Identifying Ineffective Monitors From Securities Class Action Lawsuits *

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Abstract

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Keywords*:* Institutional Investors, Shareholder linkages, Corporate Governance, Securities Litigation

JEL Classification: D21, G32, G34, K22

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Abstract

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The free-rider problem occurs when atomistic investors have little incentive to monitor management because their ownership stakes are too small (Grossman and Hart, 1980). Shleifer and Vishny (1986) propose that large shareholders may alleviate the free rider problem when their ownership is large enough to reap the benefits of implementing costly monitoring. In practice, however, monitoring technology is imperfect and large shareholders vary in their ability to assess management performance. If large shareholders are ineffective monitors, managers may engage in value destroying activities, damaging shareholder wealth.

Fortunately, the United States legal system provides an important mechanism to protect minority shareholders: securities class action lawsuits. Securities class action lawsuits occur when investors believe management has engaged in wrong-doing. These lawsuits often reference managerial misconduct which implies the failure of governance and monitoring mechanisms (Cheng, Huang, Li, and Lobo, 2010) and are typically filed by minority shareholders who in normal circumstances have little influence on management (Bebchuk, 2007).

We develop a new methodology to uncover monitoring issues in the context of litigation risk. Monitoring activities – both success and failures – are often difficult to observe because institutional investors tend to intervene through "behind-the-scenes" private meetings with management.[1] Another prominent monitoring mechanism is the threat of exit which is likewise difficult for researchers to observe (Admati and Pfleiderer, 2009; Edmans, 2009; Edmans and Manso, 2011). Our approach is based on the notion

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[1] See, for example, Smith (1996), Carleton, Nelson, and Weisbach (1998), Becht, Franks, Mayer, and Rossi, (2009), Dimson, Karakas, and Li (2014), McCahery, Sautner, and Starks (2015).

that an institutional investor may be unlucky to own shares in a single firm subject to securities litigation. However, owning shares in multiple companies undergoing litigation reflects an investor's ineffectiveness in governance and monitoring actions. Therefore, firms that are predominantly owned by 'litigation-prone' investors may be quietly experiencing managerial agency problems. We hypothesize that this *shareholder-based linkage* provides important information regarding a firm's future risk of securities litigation.

Using the five largest institutional shareholders in a firm, we identify the proportion that are 'litigation-prone' investors and call the measure *litigation-prone shareholder linkage*. The evidence suggests that *litigation-prone shareholder linkage* significantly predicts class-action lawsuits in the subsequent year. Results from a probit regression indicate that a one standard deviation increase in the *litigation-prone shareholder linkage* measure increases the probability of litigation between 22% to 41%. This an economically large effect relative to the sample average probability and is comparable to the predictive power of the most commonly used measure of litigation risk (26%), high lawsuit industry membership (Kim and Skinner, 2012).

While our results are robust to the inclusion of industry membership controls, it is possible that the *litigation-prone shareholder linkage* measure reflects time-varying spillover effects of industry membership on litigation risk (Gande and Lewis, 2009). We address this issue by reconstructing the *litigation-prone shareholder linkage* measure using only firms from different industries. This alternative measure continues to predict future litigation risk, suggesting that industry spillover effects are not behind our findings. Our results are also robust to using *litigation-prone shareholder linkage* measures that exclude firms from the same geographic region or firms that share customer-supplier relationships.

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There is a view that securities class action lawsuits are frivolous and reflect excess litigation behavior (Romano, 1991). These 'nuisance' lawsuits are less likely to reflect underlying managerial agency problems and may increase the noise in our measurement. Therefore, we re–estimate our analysis by classifying litigation-prone investors using only serious lawsuits, defined as settled cases and case with more negative initial announcement returns. We find that the predictability of future litigation is stronger using serious cases to construct the *litigation-prone shareholder linkage* measure. This evidence is consistent with the view that our approach identifies ineffective governance rather than frivolous litigation.

The concept of ineffective monitoring implies that certain investors are unsuccessful in the role as monitors. However, it is understood that certain investors may lack ex-ante incentives to be active monitors. For example, these might be investors with 1.) low ownership stakes (Grossman and Hart, 1980; Fich, Harford, and Tran, 2015). 2.) "grey" institutional investors with potential business relationships (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005). 3.) short holding periods who prefer to exit rather than engage management (Parrino, Sias, and Starks, 2003). To ensure that we are not re–documenting evidence in the prior literature, we re–construct our measure by focusing separately on these types of investors. The evidence suggests that our main findings are not due to these investors but are caused by presumably active monitors that appear to be ineffective.

Our analysis so far focuses only on securities class actions lawsuits. A direct corollary is that ineffective monitoring should also produce other unfavorable governance outcomes. To test this, we examine merger announcement returns and forced CEO turnover-

performance sensitivity following prior literature. The evidence suggests that firms with high *litigation-prone shareholder linkages* experience significantly negative bidder merger announcement returns and significantly lower CEO turnover-performance sensitivity.

Since valuable signals on future litigation risk are embedded in common shareholder linkages, we examine whether market participants also pickup on these clues. We focus on a group of informed traders – short sellers. When firms experience an increase in their *litigation-prone shareholder linkage* measure, we find that short interest spikes. Using the estimated predicted values of future litigation risk from the *litigation-prone shareholder linkage* measure, we find evidence consistent with short sellers learning through the shareholder linkage channel.

One remaining issue is that securities class action lawsuits maybe initiated by large institutional shareholder themselves (Cheng, Huang, Li, and Lobo, 2010). Therefore, it is possible that our results are driven by large institutional investors resorting to class action lawsuits as a managerial disciplining tool. While class action lawsuits are a form of shareholder monitoring, this is unlikely to drive our findings because institutional investor led class action lawsuits are a small fraction of lawsuits in our sample – amounting to just over 10%. Also, our results remain after dropping all institutional investor led class action lawsuits or omitting corporate and public pension funds from the shareholder linkage measure.

We provide a series of robustness tests to insure our findings are not sensitive to our methodological choices. We find that our results are robust to when our shareholder linkage measure is created using the top 10 largest institutional shareholders or using only institutional blockholders. We find that our results hold with the inclusion of firms fixed

effects (i.e. conditional logit regressions), suggesting that unobserved heterogeneity is not behind our findings.

Our findings contribute to a large literature on the monitoring abilities of institutional investors. While behind-the-scenes engagement with management is a key monitoring tool used by institutional investors, it is difficult for researchers to observe (Carleton, Nelson, and Weisbach, 1998; Becht el al., 2009; Dimson, Karakas, and Li, 2014; McCahery, Sautner, and Starks, 2015). Our objective is to uncover important clues on the behind-the-scenes monitoring actions of institutional investors. Kempf, Manconi, and Spalt (2015) show that investors may at times become distracted from their monitoring activities. Our main contribution shows that certain large shareholders may be ineffective monitors.

Our study contributes to the literature on the determinants of litigation risk. To the best of our knowledge, our study is the first to propose the idea that shareholder linkages may provide important information on litigation risk. We provide a firm-level measure that predicts future litigation events which adds to our growing understanding of the determinants of litigation risk (Kim and Skinner, 2012). Our evidence also suggests an important role for corporate governance in litigation risk – evidence that is puzzlingly absent using commercial vendor corporate governance measures (Daines et al. 2010; Kim and Skinner, 2012).

Finally, we add to a growing literature that studies the effects of common shareholder linkages. While previous studies focus on stock price co-movement and liquidity (Greenwood and Thesmar, 2011; Anton and Polk, 2014; Griffin et al, 2015), to the best of knowledge, we are the first to show that common shareholder linkages also affects

corporate outcomes such as class action lawsuits.

1 Litigation Risk and Shareholder Linkage Measures

1.1 Litigation Risk

Our focus on security litigation risk is confined to the risks of securities class action lawsuits. A related legal risk are lawsuits by government agencies (i.e. U.S. Securities and Exchange Commission, U.S. Department of Justice, and states attorney general) which typically represent cases of serious fraud stemming from accounting irregularities.

The most commonly used proxy for litigation risk is industry membership in biotechnology, computer, and retail following Francis, Philbrick, and Schipper (1994a, 1994b). Litigation risk is also related to potential damages as measured by firm size, stock volatility, and stock turnover as larger amounts of potential damages attract the attention of attorneys.[2] Firm characteristics such as recent sales growth and external financing have are also associated with litigation risk (Johnson, Kasznik, and Nelson, 2000).[3]

1.2 Measuring Shareholder Linkages

We propose that common shareholder linkages may reveal signals about a firm's future litigation risk. We construct our measure of shareholder linkages in two steps. For each firm, we identify large shareholders as the top 5 institutional investors ranked by the

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[2] See: Alexander (1991), Jones and Weingram (1996), Skinner (1997).
[3] Litigation risk affects cash holdings (Arena and Julio, 2015), IPO underpricing (Lowry and Shu, 2002; Weiss Hanley and Hoberg, 2010), M&A activity (Gormley and Matsa, 2011), financial reporting and disclosure behavior (see: Kim and Skinner (2012) for a complete summary), auditor choice (Shu, 2000), and director reputation (Karpoff and Lott, 1993; Srinivasan, 2005; Fich and Shivdasani, 2007; Brochet and Srinivasan, 2014).

amount of holdings of the company's common stock. The data on quarterly institutional holdings are from Thomason CDA/Spectrum 13F database. To study the large shareholder linkage effects, we require a minimum of 10 stocks in each investor's portfolio. First, we identify a group of "litigation-prone" institutional investors. For each year t, we split the universe of Compustat firms into two subsamples by whether firms are subject to any securities class action litigations during the year. We select the complete set of large institutional investors from all of the firms that are being sued. Then, among this set of investors, we define an investor as the "litigation-prone" investor if the fraction of holdings of litigation stocks in its portfolio is above the sample median fraction. Second, for each firm i without subject to any securities class action lawsuit during year t, we calculate the fraction of institutional holdings that are held by the litigation-prone investors among the top 5 largest investors by stock holdings of firm i, as the measure of litigation-prone large shareholder linkage. Specifically, for firm i at quarter s, it is defined as:

$$Litigation\ prone\ Large\ Shareholder\ Linkage_{i,s} = \frac{\sum\limits_{j \in\ Prone\text{-}to\text{-}litigation\ Investors\ among\ Top\ 5} H_{i,j,s}}{\sum\limits_{j \in\ Top\ 5\ Investors} H_{i,j,s}} ,$$

where $H_{i,j,s}$ is the institutional holdings of stock i by investor j. We use the yearly average litigation-prone large investor linkage (across four quarters) as our main measure in later analyses.

We also create three additional litigation-prone large shareholder linkage measures (top10, block01, block05). We follow the same procedure as above to calculate the measure of litigation-prone large shareholder linkage, but focus on the top 10 (block01, block05)

institutional investors ranked by the amount of holdings of the company's common stock, defined respectively. An investor is considered to be a block01 (block05) shareholder if its ownership is above 1% (5%) of the firm's share outstanding. To insure that industry, geographical, or customer-supplier effects are not behind our results, we calculate alternatives measures of litigation shareholder linkage. We also separately calculate *litigation-prone shareholder linkage* measures for independent (i.e. investment companies, independent investment advisors, and public pension funds) and "grey" (i.e. bank trusts, insurance companies, corporate pension funds, and other institutions) following Brickley, Lease, and Smith (1988) and Almazan, Hartzell, and Starks (2005).

2   Data and Variables

We obtain the data on litigation filings from the Stanford Law School securities class action clearinghouse during the period of 1996 to 2013. This is the most commonly used source of lawsuit filings and its completeness has been verified in previous studies. Kim and Skinner (2012) examined the 10-k disclosures all S&P 500 companies from the three period 2007-2009 and found this database found all 46 cases of 10b-5 securities class action.

We collect equity holdings data of institutional investors from Thomson 13F filings. The SEC requires that all institutional investment managers with investment discretion over $100 million in 13(f) securities report holdings positions each quarter. Investor style (value, income & growth, growth) and investor types (banks, insurance companies, investment companies, investment advisors, and other) are based on classifications available on Brian Bushee's website.[4]

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[4] The data are available at http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html.

Stock return and accounting data from CRSP and COMPUSTAT are used to construct firm level variables including size, market-to-book, book leverage, profitability, cash holdings, ILLIQ, and stock return volatility. We create a standard measure of litigation risk – FPS dummy – which is a dummy variable equal to 1, if the firm is in the bio-technology, computers, electronics and retail industries (i.e. SIC codes 2833-2838, 8731-8734; 3570-3577, 7370-7374; 3600-3674; 5200-5961). This is based on Francis, Philbrick, and Schipper (1994a, 1994b). Detailed descriptions of all the variables are provided in the Appendix.

[TABLE I HERE]

Table I summarizes the security class action lawsuits in our sample. Panel A shows the number of lawsuits each year and separately by settled and dismissed suits. About 55% of lawsuits are settled, while 37% were dismissed. The final column shows ongoing events that have yet to be settled or dismissed which represents the remaining 8% of the sample. Panel B reports cumulative abnormal return around the filing dates of the class action lawsuits. We use the market model to estimate the abnormal returns using an estimate period of (–300, –46) before filing date. The CAR is large and statistically significant across various periods around the lawsuit filing dates. In the immediate three day window, the the CAR is negative and statically significant (–4.1%, t=–16.68). The CARs are larger estimating over the pre-filing date period both starting at day t=–10 (–11.5%, t=–24.20) and day t=–30 (–18.0%, t=–26.39). The next two columns show differences in announcement returns between settled and dismissed cases. Settled cases tend to have more negative announcement returns across the three estimated windows. It is noteworthy

that even for dismissed cases – possibly considered as nuances cases – the market reaction is substantial over the –30 to +1 window (–13.4%, t=–13.62).

[TABLE II HERE]

Table II reports the key summary statistics of our sample. Litigation occurs 2.6% of the time in our firm-year sample, similar to the findings from previous studies. The *litigation-prone shareholder linkage* measure has a mean of 36.9% and median 33.8%. This implies that around 37% of the top five investors for average the firm-year observation is classified as a '*litigation-prone*' investor. We also report the mean and medians for the Top 10 and blockholder version of our shareholder linkage measure.

[TABLE III HERE]

Table III reports summary statistics for *litigation-prone* large shareholders. Panel A presents a comparison between *litigation-prone* large shareholders and non-*litigation-prone* large shareholders. A large shareholder is defined as an institutional investor that is one of the top 5 largest shareholders in a companies in at least 10 different stocks. The first row shows that the median/mean institutional investor classified as 'large' has $301/$6,525 million in equity portfolio holdings of which 0%/2.46% of their portfolio companies experience a litigation event. This is roughly similar to the fraction of stocks experiencing litigation in our sample.

The next row shows that large institutional shareholders that hold at least 1 stock that experiences a class action lawsuit tends to be larger with a median/average portfolio holding size of $1,258/$15,888 million. This reflects that investors with larger portfolios

are more likely to randomly hold a stock that experiences a class action lawsuit (3.46%/6.55% mean/median). Using this sample of institutional investors, we define *litigation-prone* large shareholders as those investors that are above the annual median in their portfolio fraction of litigation stocks. On average, these investors tend to have larger portfolio holdings ($21,314 vs. $10,434 million), but the median *litigation-prone* investor tends to be smaller ($993 vs. $1615 million). The litigation-prone large shareholders have a much larger portfolio fraction of litigation stocks (11.77% vs. 1.41%).

Next we analyze the investment performance of litigation-prone large shareholders. On both a raw and DGTW-adjust basis, litigation prone large shareholders underperform other large shareholders. On average, litigation-prone large shareholders underperform by 69 basis points per quarter in raw terms or 16% in DGTW-adjusted terms. These differences are statistically significant. The findings are also similar when comparing medians, indicating that extreme outliers are unlikely to drive these findings.

Panel C shows that university endowments and pension funds, both public and corporate, are the least likely to be classified as *litigation-prone* large shareholders. This is consistent with the idea that these investors likely follow prudent man laws (Del Guercio, 1996) and steer clear of companies with litigation risk. On the other end of the spectrum, investment companies and independent investment advisors are the most likely to classified as *litigation-prone* large shareholders.

To get a better sense of the type of large institutional shareholders that are classified as litigation-prone, we provide a list of examples in Panel D of Table III. This list includes the top 50 institutional investors ranked by average fraction of holdings in litigation stocks.

3   Uncovering Litigation Risk from Shareholder Linkages

We present the results from tests of our main hypothesis that shareholder linkages reveal relevant firm information on firm's litigation risk. Then we examine whether market participants – namely short sellers – are likely picking up on these clues. Finally, we use the litigation shareholder linkage measure to study the real effects of litigation risk.

3.1   Predicting Future Litigation From Shareholder Linkages

We start by examining the effect of class-action litigation in *other* firms which share common shareholder links on the probability of a firm's future litigation (i.e. ex-ante litigation risk). We estimate the following probit model in equation (1):

$$Litigation\ Dummy_{i,t+1} = a_i + \beta \times Litigation\ Prone\ Shareholder\ Linkage_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+1} \quad (1)$$

where *Litigation Dummy* is equal to 1 if the firm is being sued in year *t+1*. *Litigation-prone Shareholder Linkage*$_{i,t}$ is defined the fraction of holdings by *litigation-prone* investors among the firm's top 5 largest institutional investors, and $X_{i,t}$ is a vector representing firm control variables estimated in the previous year. Variable definitions are available in the appendix.

[TABLE IV HERE]

Table IV reports the regression results. The regressions include year fixed effects to capture time-varying macroeconomic trends and standard errors are clustered at the firm level in all specifications. Column (1) shows the univariate relation using only the *Litigation-prone Shareholder Linkage* measure which indicates that the variable alone significantly predicts the probability of a litigation event in the following year at the 1%

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confidence level. The conditional marginal effect implies that a one standard deviation increase in the *Litigation-prone Shareholder Linkage* measure increases the probability of a litigation event by 41%. This large economic effect suggests that shareholder linkages contain important information on a company's future litigation events.

Column (2) of Table III reports regression results that include additional investor-based control variables that are potentially associated with the shareholder linkage measure. We include measures at year t for the average level of large institutional ownership, the average level of other institutional ownership, insider ownership as well as the change in these variables from t to t+1. We also include institutional turnover defined as the weighted average churn rate of the institutional ownership. While both the level and change in insider ownership significantly predicts future litigation, the inclusion of these variables does not significantly change the predictive power of the litigation shareholder linkage measure. The coefficient estimate on the litigation shareholder measure remains positive and statistically significant at better than the 1% level, and the marginal effect remains economically large at 38%.

Next, we include firm characteristics that may influence the probability of litigation. We include an *FPS dummy*, which is a dummy variable equal to 1 if the firm is in one of the high litigation risk industries. We include *firm size*, measured as the logarithm of total assets, to capture the idea that firms with "deep pockets" are more likely to be sued. We also include *book leverage* ratio, the *market-to-book* ratio, *profitability*, *sales growth*, *R&D*, *goodwill*, *equity proceeds,* and *debt proceeds*.

We report the regression results that include firm characteristics in Column (3) which shows that the coefficient estimate on the *Litigation-prone Shareholder Linkage* measure

remains positive and statistically significant at the 1% level. The marginal effect remains economically large at 26%. The results also show that the FPS dummy variable is statistically significant, consistent with prior literature. Future lawsuits are positively related to firm size, the market-to-book ratio, sales growth, which reflects the ability of the firm to pay damages. Recent financing (i.e. equity/debt issuance) is also associated with future litigation events since financing events may trigger lawsuits.

While these results rule out the possibility that firm characteristics are behind our findings, it is possible that *Litigation-prone Shareholder Linkage* captures omitted dimensions of firm risk. The results in Column (4) alleviates this concern as the coefficient estimate on *Litigation Shareholder Linkage* remains positive and statistically significant after controlling for past annual stock return, return volatility, return skewness, and stock illiquidity. These variables capture the size of potential shareholder damages following Kim and Skinner (2012). The economic effect of large shareholder linkage remains large, as a one standard deviation change increases the probability of a litigation event by 22%.

Our probit regression specifications include an array of firm characteristics following the convention in prior literature. However, these tests do not rule-out the potential of unobserved firm heterogeneity. We address this concern by estimating a similar set of regressions using a conditional logit with firm strata (i.e. fixed effects). Panel B of Table IV shows that *Litigation-prone Shareholder Linkage* measure remains a statistically significant predictor of future litigation at better than the 1% level across all specifications.

In sum, these results indicate shareholder linkages predict future securities class action lawsuits beyond previously identified firm-level factors, unobserved firm heterogeneity, and underlying systematic factors. We argue that this is consistent with the

view that shareholder linkages embed information on the monitoring abilities of institutional investors.

3.2   Severity of Lawsuits

While securities class action lawsuits have large settlement, certain lawsuits may be considered "nuisances" suits with little credibility (Romano, 1991). However, the average filing date returns suggest that on average securities class action lawsuits are likely to have a material basis. This is also important for our analysis because "nuisances" lawsuits are unlikely related to underlying corporate governance issues.

Therefore, we re-estimate our main tests by classifying severe lawsuits based on whether the cases are settled and by the initial market reaction around filing date. Notice that in Table I, even dismissed lawsuits generate significant abnormal returns around litigation filing dates.

[TABLE V HERE]

Table V presents the results. Panel A shows that the effect of shareholder linkages is stronger for settled cases than dismissed cases. The Chi-square test of difference in coefficients is statistically significant across all four specifications. It is important to note that the linkage measure built from dismissed cases is also statistically significant. This suggests that dismissed cases may have information on the probability of future litigation through shareholder linkages. This may occur because not all dismissed cases reflect frivolous lawsuits but are dismissed due to incomplete discovery or issues with the legal proceedings.

Panel B shows that the effect of shareholder linkages is stronger for low initial market reaction filings. This is consistent with the settled/dismissed analysis and supports the view that litigation-prone investors are ineffective monitors. In sum, the results from our tests suggest that monitoring is the main channel. We next consider alternative explanations for our results.

3.3   Evidence on the Incentives to Monitor

The concept of ineffective monitoring implies that certain investors are unsuccessful in the role as monitors. However, it is understood that certain investors may lack ex-ante incentives to be active monitors. For example, these might be investors with 1.) low ownership stakes (Grossman and Hart, 1980; Fich, Harford, and Tran, 2015). 2.) "grey" institutional investors with potential business relationships (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005). 3.) short holding periods who prefer to exit rather than engage management (Parrino, Sias, and Starks, 2003). To ensure that we are not re–documenting evidence in the prior literature, we re–construct our measure by focusing separately on these types of investors.

We design a test to examine the presence of the selection channel by comparing large shareholders with shareholders outside the top 5 largest (i.e. small shareholders). While large shareholders are more able to influence management, smaller shareholders are less likely to have a voice with managers and are less likely to engage in behind-the-scenes activities. However, smaller shareholders are free to own shares and select into these stocks. Assuming there is no difference in the ability of small and large shareholder to select stocks with these underlying characteristics, then we would expect that the *Litigation-*

prone Shareholder Linkage of small holders should also predict future litigation risk.

[TABLE VI HERE]

Panel A of Table VI shows that while the *Litigation-prone Shareholder Linkage* measure of large shareholders strongly predicts future litigation events, the *Litigation-prone Shareholder Linkage* measure of small shareholders does not. We use the same four regressions specifications as in Table IV, but suppress control variables to conserve space. Column (1) shows that coefficient estimate on *Litigation-prone Shareholder Linkage* measure of large shareholders is positive and statistically significant, but its small shareholder counterpart is actually negative. The results are similar after controlling for shareholder ownership in Column (2), firm characteristics in Column (3), and firm risk in Column (4). We argue that this results is more consistent with monitoring channel rather than a selection channel as small shareholder linkages do not significantly predict future class action litigation.

We create a second test by separating large shareholder linkages by independent and "grey" investors. Independent institutional investors are more likely to monitor management while "grey" institutional investors – such as insurance companies and banks – are generally less willing to challenge management due to business relationships and are therefore less likely to actively monitor (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005). Therefore, if it is a monitoring channel we would expect the effects to concentrate in independent institutional investors.

Panel B of Table VI shows that the predictive power of future litigation is much larger for large shareholder linkages based on independent investors compared to grey

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investors. We standardized both linkage variables to have mean 0 and standard deviation 1 to allow for direct comparison. The coefficient estimate for independent investors is three times larger (0.160 vs. 0.052) than that of grey investors. The marginal effect (unreported) is 37% for independent investors versus 12% for grey investors. These patterns are consistent across all four specifications, suggesting that firm characteristics are not behind these differences. In the final specification, the coefficient estimate for grey investors is statistically insignificant while the coefficient estimate for independent investors remains positive and statistically significant at the 1% level.

Our third test to distinguish the shareholder governance channel from the selection channel use differences in shareholder holding period. Shorter holding periods are likely to reflect selection whereas longer holding periods are likely to be those investors that are expected to monitor. Panel C of Table V shows that the predictive power of future litigation is significantly larger for large shareholder linkages based on long holding periods. The regression standardized both variables to have mean 0 and standard deviation 1 for direct comparison. In Column (1), the coefficient estimate for long holding period investors is three times larger (0.139 vs. 0.048) than that of short holding investors. The difference between the coefficients is highly significant based Chi-square tests. The pattern is consistent across the other three specifications.

The results from these three tests indicate that (a lack of) governance is the predominant channel through which large shareholder linkages contain useful information on litigation risk.

3.4 Excluding Institution-Led Lawsuits

An advantage of our identification approach is that securities class action litigation is commonly initiated by small individual investors. Therefore, the event does not reflect an endogenous managerial choice. However, some securities class action lawsuits maybe initiated by large institutional shareholder themselves (Cheng, Huang, Li, and Lobo, 2010). While these events very rare, large institutional shareholder may become the lead plaintiff of a case originally initiated by an individual investor due to a provision in the Private Securities Litigation Reform Act (PSLRA) of 1995. PSLRA allows the plaintiff with the largest stake to be the lead plaintiff.

Therefore, it is possible that our results are driven by large institutional investors resorting to class action lawsuits as a managerial disciplining tool. One view is that securities class action lawsuits may act as a form external governance when all internal options are exhausted. This may be problematic for our tests if this is a shareholder initiated action. Yet, empirically this is unlikely to drive our findings because institutional investor led class action lawsuits are only a small fraction of lawsuits in our sample – amounting to just over 10%.

[TABLE VII HERE]

Table VII presents the results of two tests that ensure institution led litigation is not driving our results. First we exclude all retirement plans and pension funds from the litigation-prone shareholder measure. Panel A of Table VII shows that our results are not sensitive to this requirement as both the statistical and economic significance is similar to the results in Table III. Next, we drop all institutional investor led class action lawsuits

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from our sample. Panel B of Table VII shows that this restriction does not materially change our main finding either.

In sum, while securities class action lawsuits may be a form of external governance, we find that this is not the primary channel behind our findings. We address concerns that our results are due to additional omitted variables.

3.5 Excluding Industry, Geography, & Customer-Supplier Channels

If institutional investors have a greater tendency to hold stocks in a particular industry, our *shareholder linkage* measure may capture elements of industry links – and thus proxy for time-varying industry risk. For example, a negative oil price shock likely affects the overall energy industry, and its effects would propagate to common shareholders of the firms. Similarly, firms located in the same geographic area or firms that have customer-supplier links are exposed to common systematic factors and may share also similar common shareholders. We address this concern by creating an alternative *shareholder linkage* measures that exclude firms: 1.) in the same industry 2.) in the same geographic region 3.) or share customer-supplier links.

[TABLE VIII HERE]

Table VIII present the coefficient estimates on the variable of interest – alternative litigation shareholder linkage – while suppressing the control variables to conserve space. The regression specification in each column are exactly the same as the ones estimated in the corresponding table listed (i.e Table IV). Panel A shows that the results are not

materially changed after excluding industry linkages. The conditional marginal effects range from 41% to 23% which is comparable to results in Table IV (41% to 22%).

Panel B of Table VIII shows that the results are also similar after excluding companies in the same geographic region. We identify the locations of firms by ten large geographic regions to be conservative.[5] The conditional marginal effects range from 43% to 22%. Panel C shows that the results are not sensitive to exclusion of customer-supplier linkages.

The results from these tests suggests that ability of shareholder linkages to predict future litigation events is not due to underlying firm linkages based on industry, geography, or customer-supplier connections. This indicates that shareholder linkage measure has additional information content on future litigation events.

3.6 Alternative Measurement: Shareholder Cutoffs

Our construction of shareholder linkage requires certain ad-hoc assumptions. This section presents additional evidence to address the concern that our findings are sensitive to these assumptions. Our main test use the top 5 shareholders because we argue that these shareholders are likely large enough to influence management. We acknowledge that the top 5 is still an arbitrary cutoff, and that for some firms the cutoff may ideally be higher or lower.

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[5] The region definitions are: New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut), Middle Atlantic (New York, Pennsylvania, New Jersey), East North Central (Wisconsin, Michigan, Illinois, Indiana, Ohio), West North Central (Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa), South Atlantic (Delaware, Maryland, Washington D.C., Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida), East South Central (Kentucky, Tennessee, Mississippi, Alabama), West South Central (Oklahoma, Texas, Arkansas, Louisiana), Rocky Mountain (Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico), Northwest (Oregon, Washington, Idaho) and California.

[TABLE IX HERE]

To address this concern, we re-estimate all of our tests using Top 10, and only block holders (i.e. institutional investors with ownership $> 5\%$ or $> 1\%$). Table IX shows that all the results are robust to alternative cutoffs of top shareholders. The most powerful predictive measure is the Top 10 based cutoff which generates conditional marginal effects on shareholder linkage between 48% and 26%.

4 Corporate Governance Outcomes and Short Seller Actions

We explore two potential implications of our findings. Our analysis so far focuses only on securities class actions lawsuits. A direct corollary is that ineffective monitoring should also produce other unfavorable governance outcomes. To test this, we examine merger announcement returns and forced CEO turnover-performance sensitivity following prior literature. Second, since shareholder linkages are extracted from publically available information, we ask whether certain market participants take cues from the information embedded in these shareholder linkages.

4.1 Corporate Governance Outcome: Acquisitions

Merger and acquisitions are one potential corporate governance outcome. To prevent empire-building, governance mechanisms are designed to stop managers from making acquisitions that are value-destroy for the shareholders. However, poor acquisitions may occur when these mechanisms fail. We test whether the litigation-prone shareholder linkage measure predicts bad future acquisition by estimating an OLS regression of

cumulative abnormal returns surrounding merger announcement on the *Litigation-prone Shareholder Linkage* measure.

Panel A of Table X shows that the *Litigation-prone Shareholder Linkage* measure of large shareholders strongly predicts negative bidder merger announcements. Column (1) includes only deal characteristics and shows that coefficient estimate on *Litigation-prone Shareholder Linkage* measure of large shareholders is negative and statistically significant. The results are similar after controlling for shareholder ownership in Column (2), firm characteristics in Column (3), and firm risk in Column (4). This evidence is consistent with the view that the litigation-prone shareholder linkage measure captures ineffective monitoring.

4.2 Corporate Governance Outcome: CEO Turnover

Another commonly studied governance outcome is CEO turnover. Firms with better governance mechanisms tend to dismiss CEOs after poor performance. However, poorly performing CEOs may be able to hang on to their jobs when these mechanisms fail. We test whether the litigation-prone shareholder linkage measure predicts bad future acquisition by estimating a probit model of forced CEO turnover on stock return, conditioning on high *Litigation-prone Shareholder Linkage* measure.

Panel B of Table X shows that CEOs of firms with high *litigation-prone shareholder linkage* are less likely to be dismissed after poor stock performance. Column (1) includes only CEO characteristics and shows that coefficient estimate on the interaction term is negative and statistically significant. The results are similar after controlling for shareholder ownership in Column (2), firm characteristics in Column (3), and firm risk in

Column (4). This evidence is consistent with the view that the litigation-prone shareholder linkage measure captures ineffective monitoring.

4.3   Do Short Sellers take cues from Shareholder Linkages?

The evidence in the previous section shows that common shareholders linkages provide valuable information on a firm's litigation risk. Therefore, it is possible that sophisticated investors may take cues from shareholder linkages and trade on this information. Gande and Lewis (2009) show that lawsuits generate negative market reactions to peer firms, suggesting that the market anticipates future litigation risk. Since taking short positions are the most direct way to exploit future litigation risk, we propose that short sellers are traders that may use the information embedded in shareholder linkages.

To test that the market is taking cues from shareholder linkages, we estimate a first stage probit regression to predict the litigation likelihood explained by the *litigation-prone large shareholder linkage* measure.

$$Sued_{i,t+1} = a + \beta \times Litigation-prone\ Large\ Shareholder\ Linkage_{i,t} + \varepsilon_{i,t+1} \qquad (2)$$

Using the predicted values from equation (2), we estimate a panel regression using the following equation (3):

$$Short\ Interest_{i,t+1} = a + \beta \times Predicted\ Litigation\ Likelihood_{i,t} + \delta \times X_{i,t} + \varepsilon_{i,t+1} \qquad (3)$$

The dependent variable, *short interest*, is the total amount of short interest in the following year. $X_{i,t-1}$ is a vector representing firm control variables, estimated in year *t*. The regression models include year fixed effects and industry fixed effects in the third and

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fourth specifications. Standard errors are clustered at the firm level.

[TABLE XI HERE]

Table XI reports the results. Column (1) shows a significantly higher levels of short interest in the following year when predicted litigation likelihood is high. The coefficient estimate on *Predicted Litigation Likelihood* is positive and statistically significant at the 1% level. Column (2) shows that the results are similar with inclusion of shareholder measures.Columns (3) and (4) show that the measure continues to predict short interest after including firm characteristics and firm risk measure. In Panel B and C, we show that the results are robust to excluding other linkage channels and using various cutoff for defining large shareholders.

The evidence is consistent with the view that short-sellers may take cues from when common shareholders linkages. Since short sellers may immediately take short-sell positions on announcement of lawsuits, we estimate the regression using current year short interest. We find that the litigation shareholder linkage measure also predict higher current year short interest.

5   Conclusion

We identify ineffective monitors using the frequency of stocks in the investor's portfolio that are undergoing securities class action litigation. We propose that common shareholder linkages provide valuable information on future litigation risk. Using five largest institutional shareholders, we create a litigation investor fraction measure based on the number of litigation events in other firms held by these top five shareholders. The litigation linkage measure strongly predicts future litigation events, even when the measure is constructed using different industries.

The evidence also suggests that ineffective monitors affect other corporate governance outcomes. We find that firms with a high fraction of litigation-prone investors are more likely to engage in value destroying acquisitions and are less likely to fire their CEOs after poor stock performance. Short sellers also target these firms in anticipation of future litigation events. On balance, our evidence suggests that ineffective monitors may destroy firm value.

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Appendix: Variable Definitions

Litigation Dummy: a dummy variable that takes a value of 1 if the firm is subject to securities class action litigation in a year and 0 otherwise. We obtain the data on all litigation filings in the U.S. from the Stanford Law School securities class action clearinghouse during the period of 1996 to 2013.

Litigation-prone Large Shareholder Linkage (main measure: top 5): For each firm, we identify large shareholders as the top 5 institutional investors ranked by the amount of holdings of the company's common stock. The data on quarterly institutional holdings are from Thomason CDA/Spectrum 13F database. To study the large shareholder linkage effects, we require a minimum of 10 stocks in each investor's portfolio. First, we identify a group of "prone-to-litigation" institutional investors. For each year t, we split the universe of Compustat firms into two subsamples by whether firms are subject to any securities class action litigations during the year. We select the complete set of large institutional investors from all of the firms that are being sued. Then, among this set of investors, we define an investor as the "prone-to-litigation" investor if the fraction of holdings of litigation stocks in its portfolio is above the sample median fraction. Second, for each firm i without subject to any securities class action lawsuit during year t, we calculate the fraction of intuitional holdings that are held by the litigation-prone investors among the top 5 largest investors by stock holdings of firm i, as the measure of *litigation-prone large shareholder linkage*. Specifically, for firm i at quarter s, it is defined as:

$$\text{Litigation-prone Large Shareholder Linkage}_{i,s} = \frac{\sum_{j \in \text{ Litigation-prone Investors among Top 5}} H_{i,j,s}}{\sum_{j \in \text{ Top 5 Investors}} H_{i,j,s}},$$

where $H_{i,j,s}$ is the institutional holdings of stock i by investor j. We use the yearly average litigation-prone large shareholder linkage (across four quarters) in later analyses.

Litigation-prone Large Shareholder Linkage: *(top10, block01, block05):* We follow the same procedure as above to calculate the measure of litigation-prone large shareholder linkage, but focus on the top 10 (block01, block05) institutional investors ranked by the amount of holdings of the company's common stock, defined respectively. An investor is considered to be a block01 (block05) shareholder if its ownership is above 1% (5%) of the firm's share outstanding.

Institutional Ownership (total): the number of shares held by all of the institutional investors divided by the number of shares outstanding.

Large Institutional Ownership (top5, top10, block01, block05): the number of shares held by large institutional investors (top5, top10, block01, block05) divided by the total number of shares outstanding, defined respectively. An investor is considered to be a block01 (block05) shareholder if its ownership is above 1% (5%) of the firm's share outstanding.

Other Institutional Ownership (top5, top10, block01, block05): the difference between total institutional ownership and large institutional ownership (top5, top10, block01, block05*), defined respectively.

Insider Ownership: the number of stocks held by corporate insiders divided by the total number of shares outstanding.

Change in Ownership (large institutional investor, other institutional investor, insider): the change in quarterly investor ownership (*large institutional investor, other institutional investor, insider*) in a year.

Institutional turnover: We first calculate the portfolio churn rate of institutional investors to capture how frequently an investor rotates his positions on all the stocks of the portfolio. If we denote the set of companies held by investor i by Q, the churn rate of investor i at quarter s is:

$$CR_{j,s} = \frac{\sum_{k \in Q} \left| N_{j,k,s} P_{k,s} - N_{j,k,s-1} P_{k,s-1} - N_{j,k,s-1} \Delta P_{k,s} \right|}{\sum_{k \in Q} \frac{N_{j,k,s-1} P_{k,s-1} + N_{j,k,s} P_{k,s}}{2}}, \text{ where } P_{k,s} \text{ and } N_{j,k,s} \text{ represent the price and number}$$

of shares of stock k held by investor j at quarter s. Then, for each quarter t, we calculate the average churn rate over the previous 4 quarters: $\overline{CR_{j,t}} = \frac{1}{4} \sum_{r=1}^{4} CR_{j,\,t-r+1}$. Next, at the stock level, for each stock i, we calculate the holdings-weighted average institutional churn rate.

Firm Size: the logarithm of book assets (AT).

Market-to-Book: market value of assets/book assets (AT), where the market value of assets is calculated as: stock price (PRCC_F) * shares outstanding (CSHO) + short term debt(DLC) + long term debt(DLTT) + preferred stock liquidation value (PSTKL) – deferred taxes and investment tax credits (TXDITC).

Book Leverage: total debt/book assets (AT), where total debt is long term debt (DLTT) + short term debt (DLC).

Profitability: operating income before depreciation (OIBDP)/book assets (AT).

Sales Growth: current year sales (SALE) less prior year sales scaled by prior year sales.

R&D: research and development expenses (XRD) scaled by book assets (AT). If the information on XRD is missing, we put it to be 0.

Goodwill: goodwill (GDWL) divided by book assets (AT).

Equity Proceeds: the amount of equity issuances (SSTK) divided by book assets (AT).

Debt Proceeds: the amount of debt issuances (DLTIS) divided by book assets (AT).

Yearly Return: the cumulative stock return in a year.

Return Volatility: the standard deviation of monthly stock returns in a year.

Return Skewness: the standard deviation of monthly stock returns in a year.

Amihud Illiquidity: the Amihud (2000) illiquidity measure, at annual frequency. It averages the square root of the ratio of the absolute price change divided by daily dollar volume over each day in year *t*, calculated as: $Illiquidity_{i,t} = \frac{1}{D_t} \sum_{days \in t} (1000 * \sqrt{\frac{|daily\ return|}{daily\ dollar\ volume}})$.

FPS Industry Dummy: a dummy variable equal to 1 if the firm is in one of the four industries (Biotech: SIC codes 2833-2838 8731-8734; Computer: SIC codes 3570-3577, 7370-7374; Electronics: SIC codes 3600-3674; Retail: SIC codes 5200-5961) and 0 otherwise.

Industry Fixed Effects: industry dummy variables defined at the two-digit SIC level.

Bidder CAR (-1, +1): the 3-day cumulative abnormal returns of the bidder around the merger announcement date. We use the market model to estimate the abnormal returns with window (-300, -46) before the announcement date as the estimation period.

Forced CEO Turnover Dummy: a dummy variable equal to 1 if the firm has a forced CEO turnover in the year and 0 otherwise. We obtain the data on forced CEO turnovers for firms in the S&P ExecuComp database between 1993 and 2010 from Jenter and Lewellen (2014).

Short Interest: the yearly average ratio of the amount of shares being lent divided by the total shares outstanding. We obtain the monthly short selling data from CRSP from 1996 to 2013.

Table I
Summary Statistics: Securities Class Action Litigations

In this table, we provide summary statistics for our sample of securities class action litigations. We obtain the data on all of the litigation filings of publicly listed firms in the U.S. from the Stanford Law School securities class action clearinghouse during the period of 1996 to 2013. Panel A reports the number of class action litigations by year. For each year, we summarize the number of filed litigations, and we distinguish litigations by their current status: settled, dismissed and ongoing.

In Panel B, we calculate the cumulative abnormal returns (CARs) around the filing dates of class action litigations. We use the market model to estimate the abnormal returns with window (-300, -46) before the filing date as the estimation period. We report the average CARs for three event windows: (-30, +1), (-10, +1) and (-1, +1), and we test them to be statistically different from 0. We also separately report the average CARs for the settled cases as well as the dismissed cases. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively with t-statistics given in parentheses.

Panel A: Number of Securities Class Action Litigations by Year

Year	Number of Litigations	Settled	Dismissed	Ongoing
1996	95	63	32	-
1997	168	122	46	-
1998	229	145	84	-
1999	201	118	83	-
2000	202	129	73	-
2001	480	420	60	-
2002	241	159	81	1
2003	203	112	89	2
2004	215	123	91	1
2005	167	86	80	1
2006	109	66	42	1
2007	162	88	67	7
2008	185	84	97	4
2009	123	44	66	13
2010	154	46	90	18
2011	182	47	106	29
2012	146	13	59	74
2013	159	2	14	143
Total	3,421	1,867	1,260	294

Panel B: Announcement Returns around Litigation Filing Dates

Event Window	Overall	Settled	Dismissed
CAR (-30,+1)	-18.0%***	-21.3%***	-13.4%***
	(-26.39)	(-21.16)	(-13.62)
CAR (-10,+1)	-11.5%***	-13.7%***	-8.4%***
	(-24.20)	(-19.73)	(-12.32)
CAR (-1,+1)	-4.1%***	-5.3%***	-2.6%***
	(-16.58)	(-14.10)	(-7.97)

Table II
Summary Statistics: Main Variables

This table presents summary statistics of the main variables used in the study. The data on quarterly stock holdings of institutional investors are from Thomson CDA/Spectrum (13F). The data on daily and monthly stock returns, Short Interest, trading volumes and annual accounting information are from Compustat and CRSP. In our later multivariate analyses, all of the sample firms do not have any securities class action lawsuits during the year in which we calculate the litigation-prone large shareholder linkage (by construction). The complete sample includes 79521 firm-year observations. For each variable, we report the mean, the median, the standard deviation and the number of observations. The detailed definitions can be found in the appendix.

	Mean	Median	Std. Dev.	N
Litigation Dummy	0.026	0.000	0.160	79521
Litigation-prone Large Shareholder Linkage (Top 5 Institutional Investors)	0.369	0.338	0.260	79521
Litigation-prone Large Shareholder Linkage (Top 10 Institutional Investors)	0.418	0.405	0.246	79521
Litigation-prone Large Shareholder Linkage (Block01: Institutional ownership>1%)	0.413	0.408	0.264	72604
Litigation-prone Large Shareholder Linkage (Block05: Institutional ownership>5%)	0.282	0.166	0.321	54139
Institutional Ownership (Total)	0.401	0.356	0.308	79521
Large Institutional Ownership (Top 5)	0.189	0.185	0.130	79521
Large Institutional Ownership (Top 10)	0.260	0.257	0.178	79521
Large Institutional Ownership (Block01)	0.323	0.296	0.226	72604
Large Institutional Ownership (Block05)	0.175	0.145	0.114	54139
Institutional Turnover	0.543	0.523	0.116	79521
Insider Ownership	0.048	0.008	0.093	79521
FPS Industry Dummy	0.269	0.000	0.443	79521
Firm Size	5.747	5.570	2.228	79521
Book Leverage	0.222	0.169	0.250	79521
Market-to-Book	1.808	1.162	2.120	79521
Profitability	0.029	0.096	0.297	79521
Sales Growth	0.641	0.113	1.613	79521
R&D	0.054	0.000	0.117	79521
Goodwill	0.077	0.002	0.128	79521
Equity Proceeds	0.078	0.005	0.198	79521
Debt Proceeds	0.093	0.002	0.189	79521
Stock Return	0.144	0.028	0.734	79521
Return Volatility	0.159	0.131	0.108	79521
Return Skewness	0.315	0.261	0.753	79521
Amihud Illiquidity	0.443	0.177	0.602	79521
Bidder CAR (-1, +1)	0.002	-0.000	0.059	2854
Forced CEO Turnover Dummy	0.023	0.000	0.149	14868
Short Interest (%)	2.968	1.796	3.275	50692

Table III
Summary Statistics: Litigation-Prone Large Shareholders

In this table, we present summary statistics of our sample of large institutional investors and their portfolio holdings of litigation stocks. For each firm, we identify large shareholders as the top 5 institutional investors ranked by the amount of holdings of the company's common stock. To study the large shareholder linkage effects, we require a minimum of 10 stocks in each large investor's portfolio.

In Panel A, we report the size of the portfolio holdings of large institutional investors and the fraction of holdings in stocks that are subject to securities class action litigations in the year. We separately report the statistics for the large shareholders holding at least 1 litigation stocks. Among these investors, we identify an investor as the "litigation-prone" large shareholder if the fraction of holdings of litigation stocks in its portfolio is above the sample median fraction.

In Panel B, we compare the portfolio returns of the litigation-prone large shareholders with the returns of other non-litigation-prone large shareholders. We calculate both the raw portfolio return for each investor-quarter as the weighted average return of the investor's portfolio using the previous-quarter end holdings value as the weight. We also follow the methodology of Daniel, Grinblatt, Titman and Wermers (1997) to calculate the DGTW adjusted portfolio returns. In every quarter t, and for each institutional investor j, we calculate the adjusted portfolio return as $\text{DGTW}_{j,t} = \sum_{i=1}^{N} \omega_{i,t-1} (\text{Ret}_{i,t} - \text{Benchhmark}_{i,t})$, where $\omega_{i,t-1}$ is the portfolio weight on stock i at the end of quarter t-1, $\text{Ret}_{i,t}$ is the quarter t return of stock i, and $\text{Benchhmark}_{i,t}$ is the quarter t return of the characteristic-based benchmark portfolio that is matched to stock i along the dimensions of size (market value of equity), book-to-market ratio, and momentum. We perform both t-tests and Wilcoxon tests to compare the differences in the mean and median values.

In Panel C, we distinguish the litigation-prone large shareholders by investor type and report the statistics accordingly. We follow the investor type classifications from 13F and classify institutional investors into: bank trust, insurance company, investment company, independent investment advisor, corporate pension fund, public pension fund, university and foundation endowments, and the rest (Miscellaneous). We use the investor type classification obtained from Brian Bushee's website.

In Panel D, we provide a list of examples (top 50) of litigation-prone large shareholders ranked by their average fraction of portfolio holdings in litigation stocks across the sample period. We report the names of institutional investors, the size of total portfolio holdings in the sample stocks, and the average number of sample stocks for which the institutions are listed as top 5 institutional investors.

Table III (Continued)

Panel A: Identification of Litigation-prone Large Shareholders

	Size of Portfolio Holdings ($millions)		Portfolio Fraction of Litigation Stocks		Number of Obs.
	Mean	Median	Mean	Median	(Quarter)
Large Institutional Shareholders	6525.34	301.88	2.46%	0	35087
Large Institutional Shareholders (holds at least 1 litigation stocks)	15888.05	1258.43	6.55%	3.46%	13153
Litigation-prone Large Shareholders (holds more than 1 litigation stocks)	21314.30	993.18	11.67%	7.90%	6593
Other Large Shareholders (holds more than 1 litigation stocks)	10434.49	1614.94	1.41%	1.10%	6560

Panel B: Quarterly Portfolio Returns of Litigation-prone Large Shareholders

	Raw Return		DGTW-adjusted Return		Number of Obs.
	Mean	Median	Mean	Median	(Quarter)
Litigation-prone Large Shareholders	2.52%	3.43%	0.14%	-0.06%	6434
Other Large Shareholders	3.13%	3.92%	0.30%	0.03%	27174
T-test (mean) or Wilcoxon-test (median)	-3.88***	-2.96***	-2.50**	-3.25***	

Panel C: Litigation-prone Large Shareholders by Investor Type

	Size of Portfolio Holdings ($millions)		Portfolio Percentage of Litigation Stocks		Number of Obs.
	Mean	Median	Mean	Median	(Quarter)
University endowments	3612.58	1757.57	8.15%	7.23%	18
Corporate pension fund	1921.73	973.49	20.29%	11.91%	26
Public pension fund	1566.64	346.44	14.80%	5.68%	81
Insurance company	42963.78	4725.84	11.32%	7.99%	203
Miscellaneous	8391.20	656.03	13.82%	9.25%	289
Bank trust	100840.60	14402.50	14.44%	7.92%	441
Investment company	71396.07	13510.13	8.86%	7.10%	641
Independent investment advisor	7786.09	633.57	11.59%	8.05%	4816

Table III (Continued)

Panel D: Examples of Litigation-prone Large Shareholders
(Top 50 Institutions Ranked by Average Fraction of Holdings in Litigation Stocks)

Name of Institutional Investor	Average Size of Portfolio Holdings in $millions	Average Fraction of Portfolio Holdings in Litigation Stocks	Average Number of Stocks Listed as Top 5 Institutional Investors
Paloma Partners Management	218.30	85.4%	18
Fifth Third Bank	1804.12	77.6%	51
Satellite Asset Mgmt	982.75	75.2%	11
MFC Global Investment Mgmt	1369.31	65.9%	10
Wexford Capital LP	252.98	61.8%	18
New York St Common Ret.	110.28	59.8%	11
First Security Corp/Utah	362.41	59.2%	21
Whitney Holdings Llc	313.82	53.3%	15
Bowman Capital Mgmt	322.13	51.9%	15
Forstmann-Leff Assoc	225.02	48.6%	15
Emer Mrkt Management	274.34	47.3%	15
Evercore Trust Company	11497.21	46.7%	10
FBR Fund Advisers	189.99	44.5%	10
CMGI Inc.	1854.53	37.9%	12
SG Cowen Asset Management	177.00	37.4%	59
Gotham Ptnr Mgmt	135.79	37.2%	11
Capital Intl Ltd.	2143.79	34.7%	11
Tracer Capital Mgmt	569.70	34.1%	10
Scepter Holdings, Inc.	133.12	33.6%	13
Senator Investment Group	568.45	32.6%	10
Mercury Real Estate Advisors	231.60	32.2%	10
Pacific Finl Research, Inc.	5894.52	32.2%	14
Baupost Group Inc	151.43	31.4%	10
MHR Fund Management	1611.01	31.1%	15
CGNU Plc (Uk)	307.44	31.0%	12
Bank One Corporation	2184.30	30.4%	163
Norges Bank	1099.83	30.1%	26
Van Wagoner Capital Mgmt	233.38	30.0%	23
Abrams Capital	555.87	29.8%	10
Highland Capital Mgmt	1202.00	29.1%	14
Bank Of Nova Scotia	8707.64	28.6%	14
Credit Suisse Asset Mgmt	530.44	28.5%	35
Gotham Partners Mgmt	228.65	28.0%	10
Bartlett & Co.	107.33	27.2%	16
Feirstein Barry	184.66	27.0%	14
S.A.C. Capital Advisors	1165.47	27.0%	14
Friedman Billings Ramsey Inv	349.41	26.8%	18
Water Island Capital	595.29	26.7%	18
Zak Capital	127.09	26.4%	10
Pennant Capital Management	350.25	25.5%	10
Stark Offshore Management	887.50	25.4%	57
Vinik Jeffrey N.	515.29	25.1%	11
RHO Capital Partners	233.28	25.0%	10
Feinberg Stephen A	286.90	23.8%	13
Trinity I Fund LP	497.16	23.3%	12
Pennsylvania Public Sch Emp Re	313.75	23.2%	34
RA Capital Management	117.30	23.1%	14
Tracer Capital Mgmt	580.01	23.0%	11
Commonwealth Bank Of Australia	974.85	22.6%	10
Van Wagoner Capital Mgmt	517.28	22.5%	17

Table IV
Predicting Future Litigation: Main Results

In this table, we examine the relation between the litigation-prone large shareholder linkage and the probability of future securities class action litigations. Specifically, we estimate the following probit model:

$$\text{Litigation Dummy}_{i,t+1} = \alpha + \beta \times \text{Litigation-prone Large Shareholder Linkage}_{i,t} + \delta \times X_{i,t} + \varepsilon_{i,t+1},$$

where the dependent variable is a dummy variable that is equal to 1 if the firm is being sued in year t+1 and 0 otherwise. The main variable of interest is the litigation-prone large shareholder linkage, defined as the fraction of holdings by litigation-prone large investors among the firm's top 5 institutional investors. All the independent variables are taken in year t. The detailed definitions of all the variables can be found in the appendix.

In Panel A, we present the baseline results. Column (1) is the simplest specification without other control variables. In column (2), we control for ownership characteristics such as large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. We also include year fixed effects. In column (3), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth, R&D, goodwill, equity proceeds, debt proceeds as well as industry fixed effects at the two-digit SIC level. In column (4), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity. We cluster the errors at the firm level in all specifications. For each column, we report the conditional marginal effects of litigation-prone large shareholder linkage, as the increase in litigation probability due to one standard deviation increase in litigation-prone large shareholder linkage divided by the predicted litigation probability at the mean.

In Panel B, for robustness checks, we estimate a conditional logit specification with the inclusion of firm fixed effects. The layout of control variables in columns (1)-(4) is the same as in Panel A. We cluster the errors at the firm level in all specifications. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table IV (Continued)

Panel A: Probit Regressions

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.675***	0.614***	0.399***	0.323***
	(20.18)	(15.56)	(9.42)	(7.03)
Controls				
Large Inst. Ownership		-0.017	0.229**	0.018
		(-0.19)	(2.51)	(0.18)
Other Inst. Ownership		0.881***	0.557***	0.248***
		(16.23)	(8.77)	(3.46)
Insider Ownership		0.859***	0.605***	0.372***
		(9.70)	(6.56)	(3.84)
Change in Large Inst. Ownership		-0.447	-0.801	-1.293
		(-0.44)	(-0.77)	(-0.76)
Change in Other Inst. Ownership		-0.903	-1.219	-1.453
		(-0.86)	(-1.14)	(-0.84)
Change in Insider Ownership		0.800	0.964	1.519
		(0.77)	(0.91)	(0.89)
Institutional Turnover		1.200***	1.059***	0.912***
		(17.40)	(12.98)	(8.84)
FPS Industry Dummy			0.172***	0.150***
			(4.88)	(4.15)
Firm Size			0.110***	0.066***
			(16.98)	(7.85)
Book Leverage			-0.153***	-0.087
			(-2.78)	(-1.60)
Market-to-Book			0.027***	0.018***
			(6.24)	(3.85)
Profitability			-0.062	-0.078
			(-1.44)	(-1.61)
Sales Growth			0.036***	0.027***
			(5.31)	(3.86)
R&D			0.015	-0.146
			(0.12)	(-1.16)
Goodwill			-0.037	0.032
			(-0.43)	(0.38)
Equity Proceeds			0.491***	0.237***
			(8.82)	(3.99)
Debt Proceeds			0.198***	0.167***
			(3.44)	(2.73)
Stock Return				-0.153***
				(-7.21)
Return Volatility				1.741***
				(15.12)
Return Skewness				-0.089***
				(-5.20)
Amihud Illiquidity				-0.936***
				(-9.61)
Year FE	-	Y	Y	Y
Industry FE (2-digit SIC)	-	-	Y	Y
Cluster	Firm	Firm	Firm	Firm
Number of Observations	79,521	79,521	79,521	79,521
Conditional Marginal Effects	41%	38%	26%	22%

Table IV (Continued)

Panel B: Conditional Logit Regressions with Firm Fixed Effects

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	1.081***	1.076***	1.011***	0.857***
	(8.62)	(9.43)	(8.56)	(7.10)
Controls				
Large Inst. Ownership		0.372	-0.005	-0.205
		(1.03)	(-0.01)	(-0.52)
Other Inst. Ownership		2.087***	0.081	-0.204
		(9.42)	(0.31)	(-0.74)
Insider Ownership		1.712***	0.877***	0.688**
		(5.70)	(2.63)	(2.01)
Change in Large Inst. Ownership		-0.222	-3.814	-2.753
		(-0.02)	(-0.23)	(-0.18)
Change in Other Inst. Ownership		-1.041	-4.468	-2.997
		(-0.08)	(-0.26)	(-0.20)
Change in Insider Ownership		0.278	3.584	2.654
		(0.02)	(0.21)	(0.17)
Institutional Turnover		1.361***	1.514***	0.767*
		(4.09)	(4.10)	(1.92)
FPS Industry Dummy			0.161	0.157
			(0.87)	(0.85)
Firm Size			1.077***	0.829***
			(17.88)	(13.22)
Book Leverage			-0.264	-0.176
			(-1.32)	(-0.88)
Market-to-Book			0.070***	0.059***
			(5.67)	(4.47)
Profitability			-0.225	-0.336*
			(-1.21)	(-1.78)
Sales Growth			0.074***	0.050*
			(2.78)	(1.82)
R&D			1.136**	1.058*
			(2.16)	(1.96)
Goodwill			-1.801***	-1.499***
			(-5.37)	(-4.43)
Equity Proceeds			0.373**	-0.118
			(2.40)	(-0.72)
Debt Proceeds			0.317*	0.229
			(1.65)	(1.17)
Stock Return				-0.196***
				(-5.04)
Return Volatility				2.195***
				(6.78)
Return Skewness				-0.142***
				(-3.44)
Amihud Illiquidity				-2.498***
				(-9.33)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Cluster	Firm	Firm	Firm	Firm
Number of Observations	15,669	15,669	15,669	15,669

Table V
Predicting Future Litigation: Distinguish Large Shareholder Linkage by Severity of Litigation Cases

In this table, we predict future litigations while distinguishing large shareholder linkage by the severity of previous litigation cases. Specifically, we separately calculate the litigation-prone large shareholder linkage with more or less severe litigation cases. We measure the severity of litigations either by whether the case outcome is settled or dismissed or by the announcement returns around the case filing date.

In Panel A, we calculate the litigation-prone large shareholder linkage measures only based on the settled litigation cases and only based on the dismissed litigation cases. In Panel B, we identify the severity of cases by the cumulative abnormal returns during the 3-day window (-1, +1) around the litigation filing date. We define cases with high/low announcement return by the sample median CAR. We calculate the litigation-prone large shareholder linkage measures only based on the high CAR (-1,+1) cases and only based on the low CAR (-1,+1) cases. To compare the economic significances, we standardize both linkage variables to have a mean of 0 and a standard deviation of 1 (by subtracting the mean and dividing by the standard deviation, respectively). In both panels, the dependent variable is a dummy variable that is equal to 1 if the firm is being sued in year $t+1$ and 0 otherwise. In columns (1)-(4), we follow the same specifications as in Panel A, Table IV. For brevity, we only report the coefficients of the interested variables. We test the statistical difference in coefficients of the two linkage measures and report the Chi-square statistics accordingly. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Panel A: Large Shareholder Linkage from Settled and Dismissed Cases

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.126***	0.116***	0.085***	0.072***
(From Settled Cases)	(13.57)	(10.79)	(7.47)	(5.85)
Litigation-prone Large Shareholder Linkage	0.078***	0.084***	0.049***	0.035***
(From Dismissed Cases)	(8.58)	(7.92)	(4.36)	(2.90)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	9.75***	3.26*	3.74**	3.51*
Number of Observations	79,521	79,521	79,521	79,521

Panel B: Large Shareholder Linkage from Cases with High and Low CARs

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.138***	0.115***	0.085***	0.071***
(From Cases with Low CAR(-1,+1))	(14.25)	(10.46)	(7.40)	(5.71)
Litigation-prone Small Shareholder Linkage	0.065***	0.077***	0.042***	0.034***
(From Cases with High CAR(-1,+1))	(6.57)	(6.74)	(3.56)	(2.64)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	18.14***	3.95**	4.65**	3.07*
Number of Observations	79,521	79,521	79,521	79,521

Table VI
Predicting Future Litigation: Monitoring Incentives

In this table, we examine the shareholder governance channel that addresses the relation between the litigation-prone large shareholder linkage and the probability of future securities class action litigations.

In Panel A, we consider the linkage effects from both large shareholders and small shareholders. For each firm, we identify large (small) shareholders as the top 5 (other none-top 5) institutional investors ranked by the amount of holdings of the company's common stock. We follow the same methodology (as detailed in the appendix) to construct the measures of litigation-prone small shareholder linkage.

In Panel B, we distinguish large institutional shareholders by their types. First, we divide institutions into two groups: independent institutions (investment companies, independent investment advisors, public pension funds) and grey institutions (bank trusts, insurance companies, corporate pension funds, and other institutions). Second, we separately calculate the litigation-prone linkage measures based on the independent institutions and the grey institutions.

In Panel C, we distinguish large institutional shareholders by their holding periods of stocks. For each stock, we identify investors with long and short holding periods in the stock by the median holding period among its large shareholders. Then, we separately calculate the litigation-prone linkage measures based on the large shareholders with long holding periods and those with short holding periods.

In all three panels, to compare the economic significances, we standardize the linkage variables to have a mean of 0 and a standard deviation of 1 (by subtracting the mean and dividing by the standard deviation, respectively). In columns (1)-(4), we follow the same specifications as in Panel A, Table IV. The dependent variable is a dummy variable that is equal to 1 if the firm is being sued in year t+1 and 0 otherwise. For brevity, we only report the coefficients of the interested variables. In each panel, we test the statistical difference in coefficients of the two linkage measures and report the Chi-square statistics accordingly. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table VI (Continued)

Panel A: Large and Small Shareholder Linkages

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.184***	0.165***	0.109***	0.081***
(Top 5 Institutional Investors)	(19.05)	(14.79)	(9.13)	(6.49)
Litigation-prone Small Shareholder Linkage	-0.043***	0.010	0.006	0.018
(None-top 5 Institutional Investors)	(-4.72)	(0.99)	(0.52)	(1.29)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	251.21***	94.95***	34.62***	9.29***
Number of Observations	72,371	72,371	72,371	72,371

Panel B: Large Shareholder Linkages: Independent and Grey Investors

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.160***	0.138***	0.084***	0.068***
(Independent Investors)	(17.23)	(12.75)	(7.26)	(5.53)
Litigation-prone Large Shareholder Linkage	0.052***	0.043***	0.034***	0.018
(Grey Investors)	(4.82)	(3.82)	(2.88)	(1.49)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	51.56***	34.21***	8.81***	7.89***
Number of Observations	64,696	64,696	64,696	64,696

Panel C: Large Shareholder Linkages: Long and Short Holding Period

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.139***	0.125***	0.080***	0.062***
(Investors with Long Holding Period)	(13.14)	(10.29)	(6.25)	(4.57)
Litigation-prone Large Shareholder Linkage	0.048***	0.035***	0.027**	0.021*
(Investors with Short Holding Period)	(4.88)	(3.42)	(2.57)	(1.86)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Chi-square Test: Difference in Coefficients	38.80***	31.36***	9.87***	5.48**
Number of Observations	50,819	50,819	50,819	50,819

Table VII
Predicting Future Litigation: Institutional Plaintiff Channel

In this table, we examine the concerns that large shareholders may actively serve as lead plaintiffs in many securities class action litigations. For each column, we report the conditional marginal effects of litigation-prone large shareholder linkage, as the increase in litigation probability due to one standard deviation increase in litigation-prone large shareholder linkage divided by the predicted litigation probability at the mean. For brevity, we only report the coefficients and the conditional marginal effects of interested variables.

In Panel A, as Cheng et al. (2010) show that retirement and pension funds are the most frequent types of institutions that serve as lead plaintiffs in securities class action litigations, we exclude corporate pension funds and public pension funds when we construct the litigation-prone large shareholder linkage. In columns (1)-(4), we follow the same specifications as in Panel A, Table IV. The dependent variable is a dummy variable that is equal to 1 if the firm is being sued in year t+1 and 0 otherwise.

In Panel B, we exclude the class action lawsuits with institutional investors serving as lead plaintiffs, both in the procedure to construct the prone-litigation large shareholder linkage, and from the dependent variable. We identify institutional lead plaintiffs by searching the names of lead plaintiffs with the keywords: "pension", "management", "fund", "administration", "retirement", "advisor" and "trust". In columns (1)-(4), we follow the same specifications as in Panel A, Table IV. The dependent variable is a dummy variable that is equal to 1 if the firm is being sued in securities class action litigations without institutional investors serving as lead plaintiffs in year t+1 and 0 otherwise.

Panel A: Excluding Retirement and Pension Funds

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.655***	0.598***	0.382***	0.304***
	(19.68)	(15.28)	(9.06)	(6.66)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	40%	38%	25%	21%
Number of Observations	79,506	79,506	79,506	79,506

Panel B: Excluding Litigations with Institutional Lead Plaintiffs

Dep. Var.: Litigation Dummy	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.613***	0.604***	0.451***	0.313***
	(14.79)	(12.18)	(8.52)	(5.45)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	35%	35%	27%	20%
Number of Observations	78,734	78,734	78,734	78,734

Table VIII
Predicting Future Litigation: Other Linkage Channels

In this table, we perform robustness checks to the previous results in Table IV, and consider specifications that help to rule-out alternative linkage channels. We repeat all of the previous analyses with the same specifications as in Table IV, Panel A. For brevity we only report the variables of interests. For each specification, we report the coefficient and the conditional marginal effect of Litigation-prone Large Shareholder Linkage.

In Panel A, we only identify Litigation-prone Largeinvestors holding stocks that are being sued in different industries (different 1-digit SIC code) with respect to the sample firms when we construct the measure of Litigation-prone Large Shareholder Linkage.

In Panel B, we only identify Litigation-prone Largeinvestors holding stocks that are being sued in different regions with respect to the sample firms when we construct the Litigation-prone Large Shareholder Linkage. We identify the locations of firms by ten regions: New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut), Middle Atlantic (New York, Pennsylvania, New Jersey), East North Central (Wisconsin, Michigan, Illinois, Indiana, Ohio), West North Central (Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa), South Atlantic (Delaware, Maryland, Washington D.C., Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida), East South Central (Kentucky, Tennessee, Mississippi, Alabama), West South Central (Oklahoma, Texas, Arkansas, Louisiana), Rocky Mountain (Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico), Northwest (Oregon, Washington, Idaho) and California.

In Panel C, we perform the analyses by excluding the firms whose suppliers or customers have been subject to securities class action litigations in the previous three years. We identify the supply chain relationship using the Compustat Customer Segments data.

In Panel D, we exclude the interlocking board channel. We use the data on firm directors from the IRRC Risk Metrics database from 1996 to 2010. We exclude all of the sample firms that have one or more common directors with the firms having class action lawsuits in the year when we construct the Litigation-prone Large Shareholder Linkage measure. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table VIII (Continued)

Dep. Var.: Litigation Dummy				
Panel A: Excluding Industry Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.689***	0.612***	0.400***	0.328***
	(19.50)	(15.59)	(9.46)	(7.17)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	41%	38%	26%	23%
Number of Observations	79,521	79,521	79,521	79,521
Panel B: Excluding Regional Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.763***	0.698***	0.447***	0.343***
	(19.61)	(14.93)	(8.81)	(6.40)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	43%	41%	27%	22%
Number of Observations	65,608	65,608	65,608	65,608
Panel C: Excluding Supply Chain Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.629***	0.564***	0.380***	0.299***
	(17.94)	(13.72)	(8.67)	(6.24)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	38%	35%	24%	20%
Number of Observations	76,035	76,035	76,035	76,035
Panel D: Excluding Interlocking Board Channel	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.676***	0.639***	0.450***	0.348***
	(17.71)	(14.27)	(9.42)	(6.73)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	40%	38%	28%	23%
Number of Observations	69,085	69,085	69,085	69,085

Table IX
Predicting Future Litigation: Alternative Measures

In this table, we perform robustness checks to the previous results in Table IV, using alternative measures of litigation-prone large shareholder linkage. We repeat all of the previous analyses with the same specifications as in Table IV, Panel A. For brevity we only report the variables of interests. For each specification, we report the coefficient the conditional marginal effect of litigation-prone large shareholder linkage. In Panel A, we follow the same procedure as before to calculate the measure of litigation-prone large shareholder linkage, but focus on the top 10 institutional investors of each firm ranked by the amount of holdings of the company's common stock. In Panel B, we follow the same procedure but focus on the investors with ownership above 1 percent of the firm's shares outstanding. In Panel C, we calculate the measure of litigation-prone large shareholder linkage based on large investors with ownership above 5 percent of the firm's shares outstanding. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dep. Var.: Litigation Dummy				
Panel A: Top 10 Investors	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.832***	0.804***	0.522***	0.403***
	(22.69)	(17.85)	(10.82)	(7.51)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	48%	47%	32%	26%
Number of Observations	79,521	79,521	79,521	79,521
Panel B: Block Investors (ownership>1%)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.664***	0.677***	0.465***	0.367***
	(19.44)	(16.17)	(10.42)	(7.37)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	41%	42%	30%	25%
Number of Observations	72,604	72,604	72,604	72,604
Panel C: Block Investors (ownership>5%)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	0.394***	0.324***	0.221***	0.162***
	(11.22)	(8.49)	(5.50)	(3.94)
Same Specification as in Panel A, Table IV	Y	Y	Y	Y
Conditional Marginal Effects	26%	22%	16%	12%
Number of Observations	54,139	54,139	54,139	54,139

Table X
Predicting Corporate Governance Outcomes

In this table, we examine the relation between the litigation-prone large shareholder linkage and other corporate governance outcomes commonly used in the literature. Specifically, we focus on the bidder announcement returns in mergers and CEO turnover-performance sensitivity.

In Panel A, we focus on the bidder announcement return. We estimate the following OLS model:

$$\text{Bidder CAR } (-1, \ +1)_{i,t+1} = \alpha + \beta \times \text{Litigation-prone Large Shareholder Linkage}_{i,t} + \delta \times X_{i,t} + \varepsilon_{i,t+1},$$

where the dependent variable is the 3-day cumulative abnormal returns of the bidder around the merger announcement date in year t+1. We use the market model to estimate the abnormal returns with window (-300, -46) before the announcement date as the estimation period. We obtain the data on mergers from SDC Platinum's M&A database for the period of 1994 to 2010. We require the deal value to be more than 50 million dollars. We always control for major deal characteristics: *Deal Value, as* the logarithm of the dollar value of the merger; *Tender Offer Dummy, as* a dummy variable equal to 1 if the merger is a tender offer and 0 otherwise; *Cash Offer Dummy, as* a dummy variable equal to 1 if the method of payment is only by cash and 0 otherwise; *Same Industry Dummy, as* a dummy variable equal to 1 if the target and the bidder have the same two-digit SIC industry code. We always cluster the errors at the year level. All the independent variables are taken in year t. In column (2), we control for ownership characteristics such as large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. In column (3), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth as well as industry fixed effects at the two-digit SIC level. In column (4), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity.

In Panel B, we focus on the forced CEO turnover-performance sensitivity. We estimate the following probit model:

$$\text{Forced CEO Turnover Dummy}_{i,t+1} = \alpha + \beta \times \text{Stock Return}_{i,t} \times \text{High Linkage Dummy}_{i,t} + \delta \times X_{i,t} + \varepsilon_{i,t+1},$$

where the dependent variable is the forced CEO turnover dummy in year t+1. We obtain the data on forced CEO turnovers for firms in the S&P ExecuComp database between 1993 and 2010 from Jenter and Lewellen (2014). The variable of interest is the interaction term between stock return and a high linkage dummy. In each year, we first regress the litigation-prone large shareholder linkage on the complete set of control variables as in column (4), and we obtain the regression residuals. Then, we define the high linkage dummy to be 1 if the regression residual is above the sample median and 0 otherwise. We always control for major CEO characteristics: *CEO Tenure,* as the logarithm of the number of years since the CEO resumes office; *CEO Age,* as the logarithm of the CEO's age; CEO *Chairman,* as a dummy variable that is equal to 1 if the CEO is also the chairman of the board and 0 otherwise. We obtain the information from the annual job titles of the CEO; CEO *Founder,* as a dummy variable that is equal to 1 if the CEO is the same CEO when the firm first appears in the ExecuComp database and 0 otherwise; *CEO Ownership,* as the number of stocks held by the CEO divided by the number of shares outstanding. All the independent variables are taken in year t. In column (2), we control for ownership characteristics such as large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. In column (3), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth as well as industry fixed effects at the two-digit SIC level. In column (4), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity. We always cluster the errors at the firm level. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Table X (Continued)

Panel A: Merger Announcement Returns

Dep. Var.: Bidder CAR (-1,+1)	(1)	(2)	(3)	(4)
Litigation-prone Large Shareholder Linkage	-0.018***	-0.019***	-0.013***	-0.013***
	(-5.75)	(-6.49)	(-3.88)	(-3.78)
Controls				
Deal Value	-0.004***	-0.004***	-0.003***	-0.003***
	(-4.16)	(-3.90)	(-3.68)	(-3.64)
Tender Offer	-0.001	-0.001	0.001	0.001
	(-0.36)	(-0.31)	(0.21)	(0.22)
Cash Offer	0.009***	0.008***	0.007***	0.007***
	(3.80)	(3.56)	(3.26)	(3.23)
Same Industry	-0.004**	-0.004*	-0.002	-0.002
	(-2.25)	(-2.00)	(-1.12)	(-1.09)
Large Inst. Ownership		0.008	-0.007	-0.005
		(0.60)	(-0.56)	(-0.38)
Other Inst. Ownership		0.006	0.006	0.010*
		(0.73)	(1.07)	(1.86)
Insider Ownership		0.013	0.008	0.008
		(0.88)	(0.63)	(0.58)
Change in Large Inst. Ownership		1.076**	1.070**	1.067**
		(2.48)	(2.39)	(2.25)
Change in Other Inst. Ownership		1.063**	1.058**	1.054**
		(2.47)	(2.39)	(2.25)
Change in Insider Ownership		-1.066**	-1.059**	-1.055**
		(-2.47)	(-2.38)	(-2.24)
Institutional Turnover		-0.011	-0.018	-0.017
		(-0.65)	(-1.26)	(-1.23)
FPS Industry Dummy			-0.002	-0.001
			(-0.36)	(-0.29)
Firm Size			-0.002	-0.001
			(-1.66)	(-1.05)
Book Leverage			0.012	0.011
			(1.48)	(1.43)
Market-to-Book			-0.000	-0.000
			(-0.64)	(-0.67)
Profitability			0.012	0.014
			(1.27)	(1.62)
Sales Growth				0.000
				(0.42)
Stock Return				0.001
				(0.30)
Return Volatility				0.015
				(1.01)
Return Skewness				-0.003
				(-1.68)
Amihud Illiquidity				0.013**
				(2.46)
Year FE	Y	Y	Y	Y
Industry FE (2-digit SIC)	-	-	Y	Y
Cluster	Year	Year	Year	Year
Number of Observations	2,854	2,854	2,854	2,854

Table X (Continued)

Panel B: Forced CEO Turnover-Performance Sensitivity

Dep. Var.: Forced CEO Turnover Dummy	(1)	(2)	(3)	(4)
Stock Return	-0.529***	-0.510***	-0.493***	-0.497***
	(-4.98)	(-4.92)	(-5.20)	(-5.53)
Stock Return × High Linkage Dummy	0.321***	0.310***	0.311***	0.302***
	(2.69)	(2.71)	(2.99)	(3.07)
Controls				
High Linkage Dummy	0.029	0.028	0.037	0.039
	(0.59)	(0.58)	(0.75)	(0.81)
CEO Tenure	-0.013	-0.006	-0.006	-0.000
	(-0.37)	(-0.17)	(-0.16)	(-0.00)
CEO Age	-0.572***	-0.510***	-0.352*	-0.332*
	(-3.07)	(-2.75)	(-1.80)	(-1.70)
Founder CEO Dummy	-2.179***	-2.397***	-2.763***	-2.682***
	(-2.66)	(-2.76)	(-2.88)	(-2.71)
Chairman CEO Dummy	-0.188***	-0.218***	-0.223***	-0.233***
	(-3.13)	(-3.53)	(-3.42)	(-3.59)
CEO Ownership	-0.127***	-0.107**	-0.104**	-0.103*
	(-2.59)	(-2.14)	(-2.00)	(-1.96)
Large Inst. Ownership		0.065	-0.025	0.005
		(0.27)	(-0.10)	(0.02)
Other Inst. Ownership		-0.254	-0.206	-0.001
		(-1.48)	(-1.12)	(-0.00)
Insider Ownership		-0.109	-0.077	-0.139
		(-0.29)	(-0.19)	(-0.34)
Change in Large Inst. Ownership		-0.606	-0.450	0.151
		(-0.15)	(-0.10)	(0.03)
Change in Other Inst. Ownership		-1.110	-0.891	-0.310
		(-0.27)	(-0.20)	(-0.07)
Change in Insider Ownership		0.772	0.664	0.167
		(0.19)	(0.15)	(0.04)
Institutional Turnover		1.380***	0.666	0.449
		(3.42)	(1.53)	(1.01)
FPS Industry Dummy			0.415***	0.388***
			(4.59)	(4.31)
Firm Size			-0.004	0.018
			(-0.20)	(0.91)
Book Leverage			0.160	0.091
			(1.17)	(0.64)
Market-to-Book			-0.027	-0.024
			(-1.29)	(-1.11)
Profitability			-0.223	-0.039
			(-1.27)	(-0.21)
Sales Growth			0.035	0.029
			(1.34)	(1.14)
Return Volatility				1.316***
				(3.88)
Return Skewness				0.004
				(0.09)
Amihud Illiquidity				0.275*
				(1.65)
Year FE	Y	Y	Y	Y
Industry FE	-	-	Y	Y
Cluster	Firm	Firm	Firm	Firm
Number of Observations	14,868	14,868	14,868	14,868

Table XI
Predicting Future Short Interest

In this table, we examine the relation between the litigation-prone large shareholder linkage and future Short Interest of the firm's common stocks through the channel of increased litigation risk. Specifically, we estimate a two-stage model. In the first stage, we estimate the following probit model:

$$\text{Litigation Dummy}_{i,t+1} = \alpha + \beta \times \text{Litigation-prone Large Shareholder Linkage}_{i,t} + \varepsilon_{i,t+1},$$

from which we calculate the predicted litigation likelihood explained by the litigation-prone large shareholder linkage. Then, in the second stage, we estimate the following model:

$$\text{Short Interest}_{i,t+1} = \alpha + \beta \times \text{Predicted Litigation Likelihood}_{i,t} + \delta \times X_{i,t} + \varepsilon_{i,t+1},$$

where the dependent variable is the Short Interest of the firm in year t+1. The main variable of interest is the predicted litigation likelihood by the litigation-prone large shareholder linkage. All the independent variables are taken in year t. The detailed definitions of all the variables can be found in the appendix. In column (1), we control for ownership characteristics such as large institutional ownership, other institutional ownership, insider ownership, changes in these ownerships and institutional turnover. In column (2), we control for firm characteristics including FPS industry dummy, firm size, book leverage, market-to-book, profitability, sales growth, R&D, goodwill, equity proceeds, debt proceeds as well as industry fixed effects at the two-digit SIC level. In column (3), we further control for stock characteristics such as yearly return, return volatility, return skewness and Amihud illiquidity. In column (4), we include firm fixed effects. We include year fixed effects and cluster the errors at the firm level in all specifications. ***, ** and * represent significance levels at 1%, 5%, and 10%, respectively, using robust standard errors with t-statistics given in parentheses.

Dep. Var.: Short Interest	(1)	(2)	(3)	(4)
Predicted Litigation Likelihood	1.122***	0.764***	0.617***	0.410***
(By Litigation-prone Large Shareholder Linkage)	(9.13)	(7.09)	(5.93)	(4.75)
Controls				
Large Inst. Ownership	1.711***	1.906***	1.196***	2.920***
	(7.51)	(8.84)	(5.71)	(10.90)
Other Inst. Ownership	5.559***	5.627***	5.060***	6.464***
	(35.62)	(33.34)	(30.24)	(27.26)
Insider Ownership	0.106	-0.253	-0.620***	-0.555***
	(0.52)	(-1.29)	(-3.23)	(-2.74)
Change in Large Inst. Ownership	2.295	1.634	0.873	0.570
	(0.56)	(0.44)	(0.25)	(0.19)
Change in Other Inst. Ownership	2.918	2.159	1.292	0.942
	(0.71)	(0.57)	(0.37)	(0.30)
Change in Insider Ownership	-0.102	0.357	1.051	1.690
	(-0.02)	(0.10)	(0.30)	(0.55)
Institutional Turnover	2.417***	1.434***	0.522***	-0.094
	(13.13)	(8.03)	(3.17)	(-0.55)
FPS Industry Dummy		-0.010	-0.034	0.078
		(-0.10)	(-0.37)	(0.48)
Firm Size		0.033*	-0.082***	0.185***
		(1.94)	(-4.25)	(3.40)
Book Leverage		0.640***	0.773***	0.961***
		(5.50)	(6.82)	(5.31)
Market-to-Book		0.222***	0.157***	0.150***
		(12.85)	(9.17)	(8.07)
Profitability		0.330***	0.194*	0.085

		(3.21)	(1.96)	(0.75)
Sales Growth		0.021	-0.014	0.057**
		(0.88)	(-0.60)	(2.33)
R&D		1.697***	1.185***	-0.034
		(5.00)	(3.65)	(-0.07)
Goodwill		-0.936***	-0.895***	-0.364
		(-4.84)	(-4.83)	(-1.35)
Equity Proceeds		0.990***	0.400***	0.308**
		(7.43)	(3.10)	(2.27)
Debt Proceeds		0.447***	0.332***	0.373***
		(3.70)	(2.92)	(3.53)
Stock Return			0.078***	0.034*
			(3.44)	(1.65)
Return Volatility			4.555***	2.530***
			(20.97)	(11.55)
Return Skewness			-0.104***	-0.054***
			(-5.62)	(-3.24)
Amihud Illiquidity			-1.305***	-0.291***
			(-23.78)	(-5.68)
Year FE	Y	Y	Y	Y
Industry FE (2-digit SIC)	-	-	Y	-
Firm FE	-	-	-	Y
Cluster	Firm	Firm	Firm	Firm
R-squared	0.249	0.291	0.318	0.670
Number of Observations	50,692	50,692	50,692	50,692