variables capturing whether the companies have joint indications between multiple company types simultaneously. We omit the indicator variable *DRU-HC* in order to avoid violating the full rank condition required for consistent estimates. We also include five control variables. *Ln(size)* is the natural log of market capitalization. *Turn* is the share turnover for each stock while *Ln(price)* is the natural log of share price. *Spread* is the bid-ask spread, and *Volt* is the price volatility. *P*-values, which are obtained from robust standard errors that account for clustering across firms, are reported in parentheses. *, ** and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

In general, the regression results are similar across columns. For example, we find that the indicator variable *HEALTH CARE* does not produce estimate that are reliably different from zero. However, we do find the indicator variables *DEVICE*, *INSURER* and *HC-INS* produce negative estimates in five of the seven columns in Table 4. These results suggest that after controlling for a variety of factors that might affect stock returns, during the period immediately after the *Pass Date*, health insurers have unusually negative returns when compared to *DRUG-HC* companies. In column [7], the coefficient on *INSURER* (-0.0223) and *DEVICE* (-0.0024) suggests that after controlling for a number of independent factors, health insurers and device companies underperform *DRUG-HC* in the two-day period immediately after the *Pass Date*. These latter findings suggest that not only are the results for health insurers and device companies statistically significant, but also the results are economically significant. We also note that the positive and significant coefficients on the natural log of share prices only suggest the positive influence on CARs—whether the CARs are initially positive or negative. We find some evidence that stocks with higher share prices generally have abnormally high returns during the period immediately after the *Pass Date*. From a broad perspective, Table 4 support the notion that the passage of ACA was viewed as a negative event for health insurers and medical device companies as compared to companies who operate simultaneously in the pharmaceutical and health care sector.

Table 5 reports the results when the data is measured during the period surrounding the *Supreme Court Date*. As before, the coefficients reported in Table 5 come from estimating equation (1) with robust standard errors. As before, we estimate variance inflation factors in unreported results and show that these factors are each below 3.6, suggesting that multicollinearity does not appear to be a significant issue in these tests. However, for robustness, we again estimate various combinations of equation (1) to show that the results are generally unaffected despite which control variables are included.

The results in Table 5 are qualitatively similar across each column, so, for brevity, we only discuss our findings in the full specification (column [7]). First, we find some evidence that stocks with low share turnover and stocks with higher share prices generally have abnormally high returns during the period immediately after the *Supreme Court Date*. As before, we also find that the indicator variable *HEALTH CARE* produces a coefficient that is not reliably different from zero. More importantly, we find that the indicator variable *INSURER*, *DEVICE* and *HC-INS* produce negative estimates in each of the seven columns.

Table 7:
Cross-Sectional Regressions – Supreme Court Date

	CAR(0,3)	CAR(0,5)	CAR(0,10)	CAR(0,30)
<i>Intercept</i>	0.1991 (0.206)	0.1874 (0.184)	0.1744 (0.227)	0.1945 (0.306)
<i>DRUG</i>	0.0162 (0.167)	0.0112 (0.324)	0.0237 (0.112)	0.0213 (0.245)
<i>HEALTH CARE</i>	0.0022 (0.414)	0.0109 (0.216)	0.0166 (0.379)	0.0067 (0.461)
<i>INSURER</i>	-0.0165*** (0.000)	-0.0223*** (0.000)	-0.0182*** (0.000)	-0.0306*** (0.000)
<i>DEVICE</i>	-0.0103** (0.043)	-0.0055*** (0.000)	-0.0067*** (0.000)	-0.0058** (0.016)
<i>HC-INS</i>	-0.0088* (0.067)	-0.0106* (0.059)	-0.0231* (0.069)	-0.0145** (0.041)
<i>HC-DEV</i>	-0.0206 (0.235)	-0.0143 (0.123)	-0.0087 (0.227)	-0.0143 (0.356)
<i>Ln(size)</i>	-0.0056 (0.366)	-0.0014 (0.223)	-0.0044 (0.144)	-0.0156 (0.387)
<i>Turn</i>	0.0033 (0.212)	0.0265 (0.223)	0.0201 (0.309)	0.0221 (0.223)
<i>Ln(price)</i>	0.0165*** (0.000)	0.0256* (0.058)	0.0106** (0.043)	0.0225** (0.031)
<i>Spread</i>	-0.0435 (0.324)	-0.0236 (0.124)	-0.0121 (0.238)	-0.0098 (0.116)
<i>Volt</i>	-0.0212 (0.511)	-0.0113 (0.111)	-0.0098 (0.243)	-0.0329 (0.221)
Adjusted R ²	0.198	0.133	0.214	0.187

The table reports the results from estimating the following equation using cross-sectional data:

$$CAR_i = \alpha + \gamma_1 DRUG_i + \gamma_2 HEALTH\ CARE_i + \gamma_3 INSURER_i + \gamma_4 DEVICE_i + \gamma_5 HC-INS_i + \gamma_6 HC-DEV_i + \beta_1 Ln(size)_i + \beta_2 Turn_i + \beta_3 Ln(price)_i + \beta_4 Spread_i + \beta_5 Volt_i + \varepsilon_i$$

The dependent variable is the cumulative abnormal return for each stock i from day t to $t+3, t+5 \dots t+180$, where day t is the *Supreme Court Date* (June 28, 2012). The independent variables of interest are the three indicator variables. *DRUG* captures firms that are classified as a pharmaceutical company according to standard industry codes. *HEALTH CARE* is an indicator variable capturing health care companies. *DEVICE* is an indicator variable equal to one if the particular firm is classified as a medical device company according to standard industry codes—zero otherwise. *INSURER* is an indicator variable capturing whether the company is considered a health insurer. *DRUG-HC* and *HC-INS* are indicator variables capturing whether the companies have joint indications between multiple company types simultaneously. We omit the indicator variable *DRU-HC* in order to avoid violating the full rank condition required for consistent estimates. We also include five control variables. *Ln(size)* is the natural log of market capitalization. *Turn* is the share turnover for each stock, while *Ln(price)* is the natural log of share price. *Spread* is the bid-ask spread, and *Volt* is the price volatility. P -values, which are obtained from robust standard errors that account for clustering across firms, are reported in parentheses. *, ** and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Further, the magnitude of the coefficients is economically meaningful. For instance, results in column [7] suggest that after controlling for other factors that might influence the level of stock returns during the period immediately after the

Supreme Court decision, health insurers underperform companies that operate simultaneously in the pharmaceutical and health care sector by 5.6%, while medical device companies underperform companies who operate simultaneously in the pharmaceutical and health care sector by 0.9%.

We further expand our event window to examine the impact of the *Pass Date* and *Supreme Court Date* at greater lengths than a typical three-day window. We estimate equation 1 with the dependent variable as the cumulative abnormal return for each stock i from day t to $t+3$, $t+5$ and so on where day t is the *Pass Date* or the *Supreme Court Date*. Table 6 and Table 7 report results of a three-, five-, 10- and 30-day event window around the *Pass Date* and *Supreme Court Date*, respectively. The results mirror that of the two-day event window and report that while health care providers realize little market reaction to the ACA legislation, health insurers, medical device companies, and companies with operation in health care and insurance underperform companies that operate simultaneously in the pharmaceutical and health care sector over an extended event window. These findings suggest that not only are the results for health insurers, device companies and joint health care-insurance companies statistically significant, but also the results are economically significant.

5. Conclusion

The provisions of the ACA likely will have a significant influence on performance of firms operating in the health care arena. This suggests that new information regarding the likelihood of the ACA becoming law should be disseminated by the market and reflected in the stock prices of firms in the industries affected by the ACA. As a result, we analyze the returns of stocks in the pharmaceutical, health care, health insurance⁸ and medical device industries during the time period surrounding the *Pass Date* and the *Supreme Court Pass Date*. The firms in these industries appear to be key stakeholders, and the market's expectation of the future cash flow of these firms is likely to be adjusted by the new information contained in both regulatory events.

It is important to consider that under the assumption that the ACA would increase the number of insureds, the demand for health care is likely to increase. The positive response in health care stocks is likely reflecting the market's perception that firms providing health care are going to benefit from the increase in the number insured. The results also show a negative price response in insurance companies. While the signs are opposite when comparing health care companies to insurance companies, the results are intuitive. The ACA reduces the flexibility of insurance companies to insure those that are likely to file more

8. While stock companies only make up about 19% of the number of health insurers, the three largest health insurers (WellPoint, Aetna and UnitedHealth Group) hold more than 50% of the national market for commercial health insurance. These firms are in our sample and give us a foundation from which to generalize our results.

claims. Therefore, the market bids down the prices of insurance stocks due to the potential for higher losses.

Our results indicate a significant stock price reaction among the six stakeholder industries during the time period surrounding the release of new information regarding the likelihood of the ACA becoming law. In particular, our results suggest that the passage of the ACA legislation has a negative effect on health insurance, medical device companies, and companies that operate jointly in the health care and insurance sectors. We also find some evidence that the regulatory events had a positive influence on firms in the health care industry. The results are important to regulators in examining the impact the ACA has on its key stakeholder industries.

Taken in their entirety, our results suggest that the market revised expectations of publicly traded health insurers' and medical device companies' cash flows downward when it became more evident the ACA would become law. To the extent that the market demonstrates a degree of efficiency, this suggests that regulators may need to take actions to ensure the stability of health insurance and medical device markets in the post-ACA era. It also suggests that for health insurers and medical device firms, the ACA may have adverse consequences for capital budgeting and other decisions sensitive to the cost of capital. However, our finding that the ACA's regulations have a positive influence on health care firms offers insight to policymakers and regulators who seek to assess the potential benefits of the ACA on the participants in the health care market.

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