Does regulatory exposure create M&A synergies?

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Abstract

We study the impact of regulation on acquisition investment, using a novel firm-level measure of exposure to all federal regulations. Highly regulated companies issue more acquisition bids, invest more in those transactions, and earn higher M&A announcement returns. Moreover, highly regulated acquirers exhibit better long-term performance, greater M&A synergies, and a significant reduction in their regulatory exposure after merger completion. The benefits are stronger in deals with small transaction values and in those involving private targets. Overall, our findings uncover a new link between M&A and regulation, highlighting synergy opportunities which materially affect corporate investment choices.

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1. Introduction

Companies must comply with thousands of federal regulations, which affect virtually every aspect of their activities such as competition, taxation, and pollution. By some accounts, the median firm spends up to 4.1% of its market capitalization on compliance (Ewens et al., 2021). Consequently, regulation is believed to have an adverse effect on corporate investment, since resources which could have been used to fund investment must be redirected towards regulatory compliance (Bargeron, Lehn, and Zutter, 2010; Kang, Liu, and Qi, 2010). In this paper, we reach different conclusions using a new comprehensive measure of regulatory exposure. We find that high regulatory exposure creates synergy opportunities, and therefore has a significant impact on the likelihood of issuing merger offers, the types of firms that merge, and the performance of merger and acquisition transactions.

To assess exposure to federal regulation, we begin with new data on regulatory intensity from Kalmenovitz (2019). Based on a trove of administrative reports dating back to 1981, he creates a daily index (*RegIn*) which captures the costs of compliance with all federal paperwork regulations. The index represents the number of regulations, the number of forms filed by companies ("how much paperwork"), and the time it takes to prepare and file the forms. To develop our firm-specific measure of exposure, we first extract the residuals from a second-order autoregression of *RegIn*. These residuals are serially uncorrelated and capture sudden shifts in the regulatory intensity firms face. Using CRSP monthly stock files, we regress each firm's excess return on the shifts series. We run these tests in 24-month rolling windows controlling for Fama-French risk factors. The coefficient of the shifts variable, which we label *RegExp*, produces a time-varying and firm-specific measure of regulatory exposure. It represents how sensitive a firm's stock returns are to sudden shifts in regulation over a 24-month period.

Existing work highlights the detrimental impact of uncertainty, especially one that relates to government policies and antitrust investigations, on M&A deals.[1] Our new measure captures firm-specific exposure to a broad set of federal regulations, and it is possible that this exposure has a similar negative impact on acquisition activity. On the other hand, the type of exposure our measure captures – compliance with paperwork regulations – has not been studied previously and may negligibly affect M&A decisions. Moreover, exposure to regulation and uncertainty over regulation are two different constructs and could have a different effect on investment. Increased regulatory exposure could compel firms to develop unique compliance expertise, which in turn may improve their eligibility to qualify for certain investment projects. In addition, neoclassical theory presents M&A as a synergy-driven positive net present value investment (Mitchell and Mulherin, 1996; Ahern and Weston, 2007). This could be particularly relevant for our setting, if high exposure to regulatory shocks changes the company's investment opportunity set and its cost structure. Motivated by these arguments we formulate our *regulatory synergy* hypothesis. Under this alternative hypothesis, increased exposure to federal regulations generates a positive externality that manifests as synergies to acquirer firms.

We use our proxy of regulatory exposure, *RegExp,* to evaluate several empirical predictions stemming from the regulatory synergy hypothesis with M&A data from 1986 to 2018. We begin by showing that firms with increased regulatory exposure issue more acquisition bids and spend more in those transactions (on the aggregate). A one standard deviation increase in *RegExp* is associated with a 2.7% increase in acquisition likelihood and with a 2.9% increase in acquisition expenditure relative to the sample mean. Consistent with the idea that higher regulatory exposure

[1] To proxy for uncertainty, de Bodt, Cousin, and Officer (2021) use Department of Justice and Federal Trade Commission antitrust investigations; Bhagwat, Dam, and Harford (2016) use option-implied volatility of stock prices (VIX); and Bonaime, Gulen, and Ion (2018) use the Economic Policy Uncertainty index (EPU) from Baker, Blooms, and Davis (2016).

generates benefits to the acquirer firms, we find that bidders' M&A announcement returns improve in their regulatory exposure. A single standard deviation increase in *RegExp* is related to a 0.21% higher acquirer announcement return (akin to a $20 million increase in terms of market capitalization for the average acquirer).

Other tests show that highly regulated acquirer firms tend to execute smaller deals (with respect to transaction value) and to pursue private targets. Notably, these types of deals generate more positive M&A announcement returns for high *RegExp* acquirers. Acquirers with high regulatory exposure earn 0.776% higher CARs for small deals (corresponding to a $74 million market capitalization increase for the average acquirer) and 0.716% higher CARs for private deals (equivalent to a $69 million gain for the average acquirer). This empirical evidence is consistent with the idea that, unlike small and private firms, larger firms are less encumbered by increased regulatory costs and can derive benefits from expertly complying. Consequently, these findings have substantial repercussions for the kinds of firms that pursue merger deals (e.g., highly regulated companies) and those targeted in these transactions (e.g., small and private businesses).

Additional analyses consider the value multiple measure of Rhodes-Kropf, Robinson, and Viswanathan (2005) and the average multiple measure of Jaffe, Jindra, Pedersen, Voetmann (2018) as proxies for M&A synergies. The results indicate a positive association between *RegExp* and both synergy proxies. To complement the short-term return evidence from market reactions to M&A announcements, we study the long-term performance of completed deals with buy-and-hold abnormal returns and accounting returns. In line with the short-term findings, our long-term performance measures improve in the acquirer's regulatory exposure. For example, increasing *RegExp* by a single standard deviation is associated with 0.219% lower one year buy-and-hold

returns for the average firm, but is not associated with significantly lower returns for firms that complete an acquisition.

Our last set of tests show that, after completing an acquisition, firms exhibit an economically important decrease in their mean (and median) exposure to regulation. We observe that such a decrease is more intense following small M&A deals and those involving private targets. In these types of transactions, the drop in regulatory exposure exceeds 7 percent, on average. This evidence suggests that by investing in acquisitions, firms are able to diversify away regulatory exposure.

Overall, our empirical analyses deliver strong support for the neoclassical M&A theory and our regulatory synergy hypothesis. Both predict that increased regulatory exposure affects merger decisions by generating synergies to bidder firms during these transactions. According to our empirical analyses, these benefits manifest in the form of more acquisition bids and more profitable M&A deals (particularly transactions involving small or private targets). Moreover, firms benefit from a reduction in their regulatory exposure after executing M&A investments.

The contributions of this study are as follows. First, our work advances the literature on the determinants of M&A activity, particularly studies related to government regulation. Mitchell and Mulherin (1996) and Harford (2005) find that deregulation, specifically the relaxation of antitrust and market structure provisions, encourages merger activity. Similarly, Balogh, Creedy and Wright (2021) report that reducing the burden of financial disclosure encourages firms to make more acquisitions shortly after going public. Other work shows that M&A activity declines in the face of uncertainty related to stock prices, government policy, and antitrust enforcement (Bhagwat, et al., 2016; Bonaime, et al., 2018; de Bodt, et al., 2021). In contrast, we develop a comprehensive measure of exposure to a broad set of federal regulations, and we find that increased regulatory exposure *promotes* merger activity. Our results indicate that high regulatory exposure encourages

M&A investment by creating synergy opportunities. Moreover, our results have important implications for the types of firms that merge and for the changes in regulatory exposure firms realize after acquisition investments.

Second, we contribute to the vast literature on the impact of regulation (frequently proxied by either policy or political uncertainty) on corporate investment.[2] Some studies in this area evaluate the effect of specific regulations on corporate activity. For example, increased regulatory costs associated with SOX raise the rate managers use to discount future cash flows (Kang et al., 2010) and lower the market value of small firms (Iliev, 2010). Gustafson and Iliev (2017) report that the ability of small firms to raise equity improves after a 2008 SEC rule reduced regulation, whereas Dambra and Gustafson (2021) find that capital expenditure increases for firms affected by a drop in regulation related to the JOBS Act. We move this literature forward by showing that increased exposure to a broad swath of federal regulations is a major source of variation in investment behavior, in the form of acquisitions.

Third, our work improves our understanding of the economy-wide impact of government rules that corporations must follow. We find that increased regulatory exposure encourages some firms to acquire, while contemporaneous work finds that regulation discourages firms from becoming publicly listed (Engelen, Meoli, Signori, and Vismara, 2020) and requires onerous compliance costs (Ewens et al., 2021). Combined, these findings have important public policy implications related to the redistribution of capital in the economy, especially given the large sums firms invest annually in M&A deals (e.g., $3.59 trillion in 2020).[3]

[2] See, for example, Durnev (2010), Pastor and Veronesi (2012), Julio and Yook (2012), Gao and Qi (2012), Cao et al. (2013), Pastor and Veronesi (2013), Francis et al. (2014), Bradley et al. (2016), Gulen and Ion (2016), Baker et al. (2016), Jens (2017), and Kaviani et al. (2020).
[3] See: https://www.reuters.com/business/global-markets-ma-2021-08-12/

Finally, we contribute a novel firm-level measure of regulation.[4] Measuring regulation at a granular level (instead of at higher levels of aggregation) is valuable, since each firm faces a unique combination of challenges related to its business activities and other features. Additionally, firm-level data provide a useful tool to evaluate the real effects of corporate responses to regulatory exposure, such as the impact of regulatory exposure on M&A investments. Our work can assist scholars who wish to explore other implications of regulatory exposure, and thus improve our understanding of how regulation in all its forms affects the economy.

2. Data

This section describes our novel firm-level measure of regulatory exposure and our sample construction process.

2.1 Regulatory exposure

Jensen and Meckling (1976) describe the private corporation as a legal fiction which serves as a nexus for contracting relationships. Government regulation influences nearly all of these relationships. For example, corporations must abide by federal standards for financial reporting, labor relations, product safety and labeling, among many other guidelines. Business owners and the financial press often argue that the cost of compliance with these regulations imposes a large burden on U.S. corporations, particularly for small businesses. Indeed, survey evidence shows that small business owners consistently rank the burden of federal paperwork regulations among the most severe problems faced by their business.[5]

Fearing that regulatory compliance costs impose a substantial drag on the U.S. economy,

[4] See Aghion, Algan, and Cahuc (2010) and Djankov, La Porta, Lopez-De-Silanes, and Shleifer (2002) for measures at the country level, Mulligan and Shleifer (2005) for measures at the state level, and Olley and Pakes (1996), Al-Ubaydli and McLaughlin (2015), and Zingales (1998) for measures at the industry level.

[5] See: https://www.nfib.com/Portals/0/PDF/AllUsers/research/studies/small-business-problems-priorities-2012-nfib.pdf and https://www.wsj.com/articles/a-new-small-business-burden-11563232900

Congress passed the Paperwork Reduction Act (PRA) in 1980 (Pub. L. No. 96-511, 94 Stat. 2812) "to reduce paperwork and enhance the economy and efficiency of the Government and private sector by improving Federal information policymaking."[6] The PRA and the Code of Federal Regulations (5 CFR 1320) charge the Office of Management and Budget (OMB) and the Office of Information and Regulatory Affairs (OIRA) with the task of tracking and reviewing each active regulation imposed by a federal agency. We scrape communications from these internal reviews, filed on Form 83-I, from the OIRA's website between 1981 and 2018. Following the OMB's classification scheme, we define a "regulation" as a unique OMB control number across all Form 83-I's. The resulting raw dataset yields 167,726 forms filed by 347 federal agencies in connection with 35,784 separate regulations.

Next, we convert these form-level data into a regulation-quarter dataset that tracks the number of federal regulations active during a given calendar quarter. To do so, we transform our regulation count into a regulation intensity index following the methodology of Baker, Bloom, and Davis (2016), who construct an economic policy uncertainty index from news article counts. Specifically, we calculate the quarterly number of active regulations by agency, standardize each agency series to unit standard deviation, and then average across all agencies by quarter to create a government series. Afterwards, we normalize the government series to a mean of 100 to produce a regulatory intensity index. We construct this index, which represents the quantity of active paperwork regulations, in the spirit of prior research that quantifies the institutional environment in which firms operate by counting key features, such as investor protections (La Porta, Lopez-de Silanes, Shleifer, and Vishny, 1998; Bris and Cabolis, 2008) and employment protection (Dessaint, Golubov, and Volpin, 2017).

[6] See: https://www.govinfo.gov/content/pkg/STATUTE-94/pdf/STATUTE-94-Pg2812.pdf#page=1

Unlike investor protections, which uniformly affect all corporations operating within a certain country-year, federal regulation heterogeneously affects firms depending on their exposure. Therefore, to account for this heterogeneity, we create a novel firm-specific measure of regulatory exposure that captures a stock's sensitivity to unexpected changes in the intensity of federal regulation. We produce this measure, which we label *RegExp*, by extracting unanticipated changes in the regulatory intensity index and regressing each firm's excess stock return on this innovation series and Fama-French risk factor controls. This process, which is similar to the method that Alfaro, Bloom, and Lin (2019) and Akey and Lewellen (2017) use to assess firm-level sensitivity to aggregate economic policy uncertainty, generates a firm-specific and time-varying measure of exposure to active federal regulations.

Specifically, we extract unanticipated changes in the regulatory intensity index by regressing the quarterly change in the index at time *t*, $\Delta RegIn_t$, on its lag and its lagged level:

$$\Delta RegIn_t = a + b \cdot \Delta RegIn_{t-1} + c \cdot RegIn_{t-1} + u_t \quad (1)$$

The predicted change in regulatory intensity ($\Delta RegIn_t$) is allowed to depend on its most recent change ($\Delta RegIn_{t-1}$) and on the deviation of its most recent level ($RegIn_{t-1}$) from the long run mean (a). Consequently, model (1) is analogous to a second-order autoregression in the level series. We then extract the serially uncorrelated residuals ($\hat{u}_t$) from this estimated regression model and multiply them by 100 for ease of interpretation. The resulting scaled fitted residuals ($R_t = 100 \cdot \hat{u}_t$) represent unexpected shocks to aggregate regulatory intensity. Finally, we use these fitted residuals, CRSP monthly stock returns, and monthly factors from Kenneth French's website to estimate firm-level regulatory exposure.

To do so, we regress the following equation in 24-month rolling windows for each firm *i* at time *T*, where *t* lies in the interval [T, T-23]:

$$r_{i,t} = B^{0}_{i,T} + B^{F}_{i,T} \cdot \overrightarrow{F_t} + B^{reg}_{i,T} \cdot R_t + \epsilon_t \quad (2)$$

$r_{i,t}$ is the firm's excess stock return over the risk-free rate, $\overrightarrow{F_t}$ is a vector that includes the market (*MKT)*, size (*SMB*), and value (*HML*) Fama-French factors, and R_t is the scaled fitted residual from Equation (1). Thus, our coefficient of interest, $B^{reg}_{i,T}$, represents the comovement of stock *i* with shifts in regulatory intensity over a 24-month period.

We define *RegExp* as the absolute value of $B^{reg}_{i,T}$ to capture the magnitude of the stock's response to regulatory shocks. Prior research typically studies the effect of regulation (or deregulation) using discrete indicators that flag policy changes in a specific industry or location (e.g., Mitchell and Mulherin, 1996; Andrade, Mitchell, and Stafford, 2001; Harford, 2005; Al-Ubaydli and McLaughlin, 2017), or by counting the number of regulation-related keywords used in earnings calls and annual reports (Calomiris, Mamaysky, and Yang, 2020; Gong and Yannelis, 2018). Our novel measure advances this literature because it captures a firm's regulatory burden based on investors' reactions to changes in a comprehensive database of federal regulations. As such, it overcomes problems with how location-based regulations affect firms that operate across different jurisdictions and how industry-based regulations affect firms that operate across different business lines.

2.2 Sample construction

We draw our sample of firm-quarter observations from the Center for Research in Security Pricing (CRSP)-Compustat Merged Fundamental Quarterly Database. The sample consists of U.S. public companies (CRSP share code 10 or 11) traded on NYSE, NASDAQ, or AMEX (CRSP exchange code 1, 2, or 3) with at least 20 months of historical stock price data so that we can estimate the firm's exposure to U.S. regulation. We further require that each firm-quarter observation has data available to construct our outcome and lagged control variables. Since prior

research shows that acquisition data are incomplete in the early 1980s (Netter, Stegemoller, and Wintoki, 2011), we begin the sample period in 1986 as in Ahern and Harford (2014). Imposing these criteria yields a sample of 338,221 firm-quarter observations from 10,835 U.S. public companies between 1986 and 2018.

We draw our sample of mergers and acquisitions (M&A) from the Securities Data Company (SDC) Platinum Merger and Acquisition database. Following prior M&A work (e.g. Moeller, Schlingemann, and Stulz, 2004; Masulis, Wang, and Xie, 2007), we exclude spinoffs, recapitalizations, exchange offers, repurchases, privatizations, deals valued at less than $1 million, and deals where the acquirer controlled more than 50% of the target prior to the announcement or sought less than 50% upon completion, and deals that were neither completed nor withdrawn. We ensure that the acquirer is a U.S. public company but allow for public, private, and subsidiary targets. Next, we merge these deals into our firm-quarter sample using cusip, ticker, and company name recorded in the CRSP historical stock names file and drop transactions with insufficient data to construct our outcome and control variables. This process produces a sample of 23,019 M&A deals announced by 5,548 U.S. firms from fiscal years 1986 to 2018.

Table 1 reports descriptive statistics for our firm-quarter and deal samples.[7] The magnitude of our regulatory exposure variable is small by construction – with a mean, standard deviation, and interquartile range of 0.005 – because it reflects the stock-implied exposure to changes in regulatory intensity, which are measured using residuals from a second-order autoregression. Firms in our sample announce an M&A deal in roughly 6% of quarters and spend an average of $41 million on acquisitions during a given quarter. The average acquirer firm has a $9.5 billion market capitalization, 0.11 return on assets (ROA) ratio, 1.94 market-to-book ratio, and 0.21 book

[7] We normalize nominal values to 2018 dollars and winsorize variables at the 1/99% tails throughout the analysis.

leverage ratio. We estimate market model cumulative abnormal returns (CARs) using the CRSP equal-weighted index and a one year estimation window (252 trading days) ending one month (20 trading days) prior to the three-day [-1, +1] event window centered on the deal announcement day. The mean acquirer 3-day CAR in our sample is 0.81% and the fraction of deals involving public, private, and subsidiary targets is 22%, 45%, and 33%, respectively. Overall, our descriptive statistics are similar to prior studies of mergers and acquisitions.[8]

3. Empirical design

Our goal is to examine the relation between regulatory exposure and acquisition activity. A potential concern with this analysis, however, is that regulatory changes may be correlated with industry or macroeconomic factors that affect acquisitions. Our empirical design addresses this concern in two ways.

First, we construct our novel firm-level measure of regulatory exposure in a manner that reduces the scope for our estimates to be biased by omitted industry or macroeconomic factors. As noted above, we measure regulatory changes using residuals from a second-order autoregression that, by construction, are serially uncorrelated and capture regulatory shocks that could not be anticipated based on past values. Moreover, our focus on stock-implied exposure captures variation in *RegExp* driven by how much investors perceive each firm is affected by these common shocks based on its economic characteristics.

A variance decomposition reveals that time and industry fixed effects individually account for only 5% of the overall variation in *RegExp*. Thus, almost 90% percent of variation in *RegExp* is at the firm level. A regression of *RegExp* on firm and time fixed effects reveals that one-quarter of

[8] For example, Moeller et al. (2004) report mean ROA of 0.13, leverage of 0.31, CARs of 1.10%, and 22% of deals involving public targets in their sample of deals from 1980 to 2001. John, Knyazeva, and Knyazeva (2015) report a relative deal size of 24% and 91% bid completion rate in their 1985–2009 sample.

the variation in regulatory exposure is attributable to permanent differences across firms (firm fixed effects) with the rest being the product of changes in regulatory exposure across firms over time (the residual). Thus, our focus on a stock's sensitivity to sudden regulatory shifts produces a measure that exhibits vast heterogeneity across firms.

The firm-level variation in *RegExp* suggests that U.S. companies face distinct regulatory burdens despite being subject to a common regulatory regime. This interpretation is consistent with Kalmenovitz, Lowry, and Volkova (2021), who show that government oversight is often dispersed, creating unique regulatory burdens for firms that must interact with multiple agencies. For example, Capital One in 2011 exhibits the largest *RegExp* surge in our dataset as the financial institution began to navigate the increased burden of the Dodd-Frank Act and the creation of the Consumer Financial Protection Bureau. Meanwhile, Hub Group, a transportation company with $1.5 billion market capitalization, experiences the second highest spike in our dataset (in 2016). Hub Group's heightened regulatory exposure stemmed from new Environmental Protection Agency regulations that affected their operations and immigration restrictions that jeopardized their access to skilled labor. Together, these examples illustrate that *RegExp* captures firm-specific reactions to economically relevant regulatory shocks rather than proxying for secular macroeconomic trends or time-invariant industry characteristics.

Second, we estimate ordinary least squares (OLS) regressions to control for factors previously shown to influence acquisition decisions. In our baseline specification, we estimate:

$$y_{i,j,t} = \alpha + B \cdot RegExp_{i,t} + \gamma \cdot \overrightarrow{X_{\iota,t}} + \theta \cdot \overrightarrow{I_{J,t}} + \delta \cdot \overrightarrow{M_t} + \epsilon_{i,t} \quad (3)$$

$y_{i,j,t}$ is the outcome variable for firm *i* operating in industry *j* at time *t*, $RegExp_{i,t}$ is the magnitude of stock *i*'s response to regulatory shocks over the previous 24-months, $\overrightarrow{X_{\iota,t}}$ is a vector of firm controls, $\overrightarrow{I_{J,t}}$ is a vector of industry controls, and $\overrightarrow{M_t}$ is a vector of macroeconomic controls. We

follow standard practice in the M&A literature (e.g., Moeller et al., 2004; Masulis et al., 2007) by including acquirer size, prior stock return, return on assets, market-to-book ratio, and leverage in the vector of firm controls in all regressions. We choose our industry and macroeconomic control variables based on prior research which shows the following variables affect acquisition decisions: industry economic shocks (Mitchell and Mulherin, 1996), interest rate spreads (Harford, 2005), market valuation (Rhodes-Kropf, Robinson, Viswanathan, 2005), macroeconomic uncertainty (Bhagwat, Dam, Harford, 2016), and economic policy uncertainty (Bonaime et al., 2018). An additional benefit of including these variables as controls is that they allow us to compare the economic significance of *RegExp* relative to established determinants of M&A activity. However, to further reduce the possibility of bias from unobserved industry or macroeconomic factors, we replace these controls with Fama-French 48 industry fixed effects and year fixed effects in our strictest specifications. Finally, we cluster standard errors by firm in all regressions to account for potential serial correlation in the error term (e.g., Masulis et al., 2007; Field and Mkrtchyan, 2017).

4. Results

4.1 Acquisition activity

We begin our empirical analysis by examining the relation between regulatory exposure and acquisition activity. A large literature on real options theory, dating to Bernanke (1983), argues that uncertainty increases the value of a firm's option to delay and leads to a drop in corporate investment, particularly for outlays with a high degree of irreversibility. Bonaime et al. (2018) provide empirical support for this theory by showing that acquisition activity is negatively related to news-based measures of economic uncertainty regarding taxes, government spending, and regulation. Therefore, to the extent that regulatory exposure creates uncertainty, we expect *RegExp* to be negatively associated with deal activity.

We note, however, that uncertainty over regulation and exposure to regulation are unique constructs. Although the federal government's complex and ever-changing regulatory framework can create uncertainty, enacted regulations have real effects on the competitive landscape and costs associated with their compliance. Neoclassical theory of M&A argues that shocks to the economic, technological, or regulatory environment alter firms' optimal investment opportunity set, leading to an increase in acquisition activity (Gort, 1969; Mitchell and Mulherin, 1996; Andrade, Mitchell, and Stafford, 2001). Thus, if regulatory exposure alters the ideal scope of some firms, particularly those that develop expertise in regulatory compliance, then *RegExp* will be positively associated with deal activity.

Figure 1 plots average regulatory exposure and changes in acquisition activity for our sample of U.S. public companies between 1986 and 2018. By construction, the graph exhibits no secular trend since our focus is on *changes* in acquisition activity as a function of exposure to *changes* in regulatory intensity. The dashed grey line shows that average regulatory exposure peaks during the early 2000s as federal agencies enacted homeland-security regulations in response to the September 11th terrorist attacks and strengthened financial regulations in the wake of widespread corporate accounting scandals. Exposure wanes in the later years of the Bush and Obama presidencies as their agendas became fully implemented and required few additional regulatory "shifts." The solid blue line shows that periods of high regulatory exposure are generally followed by an increase in acquisition activity and vice versa. This positive relation occurs throughout the sample period except for periods of extreme market turmoil, such as the bursting of the Dot-com Bubble in 2000 and the Financial Crisis of 2008, where acquisition activity drops precipitously. Although not a formal test, the positive relation depicted in Figure 1 provides suggestive evidence that regulatory shifts lead to a reorganization of capital in the U.S. economy.

Table 2 displays estimates from OLS regressions of deal activity on our firm-specific measure of regulatory exposure as well as firm, industry, and macroeconomic controls. According to the coefficients in Column (1), a one standard deviation increase in *RegExp* is associated with a 3.3% increase in acquisition likelihood relative to the sample mean (0.002/0.061). Similarly, Column (3) shows that a one standard deviation increase in *RegExp* is associated with a 2.9% increase in acquisition expenditure (0.008/0.272), measured as the natural log of one plus the total deal value announced during the firm-quarter. Notably, the economic magnitude of *RegExp* is in line with the scale of other factors known to promote M&A activity, such as funding and economic conditions. A one standard decrease in *Rate spread* and a one standard deviation increase in *Industry economic shock*, both constructed following Harford (2005), are associated with a 1.6% and 6.6% increase in acquisition likelihood respectively. Columns (2) and (4) confirm that the positive relation between M&A activity and regulatory exposure remains statistically significant at the 5% level when including industry and year fixed effects. Collectively, these results suggest that firms use the market for corporate control to adjust their size and scope depending on their regulatory burden.

Importantly, our control variables have coefficients that are directionally and statistically consistent with prior research, but do not drive out the association between *RegExp* and deal activity. For example, the negative and significant coefficients on *Macroeconomic uncertainty* and *Policy uncertainty* confirm that uncertainty discourages acquisitions (e.g., Bhagwat et al., 2016; Bonaime et al., 2018; de Bodt et al., 2021) while highlighting that exposure to and uncertainty about regulation are distinct constructs. Moreover, the positive and significant coefficient on *Industry deregulation* confirms that removing barriers to M&A increases deal activity (Mitchell and Mulherin, 1996; Andrade et al., 2001), underscoring that regulation can influence the M&A market directly by restricting firms' ability to consolidate and indirectly by altering firms'

incentives to merge. Our findings suggest that firms react to high regulatory compliance costs by increasing their scale via mergers and acquisitions. To the extent that higher regulatory exposure encourages some firms to develop unique compliance skills, the positive association between exposure and M&A activity offers support for the regulatory synergy hypothesis.

4.2 Shareholder value implications

Neoclassical theory offers M&A as an optimal response to changes in a firm's investment opportunity set or cost structure that should enhance shareholder wealth (Manne, 1965). Since regulatory burden represents an important economic cost, neoclassical theory and our *regulatory synergy* hypothesis predicts that high *RegExp* firms will use M&A deals to develop economies of scale and compliance expertise, increasing shareholder value. We test this prediction by examining how M&A stock price reactions vary with acquirers' regulatory exposure in our sample of 23,019 deals announced by 5,548 U.S. public companies between 1986 and 2018.

Table 3 reports the results from OLS regressions of 3-day shareholder CARs upon M&A announcements on our measure of regulatory exposure. Our baseline regressions control for standard acquirer characteristics that prior research shows affect announcement returns, as well as industry and macroeconomic characteristics that could be correlated with regulatory intensity. All continuous variables included in these regressions are standardized and all independent variables are measured at the previous fiscal quarter end. These pooled regressions exploit both cross-sectional and time-series variation in *RegExp* and allow us to compare the economic magnitudes relative to other known predictors of M&A announcement returns. Columns (2) and (4) hone in on within-industry and within-year variation in *RegExp* by including industry and year fixed effects. Finally, to be consistent with prior M&A research, we control for deal

characteristics in Columns (3) and (4).[9] However, we do not include these variables in all specifications because deal characteristics, such as target size, can also be thought of as outcome variables and Angrist and Pischke (2009) caution against including controls that could themselves be affected by the construct of interest.

Across all specifications, acquisitions appear to be more beneficial for firms with high regulatory exposure. Based on the coefficients in Column (1), a one standard deviation increase in *RegExp* corresponds to a 0.21% higher acquirer announcement return. This effect is statistically significant at the 1% level and economically meaningful as it represents a $20 million market capitalization increase for the average acquirer. The magnitude of the *RegExp* effect is comparable to other determinants of M&A returns such as leverage (Maloney, McCormick, and Mitchell, 1993) and interest rate spreads (Becher, Jensen, and Liu, 2020), which we estimate to be 0.23% and 0.16% respectively. Consistent with Bonaime et al. (2018), we find no statistical or economically meaningful relation between policy uncertainty and acquisition announcement returns, reinforcing our interpretation that regulatory *exposure* and regulatory *uncertainty* are distinct constructs. Together with our results on increased deal activity, our findings support neoclassical theory that predicts mergers and acquisitions are a value-maximizing response to shocks in a firm's operating environment. In our setting, that response triggers regulatory synergies that manifest in increased and more profitable M&A deals.

4.3 Sources of value creation

Thus far we have shown that firm-specific changes in regulatory exposure are associated with more frequent and higher quality acquisitions. This section explores the economic mechanism

[9] The controls include target listing status indicators, a withdrawn deal indicator, relative deal size, method of payment indicators, a diversifying indicator, toehold percentage, a hostile takeover indicator, and a tender offer indicator.

behind these changes. To do so, we examine whether the change in acquisition behavior i) occurs among specific deal types, ii) generates higher deal synergies and long-run operating performance, and iii) reduces the acquirer's post-deal regulatory exposure.

Neoclassical theory and our *regulatory synergy* hypothesis predict that shareholder gains will be highest among firms where an increase in scope via acquisitions delivers the greatest benefits. Given that regulatory compliance represents a large, fixed cost, we conjecture that firms that cannot efficiently absorb these costs (e.g., small or private companies) should be frequently targeted in these deals. As a result, small and private firms may benefit from being acquired if the deal enables them to better navigate their regulatory burden. We test these conjectures in Table 4 with linear probability models that regress a deal-type indicator on *RegExp* and controls from model (1). The dependent variable in Columns (1) and (2) is a small deal indicator, which equals one if the deal value is in the bottom quartile of our sample. Columns (3)-(4) and (5)-(6) examine the likelihood that the acquisition involves a private target or public target, respectively.

Consistent with neoclassical theory of M&A, results in Table 4 suggest that the change in acquisition activity is largest for firms with the greatest economic incentive to merge. A one standard deviation increase in *RegExp* is associated with a 5% increase in the likelihood of acquiring a small target (0.012/0.250) and an 8% decrease in the likelihood of acquiring a public target (0.017/0.217). These estimates suggest high *RegExp* acquirers avoid transactions of public targets who themselves may be subject to onerous additional regulation. By contrast, acquisitions help smaller firms develop the scale and expertise necessary to cope with regulation.

To sharpen this interpretation, we examine cross-sectional variation in the effect of regulatory exposure on acquirer percentage CARs. Specifically, we classify deals into subsamples of High *RegExp* and Low *RegExp* acquirers according to the sample median, and compare announcement

returns across deal types. Table 5 confirms our main finding that acquisitions create greater shareholder value for firms with high regulatory exposure. Panel A shows that acquirers with above median *RegExp* earn 0.776% higher CARs for small deals, corresponding to a $74 million market capitalization increase for the average acquirer, while Panel B shows that these acquirers earn 0.716% higher CARs for deals involving private targets, equivalent to a $69 million gain for the average acquirer. Notably, acquirers with above median regulatory exposure earn greater shareholder returns around the announcement of private targets relative to public targets. The difference in mean CARs is statistically significant at the 1% level. These results reinforce the interpretation that high *RegExp* creates value for acquirer firms that pursue target companies unable to individually cope with the regulatory burden.

Our results so far support neoclassical theory arguing that mergers and acquisitions reallocate resources to their most efficient use. According to our *regulatory synergy* hypothesis, M&A are a tool that firms exploit to develop greater scale and expertise to minimize regulatory compliance costs. While the preceding empirical evidence is consistent with the regulatory synergy hypothesis, we perform additional analyses to test this interpretation more directly. To do so, we begin in Table 6 by examining whether deals announced by high *RegExp* firms create greater synergies. We use three proxies of deal synergies as outcome variables: the 4-week premium from SDC in Columns (1) and (2), the multiple measure of Rhodes-Kropf, Robinson, and Viswanathan (RVV 2005) in Columns (3) and (4), and the average multiple measure of Jaffe, Jindra, and Pedersen, and Voetmann (2018) in Columns (5) and (6). These three variables proxy for deal synergies by capturing how much acquirers pay for an acquisition relative to the target's standalone value. However, data availability for these outcome variables is limited to public targets and a limited set of private deals with publicly available information.

The results in Table 6 indicate a positive relation between acquirer regulatory exposure and all three measures of deal synergies. According to our baseline specification, a one standard deviation increase in regulatory exposure is associated with a 5% increase in premium (2.046/44.944), a 29% increase in RVV multiple (0.310/1.078), and a 13% increase in average multiple (0.010/0.075). Together, these estimates imply that acquisitions announced by high *RegExp* acquirers are viewed favorably by investors because they create value for the whole firm.

Next, to understand the relation between *RegExp* and acquisition behavior, we examine long-run changes in the merged firm. Under the *regulatory synergy* hypothesis, high *RegExp* firms that complete an acquisition should exhibit stronger performance than similar firms without a recently completed acquisition. We test this conjecture in Table 7 with OLS regressions that relate one year buy-and-hold abnormal returns (Panel A) and return on assets (Panel B) with regulatory exposure, depending on whether the firm recently completed an acquisition. The results show that increasing *RegExp* by one standard deviation is associated with 0.219% lower one year buy-and-hold return for the average firm, but is not associated with significantly lower returns for firms that complete an acquisition. Similarly, ROA is roughly 1% (-0.097%/11.3%) lower for firms with one standard deviation above mean regulatory exposure, on average, but is not significantly different from zero for firms that have recently completed an acquisition. Finally, the results in Table 8 show that firms exhibit an economically important decrease in their mean and median exposure to regulation *after* they complete an acquisition. Notably, the decrease in average regulatory exposure from one year pre-acquisition to three years post-acquisition is significantly larger for companies that executed small M&A deals and those involving private targets. Overall, the results in Tables 6, 7 and 8 deliver strong and more direct support for the regulatory synergy hypothesis: regulatory exposure is costly, but acquisitions allow firms to

develop the scale and expertise to mitigate these costs.

5. Conclusion

The market for corporate control is an essential channel underlying the allocation of capital in the economy. Yet, the impact of government regulation—which potentially alters the efficiency of M&A transactions—is still not well understood. In this paper, we investigate the effect of corporate exposure to government regulation on acquisition investment. To do so, we develop a novel measure of regulatory exposure based on the number of forms firms must file to comply with government regulation.

Our empirical analyses indicate that highly regulated companies issue more acquisition bids, invest more in those transactions, and earn higher M&A announcement returns. Consistent with the short-term stock market announcement return evidence, highly regulated acquirers exhibit better long-term performance and greater M&A synergies. Moreover, an acquirer's regulatory exposure declines significantly after the firm completes an acquisition. Our tests also reveal that the benefits to highly regulated firms are particularly large for those completing M&A deals that involve small transaction values or private targets. The latter results suggest that firms incapable of independently coping with regulatory burden benefit from a takeover by a highly regulated acquirer if the deal enables them to better navigate such a burden.

Overall, our findings support neoclassical theory and our *regulatory synergy* hypothesis predicting that M&A gains will be higher for firms in environments most exposed to a regulatory shock. Consequently, our results have important implications for the types of firms that merge and for the changes in regulatory exposure firms achieve after M&A investments.

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Figure 1: Regulatory exposure and acquisition activity. This figure plots average regulatory exposure and changes in acquisition activity over time. The dashed line (left axis) depicts the annual average firm-specific regulatory exposure, which is the sensitivity of a stock to changes in the number of active federal paperwork regulations. The solid line (right axis) depicts the annual change in the fraction of firms that announce an acquisition. The sample consists of 338,221 firm-quarter observations from 10,835 U.S. public companies with data available in the CRSP-Compustat Merged Database between 1986 and 2018

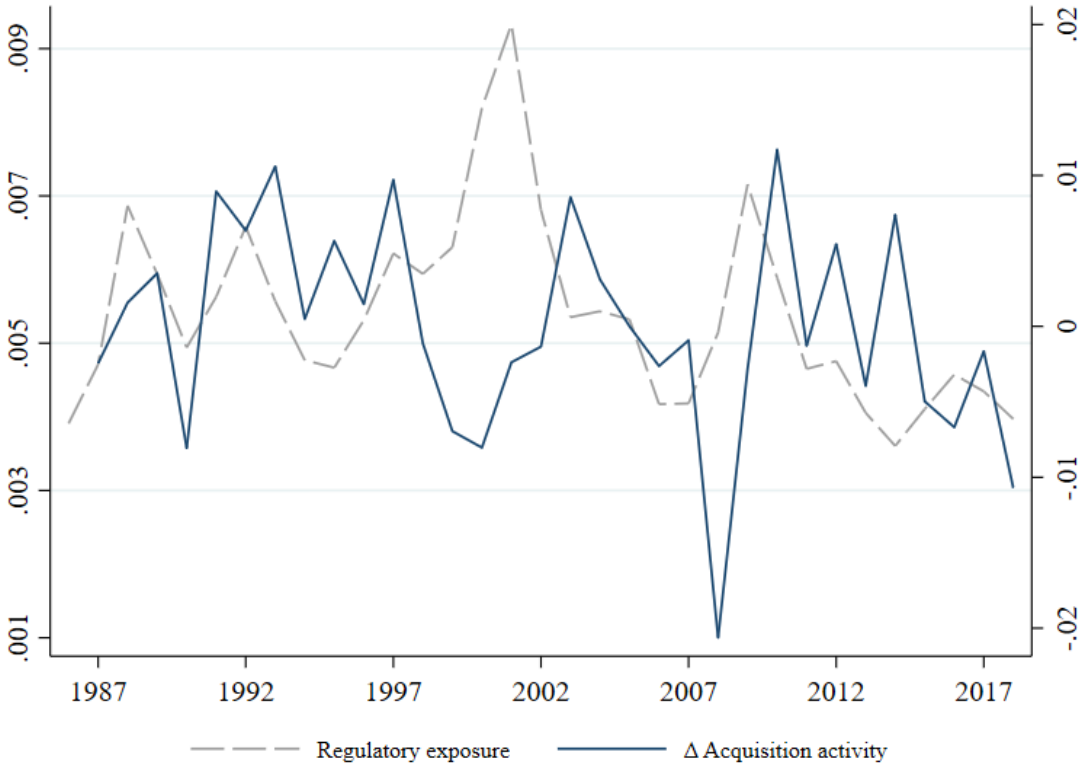

Table 1: Sample description. The firm-quarter sample consists of 338,221 firm-quarter observations from 10,835 U.S. public companies with data available in the CRSP-Compustat Merged Database between 1986 and 2018. The mergers and acquisitions (M&A) sample consists of 23,019 deals announced by 5,548 of these firms. We obtain the initial M&A sample from SDC Platinum and filter out spinoffs, recapitalizations, exchange offers, repurchases, privatizations, deals valued at less than $1 million, and deals where the acquirer controlled more than 50% of the target prior to the announcement or sought less than 50% upon completion. We winsorize variables at the 1/99% level throughout the analysis. The appendix lists variable definitions.

	Mean	S.D.	P25	Median	P75	Obs
Deal activity						
Acquisition (0/1)	0.061	0.239	0.000	0.000	0.000	338,221
Acquisition expenditure	41.033	967.068	0.000	0.000	0.000	338,221
Acquirer characteristics						
RegExp	0.005	0.005	0.002	0.003	0.007	23,019
Market capitalization	9,509.508	27935.915	367.989	1,302.234	4,767.468	23,019
Prior stock return	0.112	0.535	-0.190	0.033	0.288	23,019
ROA	0.113	0.103	0.049	0.119	0.173	23,019
Market-to-book	1.940	1.314	1.122	1.503	2.203	23,019
Leverage	0.214	0.177	0.059	0.192	0.325	23,019
Deal characteristics						
Acquirer 3-day CAR (%)	0.808	7.513	-2.148	0.292	3.073	23,019
Premium	44.944	39.016	20.000	30.000	60.000	3,313
RVV value multiple	1.078	2.811	0.078	0.290	0.806	1,946
Average multiple	0.075	0.138	0.029	0.041	0.065	3,756
Withdrawn (0/1)	0.047	0.212	0.000	0.000	0.000	23,019
Private target (0/1)	0.449	0.497	0.000	0.000	1.000	23,019
Public target (0/1)	0.217	0.412	0.000	0.000	0.000	23,019
Relative deal size	0.189	0.350	0.018	0.059	0.185	23,019
All-cash (0/1)	0.402	0.490	0.000	0.000	1.000	23,019
All-stock (0/1)	0.139	0.346	0.000	0.000	0.000	23,019
Diversifying (0/1)	0.372	0.483	0.000	0.000	1.000	23,019
Toehold (%)	0.535	4.314	0.000	0.000	0.000	23,019
Hostile (0/1)	0.007	0.086	0.000	0.000	0.000	23,019
Tender offer (0/1)	0.041	0.198	0.000	0.000	0.000	23,019
Macroeconomic characteristics						
Industry deregulation (0/1)	0.022	0.146	0.000	0.000	0.000	23,019
Industry economic shock	0.724	1.725	-0.460	0.363	1.576	23,019
Rate spread	3.702	1.598	2.410	3.650	5.080	23,019
Shiller CAPE ratio	26.559	6.896	21.402	25.840	29.749	23,019
Market return	0.131	0.161	0.047	0.153	0.242	23,019
Macroeconomic uncertainty	0.893	0.038	0.862	0.892	0.910	23,019
Policy uncertainty	108.271	41.054	79.322	96.970	126.626	23,019

Table 2: Deal activity. This table reports ordinary least squares (OLS) estimates of the effect of regulatory exposure on acquisition behavior. The sample consists of 338,221 firm-quarter observations from 10,835 U.S. public companies with data available in the CRSP-Compustat Merged Database between 1986 and 2018. The dependent variable in Columns (1) and (2) is an indicator that equals one if the firm announces an acquisition during the quarter, and zero otherwise. The dependent variable in Columns (3) and (4) is the natural log of one plus the total deal value announced during the firm-quarter. All continuous variables are standardized and independent variables are measured at the previous fiscal quarter end. Heteroskedasticity-consistent standard errors clustered by firm are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. The appendix lists variable definitions.

	Acquisition		**Acquisition expenditure**	
	(1)	(2)	(3)	(4)
RegExp	0.002***	0.001**	0.008***	0.005**
	(0.000)	(0.000)	(0.002)	(0.002)
Size	0.028***	0.032***	0.193***	0.211***
	(0.001)	(0.001)	(0.006)	(0.006)
Prior stock return	0.007***	0.007***	0.026***	0.026***
	(0.001)	(0.001)	(0.003)	(0.003)
ROA	0.004***	0.003***	0.004	0.002
	(0.001)	(0.001)	(0.003)	(0.003)
Market-to-book	-0.004***	-0.006***	-0.031***	-0.039***
	(0.001)	(0.001)	(0.004)	(0.004)
Leverage	-0.001*	0.001*	0.001	0.013***
	(0.001)	(0.001)	(0.003)	(0.003)
Industry deregulation	0.030***		0.114***	
	(0.006)		(0.026)	
Industry economic shock	0.004***		0.018***	
	(0.001)		(0.003)	
Rate spread	-0.001*		-0.008***	
	(0.001)		(0.003)	
Shiller CAPE ratio	0.006***		0.028***	
	(0.001)		(0.003)	
Market return	0.000		0.002	
	(0.001)		(0.003)	
Macroeconomic uncertainty	-0.003***		-0.011***	
	(0.001)		(0.002)	
Policy uncertainty	-0.005***		-0.024***	
	(0.000)		(0.002)	
Industry & year fixed effects	No	Yes	No	Yes
Observations	338,221	338,221	338,221	338,221
Adjusted R-squared	0.017	0.024	0.029	0.035

Table 3: Acquirer value implications. This table reports OLS estimates of the effect of regulatory exposure on acquirer percentage announcement returns. The sample consists of 23,019 deals announced by 5,548 U.S. public companies between 1986 and 2018. All continuous variables are standardized and independent variables are measured at the previous fiscal quarter end. Deal controls include target listing status indicators, a withdrawn deal indicator, relative deal size, method of payment indicators, a diversifying indicator, toehold percentage, a hostile takeover indicator, and a tender offer indicator. Heteroskedasticity-consistent standard errors clustered by firm are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. The appendix lists variable definitions.

	Acquirer 3-day CAR			
	(1)	(2)	(3)	(4)
RegExp	0.207***	0.171**	0.160**	0.164**
	(0.078)	(0.078)	(0.077)	(0.077)
Size	-0.904***	-0.857***	-0.508***	-0.482***
	(0.064)	(0.068)	(0.058)	(0.058)
Prior stock return	-0.262***	-0.243***	-0.189***	-0.208***
	(0.069)	(0.071)	(0.067)	(0.069)
ROA	0.195**	0.027	0.075	0.012
	(0.080)	(0.090)	(0.080)	(0.089)
Market-to-book	0.098	0.031	0.036	0.048
	(0.076)	(0.085)	(0.075)	(0.082)
Leverage	0.234***	0.128*	0.048	0.030
	(0.068)	(0.069)	(0.063)	(0.066)
Industry deregulation	-0.458*		-0.064	
	(0.248)		(0.257)	
Industry economic shock	-0.005		0.037	
	(0.067)		(0.067)	
Rate spread	0.158***		0.115**	
	(0.057)		(0.058)	
Shiller CAPE ratio	0.036		-0.003	
	(0.064)		(0.062)	
Market return	0.098*		0.099*	
	(0.058)		(0.058)	
Macroeconomic uncertainty	-0.209***		-0.225***	
	(0.064)		(0.064)	
Policy uncertainty	0.014		-0.035	
	(0.061)		(0.061)	
Deal controls	No	No	Yes	Yes
Industry & year fixed effects	No	Yes	No	Yes
Observations	23,019	23,019	23,019	23,019
Adjusted R-squared	0.018	0.022	0.043	0.044

Table 4: Target selection. This table reports OLS estimates of the effect of regulatory exposure on target characteristics. The sample consists of 23,019 deals announced by 5,548 U.S. public companies between 1986 and 2018. All continuous variables are standardized and independent variables are measured at the previous fiscal quarter end. Heteroskedasticity-consistent standard errors clustered by firm are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. The appendix lists variable definitions.

	Small deal		**Private target**		**Public target**	
	(1)	(2)	(3)	(4)	(5)	(6)
RegExp	0.012***	0.008**	0.006	0.008**	-0.017***	-0.006**
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
Size	-0.166***	-0.157***	-0.100***	-0.098***	0.078***	0.070***
	(0.005)	(0.005)	(0.007)	(0.006)	(0.005)	(0.005)
Prior stock return	-0.005	0.000	0.004	0.010***	0.008**	-0.004
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
ROA	0.001	-0.009**	0.009**	0.012***	-0.039***	-0.009***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Market-to-book	0.040***	0.023***	0.068***	0.049***	-0.046***	-0.018***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)
Leverage	-0.015***	-0.020***	-0.042***	-0.026***	-0.022***	-0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Industry deregulation	0.038*		-0.040*		0.088***	
	(0.020)		(0.023)		(0.021)	
Industry economic shock	0.014***		-0.022***		0.012***	
	(0.004)		(0.004)		(0.003)	
Rate spread	0.002		0.020***		-0.022***	
	(0.004)		(0.004)		(0.003)	
Shiller CAPE ratio	-0.007**		0.020***		-0.001	
	(0.004)		(0.004)		(0.004)	
Market return	-0.006		0.014***		-0.002	
	(0.004)		(0.005)		(0.004)	
Macroeconomic uncertainty	0.007**		0.007*		-0.003	
	(0.003)		(0.004)		(0.003)	
Policy uncertainty	-0.009***		0.005		-0.011***	
	(0.003)		(0.004)		(0.003)	
Industry & year fixed effects	No	Yes	No	Yes	No	Yes
Observations	23,019	23,019	23,019	23,019	23,019	23,019
Adjusted R-squared	0.154	0.168	0.065	0.093	0.050	0.108

Table 5: Acquirer announcement returns across deal types. This table reports cross-sectional variation in the effect of regulatory exposure on acquirer percentage CARs. Deals are classified as High RegExp if the acquirer's exposure is above the sample median and Low RegExp otherwise. We test differences in means using *t*-tests and report standard errors in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Deal size

	Small deal	**Large deal**	**Small – Large**
High RegExp	1.138***	1.069***	0.069
	(0.143)	(0.090)	(0.166)
Low RegExp	0.362***	0.570***	-0.208
	(0.118)	(0.074)	(0.157)
High – Low	0.776***	0.499***	0.277
	(0.197)	(0.115)	(0.231)

Panel B: Target listing status

	Private targets	**Public targets**	**Private – Public**
High RegExp	1.427***	-0.838***	2.26***
	(0.113)	(0.164)	(0.209)
Low RegExp	0.710***	-0.869***	1.579***
	(0.084)	(0.111)	(0.138)
High – Low	0.716***	0.030	0.686***
	(0.144)	(0.191)	(0.247)

Table 6: Synergies. This table reports OLS estimates of the effect of regulatory exposure on proxies of acquisition synergies. The full sample consists of 23,019 deals announced by 5,548 U.S. public companies between 1986 and 2018 but varies in each specification depending on data availability. All continuous variables are standardized and independent variables are measured at the previous fiscal quarter end. Heteroskedasticity-consistent standard errors clustered by firm are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. The appendix lists variable definitions.

	Premium		**RVV value multiple**		**Average multiple**	
	(1)	(2)	(3)	(4)	(5)	(6)
RegExp	2.046**	1.476	0.310***	0.275***	0.010**	0.008**
	(1.005)	(1.064)	(0.102)	(0.106)	(0.004)	(0.004)
Size	-1.854**	-1.867**	0.206**	0.250***	0.003	0.004
	(0.854)	(0.843)	(0.091)	(0.092)	(0.003)	(0.003)
Prior stock return	1.023	1.335	0.025	0.176	0.005	0.007
	(0.942)	(0.994)	(0.104)	(0.107)	(0.004)	(0.004)
ROA	0.526	-0.688	0.264***	0.072	-0.007*	-0.013**
	(1.060)	(1.267)	(0.081)	(0.104)	(0.004)	(0.005)
Market-to-book	2.000	0.756	0.456***	0.200	0.035***	0.025***
	(1.235)	(1.400)	(0.132)	(0.156)	(0.005)	(0.005)
Leverage	-1.314	-2.512***	0.163**	0.017	0.002	0.002
	(0.802)	(0.919)	(0.072)	(0.082)	(0.003)	(0.004)
Industry deregulation	6.226*		-0.357**		-0.006	
	(3.514)		(0.169)		(0.011)	
Industry economic shock	3.761***		-0.091		0.002	
	(0.878)		(0.075)		(0.003)	
Rate spread	0.904		0.011		0.002	
	(0.847)		(0.084)		(0.003)	
Shiller CAPE ratio	-0.101		-0.041		-0.001	
	(0.730)		(0.058)		(0.002)	
Market return	-2.159**		0.011		0.001	
	(0.900)		(0.085)		(0.003)	
Macroeconomic uncertainty	1.284		0.063		0.006**	
	(0.962)		(0.076)		(0.003)	
Policy uncertainty	1.661*		0.035		-0.005*	
	(0.923)		(0.089)		(0.003)	
Industry & year fixed effects	No	Yes	No	Yes	No	Yes
Observations	3,313	3,313	1,946	1,946	3,756	3,756
Adjusted R-squared	0.037	0.048	0.061	0.091	0.055	0.078

Table 7: Firm performance. This table reports estimates from OLS regressions that relate firm performance with regulatory exposure, depending on whether the firm recently completed an acquisition. The sample consists of 338,221 firm-quarter observations from 10,835 U.S. public companies with data available in the CRSP-Compustat Merged Database between 1986 and 2018. The dependent variables are one year buy-and-hold abnormal returns (BHAR) in Panel A and return on assets (ROA) in Panel B and are presented as percentages for readability. Acquisition is an indicator that equals one if the firm completed an acquisition in the previous five years. All continuous variables are standardized and independent variables are measured at the previous fiscal quarter end. Heteroskedasticity-consistent standard errors clustered by firm are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. The appendix lists variable definitions.

Panel A: Stock performance

	BHAR			
	(1)	(2)	(3)	(4)
RegExp	-0.219***	-0.329***	-0.240***	-0.350***
	(0.078)	(0.097)	(0.081)	(0.100)
Reg exposure * Acquisition		0.234**		0.231**
		(0.115)		(0.116)
Acquisition		-0.665***		-0.685***
		(0.165)		(0.169)
Size	0.529***	0.596***	0.306***	0.382***
	(0.056)	(0.058)	(0.058)	(0.061)
Prior stock return	35.181***	35.175***	35.023***	35.020***
	(0.084)	(0.084)	(0.085)	(0.085)
ROA	1.276***	1.271***	1.746***	1.742***
	(0.074)	(0.074)	(0.083)	(0.083)
Market-to-book	0.034	0.016	0.065	0.036
	(0.074)	(0.074)	(0.082)	(0.083)
Leverage	-0.590***	-0.584***	-0.379***	-0.363***
	(0.060)	(0.060)	(0.065)	(0.065)
Industry deregulation	4.192***	4.177***		
	(0.475)	(0.476)		
Industry economic shock	-0.520***	-0.526***		
	(0.060)	(0.060)		
Rate spread	-0.732***	-0.723***		
	(0.071)	(0.072)		
Shiller CAPE ratio	-0.148**	-0.128*		
	(0.065)	(0.066)		
Market return	0.098	0.091		
	(0.086)	(0.086)		
Macroeconomic uncertainty	-0.227***	-0.225***		
	(0.061)	(0.061)		
Policy uncertainty	0.021	0.021		
	(0.066)	(0.066)		
Industry & year fixed effects	No	Yes	No	Yes
Observations	338,221	338,221	338,221	338,221
Adjusted R-squared	0.528	0.528	0.531	0.531
Total effect on recent acquirers		-0.095		-0.119
		(0.096)		(0.099)

Panel B: Accounting performance

	ROA			
	(1)	(2)	(3)	(4)
RegExp	-0.097***	-0.117***	-0.102***	-0.119***
	(0.011)	(0.015)	(0.012)	(0.015)
Reg exposure * Acquisition		0.044**		0.037**
		(0.018)		(0.018)
Acquisition		-0.009		-0.003
		(0.023)		(0.024)
Size	0.126***	0.121***	0.148***	0.142***
	(0.008)	(0.008)	(0.009)	(0.010)
Prior stock return	0.399***	0.399***	0.395***	0.395***
	(0.012)	(0.012)	(0.012)	(0.012)
ROA	16.116***	16.114***	16.047***	16.046***
	(0.018)	(0.018)	(0.022)	(0.022)
Market-to-book	-0.008	-0.005	0.066***	0.069***
	(0.014)	(0.014)	(0.017)	(0.017)
Leverage	0.165***	0.163***	0.173***	0.171***
	(0.009)	(0.009)	(0.009)	(0.009)
Industry deregulation	-0.090**	-0.090**		
	(0.037)	(0.037)		
Industry economic shock	-0.096***	-0.096***		
	(0.009)	(0.009)		
Rate spread	0.124***	0.121***		
	(0.009)	(0.009)		
Shiller CAPE ratio	-0.049***	-0.053***		
	(0.007)	(0.008)		
Market return	0.155***	0.156***		
	(0.010)	(0.010)		
Macroeconomic uncertainty	-0.015	-0.016*		
	(0.010)	(0.010)		
Policy uncertainty	-0.064***	-0.065***		
	(0.009)	(0.009)		
Industry & year fixed effects	No	No	Yes	Yes
Observations	338,221	338,221	338,221	338,221
Adjusted R-squared	0.943	0.943	0.943	0.943
Total effect on recent acquirers		-0.073***		-0.081***
		(0.014)		(0.014)

Table 8: Change in regulatory exposure around M&A. This table reports the change in average RegExp from one year pre-acquisition to three years post-acquisition, across deal types. We test differences in means using *t*-tests and report standard errors in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Deal size

	Small deal	**Large deal**	**Small – Large**
Pre-acquisition RegExp	0.0063***	0.0047***	0.0016***
	(0.0001)	(0.0000)	(0.0001)
Post-acquisition RegExp	0.0059***	0.0044***	0.0014***
	(0.0000)	(0.0001)	(0.0001)
Pre – Post	0.0005***	0.0003***	0.0002***
	(0.0001)	(0.0000)	(0.0001)

Panel B: Target listing status

	Private targets	**Public targets**	**Private – Public**
Pre-acquisition RegExp	0.0055***	0.0043***	0.0012***
	(0.0000)	(0.0001)	(0.0001)
Post-acquisition RegExp	0.0051***	0.0041***	0.0010***
	(0.0000)	(0.0000)	(0.0001)
Pre – Post	0.0004***	0.0002***	0.0002***
	(0.0000)	(0.0001)	(0.0001)

Appendix: Variable definitions. CCM denotes the CRSP-Compustat Merged Database, SDC denotes the SDC Platinum Mergers and Acquisition Database, and FED denotes the Federal Reserve Bank of St. Louis.

Panel A: Firm characteristics

Variable	Source	Description
RegExp	CCM	Sensitivity of a stock to innovations in an index that captures the number of active federal paperwork regulations. Innovations are extracted from a 2-year autoregression and beta is estimated by regressing stock returns on these innovations plus the market, SMB, and HML factors in 24-months rolling windows
Acquisition	SDC	Indicator that equals one if the firm announces an acquisition during the quarter, and zero otherwise
Acquisition expenditure	SDC	Total deal value announced during the firm-quarter
Recent acquisition	SDC	Indicator that equals one if the firm completed an acquisition in the previous five years
Market capitalization	CCM	Common shares outstanding times the fiscal quarter closing price
Size	CCM	Natural log of market capitalization
Prior stock return	CCM	Buy-and-hold abnormal return (BHAR) over the previous 4 fiscal quarters using the CRSP equal-weighted index as market proxy
ROA	CCM	Rolling four quarter operating income before depreciation scaled by total assets
Market-to-book ratio	CCM	Ratio of market value to book value of total assets. The market value of assets is market value of equity minus book value of equity plus total assets, where the book value of equity is total assets minus total liabilities plus deferred taxes and investment tax credits if available
Leverage	CCM	Long-term debt plus debt in current liabilities, divided by total assets

Appendix: Variable definitions (cont.)

Panel B: Deal characteristics

Variable	Source	Description
Acquirer 3-day cumulative abnormal return (CAR)	SDC, CCM	Market model CAR estimated using CRSP equal-weighted index returns and a one-year estimation window (252 trading days) ending one month (20 trading days) before the [-1, +1] event window
Premium	SDC	The percentage difference between the offer price and the target's closing stock price four weeks prior to the deal announcement, trimmed at 0% and 200%
RVV value multiple	SDC, CCM	Deal value divided by the target firm's intrinsic value imputed following Rhodes-Kropf, Robinson, and Viswanathan (2005) and
Average multiple	SDC	The average of four accounting-based multiples (deal value-to-sales, deal value-to-net income, deal value-to-EBITDA, and deal value-to-book value of equity) standardized following Jaffe, Jindra, Pedersen, Voetmann (2018-JFQA)
Small deal	SDC	Indicator that equals one if deal value is in the bottom quartile of the sample, and zero otherwise
Large deal	SDC	Indicator that equals one if deal value is in the top three quartiles of the sample, and zero otherwise
Private target	SDC	Indicator that equals one if the target is private, and zero otherwise
Public target	SDC	Indicator that equals one if the target is public, and zero otherwise
Subsidiary target	SDC	Indicator that equals one if the target is a subsidiary of a public or private firm, and zero otherwise
Withdrawn	SDC	Indicator that equals one if an announced acquisition is withdrawn, and zero otherwise
Relative deal size	SDC & CCM	Deal value scaled by the acquirer's market value of equity 11 trading days prior to the announcement
All-cash	SDC	Indicator that equals one if the acquisition is paid entirely with cash, and zero otherwise
All-stock	SDC	Indicator that equals one if the acquisition is paid entirely with stock, and zero otherwise
Mixed payment	SDC	Indicator that equals one if the acquisition is not paid entirely with cash or stock, and zero otherwise
Diversifying	SDC	Indicator that equals one if the primary SIC of the acquirer and target are not in the same Fama-French 48 industry, and zero otherwise
Toehold	SDC	Percentage of target's common stock owned by the acquirer prior to deal announcement. Assumed 0 if missing in SDC
Hostile	SDC	Indicator that equals one if the acquisition is hostile, and zero otherwise
Tender offer	SDC	Indicator that equals one if a tender offer is made, and zero otherwise

Appendix: Variable definitions (cont.)

Panel C: Macroeconomic characteristics

Variable	Source	Description
Industry deregulation		Indicator that equals one for industry-years with a deregulation event listed in Harford (2005), and zero otherwise
Industry economic shock	CCM	First principal component of Harford's (2005) economic shock variables (industry median annual change in: net income to sale, sales to assets, R&D to assets, capital expenditures to assets, employment growth, return on assets, and sales growth), constructed following Bonaime, Gulen, Ion (2018)
Rate spread	FED	Difference between the Baa bond rate and the Federal Funds rate
Shiller CAPE ratio		Cyclically adjusted price earnings ratio from Shiller's website
Market return	CCM	Return on the CRSP value-weighted market index
Macroeconomic uncertainty		Index developed by Jurado, Ludvigson, Ng (2015) using a system of 279 macroeconomic variables, collected from Ludvigson's website
Policy uncertainty	CCM	Index developed by Baker, Bloom, and Davis (2016) using economic policy-related news coverage, from Bloom's website