The Effects of Information Acquisition in M&As: Evidence from SEC EDGAR Web Traffic

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Abstract

This paper studies the effects of information acquisition in mergers and acquisitions (M&As). Information acquisition, proxied by downloads of filings on the SEC EDGAR website, improves the market's assessment of deal synergies. Specifically, the information acquisition about merging firms, industry rivals, and supply-chain firms enhances the relation between combined announcement return and post-merger performance in merged firms. The informational role is more important for mergers with greater institutional downloads and more intensive institutional trading activities. Merging firms' stock prices react more to new information about the merger. Further, information acquisition in merging firms improves market informativeness about both production synergies and financial synergies achieved by the merger. Overall, this paper provides supportive evidence that information acquisition activities improve the efficiency of market valuation in mergers.

JEL Classification: G14, D81, G34

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1. Introduction

Stock market reaction is widely viewed as an important reference of value creation in various corporate events, including corporate mergers (Shahrur, 2005; Boone and Mulherin, 2007), earnings announcement (Bernard and Thomas, 1989), innovation policy (Zantout and Tsetsekos, 1994), and managerial turnover (Weisbach, 1988; Kovacs, Parrino, and Starks, 2001). The market efficiency theory (Fama, 1970, 1976) posits that the stock price should reflect market perceptions of a firm's prospect. When information is not fully incorporated into stock prices, the market's reaction provides an inaccurate reflection of expected changes in firms' fundamental value. Thus, the informativeness of the market's reaction affects the extent to which one can draw inferences about firms' prospects from stock prices. Since it is challenging to directly observe and quantify the effort exerted by market participants to acquire information, the informativeness of market reactions to corporate events has seldomly been questioned.

Understanding the informativeness of stock market reactions in mergers and acquisitions is essential for several reasons. Frist, mergers and acquisitions have wide impacts on all economically related firms (e.g., rivals, suppliers, and customers). Thus, stock market reactions provide timely anticipation of value creation for many firms announced mergers. Second, unlike routine corporate announcements, merger events are strategic decisions made by firms. For market investors, mergers are unexpected and difficult to evaluate. Hence, stock market reactions have been a critical indication of deal quality. Third, market informativeness is an important consideration when one assesses merger quality using stock market reactions. The informativeness of the stock market in the merger setting is reflected in the relation between market reactions and long-term deal performance. Assuming the market is fully informed, changes in merging firms' stock prices reflect informative assessments of expected changes in merging and related firms' production efficiency, industrial asset reallocation, and competitive structure. However, the market is not equally informed across different firms due to firm-level information frictions[2]. The uninformed

[2] Further, a large body of the literature uses stock market reactions to deal announcements to capture value creation and does not reach a consensus on whether mergers create value for acquiring firms. In a recent study, Ben-David, Bhattacharya, Jacobsen (2020)

market reactions to deal announcements could be explained by insufficient information possessed by the market when mergers are announced.

This paper uses EDGAR web traffic data to quantify information acquisition activities and test its effects on market informativeness in mergers and acquisitions. This paper aims to explore several questions. Whether information acquisition affect stock market reactions by improving the informativeness of merger value creation? What sources of deal value-creation can be identified by the market when information from corporate filings is acquired? Who acquires information that can effectively move the stock price? What information is acquired to improve market informativeness? Ceteris paribus, the more information acquired by the market, the more informed the market reactions could be. When the market reactions are strong indicators of true deal quality, short-term stock market reactions should reflect long-term post-merger performance in combined firms. In addition to operating performance, information about merging firms also improve market understanding of various sources of deal synergies, including an increase in return on equity (ROE), price markup, operating margin, and cash flow returns. Another important source of value creation is the changes in financial synergies. A decrease in the cost of capital will increase the value of combined firms. Hence, information acquisition about merging firms also improves market informativeness about deal financial synergies. Compared to retail investors, institutional investors are more sophisticated in processing financial information from corporate filings and, therefore, can more effectively move the stock price. Since deal synergies could come from changes in market shares or rents extracted along the supply chain, information about economically linked firms (i.e., rivals, suppliers, and customers) also improve market understanding of potential value creation in combined firms.

The empirical analyses start with testing the explanatory power of information acquisition on the relation between stock market reactions and deal synergies. Information acquisition activity is measured as the intensity of SEC filing downloads in merging and merger-related firms around all public deal

find that acquirer announcement returns are uncorrelated with post-merger operating performance and buy-hold abnormal returns in acquiring firms, likely due to insufficient information possessed by the market.

announcements from 2003 to 2016.[3] To ensure that investors' information acquisition is merger-related, I require download activities only requested by IP users who download at least one of the merging firms' filings within the event window. The results suggest that information acquisition significantly increases the relation between combined cumulative abnormal stock returns (CAR) and post-merger operating performance (Industry-adjusted ROA) in combined firms. Merger-related information comes from not only merging firms but also other firms. Specifically, information acquired from industry rivals can improve market informativeness about the post-merger market structure and competitive position of combined firms. Customers and suppliers also provide information to facilitate the market assessment of post-merger market power along the supply chain. I find that information acquisition about both merging firms and merger-related firms helps explain the relation between stock market reactions and post-merger operating performance.

To get a deeper insight into the role of information acquisition in mergers and acquisitions, I further test the explanatory power of information acquisition on the relation between stock market reactions and other measures of deal synergies. In addition to operating performance measured by industry-adjusted ROA, I also examine whether investors learn about specific sources of deal synergies by downloading filings of merging firms. The results suggest that information acquisition about merging firms increases the relation between combined CAR and several other synergy measures, including ROE, operating margin, price markup, and operating cash flow. The evidence implies that information acquisition facilitates market understanding of post-merger synergies gained from improved financial, operating, and product market performance. Overall, the evidence confirms that information acquisition improves market informativeness about deal quality.

[3] The SEC EDGAR web traffic data contains records of the requests of SEC filings. Although the EDGAR website is not the only source for obtaining information, it provides more timely dissemination of information to the public than other information providers and news wires such as Google search and business news from commercial websites. Since most SEC filings are mandatory disclosure in standardized formats, firms have less discretion in the contents of information disclosure.

To improve our understanding of who acquires the information and what information effectively moves stock prices, I explore the heterogeneity of information acquisition across different mergers. First, I exploit the information acquisition and trading activities of institutional investors. I use a unique dataset to identify institutional IP users and classify institutional download activities requested by institutional IP. Compared to retail investors, institutional investors are more sophisticated and can better process information from SEC filings. Consistent with this view, the subsample analysis shows that information acquisition significantly increases the relation between combined CAR and post-merger ROA only when deals experience enough institutional downloads. I also divide the sample based on the intensity of institutional trading calculated using institutional holding data. The results in subsample analysis indicate that information acquisition significantly increases the relation between combined CAR and post-merger ROA only when deal experience intensive institutional trading activities. Both pieces of evidence support the view that institutional investors can better incorporate information into merging firms' stock prices. Next, I study the difference in new and stale information about the mergers available to the market. I divide the sample based on whether the focal deal is the initial bid in the industry within the year. The informational role is more important in the initial industry bid, where the information about the merger is relatively new to the market. In other words, new information about the merger more effectively moves stock price changes in merging firms.

I then examine whether market investors use the information acquired from corporate filings to evaluate financial synergies achieved by mergers. A decrease in the cost of capital increases the value of combined firms. In this case, informed market reactions should negatively relate to the estimated cost of capital changes around merger completion. I identify pseudo portfolio firms by separately matching on target and acquirer's industry, size, BM ratio, and quarterly downloads in the year before deal announcements. Following Gebhardt, Lee, and Swaminathan (2001), I use quarterly data to construct the benchmark adjusted changes in the cost of capital in combined firms. Consistently with the argument that information acquisition improves market understanding of deal valuation, I find the information acquired

about merging firms tightens the relation between decreased cost of capital and increased combined announcement returns.

There are two main endogeneity concerns in this study. First, unobserved firm characteristics can simultaneously affect the intensity of information acquisition and changes in stock prices. For instance, firms that report filings in a more readable way may experience greater information acquisition due to less information processing cost. However, these firms are transparent enough to inform the market about merger announcements without information acquisition. To address this omitted variable bias, I conduct a difference-in-differences analysis using SEC eXtensible Business Reporting Language (XBRL) adoption from 2009 to 2011. The mandate requires firm report filings in XBRL format, which is easier to read and process. The exogenous decrease in information processing cost is assumed to increase information acquisition for firms that adopted the rule. The results suggest that the effects of information acquisition about merging firms treated by the rule after XBRL adoption are significantly stronger than in other deals. The evidence establishes casual effects of information acquisition on the informativeness of stock market reactions to mergers.

The second endogeneity concern is that stock market reactions may trigger intensive information acquisition activities. To address such a reverse causality issue, I implement the instrumental variable approach by using two-stage least-square (2SLS) analyses. I use the number of firm amendments issued in the past three years as an instrument for the information acquisition around deal announcements. The first-stage results show that more firm amendments issued in years before announcement represents higher information demand in corporate events (i.e., mergers and acquisitions), validating relevant conditions. Firm amendments issued before announcement are unlikely to affect merger announcement return, thus satisfying the exclusion restriction.

This paper contributes to several strands of the literature. It adds to existing studies on the stock market reaction to corporate events, especially mergers and acquisitions. Andrade, Mitchell, and Stafford (2001), Moeller, Schlingemann, and Stulz (2004), Moeller, Schlingemann, and Stulz (2005), Malmendier

and Tate (2008), Savor and Lu (2009), Netter, Stegemoller, and Wintoki (2011), Fich, Nguyen, and Officer (2018), and Malmendier, Moretti, and Peters (2018), among many other studies, use stock market reaction as a value creation measure in mergers and acquisitions. This paper firstly provides evidence that the relation between stock market reaction around merger events and long-term deal value creation increases with the amount of information acquired by the market. The results also suggest insufficient information acquisition explains the inconsistency between short-term market reaction and long-term takeover performance.

This paper connects the literature on information acquisition via EDGAR and price discovery rationale in financial markets. Seminal papers argue that trading activities reveal information to markets (Kyle (1985), Glosten and Milgrom (1985)). Most of the existing studies on price discovery focus on how investor trading leads to price revisions. This paper focuses on information acquisition that may prompt investors' trading behavior around merger announcements. Farboodi, Matray, and Veldkamp (working paper) find that big data growth can affect the price informativeness of large and small firms differently. Two other related papers, Bai, Philippon, and Savov (2016) and Martinea (2017), show that financial markets have become more informative due to greater information production. Gao and Huang (2019) provide empirical evidence that investors' searching activity affects stock price informativeness. Drake, Roulstone, Thornock (2015) show that EDGAR searches around earnings announcements increase stock market efficiency. Bauguess, Cooney, and Hanley (2008) show that investors' information acquisition activities affect IPO pricing. Distinct from the extant literature, this paper uses merger and acquisition as a laboratory and provides evidence that information acquisition improves stock market informativeness for deal (i.e., combined firms) valuation purposes.

This paper also contributes to the literature on information diffusion along with economic links. Merger synergies could come from post-merger collusion, market power changes, and rent extraction from supply chain relations (Eckbo, 1983; Fee and Thomas, 2003; Shenoy, 2012). Delong and DeYoung (2007) test the "learning by observing" hypothesis that the market learns to better price bank mergers from

previously observed bank mergers. Song and Walkling (2000) show that previous mergers increase the reassessment of target rivals' future acquisition probability. Dessaint, Foucault, Foucault, and Fresard (2014) find that firms' investment is sensitive to their peer firms' stock prices. Ozoguz and Rebello (2013) and Yan (2015)) also provide consistent evidence. This paper provides new evidence that non-deal but related firms (i.e., industry rivals, suppliers and customers, and previously merged firms) provide useful information for deal valuation.

The rest of the paper is as follows. Section 2 describes the data and the construction of key variables. Section 3 reports the empirical analyses. Section 4 concludes.

2. Data, Sample, and Variable Construction

The SEC EDGAR log file data contains daily filing download information from 2003 to 2016. Each daily log file provides the date and time of each download request by IP address. The daily server log dataset provides the SEC Central Index Key (CIK) under which filings are downloaded by investors, the IP address[4] of each user, and the type of filings downloaded. I focus on short-term abnormal download activities due to two reasons. First, information acquired a long time before deal announcements may be used by merging firms in their merger decisions. For example, acquirers may conduct searching activities in the target selection process. In this case, download activities do not contribute to market reaction to deal announcements. Second, download activities a long time after the deal announcement can be driven by other less relevant events to the merger.

To study information acquisition effects on market reaction efficiencies at the deal level, I construct the information acquisition measure, *Event (Peer) downloads*, using the number of downloads in merging (industry peer) firms within a (-5, +5) day event window around each deal announcement. The number of

[4] The typical IP address consists of four octets (e.g., "123.456.789.tba"), and the last octet is not published by SEC for the sake of privacy.

downloads is then normalized by the total downloads in all firms within the same period[5]. Deals announced close to each other may have overlapping event windows, within which download activities can be related to any deals. To ensure that information acquisition about non-deal firms is merger-related, I construct all measures by requiring IP users who downloaded at least once in either target or acquiring firms within the event window. Finally, following Lee, Ma, and Wang (2015), I exclude download activities that are likely to be performed by "Robot" IP users who visit more than 50 firms in a day.

The information about mergers and acquisitions is from the SDC merger and acquisition database. The sample period spans from 2003 to 2016. The screening conditions are as follows: The transaction value is no less than one million US dollars. Both target and acquirers are US public firms. The percent of shares the acquirer is seeking to own after the transaction is required to be larger than 50%. The percent of shares acquired held before the announcement is less than 50%. I restricted the deal to the merger, acquisition of majority interests, and acquisition of assets. Further, I require both target and acquirer firms have financial information in Compustat and CRSP before the deal announcement year. The final sample contains 967 deal announcements.

Figure 1 illustrates EDGAR download activities around M&As deal announcement date. Figure 1.A and Figure 1.B illustrate the average number of daily downloads of SEC filings in target and acquiring firms around deal announcements. The industry peer firms are defined as firms in the same 3-digit SIC industry with either acquirer or target firms. Figure 2.A and Figure2.B illustrate the average number of daily downloads in firms within target and acquiring industries. Figure 3 reports the average download in supplier and customer firms (exclude merging firms). Download activities experience a spike in merging firms and their rivals, customers, and suppliers around deal announcements. The pattern suggests that investors' information demand about potential changes through mergers is triggered by the corporate news when deal announcements become public information. Table 1 reports the summary statistics of the deal-level sample. Raw numbers of downloads in the 11-day window around deal announcements are reported

[5] Alternative measure of downloads in merging firms are reported in summary statistics and Appendix.

in Panel A. On average, there are 631,369 requested downloads of SEC filings in all firms around each deal announcement. There are 524 requested downloads of filings in merging firms. 2217 requested downloads of filings in rival firms of merging parties. I identify institutional downloads using the GeoLite2 database. There are roughly 16 unique institutional IP users who download merging firms' filing around deal announcements. Panel B reports the download scaled by the total number of market downloads. To address the concern that market movement affects the intensity of download, I use scaled measures as main measures in later sections. Table 2 reports the deal statistics of the sample. There is 40.6 percentage of deals are diversifying deals in which the target is from a different 3-digit SIC industry with the acquirer. On average, acquirers paid 38.3 percentage of shares by stock in the deal. Acquirer and target firm's financial information including Acquirer (Target) size, BM ratio, ROA, and cash (scaled by total assets are obtained from the Compustat database.

3. Empirical Tests

3.1. Deal-level information acquisition and stock market reactions

Information acquisition activities could improve market assessment of true deal synergies, thus increasing the efficiency of market reaction to merger announcements. The efficiency of market reaction is captured by the correlation between merger announcement returns and long-term takeover performance. The information acquisition includes download activities in both merging firms, which mainly contribute to abnormal download activities around deal announcements. I first explore deal-level information acquisition effects on market reaction efficiencies in mergers and acquisitions.

[Insert Table 3 here]

Table 3 reports the estimates of information acquisition effects on stock market reaction to merger announcements, conditional on the deal synergies measured by post-merger long-term performance. The sample contains completed deals only. The dependent variable, *Combined CAR*, is the weighted average

cumulative abnormal return (CAR) in target and acquiring firms within a [-5, +5] day window around deal announcements and estimated from the market model. The *ESV* is the total number of downloads in both merging firms normalized by the market downloads within the same window around deal announcements. The main variables of interest are interactions of *ESV* and deal synergies. The synergy measure, *ROA,* is the net changes in the industry-adjusted operating performance (ROA) in combined firms from t-1 to t+1, t+2, and t+3 years separately reported in columns (1) to (3). I further add deal-level control variables including *Diversifying Deal, Relative size, Stock paid in the deal (%), Hostile and Toehold,* and acquirer and target characteristics, *including size, BM, ROA,* and *cash*.

As shown in Table 3, the significant positive coefficients on the interaction of event downloads and deal synergies suggest that information acquisition about event firms enhances the correlation between true synergies of the deal and stock market reaction around merger announcements. In un-tabulated results, I find no significant relation between the market reaction to deal announcements and deal value creation proxied by post-merger performance. Overall, the results support the view that information acquisition about merging firms enhance the market reaction efficiency.

3.2. Endogeneity Concern

The endogeneity concerns arise due to two possibilities. First, information acquisition activities may coincide with changes in merging firms' stock prices due to unobserved firm characteristics. For instance, firms that report filings in a more readable way may experience greater information acquisition due to less information processing cost. However, these firms are transparent enough to inform the market about merger announcements without information acquisition. To address this omitted variable bias, I conduct a difference-in-differences analysis using XBRL adoption from 2009 to 2011. The XBRL adoption requires firm report filings in XBRL format, which is easier to read and process. The exogenous decrease in information processing cost can increase information acquisition intensity for firms that adopted the rule.

[Insert Table 4 here]

The treated group consists of deals in which both merging firms issue first XBRL filing in 2009, 2010, or 2011. I define deals announced one/two/three year(s) before 2009 as pre-period and one/two/three year(s) after 2011 as post-period in the sample. Table 4 columns (1) to (3) report the results in three/two/one years around the XBRL adoption year. The significant positive coefficients on the triple interaction term suggest that the effects of information acquisition about merging firms treated by the rule in deals announced after XBRL adoption are more pronounced than in other deals. The evidence establishes a casual link between information acquisition and the informativeness of stock market reactions to mergers.

The other possibility is that stock market reactions may trigger intensive information acquisition activities, which raises a reverse causality concern. I implement the instrumental variable approach by using two-stage least-square (2SLS) analyses to address this concern. I use firm amendments issued in the past three years as an instrument to proxy for the information acquisition around deal announcements. Consistent with relevant conditions, the first-stage results suggest that more firm amendments issued in years before announcement represents higher information demand in corporate events (i.e., mergers and acquisitions). The exclusion restriction requires that firm amendments issued before announcement do not affect the relation between merger announcement return and operating performance in combined firms.

[Insert Table 5 here]

The results are reported in Table 5, supporting that information acquisition causes an increase in market informativeness about deal valuation. In the first stage, reported in columns (1), (3), and (5), the natural log of amendment issued by merging firms can positively predict the event-based information acquisition around deal announcements. In the second stage, the predicted values of information acquisition measure positively affect the relation between *ROA* and *Combined CAR*. The results hold for both target and acquiring firms' information acquisition. In sum, the results in Table 4 and 5 rule out alternative possibilities under which endogeneity concerns may arise.

3.4. Heterogeneity on investor sophistication and the information novelty

To explore the heterogeneity of information acquisition effects with different levels of investor sophistication and information novelty, I conduct several sub-sample analyses. I first exploit the effects of information acquisition conducted by different groups of investors. Compared to retail investors, institutional investors are more sophisticated and can better process information from SEC filings. Using a unique dataset to identify institutional IP users, I classify deals with more sophisticated investors based on the proportion of institutional downloads.

[Insert Table 6 here]

The subsample analysis in Table 6 Columns (1) and (2) shows that information acquisition significantly increases the relation between combined CAR and post-merger ROA only when deals experience enough institutional downloads. In addition, I divide the sample based on the intensity of institutional trading calculated using institutional holding data. Table 6 Columns (3) and (4) indicate that information acquisition significantly increases the relation between combined CAR and post-merger ROA only when deals experience more intensive institutional trading activities. Both pieces of evidence support the view that institutional investors can better incorporate information into merging firms' stock prices.

[Insert Table 7 here]

To further examine whether the new or stale information available for the market is more likely to move stock prices, I group deals based on whether the focal deal is the initial bid in the industry. The informational role is more critical in the initial industry bid, where the information about the merger is relatively new for the market. In other words, new information about the merger more effectively moves stock price changes in merging firms. As shown in Table 7, the acquisition of relatively new information, rather than stale information, about the merger enhances the relation between *Combined CAR* and *ROA*. The results hold for both target and acquiring firms.

3.5. Information sharing across economically linked firms

As shown in Figure 2 and Figure 3 in the data section, investors acquire information from not only merging firms but also other economically linked firms. In some cases, information acquisition in industry rivals can improve market informativeness about the post-merger market structure and competitive position of combined firms. Customers and suppliers also provide information to facilitate the market assessment of post-merger market power along the supply chain. To explore whether information acquisition in non-deal firms also facilitates market understanding of deal quality, I test the effects of downloads in non-deal firms on market reactions around merger announcements.

[Insert Table 8 here]

Table 8 Columns (1) and (2) report the effects of downloads in rival firms on the relation between combined announcement return and post-merger performance in combined firms. Columns (3) and (4) report the effects of downloads in rival firms on the relation between combined announcement return and post-merger performance in combined firms. Columns (2) and (4) exclude the merging firms when constructing the measure of downloads in rival firms for focusing deals, and in supply-chain firms for diversifying deals. The significantly positive coefficients show that information acquisition about both merging firms and merger-related firms positively explains the relation between stock market reactions and post-merger operating performance. This evidence confirms the argument that information acquisition improves market informativeness about deal quality.

3.6. Sources of deal synergies

This section aims to investigate other sources of deal synergies. The value-creation through the merger comes in two ways. The first one is the increase in production efficiency, and the other is the decrease in the cost of capital. An increase in production efficiency may generate positive revenues and profits, thus increasing firms' future cash flow. A decrease in the cost of capital may decrease the required rate of return for firms' investment, thus increasing firm value in the long run.

[Insert Table 9 here]

Therefore, I first examine the information acquisition effects on the market informativeness about four sources of deal synergies from the production perspective, including return on equity *(ROE), Operating margin, Price markup, Operating cash flow*. Table 9 present the findings. The significant positive results suggest that information acquisition in merging firms improves market informativeness about merger synergies gained from increased production efficiency.

Furthermore, to look into whether information acquired in merging firms facilitates market understanding about financial synergies gained through the merger, I test the information acquisition effects on the relation between *Combined CAR* and changes in the benchmark adjusted cost of capital (*Chg_Adj_ICC*).

[Insert Table 10 here]

I identify pseudo portfolio firms by separately matching on target and acquirer's industry, size, BM ratio, and quarterly ESV in the year before deal announcements. Following Gebhardt, Lee, and Swaminathan (2001), I use quarterly data to construct the benchmark adjusted changes in the cost of capital in combined firms. Table 10 presents supportive findings. Consistent with the argument that information acquisition improves market understanding of deal valuation, the information acquired about merging firms increases the relation between cost of capital and combined announcement returns.

3.6. Long-term informational effects versus short-term market attention

The measure used in the aforementioned tests mainly captures the information acquisition in the short-term around deal announcements. One might argue that information acquisition serves as a measure of short-term market attention instead of learning behaviors. Nevertheless, to rule out the alternative story of short-term attention, I construct a sample of firms with similar names to merging firms. I exclude merging firms and peer firms to ensure that these non-deal firms do not provide merger-related information. If the information acquisition measure captures the market attention, firms with similar names may draw similar attention with merging firms and experience the same effects on market reaction. If the download measure

captures information learning behaviors, firms that have similar names might draw equal attention but should not experience any changes in the real outcomes.

[Insert Table 11 here]

Table 11 replicates the previous tests using the sample of firms with similar names. For each deal, I match the names of merging firms (the target and the acquirer) and those of all other firms from SEC EDGAR. Next, I require the Levenstein distance between each pair to be smaller than a threshold of 3. In Table 11, the coefficients on the variable of interests are all statistically indistinguishable from zero, suggesting that firms with similar names do not experience changes in market reaction. The overall evidence rules out the short-term attention explanation.

4. Concluding Remarks

This paper studies the effects of information acquisition on market efficiencies in mergers and acquisitions. Using the SEC EDGAR web traffic data[6], I measure information acquisition activities as the intensity of SEC filing downloads in merging firms and other non-deal firms around merger announcements. I find that information acquisition around merger announcements can lead to the consistency between stock market reaction and long-term takeover (firm) performance. Specifically, deal-level download activities significantly enhance the correlation between combined announcement returns and post-merger operating performance in combined firms. Further, I find that information acquisition can come from non-deal firms. Information acquisition in rivals, customer, and suppliers facilitate market informativeness about deal value-creation. The sources of deal value-creation come from both product efficiency and financial synergies. By exploiting staggered XBRL adoption and firm amendments as an instrumental variable, this

[6] The SEC EDGAR web traffic data contains records of the requests of SEC filings. Although the EDGAR website is not the only source for obtaining information, it provides more timely dissemination of information to the public than other information providers and news wires such as XXX. Since most SEC filings are mandatory disclosure in standardized formats, firms have less discretions. Thus, SEC filings data serves as an unbiased information acquisition source.

paper establishes the casual effects of information acquisition on the relation between market reactions and deal synergies.

This paper generates implications on drawing inferences about deal value-creation from short-term market reactions. A large body of literature uses short-term announcement return as an indicator of shareholder value creation. The results in this paper suggest that the inference can be drawn without bias only when the market reacts in informed ways. If investors do not acquire information about the merger, the market reactions could be inconsistent with the true deal synergies.

Overall, this paper provides empirical evidence to show that information acquisition improves market efficiency and transparency in takeover markets. This paper contributes to the literature by providing a novel measure of information acquisition, which has not been quantified in studies of mergers and acquisitions. This paper provides evidence to support the hypothesis that information acquisition improves market reaction efficiency in mergers and acquisitions. This paper's findings also offer a potential explanation for the inconsistency between short-term market returns and long-term firm performance. Based on its findings, empirical inferences drawn from market reaction to corporate events should consider market informativeness.

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Figure 1. Information Acquisition around M&A Deal Announcements in Merging Firms

These figures illustrate EDGAR download activities in merging firms around M&As deal announcement date. Figure 1.A illustrates the average number of daily downloads of SEC filings in each acquiring firm. Figure 1.B illustrates the average number of daily downloads of SEC filings in each target firm.

Figure 1.A Daily downloads in acquiring firms

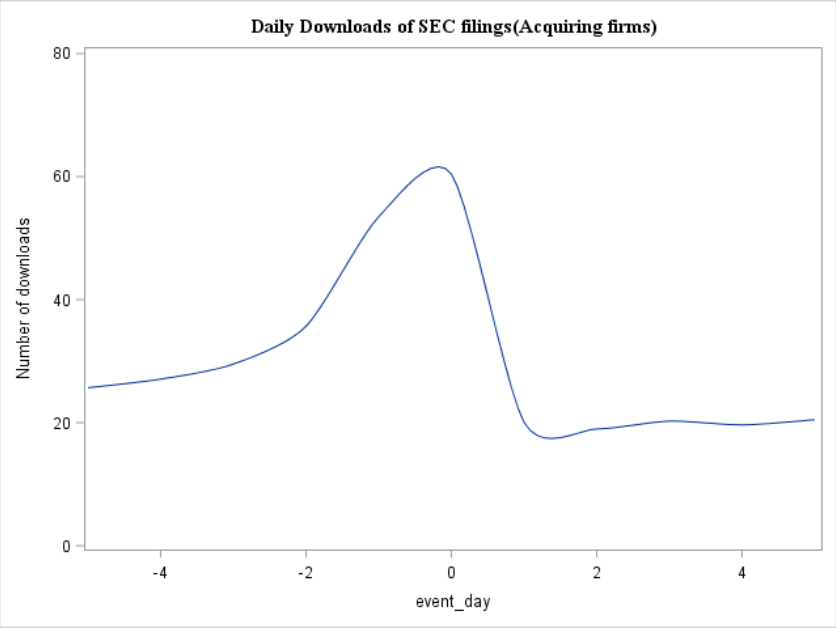

Figure 1.B Daily downloads in target firms

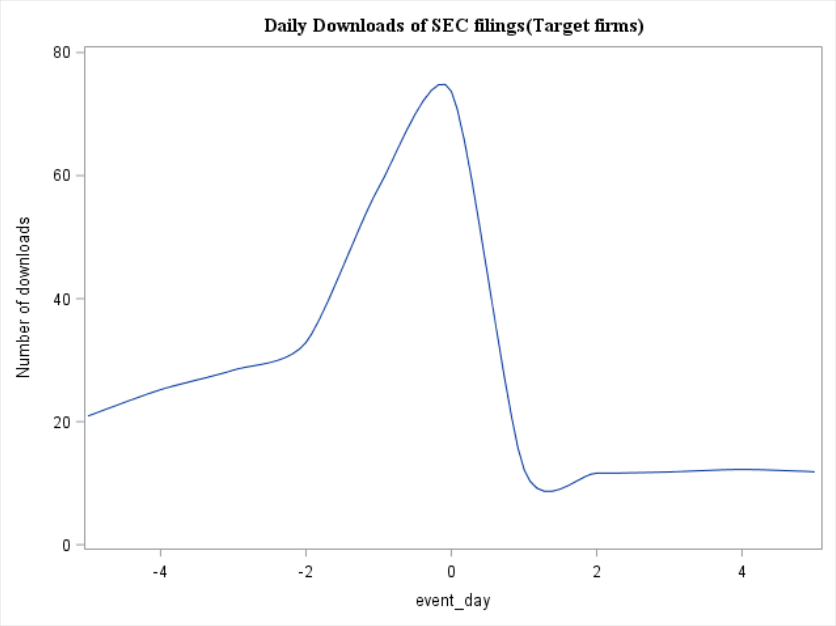

Figure 2. Information Acquisition around M&A Deal Announcements in Rival Firms

These figures illustrate EDGAR download activities in rival firms around M&As deal announcement date. Figure 2.A illustrates the average number of daily downloads of SEC filings in each acquirer industry (3-digit SIC) rival firm. Figure 1.B illustrates the average number of daily downloads of SEC filings in each target industry (3-digit SIC) rival firm.

Figure 2.A Daily downloads in acquirer industry rivals

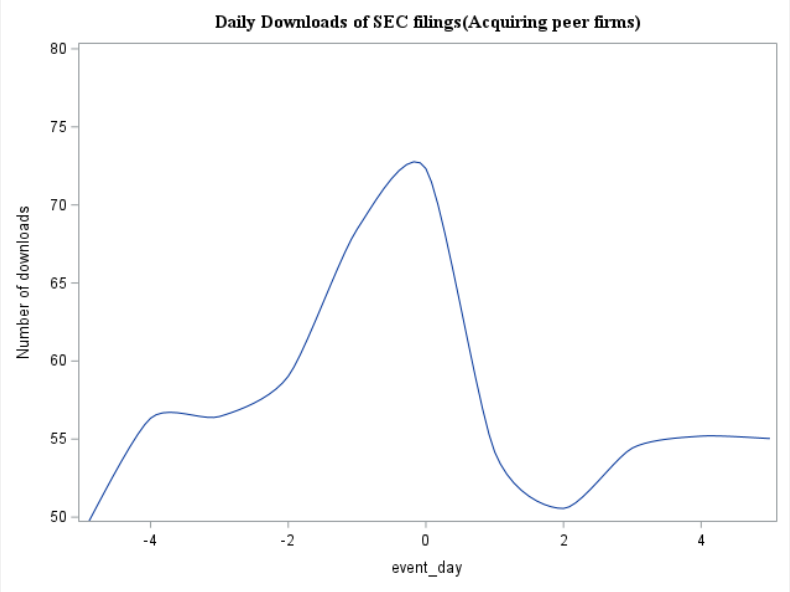

Figure 2.B Daily downloads in target industry rivals

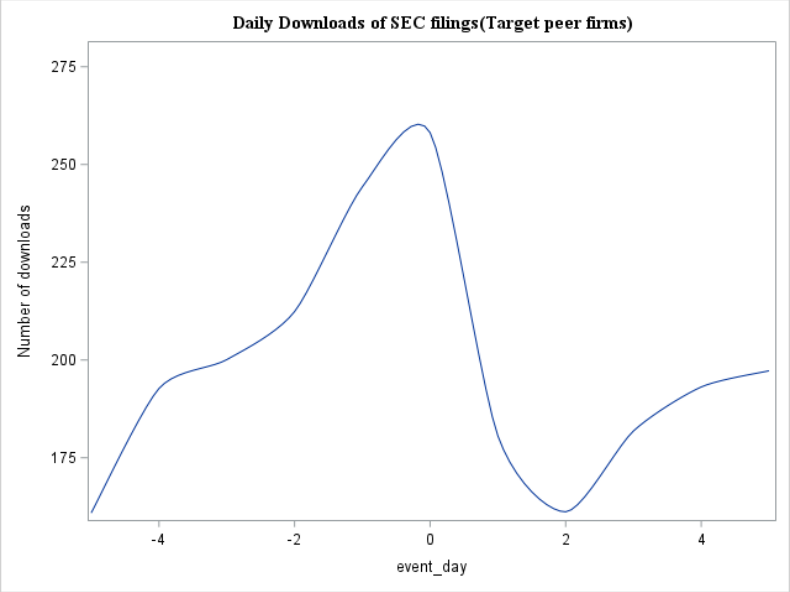

Figure 3. Information Acquisition around M&A Deal Announcements in Supply-chain Firms

These figures illustrate EDGAR download activities in rival firms around M&As deal announcement date. The figure illustrates the average number of daily downloads of SEC filings in each customer of supplier of merging firms.

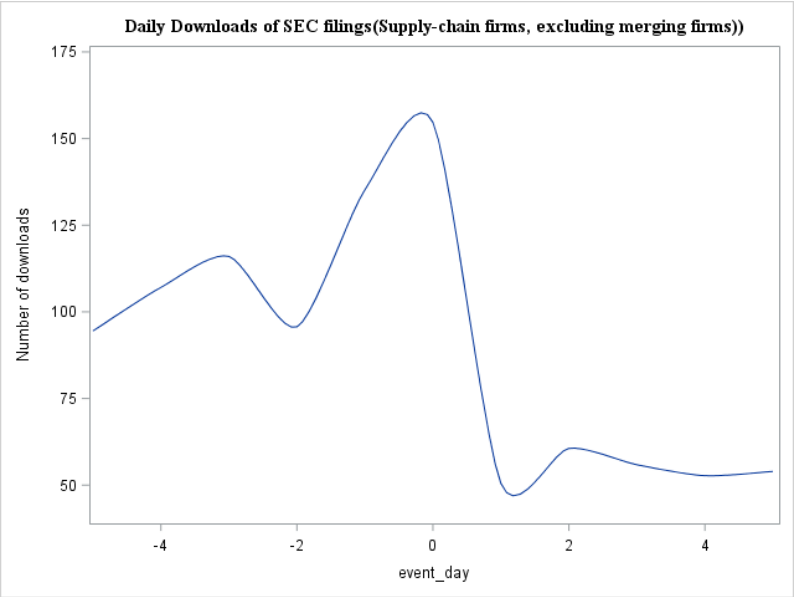

Table 1. Summary Statistics of Download Activities

This table reports the summary statistics of deal-level download activities in [-5,5] event-day window around deal announcements. The download activities are restricted to IP users who have at least one download of merging firms' filing within the event window. Panel A reports the raw number of downloads (unique IP), and Panel B reports the percentage of downloads scaled by market download. *Market ESV* is the total number of unique IP users that download filings issued by any firm within the event window. *Deal ESV* is the total number of unique IP users that download filings issued by merging firms. *Rival ESV* is the total number of unique IP users that download filings issued by industry (3-digit SIC) rivals of merging firms. *Customer/Supplier ESV* is the total number of unique IP users that download filings issued by customers or suppliers of merging firms. The customer/supplier information is from the Compustat segment customer dataset. *Institutional ESV* is the total number of unique institutional (US public firms) IP users that download filings issued by any firm. The institutional IP addresses are from the GeoLite2 database.

Panel A

Variables	N	Mean	Median	Std. Dev.	p10	p90
Market ESV	967	631,368.540	449,836	494996.610	196,432	1,462,776
Deal ESV	967	524.266	301	645.735	45	1,263
Rival ESV	967	221,7.818	1,220	2950.837	0	5,478
Customer/Supplier ESV	967	37.426	1	117.111	0	87
Institutional ESV	967	16.132	7	26.920	0	44

Panel B

Variables	N	Mean	Median	Std. Dev.	p10	p90
Deal ESV (scaled)	967	0.405	0.287	0.433	0.000	0.977
Rival ESV (scaled)	967	0.082	0.058	0.082	0.016	0.175
Customer/Supplier ESV (scaled)	967	0.007	0.000	0.020	0.000	0.018
Institutional ESV (scaled)	967	0.003	0.002	0.004	0.000	0.009

Table 2. Summary Statistics of M&A Deals and Merging Firms

This table reports the summary statistics of deals characteristics and merging firms' characteristics. *Diversifying* equals one if the target and acquirer are from two different (3-digit SIC) industries. *Relative Size* is the ratio of the target's market capitalization to the acquirer's market capitalization. *Stock (Pct)* is the percentage (in decimals) of shares traded in the transaction. *Hostile* equals one if the deal attitude is hostile. *Toehold* is the percentage (in decimals) of target shares the acquirer held six months prior to the deal announcement. *Acquirer* (*Target*) *Mkt_cap* is the natural log of market capitalization. *Acquirer* (*Target*) *BM* is the book value of equity scaled by the market value of common equity. *Acquirer* (*Target*) *ROA* is the ratio of net income(oibdp) to total assets. *Acquirer* (*Target*) *Cash* is the ratio of cash to total assets. ROA is the net changes of return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. *Combined CAR* is the cumulative abnormal stock return in [-5, 5] day-window estimated from the market model. The estimation period is from -42 to -274 days before deal announcement dates.

Variables	N	Mean	Median	Std. Dev.	p10	p90
Diversifying	967	0.406	0.000	0.491	0.000	1.000
Relative Size	967	0.467	0.066	1.290	0.013	1.015
Stock (Pct)	967	0.383	0.149	0.422	0.000	1.000
Hostile	967	0.011	0.000	0.106	0.000	0.000
Toehold	967	0.000	0.000	0.005	0.000	0.000
Acquirer Mkt_cap	967	8.180	8.052	2.095	5.421	11.131
Acquirer BM	967	0.501	0.463	0.315	0.169	0.901
Acquirer ROA	967	0.100	0.104	0.102	0.017	0.213
Acquirer Cash	967	0.155	0.082	0.174	0.014	0.420
Target Mkt_cap	967	5.988	5.890	1.873	3.618	8.476
Target BM	967	0.646	0.515	0.550	0.163	1.229
Target ROA	967	0.043	0.066	0.188	-0.095	0.199
Target Cash	967	0.215	0.106	0.237	0.016	0.591

Table 3. Information Acquisition in M&As and Stock Market Reactions

This table reports regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *ROA* is the net changes of return on assets in combined firms from the year t-1 to the year t+3/t+2/t+1. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. All download measures (*X*) are scaled by the market download within the same event window. *Deal ESV* measures information acquisition about merging firms. *Rival ESV* measures information acquisition about industry (3-digit SIC) rivals of merging firms. *Customer/Supplier ESV* measures information acquisition about customers or suppliers of merging firms. The customer/supplier information is from the Compustat segment customer dataset. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
Variables		*Combined CAR*	
Window (Year)	T+3	T+2	T+1
ROA Deal ESV*	4.3132**	3.1267**	4.0741**
	(1.526)	(1.389)	(1.722)
ROA	-0.0011	-0.0013*	-0.0018**
	(0.002)	(0.001)	(0.001)
Deal ESV	5.3581	5.9677*	6.6096*
	(3.374)	(3.207)	(3.061)
Diversifying	-0.0102	-0.0047	-0.0033
	(0.006)	(0.005)	(0.004)
Relative Size	0.0036	0.0028	0.0018
	(0.002)	(0.002)	(0.002)
Stock (Pct)	-0.0242***	-0.0282***	-0.0315***
	(0.008)	(0.007)	(0.008)
Hostile	0.0307	0.0386	0.0456*
	(0.020)	(0.027)	(0.023)
Toehold	0.0288	0.1708	0.0337
	(0.492)	(0.525)	(0.485)
Acquirer Mkt_cap	-0.0148***	-0.0153***	-0.0144***
	(0.002)	(0.002)	(0.002)
Acquirer BM	-0.0012	-0.0021	-0.0023
	(0.017)	(0.016)	(0.014)
Acquirer ROA	0.0675	0.0696*	0.0790**
	(0.041)	(0.038)	(0.029)
Acquirer Cash	-0.0288*	-0.0345**	-0.0407**
	(0.016)	(0.014)	(0.015)
Target Mkt_cap	0.0090***	0.0086***	0.0075***
	(0.002)	(0.002)	(0.002)
Target BM	0.0062	0.0062	0.0061
	(0.007)	(0.006)	(0.006)
Target ROA	-0.0425	-0.0433	-0.0362
	(0.049)	(0.048)	(0.046)
Target Cash	0.0050	0.0061	0.0174
	(0.024)	(0.022)	(0.020)
Observations	838	901	971

R-squared	0.361	0.350	0.354
Acquiring industry FE	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table 4. Diff-n-Diff Analysis - Information Acquisition around XBRL Adoption

This table reports the regression results of diff-n-diff analyses around the adoption of XBRL in 2009, 2010, and 2011. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *ROA* is the net changes of return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. *Treat* equals one if both target and acquirer first issue SEC filings in XBRL format in 2009, 2010, or 2011. *Post* equals one if the deal is announced after 2011 and zero if the deal is announced before 2009. Columns (1) to (3) report the results of subsamples in which the deal announced year falls in 3, 2, and 1 year(s) before 2009 and after 2011, respectively. Continuous variables are winsorized at the 1% and 99% levels. Robust standard errors are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
Variables		*Combined CAR*	
Window (Year)	[-3, +3]	[-2, +2]	[-1, +1]
*Treat*Post*ROA*	0.0537***	0.0501**	0.0572**
	(0.020)	(0.022)	(0.026)
*Treat*Post*	0.0243	0.0271	0.0217
	(0.018)	(0.019)	(0.026)
*Treat*ROA*	-0.0467***	-0.0522***	-0.0631***
	(0.017)	(0.018)	(0.021)
*Post*ROA*	-0.0078*	-0.0030	0.0010
	(0.004)	(0.005)	(0.008)
Treat	-0.0146	-0.0131	-0.0052
	(0.015)	(0.016)	(0.020)
Post	0.0258***	0.0240***	0.0168
	(0.007)	(0.008)	(0.012)
ROA	0.0018	0.0006	-0.0051
	(0.002)	(0.003)	(0.005)
Diversifying	-0.0026	-0.0019	-0.0023
	(0.006)	(0.007)	(0.010)
Relative Size	0.0057**	0.0056	0.0078*
	(0.003)	(0.003)	(0.004)
Stock (Pct)	-0.0262***	-0.0266***	-0.0293*
	(0.008)	(0.010)	(0.015)
Hostile	0.0081	0.0113	0.0184
	(0.032)	(0.032)	(0.036)
Toehold	-0.1480	-0.4805	0.1787
	(0.454)	(0.568)	(0.739)
Acquirer Mkt_cap	-0.0168***	-0.0152***	-0.0170***
	(0.003)	(0.003)	(0.005)
Acquirer BM	-0.0315***	-0.0293**	-0.0294*
	(0.011)	(0.012)	(0.016)
Acquirer ROA	0.0017	0.0227	0.0516
	(0.039)	(0.044)	(0.061)
Acquirer Cash	-0.0280	-0.0565**	-0.0771**
	(0.020)	(0.023)	(0.034)
Target Mkt_cap	0.0144***	0.0129***	0.0148***
	(0.003)	(0.003)	(0.005)
Target BM	0.0137**	0.0159**	0.0232**
	(0.006)	(0.007)	(0.009)

Target ROA	0.0027	0.0080	0.0315
	(0.020)	(0.023)	(0.031)
Target Cash	-0.0166	-0.0218	-0.0110
	(0.017)	(0.019)	(0.028)
Observations	512	377	224
R-squared	0.205	0.217	0.232

Table 5. Information Acquisition and Stock Market Reactions - 2SLS-IV Approach

This table reports two-stage-least-square(2SLS) regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variables in columns (1), (3), and (5) are download activities in merging firms, acquiring firms, and target firms. *Ln (Amendments) t, t-3* is the log transformation of the total amendments filed by merging firms, acquiring firms, and target firms in the past three years before deal announcements. The predicted value of downloads is then used in the second stage, whose interaction with ROA predicts the combined CAR in [-5, +5] day-window around deal announcements. *Combined CAR* is the combined cumulative abnormal return of target and acquiring firms in [-5, +5] day-window around deal announcements. *ROA* is the net changes of return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables			*Combined CAR*			
		2SLS-2nd Stage		2SLS-2nd Stage		2SLS-2nd Stage
Download measure (X)	*Deal ESV*		*Acquirer ESV*		*Target ESV*	
Ln (Amendments) t, t-3	6.4136***		4.2566***		2.3700	
	(2.020)		(0.819)		(1.395)	
*X*ROA*		19.1130**		27.2893**		22.6072*
		(7.138)		(12.502)		(10.833)
X		64.5701*		107.9996		137.4584**
		(33.019)		(72.249)		(62.521)
ROA		-0.0117*		-0.0070		-0.0089*
		(0.006)		(0.005)		(0.005)
Diversifying		-0.0117*		-0.0079		-0.0158*
		(0.006)		(0.006)		(0.008)
Relative Size		-0.0009		-0.0015		-0.0008
		(0.003)		(0.003)		(0.004)
Stock (Pct)		-0.0296**		-0.0275**		-0.0255**
		(0.011)		(0.011)		(0.011)
Hostile		0.0305		0.0515		0.0442
		(0.027)		(0.030)		(0.044)
Toehold		0.0447		0.0780		0.0472
		(0.529)		(0.656)		(0.538)
Acquirer Mkt_cap		-0.0189***		-0.0222***		-0.0126***
		(0.003)		(0.005)		(0.003)
Acquirer BM		-0.0056		-0.0094		0.0007
		(0.020)		(0.020)		(0.022)
Acquirer ROA		0.0698		0.0690		0.0615

		(0.043)		(0.045)		(0.044)
Acquirer Cash		-0.0355		-0.0225		-0.0565*
		(0.024)		(0.031)		(0.027)
Target Mkt_cap		-0.0060		-0.0004		-0.0127
		(0.009)		(0.007)		(0.011)
Target BM		-0.0001		-0.0008		-0.0014
		(0.008)		(0.009)		(0.009)
Target ROA		-0.0118		-0.0301		0.0000
		(0.057)		(0.050)		(0.064)
Target Cash		0.0146		0.0005		0.0382
		(0.029)		(0.026)		(0.035)
Observations	1,558	838	1,558	838	1,558	838
R-squared	0.103	-0.140	0.104	-0.193	0.073	-0.329
Acquiring industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Target industry FE	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes
Cluster	Year	Year	Year	Year	Year	Year

Table 6. Institutional Information Acquisition in M&As and Market Reactions

This table reports regression results for subsamples. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *ESV* measures information acquisition about merging firms, scaled by the market download within the same event window. *ROA* is the net changes of return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. Columns (1) and (2) report the results of the information acquisition effects on stock market reactions with *High* (above the median) and *Low* (below the median) institutional trading intensities, respectively. The net institutional trading in the deal announcement quarter is defined as the absolute changes of institutional holdings in target and acquiring firms from quarter t-1 to t, scaled by the total ending shares in the prior quarter. The institutional holding information is from the 13-F file. Columns (3) and (4) report the results of the information acquisition effects on stock market reactions with *High* (above the median) and *Low* (below the median) institutional downloads (unique IP users). The institutional downloads are identified from the GeoLite2 database. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	*(2)*	*(3)*	*(4)*
Variables	*Combined CAR*			
	Institutional Trading		*Institutional Downloads*	
Subsample	*High*	*Low*	*High*	*Low*
*ROA*ESV*	6.1280**	-2.9438	8.3109**	2.1971
	(2.581)	(10.601)	(3.786)	(2.562)
ROA	-0.0021	0.0049	-0.0046	-0.0001
	(0.002)	(0.009)	(0.004)	(0.003)
ESV	3.9881	16.0180	9.1701	1.3983
	(3.830)	(12.065)	(11.840)	(1.928)
Diversifying	-0.0225***	0.0023	-0.0070	-0.0204**
	(0.007)	(0.017)	(0.010)	(0.009)
Relative Size	0.0016	-0.0040	0.0007	0.0040
	(0.004)	(0.003)	(0.002)	(0.004)
Stock (Pct)	-0.0165	-0.0156	-0.0104	-0.0317*
	(0.014)	(0.014)	(0.015)	(0.015)
Hostile	0.0503*	0.0375	0.0270	0.1411***
	(0.025)	(0.035)	(0.028)	(0.028)
Toehold	-0.1578	0.7974	0.9870**	0.0000
	(1.158)	(0.451)	(0.395)	0.000
Acquirer Mkt_cap	-0.0122***	-0.0082*	-0.0074**	-0.0186***
	(0.003)	(0.004)	(0.003)	(0.005)
Acquirer BM	0.0084	-0.0356	-0.0309	0.0250
	(0.013)	(0.039)	(0.030)	(0.019)
Acquirer ROA	0.0877***	0.0923	0.0179	0.1325*
	(0.029)	(0.120)	(0.060)	(0.061)
Acquirer Cash	0.0026	-0.0770**	-0.0515*	-0.0326
	(0.026)	(0.034)	(0.024)	(0.028)
Target Mkt_cap	0.0065	-0.0011	0.0027	0.0113**
	(0.004)	(0.006)	(0.005)	(0.005)
Target BM	-0.0032	0.0227*	0.0104	-0.0017
	(0.009)	(0.013)	(0.007)	(0.010)
Target ROA	-0.0268	-0.0658	-0.0237	-0.0821*
	(0.049)	(0.051)	(0.035)	(0.043)
Target Cash	-0.0140	0.0355	0.0151	-0.0263

	(0.033)	(0.040)	(0.020)	(0.044)
Observations	492	230	388	311
R-squared	0.415	0.355	0.421	0.467
Acquiring industry FE	Yes	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 7. New vs. Stale Information Acquisition Effects on Market Reactions

This table reports regression results for subsamples. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *Deal ESV* measures information acquisition about merging firms, scaled by the market download within the same event window. *Acquirer ESV* measures information acquisition about acquiring firms, scaled by the market download within the same event window. *ROA* is the net changes of return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. Columns (1) and (2) report the results of the information acquisition effects on stock market reactions with *New* (no takeover in target industry in the past year) and *Stale* (at least one takeover in target industry in the past year) information about target firms, respectively. Columns (3) and (4) report the results of the information acquisition effects on stock market reactions with *New* (no takeover in acquirer industry in the past year) and *Stale* (at least one takeover in acquirer industry in the past year) information about acquiring firms, respectively. Columns (5) and (6) report the results of the information acquisition effects on stock market reactions with *New* (no takeover in both target and acquirer industry in the past year) and *Stale* (at least one takeover in either target or acquirer industry in the past year) information about acquiring firms, respectively. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Combined CAR					
	Information for targets		Information for acquirers		Information for deals	
Sample	New	Stale	New	Stale	New	Stale
Download measure (X)	*Deal ESV*		*Acquirer ESV*		*Deal ESV*	
*ROA*X*	41.3212**	3.5413	205.7474**	1.3532	160.2388*	4.4868
	(16.375)	(2.991)	(77.951)	(4.816)	(79.206)	(2.664)
ROA	-0.0384*	-0.0008	-0.0637**	0.0006	-0.1087**	-0.0016
	(0.019)	(0.003)	(0.028)	(0.002)	(0.048)	(0.002)
X	-9.1195	8.6736	47.6606**	4.9176	34.2592	10.1376
	(18.610)	(8.303)	(19.413)	(10.057)	(23.328)	(7.887)
Diversifying	0.1370***	-0.0132	-0.0044	-0.0131	0.0000	-0.0143*
	(0.042)	(0.008)	(0.093)	(0.009)	(0.000)	(0.007)
Relative Size	-0.0020	0.0040*	0.0049	0.0038*	-0.0101	0.0034*
	(0.013)	(0.002)	(0.011)	(0.002)	(0.012)	(0.002)
Stock (Pct)	-0.0535	-0.0163*	0.0112	-0.0172*	0.0703	-0.0176*
	(0.044)	(0.008)	(0.048)	(0.009)	(0.080)	(0.009)
Hostile	0.2631***	0.0400	0.3533***	0.0244	0.4260***	0.0199
	(0.037)	(0.049)	(0.073)	(0.044)	(0.131)	(0.036)
Toehold	0.3286	0.1755	1.8028	0.4005	2.0359	0.5170
	(1.127)	(0.443)	(1.064)	(0.412)	(2.437)	(0.413)
Acquirer Mkt_cap	-0.0175	-0.0130***	-0.0146	-0.0130***	0.0034	-0.0138***
	(0.014)	(0.002)	(0.018)	(0.002)	(0.032)	(0.002)

Acquirer BM	0.0534	-0.0022	0.0469	-0.0088	0.1298	-0.0063
	(0.043)	(0.016)	(0.053)	(0.016)	(0.081)	(0.015)
Acquirer ROA	-0.0284	0.0698	-0.0052	0.0435	0.3715*	0.0520
	(0.209)	(0.041)	(0.238)	(0.051)	(0.198)	(0.044)
Acquirer Cash	-0.0250	-0.0405**	-0.1370	-0.0372*	-0.2092	-0.0442**
	(0.120)	(0.017)	(0.128)	(0.019)	(0.148)	(0.016)
Target Mkt_cap	0.0106	0.0068**	0.0003	0.0089***	-0.0188	0.0073**
	(0.015)	(0.003)	(0.018)	(0.003)	(0.029)	(0.003)
Target BM	-0.0549***	0.0183**	-0.0589**	0.0177**	-0.0774*	0.0161**
	(0.017)	(0.008)	(0.023)	(0.008)	(0.038)	(0.007)
Target ROA	-0.0784	-0.0419	0.2731	-0.0549	0.1114	-0.0510
	(0.206)	(0.047)	(0.197)	(0.051)	(0.138)	(0.049)
Target Cash	-0.0730	-0.0126	0.0850	-0.0066	-0.0588	0.0010
	(0.144)	(0.028)	(0.136)	(0.024)	(0.172)	(0.026)
Observations	156	599	117	629	71	689
R-squared	0.799	0.228	0.830	0.266	0.878	0.288
Acquiring industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 8. Information Acquisition in Rivals, Customers, and Suppliers

This table reports regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *ROA* is the net changes of return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. All download measures (*X*) are scaled by the market download within the same event window. *Rival ESV* measures information acquisition about industry (3-digit SIC) rivals of merging firms. *Rival ESV(Restricted)* measures information acquisition about industry (3-digit SIC) rivals of merging firms, excluding downloads in target and acquiring firms if the merger is the focusing deal. *Supply-chain ESV* measures information acquisition about customers or suppliers of merging firms. *Supply-chain ESV(Restricted)* measures information acquisition about customers or suppliers of merging firms, excluding downloads in target and acquiring firms if the merger is diversifying. The customer/supplier information is from the Compustat segment customer dataset. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Variables	(1)	(2)	(3)	(4)
	Combined CAR			
Download measure (X)	*Rival ESV*	*Rival ESV (Restricted)*	*Supply-chain ESV*	*Supply-chain ESV (Restricted)*
*ROA*X*	0.8054**	1.0530**	22.8090**	25.0591***
	(0.366)	(0.452)	(9.784)	(7.766)
ROA	-0.0009	-0.0017	0.0005	0.0025
	(0.002)	(0.003)	(0.002)	(0.003)
X	1.0870	1.3000	13.4889	43.8614*
	(0.692)	(0.809)	(16.292)	(23.688)
Diversifying	0.0004	-0.0104	-0.0109	0.0000
	(0.004)	(0.006)	(0.006)	(0.000)
Relative Size	0.0053***	0.0036	0.0033	0.0009
	(0.001)	(0.002)	(0.002)	(0.003)
Stock (Pct)	-0.0354***	-0.0248**	-0.0226**	-0.0260***
	(0.008)	(0.009)	(0.008)	(0.007)
Hostile	0.0377***	0.0320	0.0316	0.0339
	(0.012)	(0.023)	(0.022)	(0.020)
Toehold	-0.0807	-0.0141	-0.0100	-0.0763
	(0.173)	(0.312)	(0.327)	(0.401)
Acquirer Mkt_cap	-0.0198***	-0.0150***	-0.0145***	-0.0146***
	(0.003)	(0.003)	(0.003)	(0.004)
Acquirer BM	-0.0127	-0.0050	-0.0042	0.0046
	(0.010)	(0.017)	(0.017)	(0.019)
Acquirer ROA	0.0511	0.0599	0.0578	0.0662

	(0.032)	(0.037)	(0.036)	(0.040)
Acquirer Cash	-0.0311*	-0.0322*	-0.0344**	-0.0403*
	(0.015)	(0.017)	(0.016)	(0.022)
Target Mkt_cap	0.0136***	0.0095***	0.0102***	0.0091**
	(0.002)	(0.003)	(0.003)	(0.003)
Target BM	0.0072	0.0067	0.0070	0.0060
	(0.005)	(0.007)	(0.007)	(0.007)
Target ROA	-0.0159	-0.0425	-0.0458	-0.0529
	(0.034)	(0.052)	(0.050)	(0.056)
Target Cash	-0.0070	0.0032	0.0049	-0.0078
	(0.016)	(0.025)	(0.025)	(0.024)
Observations	950	838	838	516
R-squared	0.185	0.358	0.350	0.287
Acquiring industry FE	Yes	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 9. Information Acquisition and Sources of Deal Synergies

This table reports regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *ESV* measures information acquisition about merging firms, scaled by the market download within the same event window. Synergy measures (*X*) include net changes of return on equity (*ROE*), *Operating margin*, and *Price markup*, and *Operating Cash Flow* from year t-1 to t+3 around deal announcements. *ROE* is defined as the ratio of net income before extraordinary items and discontinued operations to the common and preferred equity of a firm. *Operating margin* is defined as the ratio of earnings before interest and tax (EBIT) to net sales. *Price markup* is defined as the ratio of net sales to the cost of goods sold (COGS). *Operating Cash Flow* is defined as sales, minus COGS, and SG&As, plus depreciation and goodwill expenses, deflated by firm size following Healy, Palepu, and Rubak (1990). Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)
Variables		*Combined CAR*		
Synergy Measure (X)	*ROE*	*Operating margin*	*Price markup*	*Operating cash flow*
*X*ESV*	1.1074*	26.2429*	5.7767*	18.4462**
	(0.599)	(13.131)	(2.996)	(7.775)
X	1.8467	1.0173	1.8775	3.4844
	(9.124)	(8.709)	(8.777)	(8.146)
ESV	-0.0014	0.0052	-0.0061	-0.0058
	(0.001)	(0.007)	(0.005)	(0.011)
Diversifying	-0.0033	-0.0057	-0.0045	-0.0132
	(0.007)	(0.006)	(0.007)	(0.008)
Relative Size	0.0015	0.0024	0.0021	0.0013
	(0.004)	(0.004)	(0.004)	(0.005)
Stock (Pct)	-0.0123	-0.0115	-0.0131	-0.0246
	(0.016)	(0.016)	(0.015)	(0.020)
Hostile	-0.0721*	-0.0621*	-0.0531	-0.0751**
	(0.034)	(0.034)	(0.036)	(0.030)
Toehold	0.0197	0.0512	0.1223	-0.2441
	(0.563)	(0.530)	(0.524)	(1.066)
Acquirer Mkt_cap	-0.0142**	-0.0149***	-0.0148**	-0.0176***
	(0.005)	(0.005)	(0.005)	(0.005)
Acquirer BM	-0.0067	-0.0018	-0.0105	-0.0158
	(0.031)	(0.029)	(0.030)	(0.028)
Acquirer ROA	0.0799	0.1371**	0.0744	0.1032
	(0.050)	(0.046)	(0.052)	(0.101)
Acquirer Cash	-0.0636**	-0.0599**	-0.0523**	-0.0492*
	(0.022)	(0.022)	(0.021)	(0.027)
Target Mkt_cap	0.0049	0.0051	0.0063	0.0083
	(0.006)	(0.006)	(0.006)	(0.006)
Target BM	0.0136	0.0081	0.0106	0.0139
	(0.016)	(0.014)	(0.016)	(0.009)
Target ROA	-0.0328	-0.0313	-0.0412	-0.0433
	(0.061)	(0.060)	(0.061)	(0.056)
Target Cash	0.0045	-0.0093	-0.0037	-0.0149
	(0.035)	(0.034)	(0.036)	(0.029)
Observations	433	438	439	337

R-squared	0.411	0.419	0.407	0.400
Acquiring industry FE	Yes	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 10. Information Acquisition and Financial Synergies

This table reports regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of combined firms in [-5, 5] day-window around deal announcements. *Chg_Adj_ICC* is the changes of adjusted implied cost of capital(equity) from -4 to +4/+8/+12 quarters around deal completion. The implied cost of capital is following Gebhardt, Lee, and Swaminathan (2001) estimated at the quarterly level. The value is benchmarked with the average ICC of portfolio firms obtained from size, industry, BM ratio, and quarterly downloads matching at t-4 quarter. The *ESV* is the total number of downloads in target and acquiring firms adjusted by market downloads. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
Variables		*Combined CAR*	
Window (Quarter)	[-4, +4]	[-4, +8]	[-4, +12]
*Chg_Adj_ICC*ESV*	-1.8904***	-1.7760***	-1.8821***
	(0.424)	(0.292)	(0.311)
Chg_Adj_ICC	0.1338*	0.1899**	0.1905***
	(0.073)	(0.070)	(0.060)
ESV	0.1908***	0.1853***	0.1756***
	(0.025)	(0.022)	(0.033)
Diversifying	-0.0184	-0.0201	-0.0222
	(0.015)	(0.015)	(0.016)
Relative Size	0.0032	0.0034	0.0035
	(0.004)	(0.003)	(0.003)
Stock (Pct)	-0.0002	-0.0017	-0.0034
	(0.017)	(0.015)	(0.017)
Toehold	0.2460	0.2329	0.2553
	(0.827)	(0.746)	(0.721)
Acquirer Mkt_cap	-0.0151***	-0.0162***	-0.0161***
	(0.003)	(0.003)	(0.003)
Acquirer BM	-0.0299*	-0.0375**	-0.0421***
	(0.015)	(0.014)	(0.012)
Acquirer ROA	-0.0263	-0.0093	-0.0061
	(0.082)	(0.087)	(0.079)
Acquirer Cash	0.0215	0.0128	0.0035
	(0.061)	(0.058)	(0.056)
Target Mkt_cap	0.0061	0.0074**	0.0078**
	(0.004)	(0.003)	(0.003)
Target BM	0.0268*	0.0277**	0.0291**
	(0.014)	(0.013)	(0.012)
Target ROA	0.0320	0.0397	0.0240
	(0.059)	(0.056)	(0.055)
Target Cash	-0.0176	-0.0034	-0.0082
	(0.033)	(0.034)	(0.034)
Observations	229	238	241
R-squared	0.440	0.427	0.419
Acquiring industry FE	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes

Year FE	Yes	Yes	Yes

Table 11. Information Acquisition in Firms with Similar Names

This table shows the results of re-examining the information acquisition effects on stock market reactions and market anticipation of future deals. The sample contains non-deal firms who have similar names to merging firms. For each deal, name matching is conducted between the names of merging firms (the target and the acquirer) and all other firms from SEC EDGAR, excluding event firms and peer firms. The Levenstein distances between matched firms and merging firms are smaller than the threshold of three. Columns (1) to (4) report the information acquisition effects on stock market reactions. *Mkt_cap* is the natural log of market capitalization. *BM* is the book value of equity scaled by the market value of common equity. *ROA* is the ratio of net income(oibdp) to total assets. *Cash* is the ratio of cash to total assets. Continuous variables are winsorized at the 1% and 99% levels. All regressions include deal and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)
Variables			*Combined CAR*	
Synergy Measure (X)	*ROA*	*ROE*	*Operating margin*	*Price markup*
*ESV*X*	-0.0795	0.0025	0.0008	-0.0023
	(0.045)	(0.002)	(0.001)	(0.003)
X	0.1464***	-0.0029	0.0002	0.0216***
	(0.045)	(0.004)	(0.001)	(0.003)
ESV	0.0010	0.0007	0.0009	0.0015
	(0.003)	(0.004)	(0.004)	(0.004)
Mkt_cap	-0.0025	-0.0031	-0.0030	-0.0038
	(0.003)	(0.003)	(0.003)	(0.003)
BM	0.0149	0.0162*	0.0154	0.0188*
	(0.009)	(0.009)	(0.010)	(0.009)
ROA	0.0226	-0.0132	-0.0152	0.0181
	(0.037)	(0.031)	(0.030)	(0.034)
Cash	0.0125	0.0079	0.0063	-0.0011
	(0.025)	(0.026)	(0.027)	(0.030)
Observations	555	531	529	528
R-squared	0.295	0.281	0.279	0.298
Deal FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Appendix A

Table A1. Frequency of Filings Issued by Merging Firms around Deal Announcements

This table reports the frequency of total filings in different types issued (more than 1ten0 times) by merging firms in [-5, +5] day-window around deal announcements.

Form Type	*Frequency*
425	5065
8-K	4316
4	4218
DEFA14A	1725
SC TO-C	495
SC14D9C	364
10-Q	308
SC 13D/A	289
SC 13G/A	288
DFAN14A	276
4/A	136
3	132
SC 13G	123
8-K/A	115
FWP	93
10-K	91
UPLOAD	90
424B2	89
CORRESP	80
SC 14D9	77
5	74
8-A12B/A	67
424B3	65
DEF 14A	64
8-A12G/A	62
11-K	58
S-8	45
SC TO-T/A	43
SC TO-T	38
424B5	29
SC 14D9/A	26
ARS	25
8-A12B	24
10-K/A	23
S-3ASR	17
S-8 POS	14
13F-HR	13
144	11
PREM14A	10

Appendix B. Summary of Robust Measures of SEC EDGAR Downloads

The following tables report the robust results of using alternative measures as proxies for information acquisition on the relation between stock market reactions around M&A announcements and post-merger operating performance. The alternative measures of information acquisition, including raw downloads, scaled downloads, adjusted downloads, and abnormal downloads estimated from predictive models.

In table A1, the raw number of downloads captures the intensity of all types of information acquired by market investors around deal announcements. To eliminate the concern that certain systematic factors could deflate or inflate the total number of downloads for deals announced in specific periods, I create a scaled downloads measure using the raw number of downloads scaled by market downloads. The literature defines abnormal downloads relative to a firm's normal downloads in the past period. Thus, I include a measure of adjusted downloads by using the raw number of downloads scaled by the average (or the median) of the last quarter in Table B1 and B2.

To rule out the possibility that merging firms' download activities increase in the quarter before deal announcements, I robustly construct the adjusted downloads measure (Table B2) scaled by the same quarter average in the last year. Downloads could be more intensive in larger firms or specific industries. Therefore, I constructed two more adjusted downloads scaled by industry average downloads and firm size in Table B2, respectively.

To better identify the abnormal downloads, I construct two sets of benchmark portfolio firms in Table B3. One portfolio consists of firms with similar firm size, stock return, and trading volume with merging firms in the past year, and the other portfolio consists of firms who have similar downloads with merging firms in the past year. Two additional robust measures of downloads are firm characteristics benchmark portfolio adjusted measure and past-year downloads benchmark portfolio adjusted measure. Since the economic outcome in the regression analyses is the combined abnormal cumulative stock return estimated from the market model. I further construct a robust measure of downloads estimated from the predictive model using factors including size, BM ratio, book leverage, R&D, firm age. and ROA.

Considering determinants of downloads discussed in the literature (Drake et al. 2016), I include additional firm characteristics as matching variables in constructing benchmark portfolios in Table B4. The new benchmark portfolio consists of firms with similar firm size, leverage, BM ratio, analyst coverage, institutional ownership, stock return, and trading volume with merging firms in year t-1. In table B4, I further test two more robust measures of downloads estimated from modified predictive models. The first abnormal download measure is estimated from a multi-factor model, including quarterly firm characteristics (firm size, leverage, BM ratio, analyst coverage, institutional ownership, stock return, and trading volume) following the literature. The second abnormal download measure is estimated from a time-series model, including firm downloads in the past four (i.e., q-1, q-2, q-3, q-4) quarters.

Table B1. SEC EDGAR Downloads and Market Reactions around M&As

This table reports the information acquisition effects by using alternative measures around merger announcements on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *ROA* is the net changes of industry-adjusted return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. The Download Measures (X) include *Raw ESV, Scaled_ESV, Adj_ESV1*. *Raw ESV* is the total number of unique IP users that download filings issued by merging firms. *Scaled_ESV* is the percentage of downloaded filings issued by merging firms, scaled by the total number of market downloads. *Adj_ESV_last_qtr_med* is the abnormal downloads in thousands, adjusted for the median of the past quarter. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Variables	(1)	(2)	(3)
	Combined CAR		
Download Measure (X)	*Raw ESV*	*Scaled ESV*	*Adj_ESV_last_qtr_med*
*ROA*X*	0.0034*	1.8699***	0.0094**
	(0.002)	(0.404)	(0.004)
ROA	-0.0001	-0.0001	-0.0001
	(0.002)	(0.002)	(0.002)
X	0.0106	1.0187*	0.0156
	(0.010)	(0.514)	(0.015)
Diversifying	-0.0108	-0.0101	-0.0106
	(0.007)	(0.007)	(0.007)
Relative Size	0.0029	0.0034	0.0040
	(0.002)	(0.002)	(0.002)
Stock (Pct)	-0.0205**	-0.0219**	-0.0229**
	(0.008)	(0.008)	(0.009)
Hostile	0.0389	0.0385	0.0357
	(0.027)	(0.027)	(0.025)
Toehold	0.2732	0.2893	0.3004
	(0.548)	(0.554)	(0.567)
Acquirer Mkt_cap	-0.0149***	-0.0142***	-0.0148***
	(0.003)	(0.003)	(0.003)
Acquirer BM	-0.0014	-0.0021	-0.0019
	(0.018)	(0.018)	(0.018)
Acquirer ROA	0.0664	0.0644	0.0466
	(0.042)	(0.041)	(0.034)
Acquirer Cash	-0.0330*	-0.0309*	-0.0351*
	(0.016)	(0.016)	(0.016)
Target Mkt_cap	0.0082***	0.0095***	0.0086***
	(0.002)	(0.003)	(0.002)
Target BM	0.0054	0.0065	0.0074
	(0.007)	(0.007)	(0.007)
Target ROA	-0.0434	-0.0409	-0.0188
	(0.050)	(0.051)	(0.034)
Target Cash	0.0090	0.0070	0.0205
	(0.025)	(0.025)	(0.019)
Observations	792	792	770
R-squared	0.365	0.368	0.368

Acquiring industry FE	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table B2. SEC EDGAR Downloads and Market Reactions around M&As

This table reports regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *ROA* is the net changes of return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. *Adj_ESV_SIC* is the total number of merging firms' daily downloads adjusted by 3-digit industry average in [-5, 5] day-window. *Adj_ESV_Size* is the total number of downloads adjusted by size in target and acquiring firms. *Adj_ESV_same_qtr_avg* is the total number of merging firms' abnormal downloads adjusted by the average daily downloads of the same quarter in the last year. *Adj_ESV_last_qtr_avg* is the total number of merging firms' abnormal downloads adjusted by the average daily downloads of the last quarter. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)
Variables		*Combined CAR*		
Download Measure (X)	*Adj_ESV_SIC*	*Adj_ESV_Size*	*Adj_ESV_same_qtr_avg*	*Adj_ESV_last_qtr_avg*
*ROA*X*	0.0046*	0.0449**	0.0067*	0.0126**
	(0.002)	(0.021)	(0.004)	(0.005)
ROA	0.0002	-0.0010	0.0001	-0.0009
	(0.002)	(0.002)	(0.002)	(0.002)
X	0.0114	0.1007	0.0181	0.0195
	(0.011)	(0.107)	(0.016)	(0.016)
Diversifying	-0.0105	-0.0103	-0.0106	-0.0098
	(0.006)	(0.006)	(0.006)	(0.006)
Relative Size	0.0028	0.0029	0.0033	0.0030
	(0.002)	(0.002)	(0.002)	(0.002)
Stock (Pct)	-0.0221**	-0.0223**	-0.0223**	-0.0224**
	(0.009)	(0.009)	(0.009)	(0.009)
Hostile	0.0317	0.0304	0.0334	0.0337
	(0.022)	(0.023)	(0.023)	(0.025)
Toehold	0.0263	0.0159	0.0215	0.0257
	(0.515)	(0.515)	(0.511)	(0.513)
Acquirer Mkt_cap	-0.0145***	-0.0143***	-0.0142***	-0.0141***
	(0.003)	(0.003)	(0.003)	(0.003)
Acquirer BM	-0.0012	-0.0007	-0.0007	-0.0005
	(0.017)	(0.018)	(0.018)	(0.017)
Acquirer ROA	0.0614	0.0603	0.0594	0.0606
	(0.038)	(0.037)	(0.036)	(0.036)
Acquirer Cash	-0.0320*	-0.0325**	-0.0322*	-0.0321*

	(0.015)	(0.015)	(0.015)	(0.015)
Target Mkt_cap	0.0089***	0.0092***	0.0087***	0.0086***
	(0.002)	(0.002)	(0.002)	(0.002)
Target BM	0.0065	0.0072	0.0067	0.0066
	(0.007)	(0.007)	(0.007)	(0.007)
Target ROA	-0.0475	-0.0476	-0.0480	-0.0481
	(0.045)	(0.045)	(0.045)	(0.045)
Target Cash	0.0024	0.0012	0.0014	0.0020
	(0.023)	(0.023)	(0.023)	(0.023)
Observations	854	854	854	854
R-squared	0.351	0.351	0.352	0.354
Acquiring industry FE	Yes	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table B3. SEC EDGAR Downloads and Market Reactions around M&As

This table reports regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *Adj_ESV_benchmark1* is the difference between the number of downloads from target and acquiring firms and downloads of portfolio benchmarks matched on firm size, stock return, and trading volume in year t-1, then scaled by merging firms' last quarter mean. *Adj_ESV_benchmark2* is the number of downloads from target and acquiring firms adjusted (divided) by portfolio benchmarks matched on firm downloads in year t-1. *Abnormal_ESV1* is the abnormal downloads estimated from the predictive model using the past five years of merging firms' downloads, then scaled by merging firms' last quarter mean. The predicting factors include size, BM ratio, book leverage, R&D, firm age. ROA is the net changes of industry-adjusted return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
Variables		*Combined CAR*	
Download Measure (X)	*Adj_ESV_benchmark1*	*Adj_ESV_benchmark2*	*Abnormal_ESV1*
*ROA*X*	0.0034***	0.0002**	0.0197*
	(0.001)	(0.000)	(0.011)
ROA	-0.0091***	-0.0037	-0.0442**
	(0.002)	(0.002)	(0.018)
X	-0.0019	-0.0002	0.0053
	(0.003)	(0.000)	(0.008)
Diversifying	-0.0091	-0.0128	0.0350
	(0.005)	(0.008)	(0.022)
Relative Size	0.0019	-0.0009	-0.0044
	(0.003)	(0.003)	(0.009)
Stock (Pct)	-0.0182*	-0.0205**	-0.0323
	(0.009)	(0.008)	(0.024)
Hostile	0.0119	0.0466	0.0000
	(0.014)	(0.028)	(0.000)
Toehold	1.1016*	0.1531	-0.3186
	(0.511)	(0.612)	(0.765)
Acquirer Mkt_cap	-0.0131***	-0.0136***	-0.0026
	(0.003)	(0.003)	(0.009)
Acquirer BM	-0.0244	0.0104	-0.0141
	(0.018)	(0.014)	(0.033)
Acquirer ROA	0.0216	0.0805*	-0.0532
	(0.048)	(0.041)	(0.090)
Acquirer Cash	-0.0281	-0.0318	-0.0772
	(0.020)	(0.019)	(0.089)
Target Mkt_cap	0.0102**	0.0080**	0.0029
	(0.004)	(0.004)	(0.008)
Target BM	0.0163*	-0.0039	0.0440**
	(0.008)	(0.007)	(0.019)
Target ROA	0.0193	-0.0520	0.0201
	(0.020)	(0.048)	(0.045)
Target Cash	0.0167	-0.0048	0.0833*
	(0.022)	(0.028)	(0.045)

Observations	476	633	133
R-squared	0.395	0.407	0.556
Acquiring industry FE	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table B4. SEC EDGAR Downloads and Market Reactions around M&As

This table reports regression results regarding the impact of information acquisition around merger announcement on stock market reactions within the same event window. The dependent variable, *Combined CAR*, is the combined cumulative abnormal return of target and acquiring firms in [-5, 5] day-window around deal announcements. *Adj_ESV_benchmark3* is the difference between the number of downloads from target and acquiring firms and downloads of portfolio benchmarks matched on firm size, leverage, BM ratio, analyst coverage, institutional ownership, stock return, and trading volume in year t-1, then scaled by merging firms' quarterly mean in the same quarter last year. The matching sample is constructed in the past quarter. The quarterly firm characteristics are obtained from the Compustat. *Abnormal ESV2* is the abnormal download estimated from the predictive model using firm characteristics, including firm size, leverage, BM ratio, analyst coverage, institutional ownership, stock return, and trading volume. The estimation window is the past five years. The measure is scaled by the quarterly mean in the same quarter last year. *Abnormal ESV3* is the abnormal download estimated from the time-series predictive model using firm downloads in the past five years. The estimation window is the past five years. The explanatory variable for quarterly downloads in t includes quarterly downloads in t-1, t-2, t-3, and t-4. The measure is scaled by the quarterly mean in the same quarter last year. ROA is the net changes of industry-adjusted return on assets in combined firms from the year t-1 to the year t+3. The target and acquirer's return on assets in year t-1 are weighted by total assets at the beginning of the year. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
Variables		*Combined CAR*	
Download Measure (X)	*Adj_ESV_benchmark3*	*Abnormal_ESV2*	*Abnormal_ESV3*
*ROA*X*	0.0038*	0.0114***	0.0037**
	(0.002)	(0.003)	(0.002)
ROA	-0.0015	-0.0367***	-0.0027
	(0.002)	(0.012)	(0.002)
X	-0.0101	-0.0010	-0.0002
	(0.013)	(0.003)	(0.002)
Diversifying	-0.0064	-0.0066	-0.0030
	(0.006)	(0.010)	(0.006)
Relative Size	0.0039	0.0017	0.0033
	(0.003)	(0.004)	(0.006)
Stock (Pct)	-0.0294***	-0.0234**	-0.0313***
	(0.008)	(0.010)	(0.009)
Hostile	0.0118	0.0212	0.0153
	(0.010)	(0.017)	(0.019)
Toehold	0.1595	-0.0152	0.5906
	(0.479)	(0.575)	(1.081)
Acquirer Mkt_cap	-0.0136***	-0.0097**	-0.0146***
	(0.003)	(0.003)	(0.003)
Acquirer BM	-0.0078	-0.0289	-0.0240
	(0.021)	(0.019)	(0.018)
Acquirer ROA	-0.0022	0.0428	-0.0197
	(0.030)	(0.047)	(0.040)
Acquirer Cash	-0.0189	-0.0278	-0.0332
	(0.020)	(0.025)	(0.024)
Target Mkt_cap	0.0062	0.0083**	0.0120**
	(0.004)	(0.004)	(0.004)
Target BM	0.0058	0.0195*	0.0199
	(0.009)	(0.010)	(0.012)
Target ROA	0.0322**	0.0209	0.0688**
	(0.013)	(0.020)	(0.028)

Target Cash	0.0323**	0.0308	0.0321
	(0.013)	(0.025)	(0.024)
Observations	585	450	412
R-squared	0.414	0.392	0.388
Acquiring industry FE	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Appendix C. Supplementary Analyses

Table C3. Information Acquisition and Trading Volume Around Deal Announcements

This table reports regression results regarding the relation between information acquisition and trading volumes in deal firms. Panel A reports the relation between information acquisition and trading volumes in [-42, 0] day-window before deal announcements. Panel B reports the relation between information acquisition and trading volumes in [1, +126] day-window before deal announcements. Continuous variables are winsorized at the 1% and 99% levels. All regressions include acquirer industry (3-digit SIC), target industry (3-digit SIC), and year fixed effects. Robust standard errors, clustered at the year level, are reported in parentheses below coefficient estimates. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Panel A. Pre-announcement information acquisition and trading volume

	(1)	(2)	(3)
Variables	*Deal Volume*	*Acquirer Volume*	*Target Volume*
Download measure (X)	*Deal ESV*	*Acquirer ESV*	*Target ESV*
X	4.4688***	2.6826***	2.9395*
	(1.477)	(0.823)	(1.515)
Diversifying	0.0001	0.0000	0.0001
	(0.000)	(0.000)	(0.000)
Relative Size	0.0004	0.0002	0.0003**
	(0.000)	(0.000)	(0.000)
Stock (Pct)	-0.0001	-0.0000	-0.0001
	(0.000)	(0.000)	(0.000)
Hostile	-0.0005	-0.0001	-0.0004
	(0.001)	(0.000)	(0.000)
Toehold	-0.0064	-0.0060	-0.0008
	(0.036)	(0.019)	(0.018)
Acquirer Mkt_cap	0.0007***	0.0003***	0.0006***
	(0.000)	(0.000)	(0.000)
Acquirer BM	0.0012***	0.0005**	0.0008***
	(0.000)	(0.000)	(0.000)
Acquirer ROA	-0.0003	-0.0000	-0.0004
	(0.001)	(0.001)	(0.001)
Acquirer Cash	0.0017**	0.0009**	0.0007
	(0.001)	(0.000)	(0.000)
Target Mkt_cap	0.0000	0.0001*	0.0000
	(0.000)	(0.000)	(0.000)
Target BM	0.0003	0.0002	0.0002
	(0.000)	(0.000)	(0.000)
Target ROA	0.0005	0.0001	0.0002
	(0.001)	(0.000)	(0.000)
Target Cash	0.0004	0.0001	0.0003
	(0.001)	(0.000)	(0.000)
Observations	1,283	1,283	1,283
R-squared	0.590	0.597	0.543
Acquiring industry FE	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Panel B. Post-announcement information acquisition and trading volume

Variables	(1) *Deal Volume*	(2) *Acquirer Volume*	(3) *Target Volume*
Download measure (X)	*Deal ESV*	*Acquirer ESV*	*Target ESV*
X	11.1824***	7.8548***	7.2947***
	(2.102)	(1.749)	(1.919)
Diversifying	-0.0002	0.0001	-0.0001
	(0.001)	(0.000)	(0.000)
Relative Size	0.0012	0.0005	0.0009**
	(0.001)	(0.000)	(0.000)
Stock (Pct)	0.0001	0.0001	0.0003
	(0.001)	(0.000)	(0.000)
Hostile	-0.0054	-0.0020	-0.0028*
	(0.004)	(0.002)	(0.001)
Toehold	-0.0007	-0.0069	0.0044
	(0.109)	(0.057)	(0.055)
Acquirer Mkt_cap	0.0024***	0.0010***	0.0017***
	(0.000)	(0.000)	(0.000)
Acquirer BM	0.0047***	0.0019***	0.0027***
	(0.001)	(0.001)	(0.001)
Acquirer ROA	-0.0036	0.0001	-0.0023
	(0.003)	(0.002)	(0.002)
Acquirer Cash	0.0048*	0.0028*	0.0021
	(0.002)	(0.001)	(0.001)
Target Mkt_cap	0.0001	0.0003**	0.0002
	(0.000)	(0.000)	(0.000)
Target BM	0.0015*	0.0009**	0.0008*
	(0.001)	(0.000)	(0.000)
Target ROA	0.0007	-0.0001	0.0003
	(0.002)	(0.001)	(0.001)
Target Cash	0.0006	0.0003	0.0007
	(0.003)	(0.001)	(0.001)
Observations	1,350	1,350	1,350
R-squared	0.614	0.613	0.579
Acquiring industry FE	Yes	Yes	Yes
Target industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes