Class Action Security Lawsuits and Dividend Policy

Stoyan Stoyanov *
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Abstract

This paper examines how corporate dividend policy and the information content of dividends are affected by negative contemporaneous and foreseeable shocks to business. In particular, I study the effect of class action security lawsuits on firms' propensity to raise dividends and the stock price reaction to dividend increase announcements. I find that litigation risk reduces the likelihood of dividend increases and, consequently, the stock price reaction to dividend increase announcements is stronger for firms exposed to litigation. My results are robust to endogeneity concerns and to using different litigation risk measures and estimation techniques. Consistent with the existing literature, I document significant industry spillover effects of litigation and lawsuit anticipation by shareholders.

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* New York University, Stern School of Business, Department of Finance, KMC 9-175C, 44 West 4th Street, NY 10012, sstoyano@stern.nyu.edu.

1. Related Literature and Hypothesis Development

This paper examines how corporate dividend policy and the information content of dividends are affected by negative contemporaneous and foreseeable shocks to business. In particular, I study the effect of class action security lawsuits on firms' propensity to raise dividends and the stock price reaction to dividend increase announcements. All public companies in the US are susceptible to security litigation under the Securities Acts of 1933 and 1934. The Private Securities Litigation Reform Act of 1995 required explicit proof of intentional fraud by executives and made it more difficult to initiate shareholder lawsuits. While it significantly reduced the number of unsubstantiated lawsuits (Johnson, Nelson and Pritchard (2007)), security litigations still occur regularly and settlement costs remain at their pre-1995 levels (Karpoff, Lee and Martin (2006)). According to the *Securities Class Action Lawsuit Clearinghouse* (SCAC) at Stanford University, a total of 3,227 class action security lawsuits were filed between 1996 and 2010 with the highest number of 497 lawsuits filed in 2001.

Defendant firms in class action security litigations incur substantial direct and indirect costs. Direct costs include settlement and penalty costs and attorney fees and tend to be large. Arena and Julio (2011) report an average settlement amount of $56.4 million for lawsuits in the period 1996-2006, which is more than the cash holdings of the sued firms that settled during that period. Zingales (2006) calculates a total settlement value of 9.7 billion dollars in 2005. Indirect costs include but are not limited to the cost of implicit and explicit contracts (Arena and Julio (2011)), damaged reputation, and weakened relationships with suppliers and customers (Engelman and Cornell (1988)). While indirect costs are difficult to measure, they are also substantial (Arena and Julio (2011)).

The effects of shareholder initiated lawsuits on corporate policy decisions remain to be thoroughly examined. In an early study using a randomly selected sample of shareholder

lawsuits, Romano (1991) investigates manager turnover, executive compensation, and other corporate governance changes resulting from litigation activity. She finds that shareholder litigation is an ineffective corporate governance instrument and that the stock price reaction to lawsuit initiations is insignificant. Bhagat, Brickley, and Coles (1994), Bizjak and Coles (1995), and Bhagat, Bizjak, and Coles (1998) examine inter-firm lawsuits and report significant stock price reactions to lawsuit filings. In a more recent study, Gande and Lewis (2009) document a significantly negative stock price reaction to shareholder initiated lawsuits. Using firm and industry characteristics, Gande and Lewis (2009) develop an econometric model for the likelihood of litigation, and show that filing date effects underestimate the magnitude of total litigation losses by almost a third because shareholders partially anticipate lawsuits and capitalize some of the losses prior to filing. In a concurrent paper, Arena and Julio (2011) show that firms with greater exposure to litigation reduce investment, hoard cash, and experience a reduction in the market value of their cash holdings. They also document significant industry spillover effects of litigation. Other studies have found that firms at a higher lawsuit risk are more likely to underprice their IPOs (Lowry and Shu (2002)), undertake aggressive growth through increased acquisitions (Gormley and Matsa (2009)), disclose bad news early in order to reduce the likelihood of stockholder lawsuits (Skinner (1994)), and see their outside board directors lose a substantial number of board seats at other companies (Fich and Shivdasani (2007)).

My paper extends the existing literature by investigating the impact of shareholder lawsuits on dividend policy. I first examine the impact of litigation risk on the stock price reaction to dividend increase announcements. While Miller and Modigliani (1961) rigorously establish the conditions under which payout policy is irrelevant for firm value, subsequent studies find evidence in support of significant market reactions to changes in dividend policy

(survey in Allen and Michaely (2002)). Aharony and Swary (1980) show that stock prices rise during months with unexpected dividend increases and drop during months with unexpected dividend decreases. Ofer and Siegel (1987) and Denis, Denis and Sarin (1994) find that analysts regularly update their projections upon dividend change announcements. According to Hadjinicolau and Kalay (1984), Denis, Denis and Sarin (1994), and Yoon and Starks (1995), the significant market reaction to dividend increase announcements reflects the positive information that such announcements convey.[1] Other models also aim to explain dividend policy. Lang and Litzenberger (1989) suggest that higher dividend payments reduce the cash available to management for overinvestment.[2] Bajaj and Vijh (1990) find that investors favor dividend increases because they marginally prefer dividend income. More recently, Fama and French (2001) describe the "disappearing dividend" phenomenon, which Amihud and Li (2006) attribute to the lower information content of dividend increase announcements resulting from increased institutional ownership. Viswanath, Kim and Pandit (2002) observe that corporate liquidity has a significant role in dividend signaling. Using the model of Amihud and Li (2006), I find that cumulative abnormal returns (CAR) around dividend increase announcements are significantly higher for announcements made by firms exposed to litigation. Interestingly, the effect of litigation on the dividend response coefficient, measuring the price impact of the magnitude of the dividend increase, is insignificant. My results are robust to using different litigation risk measures and estimation techniques.

I next estimate an ordered probit model for the likelihood of dividend increases controlling for firm, time, and industry factors. I find that companies affected by shareholder lawsuits are less likely to raise dividends. Thus, the higher *CAR* values observed around dividend

[1] consistent with the models of dividend signaling such as the ones in Bhattacharya (1979), John and Williams (1985), Miller and Rock (1985), Ofer and Thakor (1987), Ravid and Sarig (1991).
[2] consistent with the overinvestment models of Easterbrook (1984) and Jensen (1986).

increase announcements reflect the surprise that these announcements are made by firms exposed to litigation. This result is consistent with the cash hoarding results of Arena and Julio (2011). Since raising external capital is expensive, sued firms build a cash buffer in order to meet expected litigation costs and ongoing obligations without having to resort to the markets (Arena and Julio (2011)). Dividend payments reduce firms' cash holdings making it less likely for firms affected by litigation to raise dividends.

I also address the problem of endogeneity. Recognizing that my litigation risk proxies may be correlated with other unobserved factors causing the positive market reaction to dividend increase announcements, I attempt to identify the causal link between litigation risk and abnormal returns using the industry spillover approach of Gande and Lewis (2009) and Arena and Julio (2011). As shareholder lawsuits are filed against firms in a given industry, non-sued firms in the same industry experience significant stock price decreases (Gande and Lewis (2009)), hoard cash and reduce investment (Arena and Julio (2011)). As Arena and Julio (2009) argue, peer firm lawsuits present an exogenous source of variation in litigation risk for firms within the same industry as it is unlikely that the characteristics of non-sued firms would affect litigations on their peer firms. To account for endogeneity, I redefine the litigation dummy variable in my original model to equal one if security lawsuits were recently filed against peer firms and zero otherwise, and exclude from my sample firms that were actually involved in litigation. The stock price reaction to dividend increase announcements made by firms at a higher litigation risk is again significantly stronger. A plausible alternative explanation for my results is that sued firms simply have better investment opportunities causing the stronger market reaction to dividend increase announcements by such firms. I formally test this hypothesis and find that it is likely invalid.

My paper extends the literature on the effects of litigation risk on corporate policy choices by examining the implications of security lawsuits for dividend policy. To the best of my knowledge, this is the first study that systematically investigates the relationships between litigation risk, firms' propensity to raise dividends, and the stock price reaction to dividend increase announcements by such firms. The formal testable hypotheses are:

Hypothesis 1. The stock price reaction to dividend increase announcements is stronger for announcements made by firms exposed to class action security lawsuits.

Hypothesis 2. Firms exposed to class action security lawsuits are less likely to increase dividends.

2. Data

My data sample covers years 1996-2010. Class action security lawsuit data come from the *Securities Class Action Clearinghouse* at Stanford University. SCAC provides shareholder lawsuit data, including filing date, back to 1996. To determine the ending date of each lawsuit, I reviewed the relevant case documentation on SCAC. According to SCAC, a total of 3,227 class action security lawsuits were filed between 1996 and 2010.

I use class action security lawsuits only. While firms are also exposed to other legal risks such as antitrust lawsuits and copyright infringements, existing literature focuses on security litigations for several reasons. Security litigation data are publically available and, under the Securities Acts of 1933 and 1934, all public companies are susceptible to this type of lawsuits. Moreover, class action security litigations are usually associated with substantial costs. In a robustness test, Arena and Julio (2011) add to their sample lawsuits other than security litigations and do not observe significant changes in their results.

Dividend announcement data are from the CRSP daily events file and company financial data are from Compustat. I consider all regular quarterly cash dividends on ordinary common NYSE/AMEX stocks, paid in US dollars and taxable as normal dividends (distribution code 1232). I exclude dividend increase announcements preceded or followed by other dividend announcements in a 30-day window as well as dividend increase announcements of less than half percent and dividend changes resulting from stock splits, mergers and acquisitions, or other price adjusting events. I also exclude from my sample firms that operate in the financial industry (SIC codes 6000-6999) or in a regulated industry (4900-4999). My final sample comprises 32,063 dividend announcements, of which 4,085 are dividend increase announcements and 528 are dividend decrease announcements.

3. Analysis

3.1 Stock Price Reaction to Dividend Increase Announcements

I test Hypothesis 1 using a model similar to the model in Amihud and Li (2006). To measure the stock price reaction to dividend increase announcements, I use the two-day cumulative abnormal return for days 0 (announcement day) and +1. *CAR* is computed as the sum of the daily abnormal returns, the difference between the daily stock returns and the returns on the size-based CRSP decile portfolio to which the stock belongs. The model is estimated using a pooled regression and a Fama-Macbeth regression, in which I first estimate yearly cross-sectional regressions to obtain the annual estimated coefficients for each year and then compute the weighted average of the 15 estimated coefficients using as weights the inverse of the squared coefficient standard errors from the yearly regressions. Model (1) is the pooled regression model.

The Fama-Macbeth regression model is similar to the pooled regression model, except that there are 13 industry dummies for the major industry groups defined in Lo and Wang (2001).

$$CAR_{\mathrm{i,t}} = \alpha_0 + \alpha_1 DDIVY_{\mathrm{i,t}} + \alpha_2 LITDUM_{\mathrm{i,t}} + \alpha_3 LITINT_{\mathrm{i,t}} + \alpha_4 SIZEN_{\mathrm{i,t\text{-}1}} + \alpha_5 LTYLD_{\mathrm{i,t\text{-}1}} + \sum_{\mathrm{m}} \alpha_{6\mathrm{m}} IND_{\mathrm{m,i,t}} + \sum_{\mathrm{n}} \alpha_7 QTR_{\mathrm{n,i,t}} + \varepsilon_{i,t} \tag{1}$$

$DDIVY_{\mathrm{i,t}}$, the change in dividend yield, is computed as $4*(DIVAMT_{\mathrm{i,t}} - DIVAMT_{\mathrm{i,t\text{-}1}})/P_{\mathrm{i,t\text{-}1}}$. $DIVAMT_{\mathrm{i,t}}$ is the dividend amount per share announced in quarter t, $DIVAMT_{\mathrm{i,t\text{-}1}}$ is the most recently paid dividend preceding the announcement and $P_{\mathrm{i,t\text{-}1}}$ is the price at the end of the month preceding the dividend announcement month. A positive and significant α_1 implies a positive relationship between *CAR* and the information content of the magnitude of *DDIVY*, and supports the dividend signaling hypothesis. The litigation dummy *LITDUM* equals one if firm i was involved in litigation in quarter t and zero otherwise. The litigation period begins with the quarter when litigation is announced and ends with the quarter when lawsuit settlement or termination is announced. I propose that the stock price reaction to dividend increase announcements is stronger for announcements made during the litigation period. A positive and significant *LITDUM* coefficient would support Hypothesis 1. *LITINT*, litigation intensity, equals the number of lawsuits filed against peer firms (same four-digit SIC code) in the past four quarters. A positive and significant *LITINT* coefficient suggests the existence of litigation spillover effects. *SIZEN* equals the natural logarithm of firm's market value at the end of the month preceding the dividend announcement quarter, deflated by the S&P 500 index with base of January 1996. Existing literature documents a negative sign of the *SIZEN* coefficient because (i) information on larger companies is more readily available (for instance, larger firms are usually followed by more analysts) and the dividend increase announcements of such firms provide less incremental

information; (ii) size is positively related to stock liquidity suggesting that, if firms pay dividends to reduce shareholder illiquidity costs, dividend increases would be more highly valued by holders of less liquid stocks (Amihud and Li (2006)). *LTYLD* is the long-term dividend yield, computed as the total dividends paid over the 12 months preceding the dividend announcement month and divided by the average end-of-month price in the three-month period preceding the 12-month dividend period. The sign of *LTYLD* is expected to be positive because dividend announcements are more informative and the surprise from dividend increases is greater in firms with lower growth prospects that historically paid high dividends (Amihud and Li (2006)). To control for time and industry factors, the model also includes the dummy variables $QTR_{n,i}$, equal to one if announcement i occurred in quarter n and zero otherwise, and $IND_{m,i}$, which equals one if announcement i was made by a firm in industry m (using two-digit SIC code) and zero otherwise. In the Fama-Macbeth regressions, *IND* is based on the 13 major industry groups of Lo and Wang (2001). The pooled regression contains 56 major industry groups. To account for selection, I include in the model the inverse Mills ratios from model (2). The results in Table 1 support Hypothesis 1. The estimated α_2 coefficient is positive and significant.[3] The *LITINT* coefficient is also positive and significant suggesting that the stock price reaction is stronger for dividend increase announcements made by firms in industries where security lawsuits were recently filed. I discuss this point further in section 3.4.1. The estimated coefficients of *DDIVY*, *SIZEN*, and *LTYLD* are consistent with the coefficients reported in existing literature.

[Table 1 about here]

[3] In an unreported analysis, I added to models (1-1) and (1-2) the interaction term between *DDIVY* and the litigation dummy to examine the effects of litigation on the dividend response coefficient. The interaction term is insignificant in models (1-1) and (1-2) for the litigation dummy as defined in this section as well as for the alternative litigation risk proxies defined in the later sections.

3.2 Likelihood of Litigation

Next, I use the probit model of Gande and Lewis (2009) to estimate firms' litigation propensity and replace the litigation dummies in models (1-1) and (1-2) with the estimated likelihood of litigation. As control group I use all firms that had the same four-digit SIC code as the sued firms and/or the firms that announced dividend increases between 1996 and 2010. In the control group I include only observations for the dates on which a lawsuit was filed against a peer firm or on which a peer firm announced a dividend increase. The explanatory variables used in the probit model are related to the size of potential damages, the litigation environment, and firm-specific characteristics.

The litigation likelihood of each firm depends on expected damages. Both share turnover and volatility are commonly used to calculate damage awards and are positively correlated with the possibility that stocks were traded on misleading information (Gande and Lewis (2009)). Turnover is calculated using the procedure described in Field, Lowry, and Shu (2005) and measures the probability that a share was traded during a given time window. Volatility is the standard deviation of daily stock returns over a given time period. I calculate turnover and volatility over the four quarters preceding the event date of interest. Compounded daily stock returns for the past four quarters are also included in the model as past returns seem to affect class members' incentives to initiate litigation (Gande and Lewis (2009)).

To capture the current litigation environment, a past litigation dummy variable and a litigation intensity variable are used. The past litigation dummy equals one if the company was previously involved in a security lawsuit and zero otherwise. The litigation intensity variable equals the number of lawsuits filed within the same industry over the past four quarters. Firms that were involved in litigation in the past are more likely to be sued again and litigations are

more likely to occur in industries with a greater number of recently filed lawsuits (Gande and Lewis (2009)). To account for possible nonlinearities, I follow Gande and Lewis (2009) and include the square value of the litigation intensity variable. Finally, I add controls for technology and retail industry firms. Performance results in the technology industry are often difficult to predict and such companies are more susceptible to litigation (Gande and Lewis (2009)). In contrast, retail companies are generally better able to predict future performance and also report monthly sales figures thus increasing the amount of information available to the market and reducing the likelihood of litigation (Field, Lowry, and Shu (2005)). However, retail companies tend to have more employees and also sell their products to the public, which make class action lawsuits more likely (Gande and Lewis (2009)). The effect of operating in the retail industry is thus unclear.

The last set of predictor variables comprises firm-specific characteristics. Firm size, the market value of common equity in logarithm, is included in the model to control for "deep pockets" (Gande and Lewis (2009)). Firms able to pay larger settlement/penalty amounts are more likely to be sued. Negative earnings surprises may also lead to lawsuits. Hence, similar to Arena and Julio (2011), I use the level of discretionary accruals from a Jones (1991) model estimated each year. I also add an additional naive measure of unexpected earnings which uses earnings from the same quarter in the previous year to proxy for expected earnings in the current quarter. Another firm-specific characteristic is the percentage of CEO bonus compensation out of total compensation. Bonus compensation provides greater incentives for managers to achieve better results and is thus expected to be negatively correlated with the likelihood of litigation. Following Gande and Lewis (2009), I also include a term interacting bonus compensation with a dummy variable equal to one if *ROA* is negative and zero otherwise. This variable controls for

the possibility that managers whose total compensations includes a large fraction of bonus payments may be tempted to misstate earnings in order to achieve certain performance targets.

The probit model results in Table 2a are consistent with the results of Gande and Lewis (2009) and Arena and Julio (2011). Table 2b presents the results from the *CAR* model using litigation propensity instead of the litigation dummy. The estimated litigation propensity coefficient is positive and significant.

[Table 2a about here]

[Table 2b about here]

3.3.1 Dividend Change Decisions

Why is the stock price reaction to dividend increases announced during litigation stronger? Arena and Julio (2011) show that firms involved in shareholder lawsuits significantly increase their cash holdings and reduce investment. Hence, it seems less likely that firms in litigation would increase dividends. The higher *CAR* thus reflects the surprise from the fact that firms in litigation increased dividends. To test Hypothesis 2, I estimate an ordered probit model similar to the one in Amihud and Li (2006):

$$\begin{aligned} L_{\mathrm{i}} = {} & \beta_0 + \beta_1 LITDUM_{\mathrm{i}} + \beta_2 SP500_{\mathrm{i}} + \beta_3 LTYLD_{\mathrm{i}} + \beta_4 DIFYLD_{\mathrm{i}} \\ & + \beta_5 SIZEN_{\mathrm{i}} + \beta_6 PRC_{\mathrm{i}} + \beta_7 LTVOL_{\mathrm{i}} + \sum_{\mathrm{m}} \beta_{8\mathrm{m}} \mathrm{IND}_{\mathrm{m,i}} + \sum_{\mathrm{n}} \beta_{9\mathrm{n}} \mathrm{QTR}_{\mathrm{n,i}} + \varepsilon_i \end{aligned} \tag{2}$$

The data sample covers years 1996-2010 and includes all dividend announcements. The litigation dummy is defined as in Section 3.1. A negative and significant β_1 coefficient supports Hypothesis 2. *L* equals -1, 0, and 1 for dividend decrease, no-change, and increase announcements respectively. *SP500* is a dummy variable equal to one if the stock is a constituent of the S&P 500 index and zero otherwise. *DIFYLD* is calculated as the difference between

STYLD and *LTYLD*, where *STYLD* is the most recently paid quarterly dividend divided by the monthly stock price for the month preceding the announcement month and multiplied by four. *PRC* is the quarterly price for the quarter preceding the dividend announcement, and *LTVOL* is long-term volatility computed as the standard deviation of the monthly stock returns over the 24 months before the dividend announcement month. The negative and significant *LITDUM* coefficient supports Hypothesis 2.

[Table 3a about here]

3.3.2 Effect of litigation on dividend payout ratios

I next examine the effect of litigation on firms' dividend payout ratios using model (3):

$$
\begin{aligned}
DIVPS_{\mathrm{i,t}} = {} & \beta_0 + \beta_1 LITDUM_{\mathrm{i,t}} + \beta_2 LITDUM_{\mathrm{i,t}} * \mathrm{EPS}_{\mathrm{i,t}} + \beta_3 EPS_{\mathrm{i,t}} + \beta_4 EPS_{\mathrm{i,t\text{-}1}} \\
& + \beta_5 DIVPS_{\mathrm{i,t\text{-}1}} + \beta_6 SP500_{\mathrm{i,t\text{-}1}} + \beta_7 LTYLD_{\mathrm{i,t\text{-}1}} + \beta_8 DIFYLD_{\mathrm{i,t\text{-}1}} + \beta_9 SIZEN_{\mathrm{i,t\text{-}1}} \\
& + \beta_{10} PRC_{\mathrm{i,t\text{-}1}} + \beta_{11} LTVOL_{\mathrm{i,t\text{-}1}} + \sum_{\mathrm{m}} \beta_{12\mathrm{m}} \mathrm{IND}_{\mathrm{m,i}} + \sum_{\mathrm{n}} \beta_{13\mathrm{n}} \mathrm{QTR}_{\mathrm{n,i,t}} + \varepsilon_{i,t}
\end{aligned}
\tag{3}
$$

The model is a modified version of model (2) including quarterly earnings per share in the current and the preceding quarter, quarterly dividends per share paid in the preceding quarter, and firm fixed effects. The dependent variable *DIVPS* is quarterly dividends paid per share of common stock from Compustat. The results in Table 3b suggest that sued firms don't change their payout ratios during litigation.

3.4 The Identification Problem

In this section I address the problem of endogeneity. Recognizing that my litigation risk proxies may be correlated with other unobserved factors causing the stronger stock price reaction to dividend increase announcements by firms in litigation, I attempt to identify the causal link between litigation risk and *CAR* by using the industry spillover approach of Gande and Lewis

(2009) and Arena and Julio (2011). I also examine an alternative explanation for the observed stronger price reaction – firms affected by litigation simply have better investment opportunities. I find that this hypothesis is likely invalid.

3.4.1 Industry spillover effects of litigation

Establishing a causal link between shareholder lawsuits and *CAR* is challenging because there may be unobserved factors correlated with both the litigation event and *CAR*. To account for the problem of endogeneity, Arena and Julio (2011) examine the effects of class action security litigations on non-sued firms within the same industry and find evidence supporting the existence of significant industry spillover effects of litigation risk. As shareholder lawsuits are filed on firms in a given industry, non-sued firms in the same industry experience a statistically significant decrease in stock prices (Gande and Lewis (2009)), hoard cash and reduce investment (Arena and Julio (2011)). Peer-firm shareholder lawsuits present an exogenous source of variation in litigation risk for firms within the same SIC code as it is unlikely that the characteristics of non-sued firms would affect lawsuits on peer firms (Arena and Julio (2011)). In this section, I construct the dummy variable *E-LITDUM* which equal one for dividend increase announcements made by firms where a lawsuit was filed against another firm in the same SIC code in the past four quarters and zero otherwise. Then I exclude from my sample the firms that were actually involved in litigation. The results in Table 4 are consistent with the results in Table 1 as well as with the industry spillover findings of Gande and Lewis (2009) and Arena and Julio (2011). Moreover, Table 5 suggests that dividend increases are less likely among firms affected

by the industry spillover effects of litigation. Hence, the higher *CAR* observed around dividend increase announcements by such firms. [4]

[Table 4 about here]

[Table 5 about here]

3.4.2 Unobserved investment opportunities

Another plausible explanation for the stronger price reaction to dividend increase announcements by firms exposed to litigation is that such firms may simply have better investment opportunities. Thus, it may be that unobserved investment opportunities and not litigation risk are causing the observed stronger market reaction. To test this hypothesis, I included *Tobin's Q* ratio as a control variable in models (1-1) and (1-2). If *Tobin's Q* ratio measures the quality of a firm's current and future investment opportunities and if the stock price reaction to dividend increase announcements is driven by investment opportunities and not by litigation risk, one would expect the estimated coefficient of the litigation risk proxy variable to become insignificant. The litigation risk coefficients and p-values in the reestimated models did not change significantly across the different measures of litigation risk, while the estimated *Q* coefficients were insignificant in all regressions. In addition, I also compared and found no significant difference between the pre-litigation *CAR* values for firms that increased dividends during litigation and the rest of the firms in my sample. Based on these two tests, it seems unlikely that my results are driven by unobserved investment opportunities rather than litigation risk.

[4] Estimating the model with the litigation dummy variable defined using a number of quarters other than four does not change my qualitative results.

3.4.3 Corporate governance and CEO ownership

Alternatively, it may be that the higher CAR and lower propensity to increase dividends are driven by differences in firms' corporate governance practices and not litigation risk. Consistent with the free cash flow hypothesis of Jensen (1988), managers in firms with weaker governance may invest firms' free cash flows in negative net present value projects. Increasing dividends reduces the amount of free cash available to managers; hence, the higher CAR. In unreported analyses, I added to models (1) and (2) the governance index of Gomers, Ishii, and Metrick (2003) and the ratio of shares, excluding options, owned by the firm's CEO to total shares outstanding. The estimated coefficients of the two governance proxies were insignificant and the *LITDUM* coefficients remained significant.

3.5.1 Effect of litigation on cash holdings

Arena and Julio (2011) show that firms affected by litigation reduce investment, hoard cash, and experience a reduction in the market value of their cash holdings. In order to understand why sued firms are less likely to increase dividends and why *CAR* is higher around dividend increase announcements made by sued firms, I estimate model (4) using both the levels and the changes in the dependent and independent variables:[5]

[5] Models (3) is similar to the cash holdings model of Arena and Julio (2011). Arena and Julio (2011) use all manufacturing firms in their study, while my sample comprises NYSE/AMEX firms only and excludes companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). In an untabulated analysis, I estimated model (4) using the universe of all US manufacturing firms and obtained the same results as Arena and Julio (2011). Estimating the model in levels using my data sample yields similar results.

$$
\begin{aligned}
Cash_{\mathrm{i,t}} / TA_{i,t-1} &= \gamma_0 + \gamma_1 LITDUM_{\mathrm{i,t}} + \gamma_2 LITDUM_{\mathrm{i,t}} * Leverage_{\mathrm{i,t}} / TA_{i,t-1} \\
&+ \gamma_3 LITDUM_{\mathrm{i,t}} * Acquisitio\ ns_{\mathrm{i,t}} / TA_{i,t-1} + \gamma_4 LITDUM_{\mathrm{i,t}} * Dividends_{\mathrm{i,t}} / TA_{i,t-1} \\
&+ \gamma_5 Leverage_{\mathrm{i,t}} / TA_{i,t-1} + \gamma_6 Acquisitio\ ns_{\mathrm{i,t}} / TA_{i,t-1} + \gamma_7 Dividends_{\mathrm{i,t}} / TA_{i,t-1} \\
&+ \gamma_8 Size_{\mathrm{i,t}} + \gamma_9 CF_{\mathrm{i,t}} / TA_{i,t-1} + \gamma_{10} NWC_{\mathrm{i,t}} / TA_{i,t-1} + \gamma_{11} M / B_{\mathrm{i,t}_i} + \gamma_{12} SIZEN_{\mathrm{i}} \\
&+ \gamma_{13} M / B_{\mathrm{i,t}} + \gamma_{14} Capex_{\mathrm{i,t}} / TA_{i,t-1} + \gamma_{15} R\,\&\,D_{\mathrm{i,t}} / TA_{i,t-1} + \sum_{\mathrm{m}} \gamma_{16\mathrm{m}} IND_{\mathrm{m,i}} + \varepsilon_{i,t}
\end{aligned} \tag{4}
$$

In addition to industry effects, the model also includes firm and time (quarter) fixed effects. The model is estimated using Compustat quarterly data. Since fraudulent accounting and reporting is often the cause of security lawsuits, it is important to note that Compustat contains the restated financial statement numbers which are different from the original, likely misreported, numbers. The sample includes NYSE/AMEX firms only and excludes firms operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). *Cash* is calculated as cash and marketable securities. $LITDUM_{\mathrm{i,t}}$, the litigation dummy variable, equals one if firm i was involved in litigation in quarter t and zero otherwise. The litigation period begins with the quarter when litigation is announced and ends with the quarter when lawsuit settlement or termination is announced. Size is the natural log of total assets. *Leverage* is the sum of long-term debt and short-term debt. *Acquisitions* is calculated as the sum of all cash flow statement items related to acquisition activities. *Dividends* is the cash dividends per share of common stock paid during the given fiscal quarter. *M/B* is the ratio of the market value to the book value of a firm's assets. *CF*, cash flow, is earnings after interest, dividend, and taxes and before depreciation. *NWC*, net working capital, is current assets minus current liabilities minus cash and marketable securities. *Capex*, *Acquisitions*, and *R&D* are respectively capital, acquisition, and research and development expenditures. In the model of changes in Table 6, the estimated coefficients of the interaction terms of *LITDUM* with *Acquisitions* and *Dividends* are negative and significant suggesting that increased dividend or acquisition spending reduces firms' cash holdings. This is

consistent with the result that firms in litigation are less likely to increase dividends. Sued firms hoard cash to prepare for both the direct and indirect costs of litigation. As higher dividend payments reduce the cash holdings of sued firms, it is unlikely that such firms would increase dividends. Hence, the stronger stock price reaction to dividend increase announcements made by firms in litigation. In Table 6, I also document that firms in litigation reduce their acquisition expenditures. The interaction term between *LITDUM* and the change in leverage is significantly positive implying that taking on more debt is one channel through which companies increase cash holdings.

[Table 6 about here]

3.5.2 Effect of litigation on changes in cash holdings and the propensity to raise dividends

To examine the effect of litigation on sued firms' cash holdings, dividend change decisions and payout ratios over time, I re-estimate model (2) and the changes version of model (4) setting *LITDUM* equal to one during the quarter of lawsuit filing (quarter 0) and zero otherwise, setting *LITDUM* equal to one during the quarter +1 and zero otherwise, etc. Using this methodology, I estimate the models for 16 different definitions of *LITDUM* starting with *LITDUM* equal to one during quarter -4 and zero otherwise, and ending with *LITDUM* equal to one during quarter +11 and zero otherwise. The median litigation duration for the lawsuits in my sample is about 10 quarters and the mean litigation duration is about 12 quarters. The estimated *LITDUM* coefficients and their four-quarter moving averages are plotted in Figure 1. The plots suggest that firms become less likely to raise dividends shortly before litigation filing and the likelihood to raise dividends continues to decrease until about quarter +5 after which it starts to

increase. The *LITDUM* coefficients in the model of cash holding changes follow the opposite trend. Litigation does not seem to significantly affect firms' payout ratios.

[Figure 1 about here]

3.5.3 Effect of litigation on other financial ratios

I next use a difference-in-differences style model to assess the impact of litigation on different performance ratios. The model includes M/B, Size, and industry effects as controls. The results are presented in Table 6. EBITDA to total assets, EBITDA to total sales, total sales to total assets, net income to the book value of equity, cash flow to total assets, capital expenditures to total assets, and acquisition expenditures to total assets all decrease significantly during litigation. Debt to total assets increase significantly during litigation while acquisitions to total assets decrease significantly during litigation which, along with the result in Table 6, suggests that taking on more debt and reducing acquisitions are two ways through which firms in litigation increase cash holdings.

[Table 7 about here]

4. Conclusion

This paper examines the dividend policy implications of class action security lawsuits in the United States. Consistent with the cash hoarding results of Arena and Julio (2011), I find that litigation risk reduces the likelihood of dividend increases and, consequently, stock prices react stronger to dividend increase announcements by firms exposed to security lawsuits. My results are robust to endogeneity concerns and using different litigation risk measures and estimation techniques. Consistent with existing literature, I also document significant industry spillover effects of litigation and litigation anticipation by shareholders.

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Table 1. Effect of litigation on stock price reaction to dividend increase announcements

The dependent variable is $CAR_{i,t}$, the two-day cumulative abnormal return (days 0 and +1) around the dividend increase announcement day (day 0) by firm i for quarter t. Daily abnormal return is the difference between the daily stock return and the return on the size-based CRSP decile portfolio to which the stock belongs. $LITDUM_{i,t}$, the litigation dummy variable, equals one if firm i was involved in litigation in quarter t and zero otherwise. The litigation period begins with the quarter when litigation is announced and ends with the quarter when lawsuit settlement or termination is announced. $DDIVY_{i,t} = 4*(DIVAMT_{i,t} - DIVAMT_{i,t-1})/ P_{i,t-1}$. $DIVAMT_{i,t}$ is the dividend amount per share announced in quarter t, $DIVAMT_{i,t-1}$ is the most recently paid dividend preceding the announcement and $P_{i,t-1}$ is the price at the end of the quarter preceding the dividend announcement quarter. $SIZEN_{i,t-1}$ equals firm market value (in logarithm) at the end of the month preceding the dividend announcement quarter, deflated by the S&P 500 index (base: Jan 1996). $LTYLD_{i,t-1}$ equals the sum of DIVAMT over the 12-month period preceding the announcement quarter, divided by the average end-of-month price for the three-month period preceding the 12-month period. This ratio is then deflated by (1 + return on S&P 500 index) for the 12-month period preceding the announcement quarter. The sample includes dividend increase announcements on NYSE/AMEX stocks only, excluding stocks of companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). Included are announcements with increase in dividend per share of at least 0.5%. Column [1] is a pooled regression with quarterly and industry (2-digits SIC code) dummy variables (not shown). Column [2] is a similar regression with the inverse Mills ratios from model 2 (see Table 2) that accounts for the propensity to increase dividend. Standard errors in columns [1] and [2] are heteroskedasticity-robust and clustered by quarter. Columns [3] and [4] show results for similar Fama-Macbeth regressions, except that there are 13 industry dummies for the major industry groups defined in Lo and Wang (2001). Estimation period: 1996-2010.

	Pooled Regression		Fama-Macbeth Regression	
	[1]	[2]	[3]	[4]
$LITDUM_{i,t}$	**0.0075**	**0.0062**	**0.0046**	**0.0093**
	(3.50)	**(2.94)**	**(2.27)**	**(3.43)**
$DDIVY_{i,t}$	1.0660	0.8919	1.0636	0.9012
	(4.87)	(4.24)	(4.12)	(4.12)
$SIZEN_{i,t-1}$	-0.0013	-0.0007	-0.0005	0.0008
	(-2.48)	(-1.37)	(-1.13)	(1.15)
$LTYLD_{i,t-1}$	0.0534	0.0472	0.0552	0.0416
	(1.48)	(1.27)	(2.11)	(0.81)
Inverse Mills Ratio		0.0014		0.0088
		(3.22)		(3.31)
Industry Controls	Yes	Yes	Yes	Yes
Time Controls	Yes	Yes	Yes	Yes
R^2	4.60%	5.30%	7.29%	9.15%
No. of obs.	4,085	4,085	4,085	4,085

Table 2a. Determinants of the likelihood of litigation

The dependent variable is $L_{i,t}$ which equals one if firm i is in litigation in quarter t and zero otherwise. The estimation employs a probit model. The determinants of litigation likelihood are as in Gande and Lewis (2009). Stock $\text{Turnover}_{i,t-1}$ is calculated over the four quarters preceding lawsuit filing and uses the procedure described in Field, Lowry, and Shu (2005). $\text{Volatility}_{i,t-1}$ is the standard deviation of daily stock returns over the four quarters preceding lawsuit filing. Compounded $\text{Return}_{i,t-1}$ is the compounded daily stock return over the four quarters preceding lawsuit filing. $\text{Size}_{i,t-1}$ is the natural logarithm of market capitalization in the quarter preceding the lawsuit filing quarter. Retail $\text{Dummy}_{i,t}$ equals one if firm operates in the retail industry and zero otherwise. Technology $\text{Dummy}_{i,t}$ equals one of firm operates in the technology industry and zero otherwise. Past Litigation Dummy $_{i,t}$ equals one if firm was previously involved in a security lawsuit and zero otherwise. Litigation $\text{Intensity}_{i,t-1}$ equals the number of security lawsuits filed within the same four-digit SIC code over the past four quarters. $\text{ROA}_{i,t-1}$ is return on assets. Negative ROA $\text{Dummy}_{i,t}$ equals one of $\text{ROA}_{i,t-1}$ is negative and zero otherwise. Unexpected $\text{Earnings}_{i,t}$ is the difference between current quarter earnings and earnings from same quarter in the previous year. Bonus $\text{Compensation}_{i,t}$ is the percentage of CEO bonus compensation out of total CEO compensation. Discretionary $\text{Accruals}_{i,t-1}$ for the year preceding the year of lawsuit filing are calculated using the model in Jones (1991). Two additional lags of discretionary accruals are included. Probit model with heteroskedasticity-robust and clustered (by industry) standard errors. The sample includes all NYSE/AMEX firms in the same 4-digit SIC code industries as the firms subject to litigation or the firms that increased dividends between 1996-2010. The sample period is 1996-2010. Data are quarterly. The sample includes 18,388 firm quarters.

Table 2a. Determinants of the likelihood of litigation

	Probit Regression
Stock Turnover$_{i,t-1}$	0.2499
	(1.10)
Return Volatility $_{i,t-1}$	11.7685
	(5.08)
Compounded Return $_{i,t-1}$	-0.4305
	(-4.39)
Size$_{i,t-1}$	0.1364
	(5.20)
Retail Dummy$_{i,t-1}$	0.2388
	(1.29)
Technology Dummy$_{i,t-1}$	0.3072
	(1.15)
Past Litigation Dummy $_{i,t-1}$	1.0935
	(3.99)
Litigation Intensity $_{i,t-1}$	0.7309
	(2.73)
Litigation Intensity Squared $_{i,t-1}$	-0.2648
	(-2.54)
ROA $_{i,t-1}$	-0.7979
	(-1.68)
Unexpected Earnings$_{i,t}$	-0.0067
	(-0.91)
Bonus Compensation $_{i,t}$	-0.2085
	(-1.14)
Bonus Compensation $_{i,t-1}$ * Negative ROA Dummy $_{i,t}$	0.3903
	(1.38)
Discretionary Accruals $_{i,t-1}$	0.3530
	(0.83)
Discretionary Accruals $_{i,t-2}$	0.3057
	(0.90)
Discretionary Accruals $_{i,t-3}$	0.4960
	(1.66)
Intercept	-5.6607
	(-9.44)
Pseudo R^2	16.68%
No. of obs.	18,388

Table 2b. Likelihood of litigation and the stock price reaction to dividend increase announcements

This table is similar to Table 1, with the $LITDUM_{i,t}$ there being replaced here by I-LITDUM $_{i,t}$, the instrumented litigation dummy obtained from Table 2a, accounting for endogeneity. $DDIVY_{i,t}$, $SIZEN_{i,t-1}$, and $LTYLD_{i,t-1}$ are defined in Table 1. The sample includes dividend increase announcements on NYSE/AMEX stocks only, excluding stocks of companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). Included are announcements with increase in dividend per share of at least 0.5%. Column [1] is a pooled regression with quarterly and industry (2-digits SIC code) dummy variables (not shown). Standard errors are heteroskedasticity-robust and clustered by quarter. Column [2] shows results for a similar Fama-Macbeth regression, except that there are 13 industry dummies for the major industry groups defined in Lo and Wang (2001). Estimation period: 1996-2010.

	Pooled Regression [1]	Fama-Macbeth Regression [2]
Intercept	-0.0047	0.0027
	(-0.23)	(0.29)
I-LITDUM$_{i,t}$	**0.0487**	**0.0834**
	(2.67)	**(2.33)**
$DDIVY_{i,t}$	0.9278	3.0002
	(2.21)	(6.30)
$SIZEN_{i,t-1}$	-0.0001	0.0000
	(-0.19)	(0.07)
$LTYLD_{i,t-1}$	-0.0206	-0.1662
	(-0.29)	(-1.71)
Industry Controls	Yes	Yes
Time Controls	Yes	Yes
R^2	5.05%	9.74%
No. of obs.	2,750	2,750

Table 3a. Effect of litigation on the propensity to raise dividend

Results of an ordered probit model. The dependent variable L_i equals -1, 0, and 1 for dividend decrease, no-change, and increase announcements respectively. $LITDUM_{i,t}$ is defined as in Table 1.$SP500_{i,t}$ is an indicator variable equal to one if the stock is a constituent of the S&P 500 index and zero otherwise. $DIFYLD_{i,t-1}$ is calculated as the difference between $STYLD_{i,t-1}$ and $LTYLD_{i,t-1}$, where $STYLD_{i,t-1}$ is the most recently paid quarterly dividend divided by the monthly stock price for the month preceding the announcement month and multiplied by four. $PRC_{i,t-1}$ is the quarterly price for the quarter preceding the dividend announcement, and $LTVOL_{i,t-1}$ is long-term volatility computed as the standard deviation of the monthly stock returns over the 24 months preceding the dividend announcement month. The sample includes dividend announcements on NYSE/AMEX stocks only, excluding stocks of companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). Ordered probit regression with industry (2-digit SIC code) and time (quarter) effects. Standard errors are heteroskedasticity-robust and clustered by quarter. Estimation period: 1996-2010.

	Ordered Probit Regression
$LITDUM_{i,t}$	**-0.1844**
	(-4.91)
$SP500_{i,t-1}$	-0.0051
	(-0.18)
$LTYLD_{i,t-1}$	-4.3964
	(-2.30)
$DIFYLD_{i,t-1}$	-5.2235
	(-1.70)
$SIZEN_{i,t-1}$	0.0226
	(1.47)
$PRC_{i,t-1}$	0.2056
	(7.66)
$LTVOL_{i,t-1}$	-2.2550
	(-6.54)
Industry Controls	Yes
Time Controls	Yes
Pseudo R^2	4.58%
No. of obs.	32,063

Table 3b. Effect of litigation on dividend payout ratios

The dependent variable DIVPS is quarterly dividends per share of common stock from Compustat. EPS is earnings per share of common stock. The rest of the variables are defined as in Table 3a. The sample includes NYSE/AMEX firms only, excluding companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). Pooled regression with industry effects, and firm and time fixed effects. Standard errors are clustered at the firm level. Estimation period: 1996-2010.

	$DIVPS_{i,t}$	$DIVPS_{i,t}$
$LITDUM_{i,t-1}$	**-0.0030**	**-0.0025**
	(-0.24)	**(-0.20)**
$LITDUM_{i,t-1}*EPS_{i,t}$		**-0.0026**
		(-0.68)
$EPS_{i,t}$	0.0079	0.0081
	(2.37)	(2.26)
$EPS_{i,t-1}$	0.0002	0.0003
	(0.15)	(0.17)
$DIVPS_{i,t-1}$	-0.0062	-0.0062
	(-0.33)	(-0.33)
$SP500_{i,t-1}$	0.0809	0.0809
	(2.20)	(2.20)
$LTYLD_{i,t-1}$	0.3220	0.3230
	(1.33)	(1.33)
$DIFYLD_{i,t-1}$	-0.1637	-0.1632
	(-3.20)	(-3.16)
$SIZEN_{i,t-1}$	-0.0012	-0.0012
	(-0.33)	(-0.33)
$PRC_{i,t-1}$	0.0175	0.0176
	(1.59)	(1.60)
$LTVOL_{i,t-1}$	-0.4131	-0.4141
	(-6.05)	(-6.04)
Firm Fixed Effects	Yes	Yes
Time Fixed Effects (Quarter)	Yes	Yes
Ind Effects (2-digit SIC)	Yes	Yes
R^2	4.28%	4.28%
No. of obs.	34,012	34,012

Table 4. Industry spillover effects of litigation: peer firms' price reaction to their dividend increase announcements

The dependent variable is $CAR_{i,t}$, the two-day cumulative abnormal return around the dividend increase announcement day as defined in Table 1. $E\text{-}LITDUM_{i,t}$, the litigation dummy variable, equals one if a lawsuit was filed against a firm in the same 4-digit SIC code in the past four quarters and zero otherwise. $DDIVY_{i,t}$, $SIZEN_{i,t-1}$, and $LTYLD_{i,t-1}$ are defined in Table 1. The sample includes dividend increase announcements on NYSE/AMEX stocks only, excluding stocks of companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). The sample excludes stocks of companies that were actually involved in litigation. Included are announcements with increase in dividend per share of at least 0.5%. Column [1] is a pooled regression with quarterly and industry (2-digits SIC code) dummy variables (not shown). Column [2] is a similar regression with the inverse Mills ratios from the ordered probit model in Table 5 that accounts for the propensity to increase dividend. Standard errors in columns [1] and [2] are heteroskedasticity-robust and clustered by quarter. Columns [3] and [4] show results for similar Fama-Macbeth regressions, except that there are 13 industry dummies for the major industry groups defined in Lo and Wang (2001). Estimation period: 1996-2010.

	Pooled Regression		Fama-Macbeth Regression	
	[1]	[2]	[3]	[4]
$E\text{-}LITDUM_{i,t}$	**.0044**	**.0042**	**0.0041**	**0.0037**
	(2.03)	**(1.89)**	**(2.22)**	**(1.74)**
$DDIVY_{i,t}$	1.1324	.8590	1.2403	0.8722
	(4.62)	(3.52)	(4.40)	(3.59)
$SIZEN_{i,t-1}$	-.0018	-.0010	-0.0009	-0.0004
	(-2.87)	(-1.53)	(-2.03)	(-1.01)
$LTYLD_{i,t-1}$	.0620	.0546	0.0525	0.0518
	(1.56)	(1.35)	(1.68)	(1.63)
Inverse Mills Ratio		.0023		0.0023
		(4.09)		(4.32)
Industry Controls	Yes	Yes	Yes	Yes
Time Controls	Yes	Yes	Yes	Yes
R^2	5.42%	6.68%	9.56%	11.88%
No. of obs.	3,172	3,172	3,172	3,172

Table 5. Industry spillover effects of litigation: peer firms' propensity to raise dividends

Results from an ordered probit model. The dependent variable L_i equals -1, 0, and 1 for dividend decrease, no-change, and increase announcements respectively. E-LITDUM$_{i,t}$, the litigation dummy variable, equals one if a lawsuit was filed against a firm in the same 4-digit SIC code in the past four quarters and zero otherwise. SP500$_{i,t}$, LTYLD$_{i,t}$, DIFYLD$_{i,t-1}$, SIZEN$_{i,t-1}$, PRC$_{i,t-}$, and LTVOL$_{i,t-1}$ are defined in Table 2. The sample includes dividend announcements on NYSE/AMEX stocks only, excluding stocks of companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). The sample excludes stocks of companies that were actually involved in litigation. Ordered probit regression with industry (2-digit SIC code) and time (quarter) effects. Standard errors are heteroskedasticity-robust and clustered by quarter. Estimation period: 1996-2010.

	Ordered Probit Regression
E-LITDUM$_{i,t}$	**-.0771**
	(-1.95)
SP500$_{i,t-1}$	-.0240
	(-0.69)
LTYLD$_{i,t-1}$	-3.5837
	(-1.98)
DIFYLD$_{i,t-1}$	-4.4827
	(-1.66)
SIZEN$_{i,t-1}$	.0197
	(1.07)
PRC$_{i,t-1}$	.2312
	(7.58)
LTVOL$_{i,t-1}$	-2.0461
	(-5.13)
Industry Controls	Yes
Time Controls	Yes
Pseudo R^2	4.68%
No. of obs.	25,238

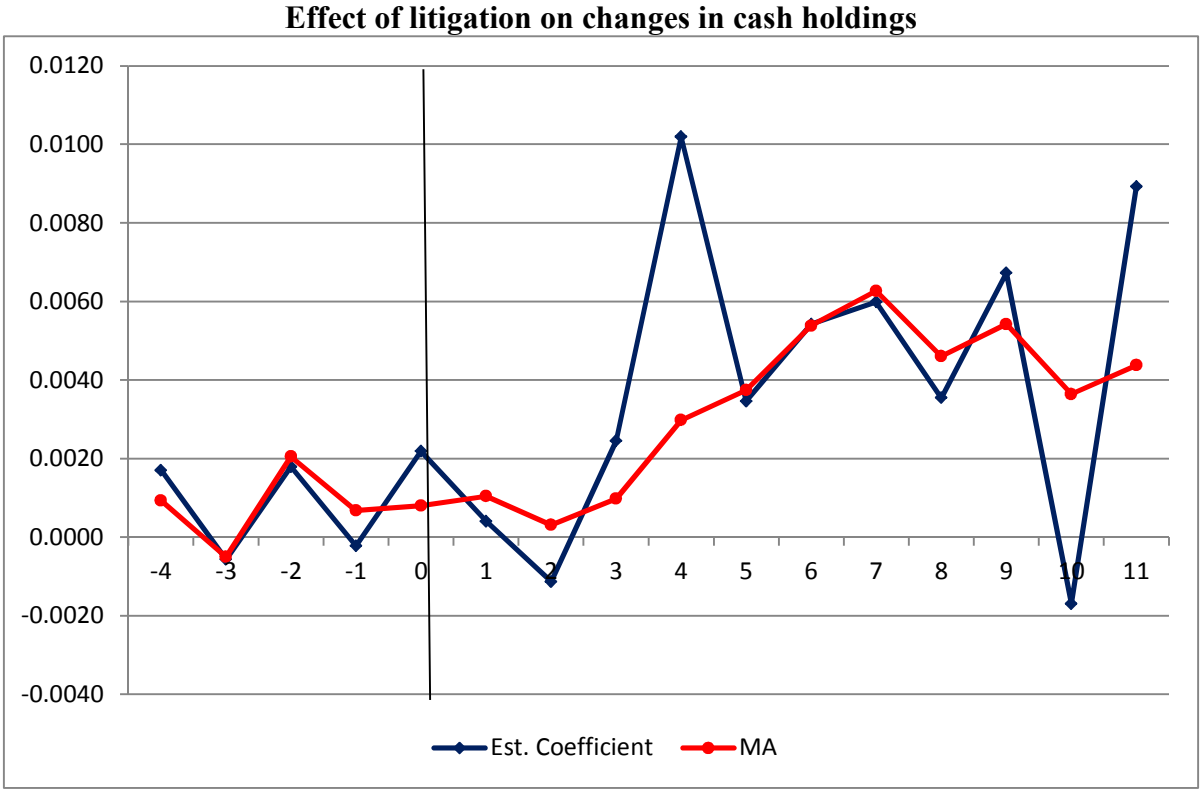
Table 6. Effect of litigation on changes in cash holdings

The dependent variable is the ratio of the change in cash and short-term investments in quarter t to total assets in quarter t-1. $LITDUM_{i,t}$, the litigation dummy variable, equals one if firm i was involved in litigation in quarter t and zero otherwise. The litigation period begins with the quarter when litigation is announced and ends with the quarter when lawsuit settlement or termination is announced. $Size_{i,t}$ is the natural log of total assets. $Leverage_{i,t}$ is the ratio of long-term debt plus short-term debt to total assets. $M/B_{i,t}$ is the ratio of the market value to the book value of a firm's assets. $CF_{i,t}$ is earnings after interest, dividend, and taxes and before depreciation. Net Working $Capital_{i,t}$ is current assets minus current liabilities minus cash and marketable securities. $Capex_{i,t}$, $Acquisitions_{i,t}$, and $R\&D_{i,t}$ are respectively capital, acquisition, and R&D expenditures. Compustat quarterly data. The sample includes NYSE/AMEX stocks only, excluding stocks of companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). All variables are winsorized at the top and bottom one percent. Pooled regressions with time (year) and industry (2-digit SIC code) effects. Standard errors are heteroskedasticity-robust and clustered by industry (2-digit SIC code). Estimation period: 1996-2010.

	$dCash_{i,t}/TA_{i,t-1}$
$LITDUM_{i,t}$	**0.0036**
	(4.60)
$LITDUM_{i,t}$*$dLeverage_{i,t}/TA_{i,t-1}$	**0.1310**
	(3.39)
$LITDUM_{i,t}$*$dAcquisitions_{i,t}/TA_{i,t-1}$	**-0.2080**
	(-3.24)
$LITDUM_{i,t}$*dDividends Paid$_{i,t}/TA_{i,t-1}$	**-0.5660**
	(-2.95)
$dLeverage_{i,t}/TA_{i,t-1}$	-0.1658
	(-3.90)
$dAcquisitions_{i,t}/TA_{i,t-1}$	-0.2839
	(-17.26)
dDividends $Paid_{i,t}/TA_{i,t-1}$	-0.1623
	(-1.82)
$dSize_{i,t}$	0.3524
	(6.76)
$dCF_{i,t}/TA_{i,t-1}$	-0.0387
	(-1.48)
dNet Working $Capital_{i,t}/TA_{i,t-1}$	-0.3294
	(-11.99)
$dM/B_{i,t}$	0.0035
	(2.09)
$dCapex_{i,t}/TA_{i,t-1}$	-0.3876
	(-9.26)
$dR\&D_{i,t}/TA_{i,t-1}$	-0.1517
	(-2.03)
Time Effects (Quarter)	Yes
Industry Effects (2-digit SIC)	Yes
R^2	38.44%
N of obs	22,427

Figure 1. Effect of litigation on changes in cash holdings, the propensity to raise dividends, and dividend payout ratios over time

$LITDUM_{i,t-4} - LITDUM_{i,t+11}$ coefficients from models (2), model (3) and model (4) in changes estimated replacing LITDUM with $LITDUM_{i,t-4} - LITDUM_{i,t+11}$. $LITDUM_{i,t+j}$ equal to one during quarter t+j (j=0 for lawsuit filing quarter) and zero otherwise, where j ranges from -4 to +11. Using this methodology, the models are estimated with 16 different LITDUM variables. For quarters 0 to +11, $LITDUM_{i,t+j}$ equals one (across the 12 $LITDUM_{i,t+j}$ variables) for actual litigation quarters only. MA is the four-quarter moving average.



Effect of litigation on the propensity to raise dividends

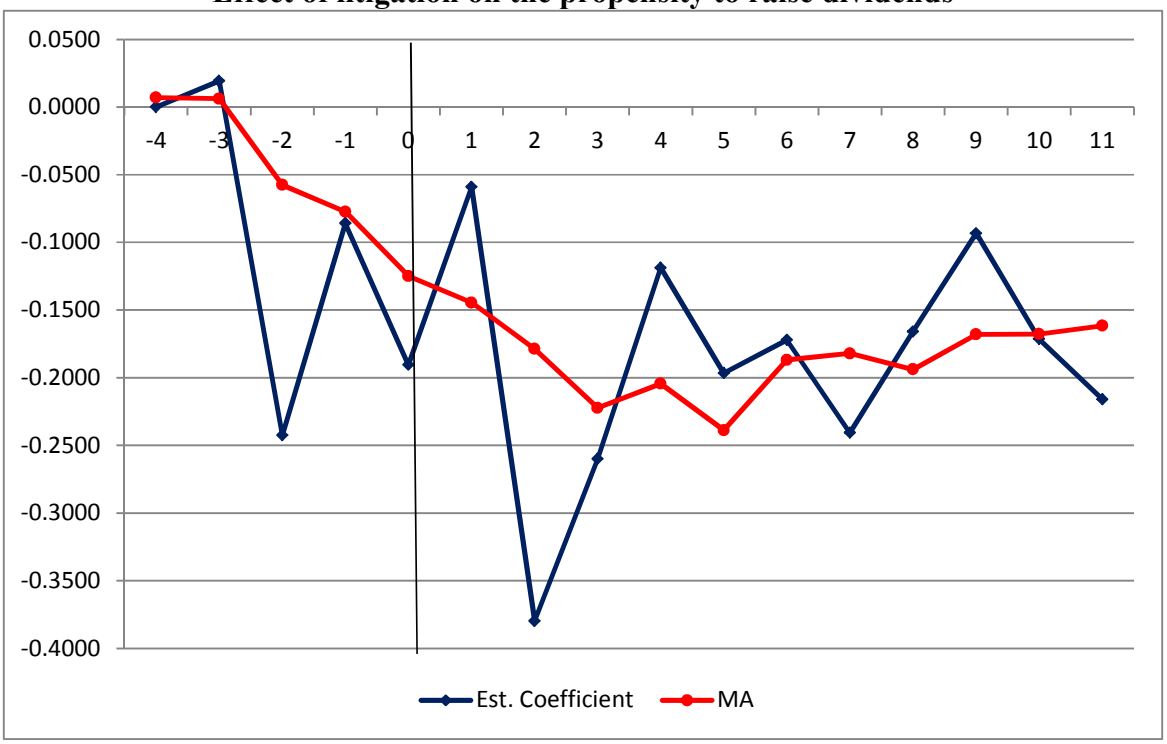


Figure 1c. Effect of litigation on dividend payout ratios

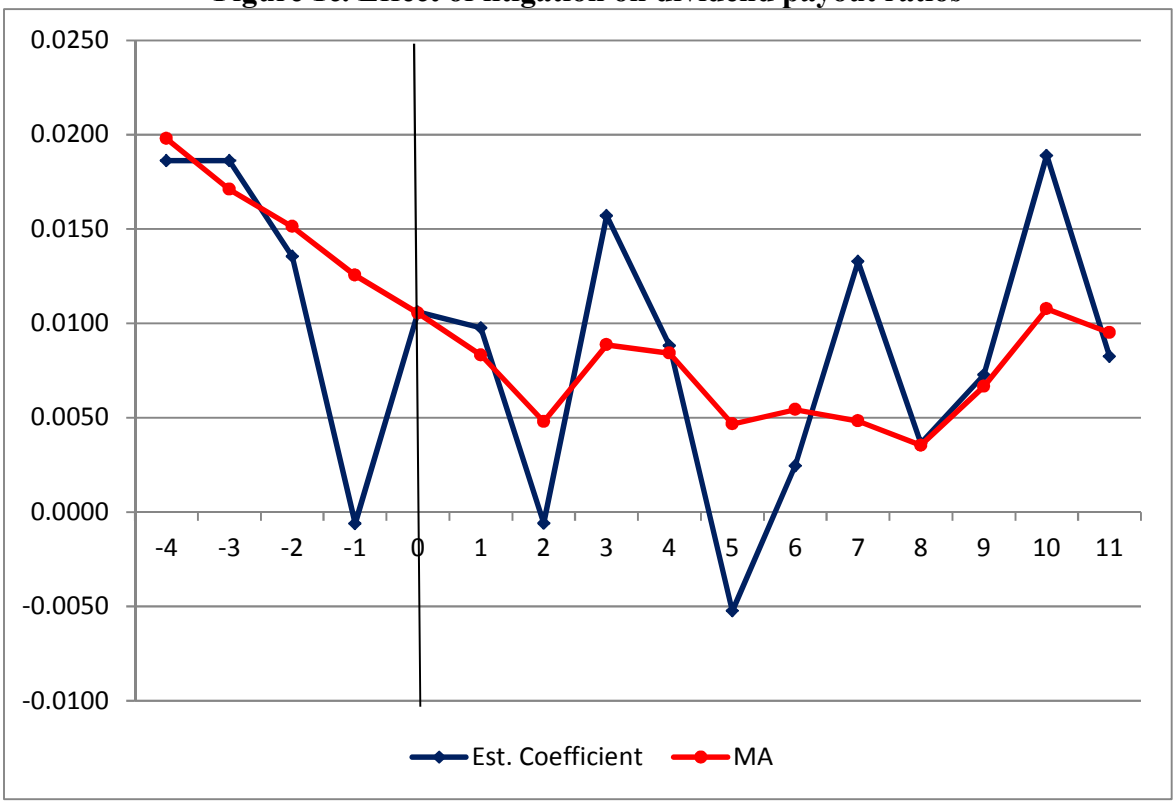


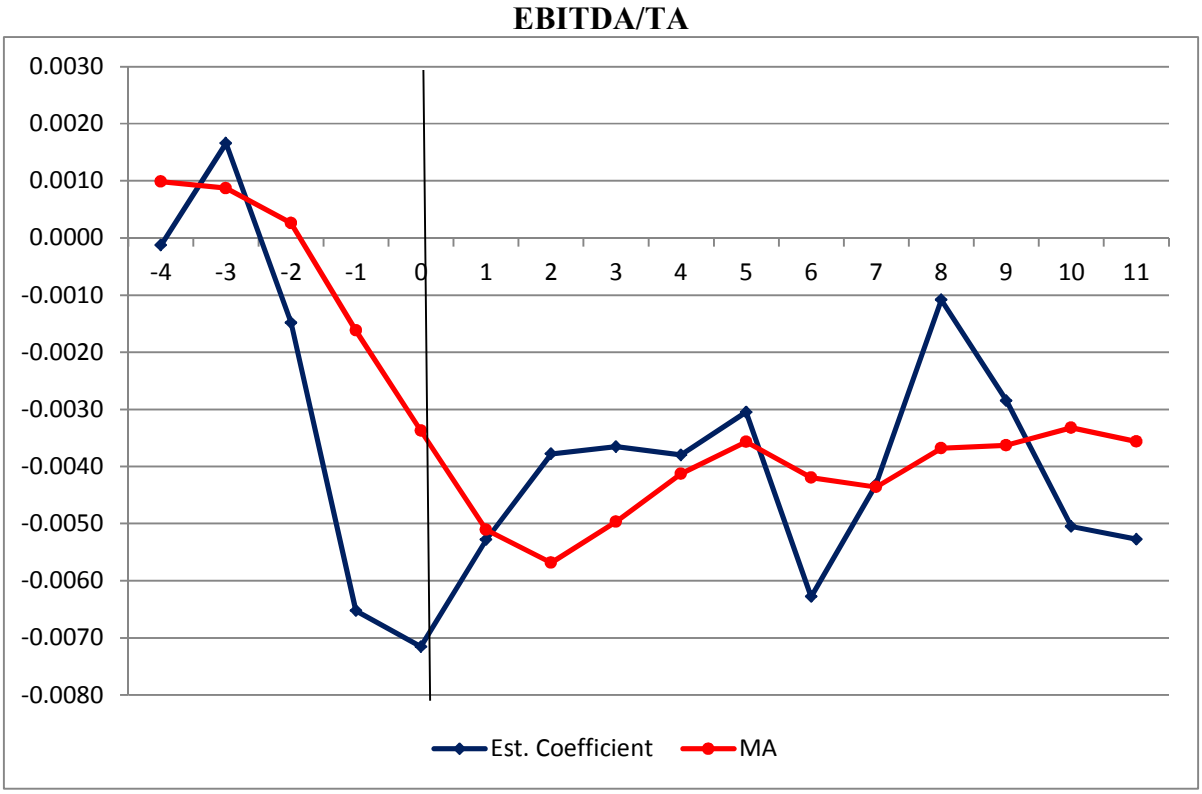
Table 7. Effect of litigation on performance ratios

EBITDA is operation income before depreciation. TA is total assets. SALE is sales/turnover (net). NI is net income (loss). BVE is the book value of equity. CASH is cash and marketable securities. CF, cash flow, is earnings after interest, dividend, and taxes and before depreciation. NWC, net working capital, is current inventory plus receivables minus payables. CAPEX is capital expenditures and ACQ is acquisitions computed as the sum of all cash flow statement items related to acquisition activities. Debt is the sum of long-term and short-term debt. $LITDUM_{i,t}$ equals one during the litigation period and zero otherwise. $M/B_{i,t}$ is the ratio of the market value to the book value of a firm's assets. $Size_{i,t}$ is the natural log of total assets. All variables are winsorized at the top and bottom 0.5%. The sample includes NYSE/AMEX stocks only, excluding stocks of companies operating in the financial services sector (SIC 6000-6999) or in a regulated industry (SIC 4900-4999). Pooled regressions with industry effects and firm and quarter fixed effects. Standard errors are heteroskedasticity-robust and clustered by firm. Estimation period: 1996-2010.

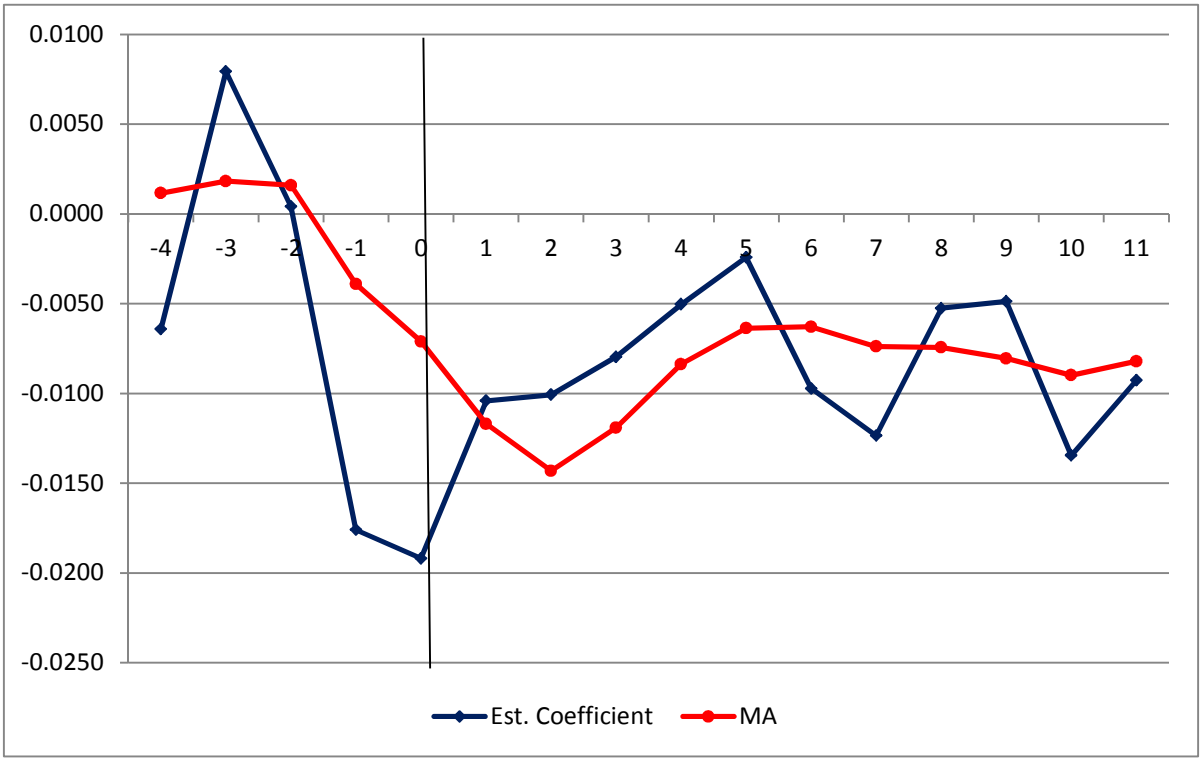
	$EBITDA_{i,t}/TA_{i,t}$	$EBITDA_{i,t}/SALE_{i,t}$	$SALE_{i,t}/TA_{i,t}$	$NI_{i,t}/BVE_{i,t}$	$CASH_{i,t}/TA_{i,t}$	$CF_{i,t}/TA_{i,t}$	$(NWC_{i,t})/TA_{i,t}$	$(Receivables_{i,t} - Payables_{i,t})/TA_{i,t}$	$CAPEX_{i,t}/TA_{i,t}$	$ACQ_{i,t}/TA_{i,t}$	$Debt_{i,t}/TA_{i,t}$
$LITDUM_{i,t}$	**-0.0053**	**-0.0125**	**-0.0097**	**-0.0263**	**0.0116**	**-0.0060**	**-0.0055**	**-0.0053**	**-0.0008**	**-0.0042**	**0.0155**
	(-4.84)	**(-3.42)**	**(-2.24)**	**(-4.89)**	**(2.84)**	**(-5.03)**	**(-1.54)**	**(-1.68)**	**(-2.06)**	**(-6.82)**	**(2.41)**
$M/B_{i,t}$	0.0067	0.0208	0.0145	0.0115	0.0099	0.0040	0.0026	0.0016	0.0020	0.0004	-0.0121
	(10.78)	(15.37)	(10.88)	(6.81)	(6.14)	(6.87)	(2.64)	(2.08)	(11.22)	(2.31)	(-6.30)
$Size_{i,t}$	0.0022	0.0301	-0.0521	0.0085	-0.0161	0.0044	-0.0142	-0.0030	-0.0002	0.0047	0.0204
	(2.74)	(10.73)	(-14.13)	(3.14)	(-5.49)	(5.03)	(-4.92)	(-1.57)	(-0.47)	(12.48)	(3.60)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind Effects (2-digit SIC)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	13.32%	7.37%	1.63%	0.29%	13.32%	1.71%	2.26%	4.93%	2.18%	0.34%	4.02%
No. of obs.	85,864	78,641	85,955	85,961	85,864	76,839	81,446	83,262	81,643	78,673	82,700

Figure 2. Effect of litigation on performance ratios over time

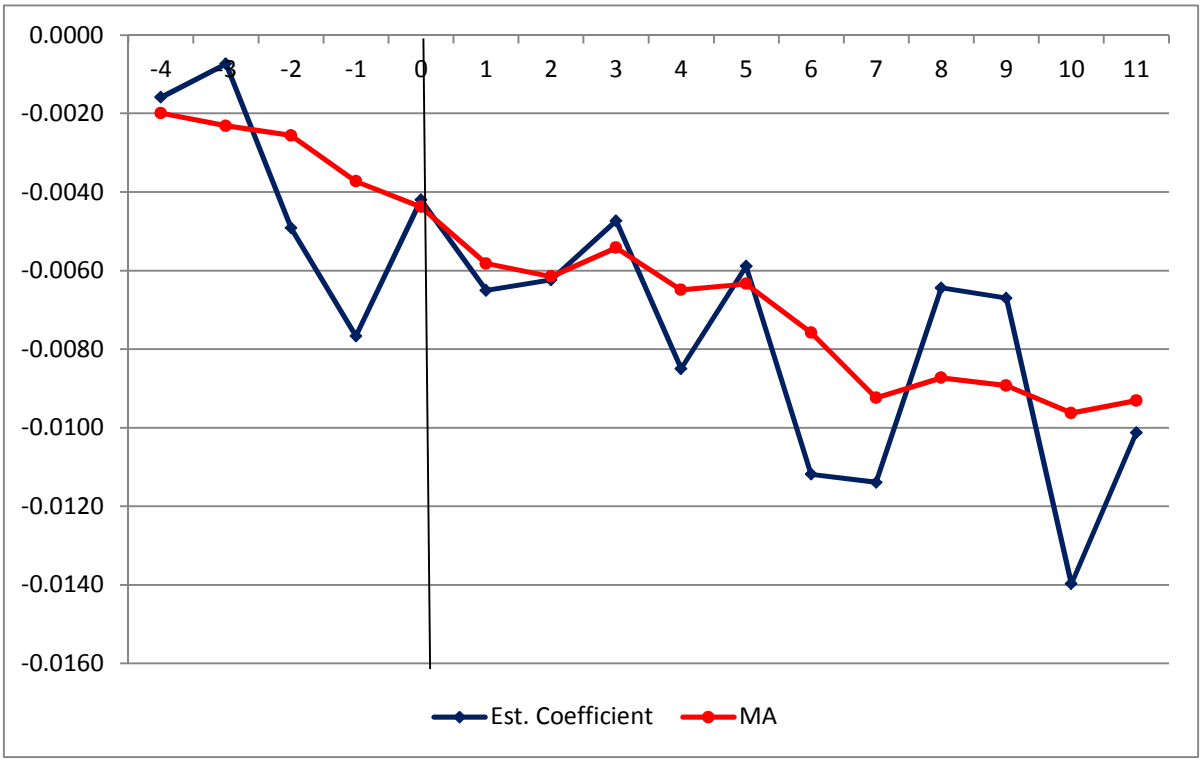
$LITDUM_{i,t-4}$ – $LITDUM_{i,t+11}$ coefficients from models in Table 7 estimated replacing LITDUM with $LITDUM_{i,t-4}$ – $LITDUM_{i,t+11}$. $LITDUM_{i,t+j}$ is equal to one during quarter t+j (j=0 for lawsuit filing quarter) and zero otherwise, where j ranges from -4 to +11. Using this methodology, the models are estimated with 16 different LITDUM variables. For quarters 0 to +11, $LITDUM_{i,t+j}$ equals one (across the 12 $LITDUM_{i,t+j}$ variables) for actual litigation quarters only. MA is the four-quarter moving average.



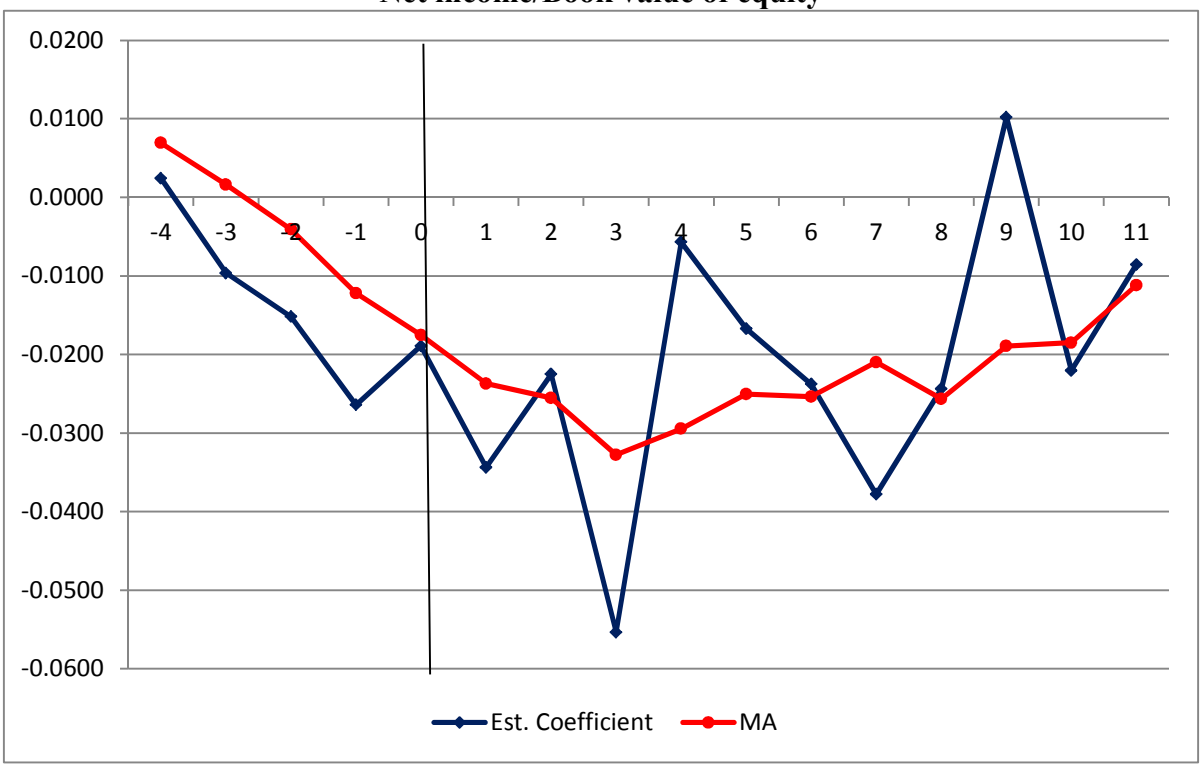
EBITDA/SALE



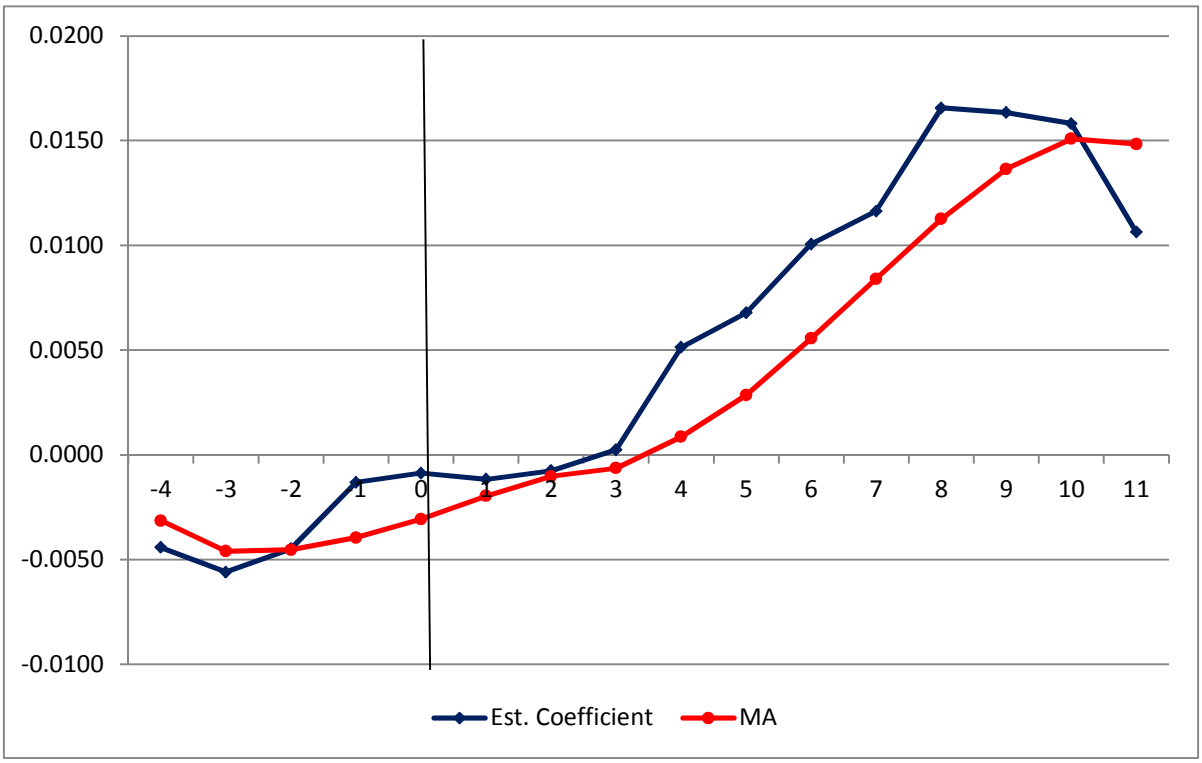
SALE/TA



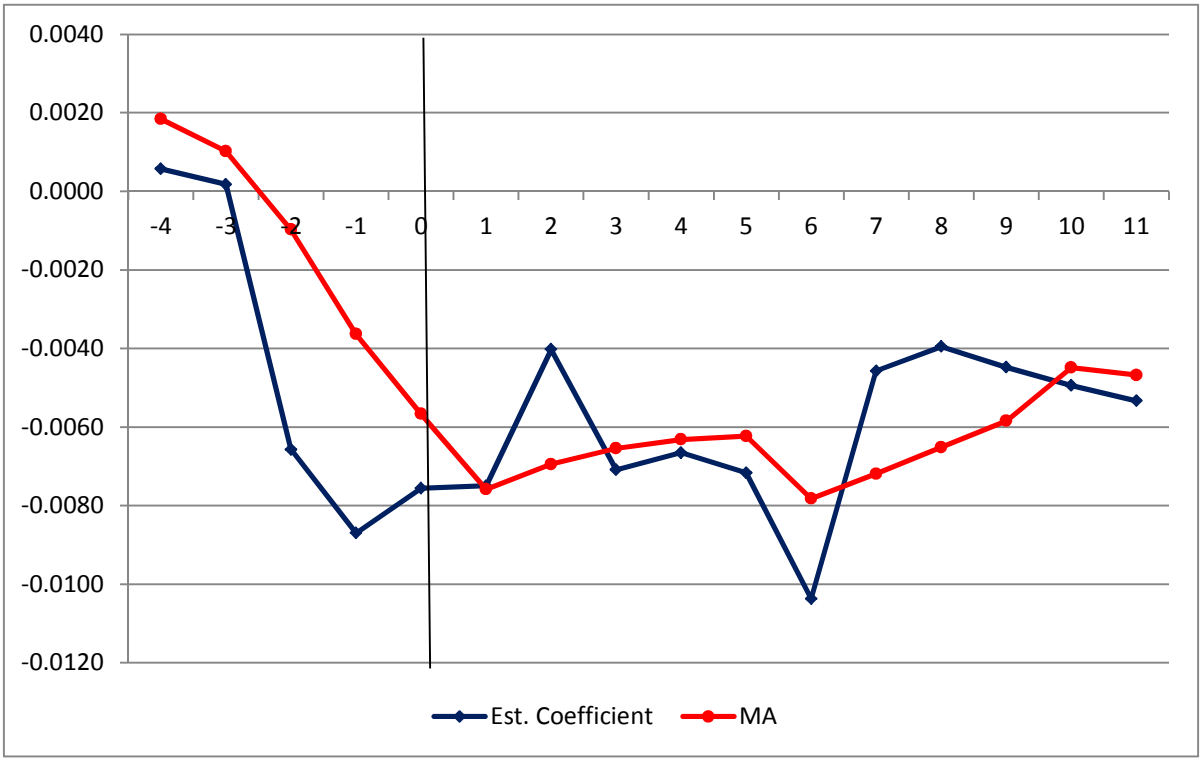
Net income/Book value of equity



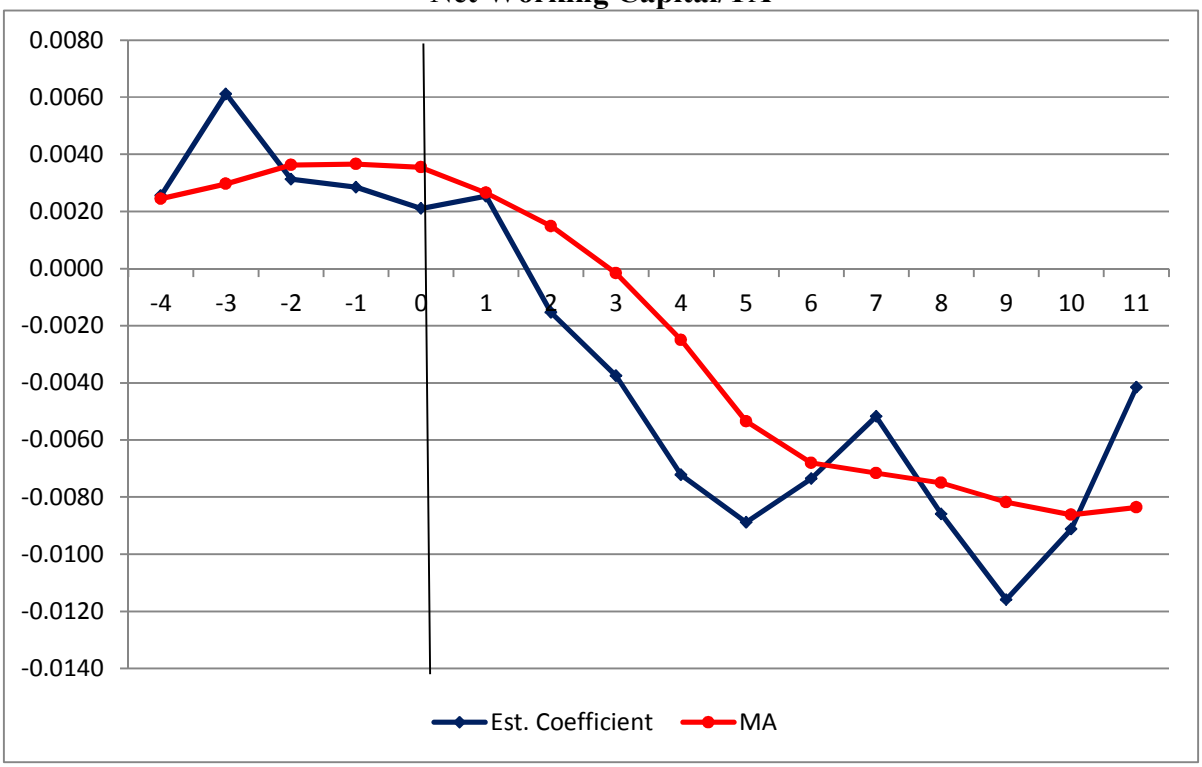
Cash/TA



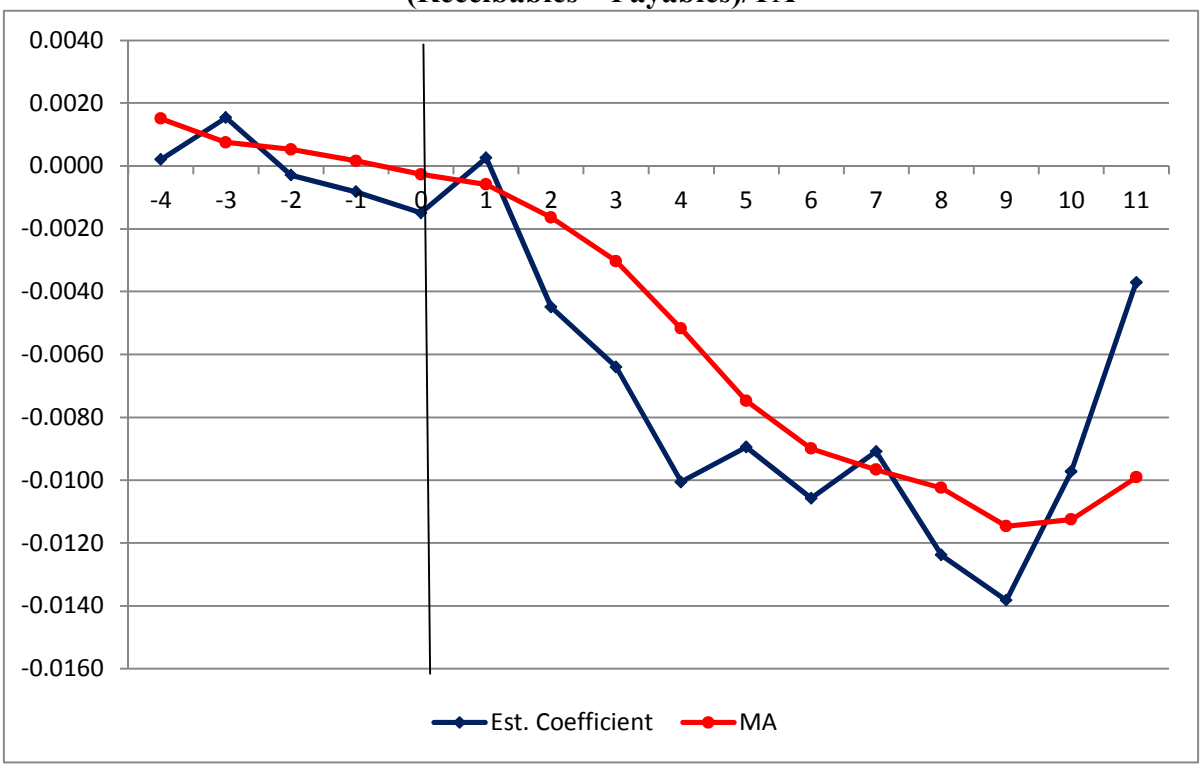
Cash Flow/TA



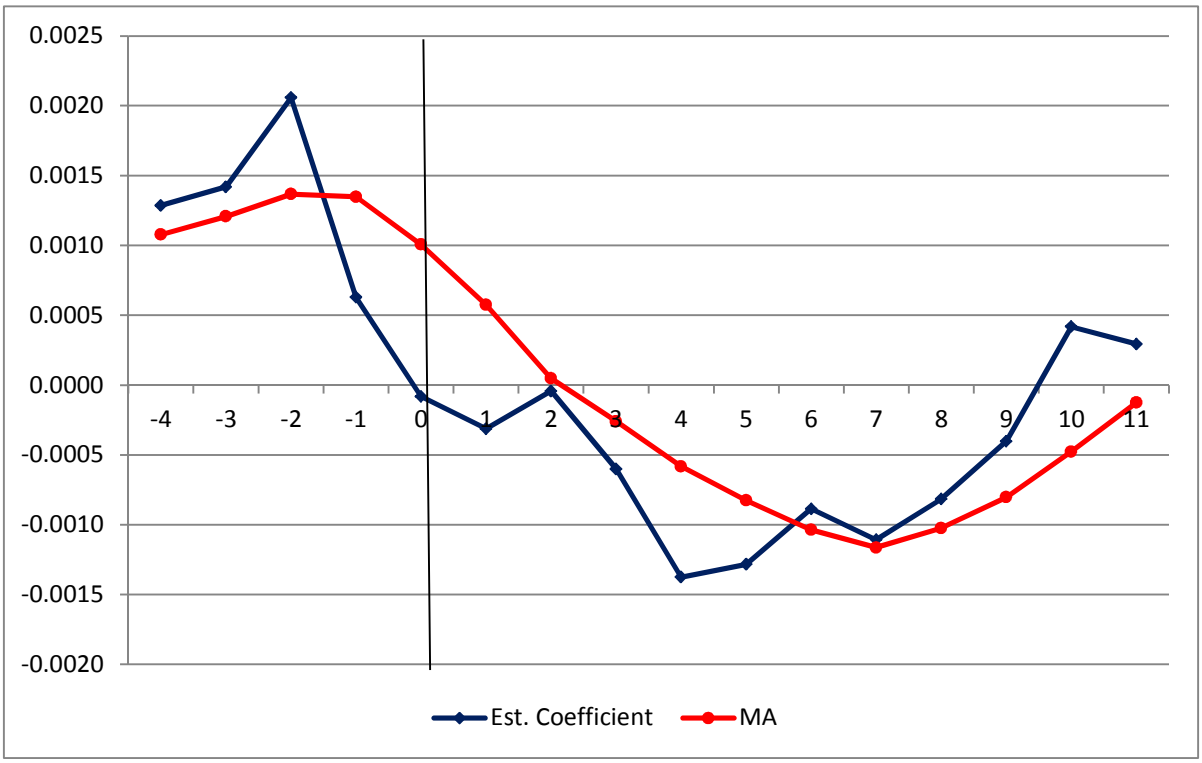
Net Working Capital/TA



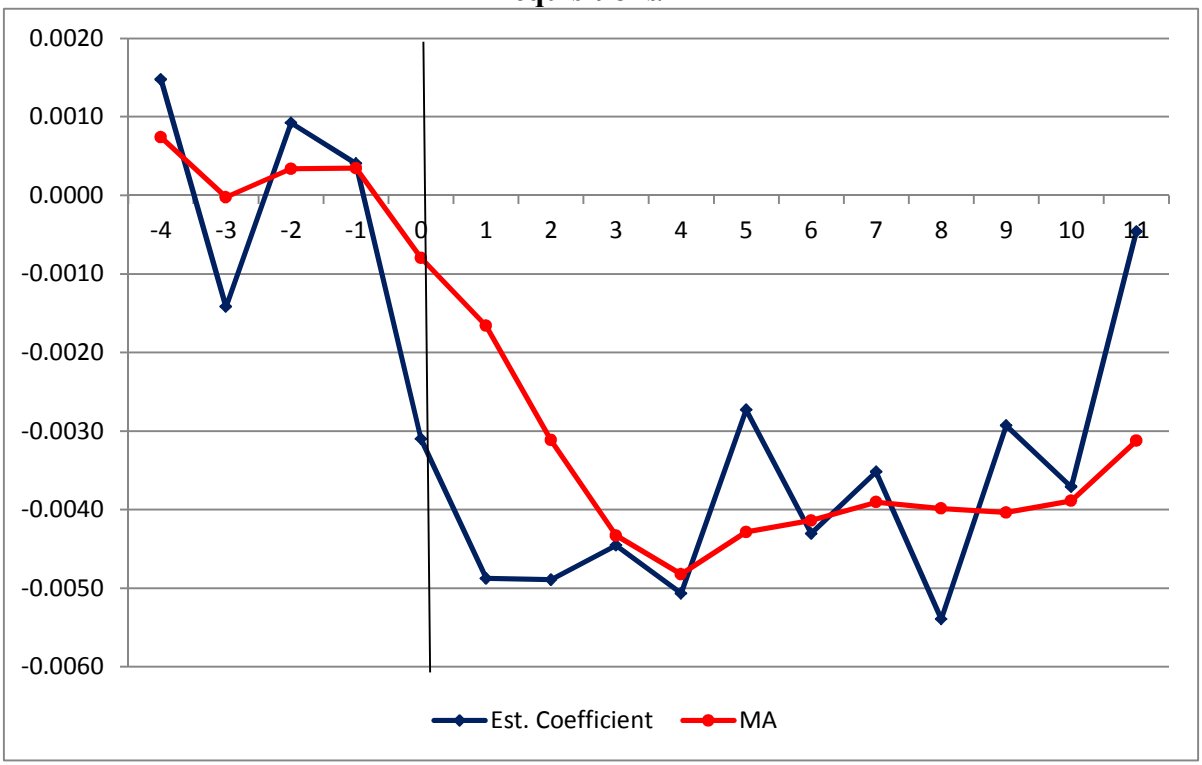
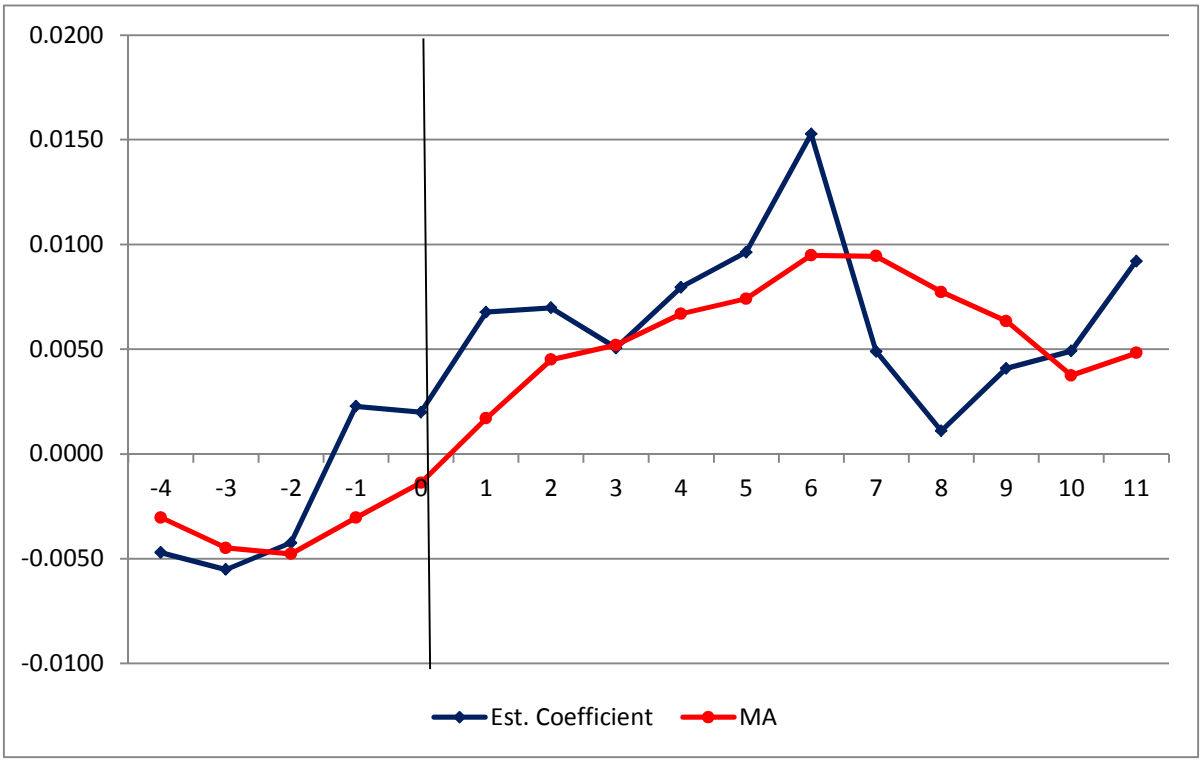
(Receibables – Payables)/TA



CAPEX/TA



Acquisitions/TA



Debt/TA