Global Journal of Management and Business Research: D
Accounting and Auditing
Volume 14 Issue 5 Version 1.0 Year 2014
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

The Stock Price Effect of the Affordable Care Act

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Abstract- This is the first empirical study to assess the stock price effect of the Affordable Care Act. The timeline for appropriate assessment begins when the Act became law on June 28, 2012 in a 5-4 decision by the United States Supreme Court. Although the study is constrained by the fact that not much time has passed since the June, 2012 Court decision, quarterly returns and stock prices were analyzed for each quarter beginning with the third quarter of 2012 and ending with the first quarter of 2014. This is referred to as the post-Act time period. The results were then compared to similar quarterly data for the period 2004-2007. This is referred to as the pre-Act period. Fifty-seven firms and 912 pre-Act firm quarters were assessed for 5 health care industries in the sector (hospital companies, diagnostic companies, medical device companies, drug manufacturing companies, and assisted living companies). These total firm quarters were then compared to the same 57 firms and 399 firm quarters in the post Act period. Findings indicate that stock prices of these firms are significantly positive in the pre-Act study period but significantly negative in the post-Act study period.

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GJMBR - D Classification : JEL Code : H54, H59

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The Stock Price Effect of the Affordable Care Act

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Abstract- This is the first empirical study to assess the stock price effect of the Affordable Care Act. The timeline for appropriate assessment begins when the Act became law on June 28, 2012 in a 5-4 decision by the United States Supreme Court. Although the study is constrained by the fact that not much time has passed since the June, 2012 Court decision, quarterly returns and stock prices were analyzed for each quarter beginning with the third quarter of 2012 and ending with the first quarter of 2014. This is referred to as the post-Act time period. The results were then compared to similar quarterly data for the period 2004-2007. This is referred to as the pre-Act period. Fifty-seven firms and 912 pre-Act firm quarters were assessed for 5 health care industries in the sector (hospital companies, diagnostic companies, medical device companies, drug manufacturing companies, and assisted living companies). These total firm quarters were then compared to the same 57 firms and 399 firm quarters in the post Act period. Findings indicate that stock prices of these firms are significantly positive in the pre-Act study period but significantly negative in the post-Act study period.

The analysis was then broken down by each of the five industries in both the pre and post-Act study periods. Findings again show that stock prices are significantly lower in post-Act time periods with hospital companies, diagnostic companies and medical device companies being the most pronounced in stock price decline.

These results have significant bearing on managers and investors in a post Affordable Care Act era. It is possible that the health care sector as a whole may experience continued downward pressure on both earnings and stock prices, while specific industries in the sector may experience more significant impact than others in the quarters and years to come.

Keywords: affordable care act, obama care, share price response, health care industry.

I. Introduction

Health care reform has been a major issue in the United States for the past several years. The result of this reform has consequences for the American consumer of those services, the taxpayers, the firms themselves, and for shareholders of the firms. The Patient Protection and Affordable Care Act (i.e., "Affordable Care Act" or "Obama Care") was signed into law by President Barack Obama on March 23, 2010. The intent of the law was to increase the number of Americans covered by health insurance and decrease the cost of that health insurance. In particular, a key provision of the bill, called the "individual mandate" requires that all Americans maintain a certain level of health insurance or face a penalty.

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The Affordable Care Act is not without controversy. In May of 2014, the Congressional Budget Office of the United States summarized the Pros and Cons of the Act. Below is their summary:

Pros:

1. Designed to reduce overall health care costs.
2. Make health care services available to 32 million uninsured Americans.
3. Make preventative services free to all Americans.
4. For those who can't afford it the Federal government will pay the states to add them to Medicaid.
5. Insurance companies cannot drop anyone once they get sick.
6. Insurance cannot deny coverage for preexisting conditions.
7. Children can be added to parents' insurance until age 26.
8. Does not apply to companies with fewer than 50 employees.

Cons:

1. 30 million Americans currently covered by private policies may be forced to pay for services they do not use or need.
2. Between 3-10 million people may lose company-sponsored health plans.
3. Increased coverage may in fact raise healthcare costs.
4. Those who do not elect a health care plan will be assessed a penalty (i.e., tax), at 2% of income, and enforced by the IRS.
5. Taxes were raised in 2013 on households earning in excess of $200,000 to help subsidize the Act.
6. Medical device manufacturers must pay a new 2.3% excise tax.
7. Drug companies will pay an estimated $84.8 billion in fees assessed by the Federal government..
8. Companies will be assessed a 40% excise tax on "Cadillac" health plans (i.e., "full coverage" plans) offered to employees, thus increasing premiums or deductibles.

The constitutionality of the Affordable Care Act was affirmed by the Supreme Court on June 28, 2012 in a 5-4 decision, with the declaration that the Act constituted a tax and therefore was legal. The upholding of the Act by the Supreme Court began to have implications on stock prices of firms impacted by the Act. Prior to the June, 2012 ruling of the High Court, the broad expectation was that the Act would be overturned, thus, most firms, and their investors, were not overly

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concerned. In the week following the Supreme Court's decision, Health Care Industry stocks were down.

The mandate of the Act was that enrollment into a health plan be effective as of March 31, 2014. Although there does not currently exist enough data to make an informed decision on the stock price implications of the Act since March 31, 2014, we can, however, evaluate the industry stocks from the time of the Supreme Court decision in 2012 and compare the stock performance across firms in the sector to pre-Act periods to assess any significant changes between the two time frames. This would give us a broad perspective of how these firms are perceived from a stockholder perspective.

II. Literature Review

To assess the stock price impact of the Affordable Care Act, event study methodology is utilized. Fama, Fisher, Jensen and Roll (1969) first use this methodology for determining the impact of legislative rulings on publicly traded firms. It has since become the standard analytical procedure.

Jayachandran (2006) observed the effect of an unexpected change in party Congressional control on industry stock prices utilizing this methodology. The impact on health care firms resulting from changes in federal health care policies have also been analyzed in detail with a similar procedure. Kawaura and Sumner (1995) analyzed the impact of patent reform on pharmaceutical companies. Their findings show that these companies were significantly hurt by the reform.

Other studies have attempted to analyze the impact of national health reform in the United States on health care firms. Ellison and Mullin (2001) utilized regression analysis in their event study and found that the Clinton health reform plan introduced between 1992-1993 had a significant negative impact on pharmaceutical company stock prices.

Miller and Al-Ississ (2010) began some initial research on the Obama health reform plan. The analysis was, however, limited to the comparison of the Massachusetts health care plan. Findings indicate that healthcare firms serving the Massachusetts market experienced a decline in stock prices after adoption of the plan.

The simple fact is that no study to date has endeavored to analyze the stock-price effect of the Affordable Care Act. This study will attempt to do just that through analysis of five major industries in the health care sector: 1) Hospital companies, 2) Diagnostic companies, 3) Medical device makers, 4) Drug manufacturers, and 5) Assisted living facilities. Security prices for these firms will be assessed for two periods: 1) Pre-Affordable Care Act time frame (2004-2007), and 2) Post-Affordable Care Act time frame (third quarter 2012- first quarter 2014). Although limited in time scope, this study will allow us to see ramifications of the Act on security prices of affected firms and stockholders.

a) Hypotheses Development

As previously noted, no current research assesses the stock price effect of the Affordable Care Act. In an effort to do just that, the stock price effects for a sample of health care sector firms are analyzed by quarter for a period prior to enactment of the Act, i.e., 2004-2007, for a total of 16 quarters. These years were selected because they exemplify a return to normalcy after the effects of 9/11 and before the effects of the ensuing recession. The stock price effects of these same firms are analyzed after the Supreme Court ruling establishing the Act as law, i.e., third quarter of 2012 through first quarter of 2014, for a total of 7 quarters. If the Act has no discernible difference across time periods, we should not see significant differences between the pre and post stock prices. This gives rise to the first hypothesis, stated in the null form:

H1: The share price responses to unexpected earnings in a pre-Affordable Care Act environment for health care related firms are not significantly different from those in a post-Affordable Care Act environment.

The broad changes in health care associated with the Affordable Care Act have undoubtedly affected some health care related industries more than others. In an attempt to better assess this effect, the analysis of hypothesis 1 is further detailed by five major industries impacted by the act, namely:

1. Hospital companies
2. Diagnostic companies
3. Medical device makers
4. Drug manufacturers
5. Assisted living facilities

Using the same premise as hypothesis 1, if the Act has no discernible difference across time periods, we should not see significant differences between the pre and post stock prices among the industries. This gives rise to the second hypothesis, stated in the null form:

H2: The share price responses to unexpected earnings in a pre-Affordable Care Act environment for health care related industries are not significantly different from those in a post-Affordable Care Act environment.

b) Sample Selection

The purpose of this study is to investigate the share price behavior of publicly traded health care firms in the presence both a pre- and post-Affordable Care Act time frame. Following Chang, Cheng and Reichelt (2010), the study is partitioned using a pooled time series approach. The pre-Act period is 2004-2007 (16 quarters) and the post-Act period is third quarter 2012 through first quarter 2014 (7 quarters). Two databases were assembled for health care related sector firms, one for pre and the other for post time periods. A Lexis-

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Nexis and Electronic Data-Gathering, Analysis and Retrieval (EDGAR) search was then made to discover the appropriate release date of the firms' 10Qs.

Table 1 summarizes the sample of firms, by health care industry, used in the study for each of the time periods analyzed.

Table 1 : Study Sample by Sample Period

	Pre-Act (Firm Quarters)	Post-Act (Firm Quarters)
Hospital companies	7 (112)	7 (49)
Diagnostic companies	6 (96)	6 (42)
Medical device makers	19 (304)	19 (133)
Drug manufacturers	15 (240)	15 (105)
Assisted living facilities (160) (70)	10	10
Total	57 (912)	57 (399)

III. Methodology

a) Hypothesis One

The purpose of the test of the first hypothesis is to assess the relative information content of unexpected earnings of share prices in a pre and post Act environment for total firms in the sample. The following model is used to evaluate information content:

$$CAR_{it} = a + b_1UE_{pre} + b_2UE_{post} + b_3MB_{it} + b_4B_{it} + b_5MV_{it} + e_{it} \quad (1)$$

Where: CAR_{it} = Cumulative abnormal return firm i, time t

a = Intercept term

UE_{pre} = Unexpected earnings for firm i, time t, for all pre-Act firms in sample

UE_{post} = Unexpected earnings for firm I, time t, for all post-Act firms in sample

MB_{it} = Market to book value of equity as proxy for growth and persistence

B_{it} = Market model slope coefficient as proxy for systematic risk

MVit = Market value of equity as proxy for firm size

e_{it} = error term for firm i, time t

The coefficient "a" measures the intercept. The coefficient b_1 is the earnings response coefficient (ERC) for all pre-Act firms in the sample (57 firms, 912 firm quarters). The coefficient b_2 is the earnings response coefficient (ERC) for all post-Act firms in the sample (57 firms, 399 firm quarters). The coefficients b_3, b_4, and b_5, are assessed for any potential contributions to the ERC for all firms in the sample. To investigate the effects of the information content of the ERC, there must be some control for variables shown by prior studies to be determinants of ERC. For this reason, the variables represented by coefficients b_3 through b_5 are included in the study. Unexpected earnings (UE_i) is measured as the difference between the actual earnings (EA_i) and security market participants' expectations for earnings proxied by consensus analyst following as per Investment Brokers Estimate Service (IBES) (EX_i). The unexpected earnings are scaled by the firm's stock price (Pi) 180 days prior to the forecast:

$$UE_i = \frac{(EA_i - EX_i)}{P_i} \quad (2)$$

For each cross sectional sample firm, an abnormal return (AR_{it}) is generated for event days –1, 0, and +1, where day 0 is defined as the quarterly earnings release date identified by EDGAR. The Dow Jones News Retrieval Service (DJNRS) is also reviewed to insure that confounding factors, such as change of corporate ownership or form, or management change, are minimized by excluding any firms which contain these events. The market model is utilized along with the CRSP equally-weighted market index and regression parameters are estimated between –290 and –91. Abnormal returns are then summed to calculate a cumulative abnormal return (CAR_{it}). Hypotheses 1 is tested by examining the coefficients associated with the quarterly unexpected earnings of pre and post Act firms' financial reports (i.e., b_1 and b_2). There are two possible conclusions; results may be noisy, or interpreted as being less beneficial to investors, which in this event, b_1, $b_2<0$, or these firms will possess an information-enhancing signal to the investor, which will result in b_1, $b_2>0$. Subsequent significance is then assessed.

b) Hypothesis Two

The purpose of the test of the second hypothesis is to assess the relative information content of unexpected earnings of share prices in a pre and post-Act environment for firms by industry membership. A model similar to the one utilized for hypothesis one is again used for hypothesis two:

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$CAR_{it} = a+b_1D_1UE_{hc}+ b_2D_2UE_{dc} + b_3D_3UE_{md}+ b_4D_4UE_{dm}+ b_5D_5UE_{al} + b_6MB_{it}+ b_7B_{it} + b_8MV_{it} + e_{it}$ (3)

Where: CAR_{it}= Cumulative abnormal return firm i, time t

a = Intercept term

D_1UE_{hc} = Dummy variable for all hospital companies firm quarters in sample where 1 = post-Act, 0= pre-Act

D_2UE_{dc} = Dummy variable for all diagnostic companies firm quarters in sample where 1= post-Act, 0= pre-Act

D_3UE_{md} = Dummy variable for all medical device companies firm quarters in sample where 1= post-Act, 0= pre-Act

D_4UE_{dm} = Dummy variable for all drug manufacturing companies firm quarters in sample where 1= post-Act, 0= pre-Act

D_5UE_{al} = Dummy variable for all assisted living companies firm quarters in sample where 1= post-Act, 0= pre-Act

MB_{it} = Market to book value of equity as proxy for growth and persistence

B_{it} = Market model slope coefficient as proxy for systematic risk

MV_{it} = Market value of equity as proxy for firm size

e_{it} = error term for firm i, time t

Ordinary least squares (OLS) regression is used to test the model for hypothesis one and two. Cross-sectional dependence and heteroskedasticity are not likely to be present in stock return metrics since sample firms are not affected by common event dates. (Binder 1985; Bernard 1987; Grammatikos and Yourougou 1990). However, whenever a set of multiple regression variables are employed, there is a probability of the presence of multicollinearity within the set of independent variables which may be problematic from an interpretive perspective. To assess the presence of multicollinearity, the Variance Inflation Factor (VIP) is utilized.

IV. Results

a) Hypothesis One Results

As indicated in Table 2, the response coefficient b_1, representing unexpected earnings for all pre-Act firms was .10 with a p-value of .01. Coefficient b_2, representing post-Act firms was -.03 with a p-value of .01. The other control variables were not found to be significant at conventional levels. This finding indicates that when assessing the impact of the Affordable Care Act from a total firm perspective, there tends to be a significant positive impact on stock prices of the pre-Act time periods but a significant negative impact on stock prices of the post-Act time periods. Hypothesis one, which suggests no difference between the two sample groups must, therefore, be rejected.

In addition, whenever a set of multiple regression variables are employed, there is a probability of the presence of multicollinearity within the set of independent variables which may be problematic from an interpretive perspective. To assess the presence of multicollinearity, the Variance Inflation Factor (VIP) was utilized. Values of VIP exceeding 10 are often regarded as indicating multicollinearity. In the test of hypothesis 1, a VIP of 1.5 was observed, thus indicating the non-presence of significant multicollinearity.

Table 2 : Stock Price Effect of Pre-Act and Post-Act Firms

Test of Hypothesis 1

Model: $CAR_{it} = a + b_1UE_{pre} + b_2UE_{post}+ b_3MB_{it} + b_4B_{it} + b_5MV_{it} + e_{it}$

a	b_1	b_2	b_3	b_4	b_5	Adj. R^2
.03	.10	-.03	.10	.07	.15	.235
(.50)	(2.47)[a]	(2.59)[a]	(.48)	(.32)	(.26)	

b_1 = information content of all pre-Act firm quarters in the sample (912)
b_2 = information content of all post-Act firm quarters in the sample (399)
b_3 = control variable for growth and persistence
b_4 = control variable systematic risk
b_5 = control variable firm size
[a]= significant at .01 level

b) Hypothesis Two Results

The response coefficients for the five industries represented by dummy variables are presented in Table 3. As indicated, all post-Act stock prices show a significant decline from pre-Act time periods. The decline is most pronounced for hospital companies (-.06, p-value of .01), diagnostic companies (-.11, p-value of .01), and medical device companies (-.16, p-value of .01). Drug manufacturing companies show a decline that is less dramatic (-.02, p-value of .05), with similar results for assisted living companies (-.01, p-value .10). The other control variables were not found to be significant at conventional levels. This finding indicates that when assessing the impact of the Affordable Care Act from a health care industry perspective, there tends to be a significant negative impact on stock prices of the

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post-Act time periods for all industries with hospital companies, diagnostic companies, and medical device companies being most pronounced. Hypothesis two, which suggests no difference between the two time period groups by industry must, therefore, be rejected.

The Variance Inflation Factor (VIP) was again utilized to assess multicollinearity in the regression model. In the test of hypothesis 2, a VIP of 1.9 was observed, thus indicating the non-presence of significant multicollinearity.

Table 3 : Stock Price Effect of Pre-Act and Post-Act Firms by Industry

Test of Hypothesis 2

Model: $CAR_{it} = a + b_1D_1UE_{hc} + b_2D_2UE_{dc} + b_3D_3UE_{md} + b_4D_4UE_{dm} + b_5D_5UE_{al} + b_6MB_{it} + b_7B_{it} + b_8MV_{it} + e_{it}$

a	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8	Adj. R^2
.04	-.06	-.11	-.16	-.02	-.01	.13	.09	.06	.228
(.36)	(2.36)[a]	(2.41)[a]	(2.39)[a]	(1.95)[b]	(1.59)[c]	(.22)	(.45)	(.31)	

b_1 = information content for hospital companies
b_2 = information content for diagnostic companies
b_3 = information content for medical device companies
b_4 = information content for drug manufacturing companies
b_5 = information content for assisted living companies
b_6 =control variable for growth and persistence
b_7= control variable systematic risk
b_8 = control variable firm size

[a] = significant at .01 level
[b] = significant at .05 level
[c]= significant at .10 level

Dummy variable = 1 for post-Act time periods and 0 for pre-Act time periods

V. Conclusion

This is the first empirical study to assess the stock price effect of the Affordable Care Act. The timeline for appropriate assessment begins when the Act became law on June 28, 2012 in a 5-4 decision by the United States Supreme Court. Although the study is constrained by the fact that not much time has passed since the June, 2012 Court decision, quarterly returns and stock prices were analyzed for each quarter beginning with the third quarter of 2012 and ending with the first quarter of 2014. This is referred to as the post-Act time period. The results were then compared to similar quarterly data for the period 2004-2007. This is referred to as the pre-Act period. Fifty-seven firms and 912 pre-Act firm quarters were assessed for 5 health care industries in the sector (hospital companies, diagnostic companies, medical device companies, drug manufacturing companies, and assisted living companies). These total firm quarters were then compared to the same 57 firms and 399 firm quarters in the post Act period. Findings indicate that stock prices of these firms are significantly positive in the pre-Act study period but significantly negative in the post-Act study period.

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