The anatomy of acquirer returns*

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Abstract

Largely constant average acquirer returns over the past four decades mask fundamental changes in the takeover market. Controlling for bidder composition, the common component of acquirer returns has increased by as much as five percentage points relative to the 1980s. Offsetting this increase, the average bidder-specific component has declined. The increase in the common component is pervasive and cannot be explained by learning, maturity, industry concentration, or improved corporate governance. However, better advisors may have contributed to this upward trend. Conceptually, the evidence is consistent with a general increase in merger synergies that have become less bidder-specific over time.

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1 Introduction

In their reviews of first-generation empirical estimates of takeover gains, Jensen and Ruback (1983) and Roll (1986) made two important observations. First, acquirer announcement returns are positive but small on average. Second, target shareholders capture the lion's share of combined takeover gains. More than three decades later, an expansive literature—benefiting from access to large-scale electronic databases—largely confirms these two conclusions (Betton, Eckbo, and Thorburn, 2008; Eckbo, 2014; Mulherin, Netter, and Poulsen, 2017). This literature also suggests several potential explanations for the lopsided sharing of takeover synergies. The hypotheses range from near-perfect competition among bidder firms to more complex explanations involving bidder agency costs, managerial hubris and/or measurement issues arising from market deal anticipation and event-induced changes in bidder stand-alone values. However, there is little consensus as to the predominant source of merger synergies and what explains the continued lackluster average bidder performance.

We offer a new perspective on takeover gains by studying the evolution of announcement returns over time in a comprehensive sample of US acquirers. Our focus on the time-series evolution is motivated by the profound changes in the capital markets and the market for corporate control over the last four decades. Empirical evidence suggests that corporate governance practices in listed firms have improved (Gillan and Starks, 2007), that executives and directors are now more highly educated (Krueger, Landier, and Thesmar, 2015), and that financial markets may have become more open and informative (Bai, Philippon, and Savov, 2016). It is reasonable to expect that such broad-based developments have also resulted in improved corporate decision-making, including acquisition decisions as one the most prominent and consequential forms of corporate investment. And yet, there is little evidence of any such improvement. It is as if none of these developments benefited acquirers and their investors.[1]

Our primary contribution is to show that existing evidence based on the evolution of unconditional average acquirer returns is misleading: it masks two fundamental but opposing underlying trends in the data. We start by recognizing that the average acquirer return in a given period is made up of two components: a possibly time-varying component common to all firms, and a time-invariant component unique to every firm.[2] As the composition of bidder firms in the sample changes over time, the *average*

[1] Netter, Stegemoller, and Wintoki (2011) conclude with the opposite—that "acquirer announcement returns have decreased threefold from 1992 to 2009" (p. 38). Alexandridis, Antypas, and Travlos (2017), however, report an up-tick in acquirer returns in "mega deals" in the post-2009 period.

[2] Golubov, Yawson, and Zhang (2015) and de Bodt, Cousin, and Roll (2019) show that bidder gains are persistent and

of the time-invariant components also changes. Therefore, the evolution over time of the unconditional average acquirer returns reflects not only temporal changes in the common component, but also changes in sample composition. The composition of listed firms—the focus of all studies of bidder returns—has in fact changed dramatically over the last decades (Fama and French, 2004; Doidge, Karolyi, and Stulz, 2017). If more recent bidders are sufficiently differentiated from earlier ones in terms of the firm-specific component, the change in sample composition may obscure the temporal pattern (if any) in the common component of acquirer returns, which is precisely what we find.

In the first part of the paper we document novel facts about the evolution of takeover gains. In line with prior research, we find that average acquirer returns over the last four decades have remained close to zero and largely flat—both unconditionally and after controlling for the usual observable firm- and deal-specific characteristics. We then show that, after further controlling for sample composition changes via firm fixed effects, bidder gains exhibit a statistically significant positive trend relative to bids in the 1980s. By 2017, this *common* component in bidder returns has increased by as much as five percentage points. Moreover, we further show that the average *bidder-specific* (fixed effect) component has declined over time just enough to offset the rising common trend, which produces the stable unconditional average return.

In the second part of the paper we explore the properties of the rising common component of acquirer returns and its potential economic drivers. We find that the increase is broad-based: it is equally-present in acquisitions of public and private targets, in cash and stock deals, in focused and diversifying transactions, and in domestic and cross-border acquisitions. Further underscoring the economic importance of this trend, we find that the increase is more pronounced in larger deals (in both absolute and relative terms), as well as in mergers of financial institutions. Informed by these findings, we narrow down the set of potential drivers of the rising common trend to those that could result in a market-wide increase. For example, merger-induced changes in market power, which could be relevant for some horizontal deals, is an unlikely candidate explanation for a trend that holds equally-well for horizontal and cross-industry mergers. Similarly, the efficiency and speed of market pricing cannot explain the time trend as we find that the trend holds for event windows of substantially varying length.

We examine four broad-based hypotheses for the rising common trend in average acquirer returns: (1) learning by repetitive acquirers and maturity effects, (2) trends in corporate governance, (3) industry

characterized by time-invariant firm-specific factors (fixed effects).

concentration effects, and (4) changes in the market for merger advisory. First, learning through acquisition activity—discussed extensively in the literature (Hayward, 2002; Aktas, de Bodt, and Roll, 2011, 2013)—suggests improved target selection and greater value-creation in successive deals by the same bidder. However, we find that the number of prior deals undertaken by a given acquirer does not explain the time trend in the common component of acquirer returns. While acquirer returns tend to decline with acquisition experience, the common trend component increases with time. We also show that this increase is unrelated to acquirer age and measures of firm maturity and life-cycle (DeAngelo, DeAngelo, and Stulz, 2006; Dickinson, 2011).

Our second and third broad-based hypotheses ask whether temporal changes in governance quality have affected agency costs and hence the likelihood of observing value-increasing takeovers.[3] The second hypothesis examines governance variables at the firm level, including institutional ownership, board independence, staggered boards, and equity-based compensation. From these governance characteristics, only board independence is statistically related to the common time trend in acquirer returns, but it does not explain it away. The third hypothesis asks whether there is a governance-related channel at the industry level. This question is prompted by the recent trend towards increased industry concentration in the U.S. (Gutiérrez and Philippon, 2017; Grullon, Larkin, and Michaely, 2019), which possibly affects external governance pressures (Giroud and Mueller, 2010, 2011). However, we find no evidence that the common trend in average acquirer returns is related to industry concentration.

Fourth, we show that composition changes in the market for M&A advisory help explain the common trend in acquirer returns. M&A advisors act as matchmakers in the market for corporate control, and the quality of the match determines potential synergies. While a number of studies examine the role of financial advisors in M&A transactions (Servaes and Zenner, 1996; Rau, 2000; Golubov, Petmezas, and Travlos, 2012), we are uniquely focused on how structural changes in the investment banking industry may have impacted merger gains over time. This focus is further motivated by the evidence in Bao and Edmans (2011), who find that bidder returns are characterized by persistent advisor effects, as well as by the findings of Sibilkov and McConnell (2014), who show that advisors whose clients perform well tend to gain market share. In the subset of our data for which advisor information is available, we find that advisor heterogeneity (advisor fixed effects) indeed explains the run-up in the common component of

[3]For example, Jensen (1986b), Harford (1999), Masulis, Wand, and Xie (2007), and Bargeron, Schlingemann, Stulz, and Zutter (2008) discuss agency costs in the context of acquisitions.

acquirer returns. A consistent explanation is that acquirers gravitate toward higher value-added advisors over time, resulting in a positive temporal trend in merger gains.

We end the paper by integrating our evidence of time-series and composition effects in acquirer returns into a unifying conceptual framework of merger synergies and their specificity. Golubov, Yawson, and Zhang (2015) suggest that bidder heterogeneity captured by firm fixed effect estimates may reflect the degree to which a bidder is unique ("extraordinary") in terms of generating takeover synergies. With this interpretation, our evidence of a declining average bidder fixed effect further implies that takeover synergies—whatever their source—have become less bidder-specific and more target-specific over time. For example, synergies are likely to be more bidder-specific when the bidder contributes a unique distribution network and less bidder-specific when the target sells itself to a cash-rich buyer in order to keep funding its ongoing operations. Since cash is fungible, synergies in the latter case are less specific to any particular bidder, which in turn affects bidder bargaining power and hence the relative share of synergies it can extract. We develop this conceptual framework further below and empirically test its implications for the evolution of *total* synergy gains and the share of synergies captured by the bidder. Overall, the evidence is consistent with a general increase in merger synergies that have become less bidder-specific over time.

The rest of the paper is organized as follows. Section 2 describes our sample, while Section 3 establishes our basic results concerning the evolution of the common and firm-specific components of acquirer returns. In Section 4, we demonstrate that the common trend in bidder returns is broad-based, while Section 5 examines a number of potential economic drivers behind it. Section 6 demonstrates how our findings of time-series and composition effects can be interpreted through the lens of a single conceptual framework of merger synergies and their specificity. Section 7 concludes the paper.

2 Sample selection and description

The M&A data come from Thomson Reuters SDC M&A database and cover all acquisitions (repurchases and recapitalizations excluded) announced during the period from January 1, 1981 to December 31, 2017 (37 years). The sample selection, which yields a total of 28,570 deals by 6,127 unique bidders, is as follows:

(1) Completed or withdrawn M&A deal announcements from Thomson Reuters SDC, excluding repur-

chases.

(2) Bidders are US public firms listed on NYSE, AMEX, or Nasdaq with a market capitalization of at least $1 million.

(3) Targets are US or foreign, public, private, or subsidiary firms.

(4) Deals are worth at least $1 million and represent at least 1% of bidder market capitalization four days prior to the deal announcement.

(5) The bidder owns less than 50% of the target before the acquisition and is seeking a transfer of control.

(6) The bidder has sufficient data on CRSP and Compustat to compute announcement period returns and standard control variables.

(7) The acquirer conducts at least two deals over the sample period (same-day announcements are excluded).

Restriction (7) above ensures that we are able to control for bidder heterogeneity via bidder fixed effects. Note that this requirement is not onerous as it results in only a modest reduction in sample size: from 34,757 to 28,570 deals. That is, more than 80% of the deals in a typical M&A sample are undertaken by repeat acquirers.

Table 1 illuminates the panel structure of our data in terms of the number of deals per bidder and the months between successive deals. As shown in Panel A, as much as 2,114 of the total sample of 6,147 bidders (35%) conduct at least 5 acquisitions over the sample period, representing 62% of the deal-level observations (17,842 out of 28,570). The most acquisitive bidder conducts 42 deals in our sample. Panel B shows the frequency distribution of the average number of months between successive deals by a given bidder, and the time between the first and last bids. Focusing on the median bidder, this firm conducts an acquisition every 12 months, and the 75th percentile of the average time between bids is 28 months. Also important, bidders tend to be active for a relative short-lived period: the time between first and last bid of a median bidder is just over four years (52 months). The 75th percentile of the time between first and last bids is 126 months. In other words, 75% of bidders are active within a period of 10 years.

This evidence is important for the analysis below as is suggests that the composition of bidders changes substantially over the four decades spanning our sample period.

We use standard event study methodology to compute announcement returns for our sample bidders. For firms with multiple classes of common stock we compute the cumulative abnormal return (CAR) as the weighted-average of CARs for the different share classes with the respective market capitalizations as weights. For most of the analysis we base our conclusion on CARs for the seven-day event window [−3, +3] centered on the announcement date (day 0). However, we show below that the main results are robust to alternative event windows, including [−1, +1] and [−2, +2], [−5, +5]. The benchmark return is the return predicted by the one-factor market model estimated over the period from 300 to 46 days prior to the first public bid announcement, using the CRSP value-weighted index as the market portfolio. In unreported results, we also find that the main results are robust to alternative factor models for generating expected returns. All return variables and financial ratios that are not bounded by construction are winsorized at the 1st and 99th percentiles (we perform the winsorization by year in order to preserve trends, if any).

Tables 2 and 3 provide descriptive statistics and definitions of all variables used in the analysis. Consistent with the extant literature (Betton, Eckbo, and Thorburn, 2008), the unconditional average acquirer CAR [−3, +3] is positive but modest, with a mean (median) of 1.04% (0.38%). About 22% of the targets are public firms, with the remainder of the transactions targeting private or subsidiary companies. The majority of targets are domestic, with 13% of the targets being foreign (cross-border deals). Mean (median) relative size of the deal as percentage of acquirer market capitalization is 39% (9%). For the subset of public targets, we also estimate target CAR [−3, +3] which averages about 22% (median of 18%). The mean (median) takeover premium relative to the stock price four weeks prior to the announcement is 45.9% (37.3%) We also compute the combined firm CAR [−3, +3] as the weighted-average of acquirer and target CARs with the respective market capitalizations on day -4 as weights. Combined firm CAR, which may be interpreted as the overall synergy gain from the combination, has a mean (median) value of 2.00% (1.16%) in our sample.

Table 4 shows the annual distribution of mean and median acquirer CAR [−3, +3], number of deals, mean and median deal value, and total deal value by year. In our analysis below, we benchmark the estimation of common trend and sample composition effects against M&A activity in the first decade, 1981-1989. Of the overall total of $18+ trillion worth of M&A activity by US firms, $16.45 trillion occurs

during 1990-2017. Moreover, as shown, annual average and median bidder CARs are small and mostly positive. Unconditionally, there is little evolution in bidder gains over the entire four-decade sample period.

3 The conditional time trend in acquirer returns

We develop and report our estimates of the common time trend in bidder gains in two steps. First, we estimate whether the (unconditional) average acquirer return has changed over the period 1990-2017 relative to the period 1981-1989.[4] This involves running a cross-sectional regression of acquirer CARs on year dummies, with controls for firm and deal characteristics as well as industry heterogeneity added progressively. In the second step, we replace the industry fixed effects with firm fixed effects to estimate the conditional time trend that is common across bidders.

3.1 Regression specification with year dummies

In the first-step estimation we run the following three cross-sectional regressions, which successively add explanatory variables:

$$CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \epsilon_i \quad (1)$$

$$CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + \epsilon_i \quad (2)$$

$$CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + IndFE + \epsilon_i. \quad (3)$$

The vector Y includes 28 annual dummy variables for the deal announcement years 1990-2017, with all of the 1980s as the omitted category, and coefficients Θ estimate the change in average acquirer CAR $[-3, +3]$ relative to acquisitions announced during the 1981-1989 period. In other words, the estimated coefficients $\mathbf{\Theta}$ are changes in the average acquirer CAR in the corresponding year relative to the average acquirer CAR observed during the 1980s. $\mathbf{X}$ is a vector of observable firm and deal characteristics.

In the second step, we replace the industry fixed effects ($IndFE$) with the bidder fixed effects $BidderFE$:

$$CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + BidderFE + \epsilon_i. \quad (4)$$

[4] All of our conclusions remain unchanged if we instead use 1981-1985 as base period for the estimation.

We employ an extensive list of time-varying control variables $\mathbf{X}$, all of which have been shown in prior studies to help explain the cross-sectional variation in bidder CARs. Among bidder characteristics, we include (the log of) acquirer size, Tobins Q, stock price run-up, idiosyncratic stock return volatility, cash holdings, and leverage. The acquirer size control is particularly relevant given our focus on the evolution of gains, as firms tend to grow over time, and firm size has a robust negative effect on acquirer returns (Eckbo and Thorburn, 2000; Moeller, Schlingemann, and Stulz, 2004; Schneider and Spalt, 2019)). In terms of deal-specific variables, $\mathbf{X}$ includes relative size and industry relatedness of the deal, tender offer, hostility, and cross-border indicators, as well as a set of interactions of target type (public/private/subsidiary) and the method of payment (cash/stock).[5]

3.2 Baseline coefficient estimates

Table 5 and Figure 1 report our baseline coefficient estimates $\mathbf{\Gamma}$ and $\mathbf{\Theta}$. The standard errors in parentheses are double-clustered by acquirer industry (2-digit SIC level) and by year. The column numbers in Table 5 corresponds to the equation numbers above. To facilitate presentation, the table reports the estimates of $\mathbf{\Gamma}$ only and omits the year-dummy coefficient estimates $\mathbf{\Theta}$. Instead, the latter are plotted in the four graphs in Figure 1 along with the associated 99% confidence intervals. The top two graphs plot the year-dummy coefficient estimates $\mathbf{\Theta}$ for regression models (1) and (2), while the bottom two graphs report the estimates of $\mathbf{\Theta}$ in regressions (3) and (4), respectively.

In the top left graph in Figure 1, which excludes all control variables, several of the year-dummy coefficient estimates are positive and statistically significant at the 1% level. However, their magnitudes are small and there is no monotonic temporal trend.[6] Adding the control variables $\mathbf{X}$ in Column (2) of Table 5 produces the year-dummy coefficient estimates in the top-right graph in Figure 1, which also does not show a noticeable time trend in average bidder CARs. The coefficient estimates on the control variables in $\mathbf{X}$ are, however, consistent with prior literature. For example, the effect of acquirer size and stock price run-up on acquirer CAR is negative, while the effect of leverage is positive.[7] Moreover, as documented by earlier studies, acquisitions of public targets are associated with lower acquirer returns,

[5] *Subsidiary target x stock* is the omitted category and serves as the benchmark for interpreting the coefficients on the interaction terms.

[6] The large drop in average acquirer returns in year 2000 is consistent with the evidence of large negative bidder dollar returns following the collapse of the 'tech bubble' documented by Moeller, Schlingemann, and Stulz (2005). They attribute the large losses in that period to reductions in bidder stand-alone values.

[7] E.g., Moeller, Schlingemann, and Stulz (2004), Rosen (2006), Maloney, McCormick, and Mitchell (1993), and Betton, Eckbo, Thompson, and Thorburn (2014).

in particular when the payment method is all-stock.[8]

Next, we add acquirer 2-digit SIC industry fixed effects—as commonly done in the extant literature—in Column (3) of Table 5. As shown in the lower left graph in Figure 1, this control for sectoral composition changes in the M&A market also does not produce a noticeable time trend in average bidder CARs. Our findings thus far are consistent with the extant literature that shows no improvement in average acquirer returns over time (Rosen, 2006; Netter, Stegemoller, and Wintoki, 2011). While Alexandridis, Antypas, and Travlos (2017) document an up-tick in average acquirer gains in the years following the financial crisis of 2007-2008, which is detectable in our Figure 1, the figure also shows through our longer sample period that this up-tick has largely reversed by the end of 2017.

3.3 Controlling for bidder composition effects

We now turn to the striking positive time trend seen in the lower-right graph in Figure 1. As shown in Column (4) of Table 5, this time trend in average bidder CARs emerges after we replace industry fixed effects with acquiring firm fixed effects. This replacement helps control for the possibility that acquirers conducting acquisitions late in the sample period are fundamentally different—in terms of unobservable heterogeneity—from those conducting acquisitions early on. Our inclusion of firm fixed effects is also motivated by evidence in Golubov, Yawson, and Zhang (2015), who find that time-invariant latent firm-specific attributes are a major determinant of acquirer CARs.

In the estimates in the bottom right chart in Figure 1, the estimated coefficients on the year indicators show a surprisingly smooth monotonic upward trend. In the last year of our sample (2017), the average acquirer CAR is 4.8 percentage points higher than the average acquirer CAR during the benchmark period (the 1980s). This conditional increase is economically large considering that the unconditional acquirer CAR in our sample averages 1.04% (median 0.38%) over the sample period (Table 2).[9] Figure 2 further shows that this common time trend in average bidder CARs is equally pronounced for our subsample of 11,447 merger deals (SDC deal type "M")—arguably the more difficult transactions for the bidder to negotiate successfully.

The fact that acquirer returns are largely flat when we do not control for bidder composition—

[8] E.g., Travlos (1987), Fuller, Netter, and Stegemoller (2002), Faccio, McConnell, and Stolin (2006), and Eckbo, Makaew, and Thorburn (2018).

[9] Notice also that the addition of firm fixed effects mitigates the sharp decline in average acquirer returns in year 2000 documented by Moeller, Schlingemann, and Stulz (2005).

and trending upward when we do—suggests that there has been a change in the average firm-specific component of acquirer returns. In other words, there must have been an influx of low fixed effect bidders over the sample period. To examine this proposition, we record the estimated bidder fixed effects from the regression specification in Column (4) of Table 5 and regress them on year dummies, once again omitting dummies for all of the 1980s to serve as a benchmark. The resulting coefficients show the change in the average bidder fixed effect for all bidders conducting deals in a given year relative to the average bidder fixed effect in the benchmark period.[10] We run two additional specifications where we control for i) time-varying deal and bidder characteristics, and ii) time-varying deal and bidder characteristics plus industry dummies (at the 2-digit SIC level). These three regressions are similar to those in columns (1), (2), and (3) of Table 5, except that the dependent variable is the estimated bidder fixed effect.

The upper left panel in Figure 3 illustrates the coefficients from a simple regression of estimated bidder fixed effects on year dummies. It is evident that, relative to the 1980s, the average bidder conducting acquisitions is of significantly lower fixed effect. The average firm-specific component declines in the early 1990s and remains between 1 and 2 percentage points lower than in the benchmark period. We further add time-varying deal and bidder characteristics to the regression and report the coefficients on year dummies in the upper right panel of Figure 3. Controlling for these characteristics we find that the decline in the average bidder fixed effect over time is even more pronounced and reaches 3 percentage points by the year 2017. The addition of industry dummies makes little difference to the estimated decline, with the results reported in the lower left panel of Figure 3.

3.4 An alternative, linear trend specification

Table 6 provides a further check on the existence of a significant common time trend in acquirer returns. The table replaces the year dummies **Y** with a simple year counter, *Year trend*, which increases by one each year starting in 1990 (years 1981-1989 continues to serve as our baseline period). Thus, in this regression specification, we impose a linear relationship between acquirer returns and time. Otherwise, we maintain the same four regression specifications as in Table 5. As shown in Column (1), when the regression excludes control variables, there is again no evidence of a significant linear trend in average

[10]To reiterate, the firm fixed effect is estimated over the entire sample and, thus, does not change over time. What changes is the composition of bidders whose (constant) fixed effects make up the average fixed effect in a given year. The assumption of a stable bidder fixed effect is supported by the findings of Golubov, Yawson, and Zhang (2015), who show that period-specific fixed effects provide no additional explanatory power. In addition, as discussed in Section 2 above, less than a quarter of bidders is active beyond a ten-year period, preventing period-specific estimation for the majority of bidders.

acquirer returns. In Column (2), we redefine *Year trend* in terms of four non-overlapping seven-year periods: 1990-1996, 1997-2003, 2004-2010, and 2011-2017. For example, *Year trend 1990-1996* takes the value of zero each year prior to 1990, increments by one each year from 1990 to 1996, and stays constant after 1996. Column (2) shows that, when the regression excludes control variables, there is a short-lived positive trend in average acquirer returns during the years 1990-1996, which reverses during 1997-2003, turns positive again in 2004-2010, for then to stay flat after 2010.

In Column (3) of Table 6, we estimate the baseline year trend effect with control variables included. The coefficient on the *Year trend* variable becomes significant, but its economic magnitude is small: the average improvement in acquirer returns is 5 basis points per year, which translates into a 1.4 percentage point improvement by the end of our sample period (Five basis points multiplied by 28 years over which the trend line is estimated, 1990-2017). When we break down this year trend effect into sub-periods in Column (4), the picture remains the same: there has been little if any systematic trend in average acquirer returns over the last three decades. Note also that this conclusion does not change when acquirer industry fixed effects are added in columns (5) and (6).

In Column (7), we again replace acquirer industry fixed effects with acquiring firm fixed effects. Here the magnitude of the *Year trend* coefficient increases by a factor of three—to 15 basis points per year on average. Over the 28 year period to the end of our sample, this would imply an improvement of 4.2 percentage points, which is similar to the magnitude of the coefficient on the year-dummy for 2017 pictured in the bottom right chart of Figure 1. Moreover, Column (8) of Table Table 6 shows that the positive coefficient on *Year trend* in column (7) is not driven by a single period, but rather represents a long-run trend. Specifically, with one exception (the 1997-2003 period), the point estimates of the four seven-year subperiods are positive and economically large. The sub-period trend is significant at 1% level during 1990-1996, at the 5% level during 2004-2010, and just misses the 10% significance level in 2011-2017.

Finally, using the estimation procedure behind Table 6, we also estimate the slopes of the three annual trends lines for average bidder fixed effect plotted in Figure 3, by replacing year dummies with the *Year trend* counter variable. For all three panels, we find statistically significant negative coefficients, equal to -0.05, -0.11, and -0.11, respectively. This confirms that the composition of bidders has indeed changed towards lower fixed effect bidders over time. In sum, the increase in the common component of acquirer returns is offset by a decline in the average firm-specific component, which results in a largely

flat unconditional average acquirer return.

In terms of further robustness, in Appendix Table 1 we show that the baseline estimate of the linear time trend is largely invariant to alternative definitions of acquirer CAR, including after varying the event window to [−1, +1], [−2, +2], [−5, +5], and to using market-adjusted returns and computing dollar gains and dollar gains scaled by deal value (i.e. NPV per dollar invested). In addition, the estimate holds up in more restrictive samples in terms of absolute and relative deal size and the number of deals per bidder.

3.5 Effect of scrambling the data panel structure

Is the emergence of a positive common trend in a firm fixed effects specification simply a statistical artifact created by saturating the regression with high-dimensional fixed effects? To examine this important question, we test whether one can obtain the same year trend effect in a firm fixed effects specification, but where firm identifiers are shuffled across firms *within* year. This permutation of the data preserves the time dimension of our panel, such that each acquirer is observed the same number of times and in the same years as in the real data. However, the permutation breaks the panel structure of the data whereby acquirers are assigned to deals conducted by *other* firms. If our finding of a strong positive trend in acquirer returns is indeed attributable to properly controlling for a composition effect, we should no longer find the same effect and observe a trend similar to that when firm fixed effects are omitted altogether.

We perform 1,000 such permutations of the data, each time repeating our regression specification from column (7) of Table 6 and recording the coefficient on the *Year trend* variable. Figure 4 presents the distribution of the resulting coefficients across the permutations. The distribution of the *Year trend* coefficient is centered on 0.05, which coincides with the magnitude observed in column (5) of Table 6 where no firm fixed effects are included in the regression at all. In fact, none of the 1,000 permutations results in a coefficient higher than 0.09, while the coefficient we obtain from the actual firm fixed effects specification is 0.15 indicated by the vertical red line in Figure 4. Overall, the results of the simulation analysis suggest that the emergence of the temporal trend in acquirer returns in a firm fixed effects specification is tightly linked to the composition effect and is not just a statistical artifact.

4 Characterizing the common trend by deal types

Having established a robust conditional time tredn in acquirer returns, below we further examine its properties. In particular, we test whether the conditional time trend is more pronounced for certain subsets of the data. In addition to better characterizing the phenomenon of interest, this also informs our subsequent search for its potential economic drivers. Table 7 reports the results of this analysis.

In Panel A of Table 7, we interact *Year trend* with indicators for deals involving public targets, cash-paid deals, same industry deals, and cross-border deals. As shown, the coefficient estimate for $Year\ trend$ remains virtually unchanged (at 0.15) and none of the interaction terms receive a statistically significant coefficient estimate. For example, the conditional time trend in acquirer returns applies equally well to deals involving listed and unlisted targets and cash and stock deals. Moreover, conditioning on focused vs. diversifying acquisitions, and domestic vs. cross-border deals, does not change the time trend estimate.

In Panel B of Table 7, the first column interacts the year trend variable with an indicator for 'mega-deals', defined as transactions worth over $500 million (Alexandridis, Antypas, and Travlos, 2017). This interaction produces a positive and significant coefficient. While the trend in acquirer returns for non-mega deals is about 13 basis points per year, the temporal improvement in acquirer returns in mega-deals is as large as 20 basis points per year (0.13 + 0.07). We further explore the size dimension in column (2), this time interacting the year trend with an indicator for deals of large relative size (defined as deals with relative size above sample median). Consistent with the results on absolute deal size, we find that the coefficient on the interaction terms is positive, suggesting that the temporal increase in acquirer gains is more pronounced for deals that represent a large fraction of the acquirer's market capitalization. Therefore, while all deals are getting better over time, this is particularly true for large deals.

Seventeen percent of our acquirers are from financial industries (SIC codes 6000-6999). As shown in Column (3) of Panel B, the coefficient on the interaction between $Year\ trend$ and the indicator for financial bidders is positive and statistically significant. Financial bidders experience an improvement in acquirer returns of about 21 basis points per year, as compared to 14 basis points for the rest of the sample. Finally, 26% of our sample bidders operate in high-tech industries, as defined by Loughran and Ritter (2004). Column (4) of Panel B shows that these high-tech acquirers receive a trend coefficient estimate that is indistinguishable from the coefficient estimate of non-high-tech bidders.

In Panel C of Table 7, we study whether the conditional trend is present across different parts

of the acquirer return distribution. First, we explore whether the trend is observed for both value-creative and value-destroying transactions. For the purpose of this test, we define two additional acquirer CAR variables. To test whether the trend is observable for value-creative deals, we define a variable *Positive CAR*, which equals acquirer CAR when the latter is positive and zero otherwise. Similarly, to test whether the trend is observable for value-destroying deals, we define a variable *Negative CAR*, which equals the acquirer CAR when the latter is negative, and zero otherwise. Columns (1) and (2) of Panel C show that *Year trend* obtains a positive and significant coefficient in the case of both positive and negative acquirer CARs: the temporal improvement has occurred for both value-creative and value-destroying transactions. This also suggests that a potential increase in the timeliness with which the stock market incorporates announced information into prices is not the reason behind the conditional increase in acquirer returns: if this were the case, returns to value-destroying deals should have become more negative.[11]

In the last two columns of Panel C, we examine whether the probability of observing extreme negative bidder announcement returns outcome has decreased over time. We define extreme negative outcomes as acquirer CAR below the 10^{th} or below the 25^{th} percentile, respectively, of the acquirer CAR distribution in the benchmark period of 1981-1989. The magnitude of the coefficients suggests that the probability of observing a deal with a market reaction below the 10^{th} (25^{th}) percentile of the acquirer CAR distribution during the 1981-1989 period is decreasing by 0.35 (0.51) percentage points per year. Thus, the mass of particularly value-destroying transactions has decreased over time.

5 Empirical hypotheses for the time trend

In this section, we examine a number of hypotheses that may help explain the positive time trend in acquirer returns. Since the above analysis shows that the trend is broad-based, we focus on economic hypotheses that tend to predict a market-wide improvement in bidder takeover gains as well. These hypotheses span acquirer learning and maturity, better corporate governance, trends in industry concentration, as well as changes in the market for M&A advisory.

[11] As a further check on the possibility that the trend we document is related to more timely market pricing of otherwise constant gains, we estimate our results using a series of extended event windows. These include [Ann - 3, Ann +21], [Ann - 3, Ann +42], [Ann - 3, Ann +63], and [Ann - 3, Resol +3], where Resol is the date of the announcement of the resolution of the proposed deal (completion or withdrawal). The results, reported in Appendix Table 2, show that the positive time trend in bidder gains actually *increases* (not decreases) with longer event windows.

5.1 Acquirer learning

Several studies of serial acquisitions document a declining trend in acquirers' cumulative abnormal returns (Fuller, Netter, and Stegemoller, 2002; Atkas, de Bodt, and Roll, 2013), even after controlling for CEO effects (Billett and Qian, 2008). Declining series returns is consistent with a gradual deterioration in acquirer decisions, e.g. due to hubris (Billett and Qian, 2008). However, the implications of learning for acquirer returns are complex. For example, Aktas, de Bodt, and Roll (2011) argue that learning does not necessarily imply increasing acquirer returns over time, and may even be consistent with decreasing returns if experience allows acquirers to resolve target valuation uncertainty and bid more aggressively for subsequent deals. A declining pattern of returns is also consistent with increasing complexity of integrating subsequent deals, with declining returns to scale, and with financially constrained acquirers picking their best deals first.

5.1.1 Learning-by-doing: direct deal experience

To our knowledge, prior studies of the learning hypothesis do not control for the composition of acquirers. Thus, it is possible that changing acquirer composition has previously obscured a true learning effect in the data. Table 8 addresses this possibility by augmenting our baseline year trend specification (with acquirer fixed effects) with various measures of deal experience. For expositional clarity, and since the sample sizes change depending on the variable included, the table also repeats the baseline time trend estimation in Column (1). In Column (2) we control for the natural logarithm of deal experience, *Ln (Deal exper.)*, defined as the number of deals conducted by the acquirer since the beginning of our sample in 1981. *Ln (Deal exper.)* receives a negative and statistically insignificant coefficient, and inclusion of this variable increases the coefficient estimate on *Year trend* to 18 bps per year.

We next control for the time elapsed since the previous acquisition, *Time since last deal*. Among other effects, this variable may help control for the possibility that experience fades over time. Our sample here excludes the first deal conducted by each acquirer in our sample as the time elapsed since last deal is not defined for the first deal conducted. We rerun the baseline specification on the same sample (Column 3), which produces an estimate of 13 basis points per year on the year trend variable. In Column (4), *Time since last deal* receives a statistically insignificant coefficient estimate, while year trend is once again increased, this time to 16 bps per year.

Because we do not observe deals conducted by our acquirers prior to the start of the sample, the deal experience variable *Ln (Deal exper.)* may be truncated. To address the issue of truncation, we use the first 5 years of our sample to define a new deal experience variable that counts only the deals conducted in the last 5 years, *Ln (Deal exper. 5 yr)*, and start the estimation in 1986. As before, we re-estimate the baseline year trend effect on the same sample (Column 5), which is now 14 bps per year. In Column (6), we also examine *Ln (Deal exper. 5 yr)*. The experience variable again receives a negative coefficient estimate of -0.45, which is close to the earlier estimates. However, with *Ln (Deal exper. 5 yr)*, the coefficient estimate is statistically significant. That is, the number of deals conducted by the acquirer in the prior 5 years is negatively associated with returns to its current deal.

Finally, in the last column of Table 8, we replace *Ln (Deal exper. 5 yr)* with several indicator variables counting the number of deals conducted in the prior 5 years. The coefficient on the year trend variable is now 15 bps. The effect of acquisitiveness on acquirer returns is again negative, but it is statistically significant only for acquirers conducting between two and four deals. Acquirers conducting five or more deals in the prior 5-year period experience returns that are indistinguishable from those who have no deal experience in the prior 5 years. Overall, Table 8 provides little empirical support for attributing the upward trend in acquirer returns to learning-by-doing.

5.1.2 Learning-by-observing: age and maturity effects

In addition to learning-by-doing, which we measure above using actual deal experience, firms may also be "learning-by-observing". The latter effect is more generally a function of acquirer age and asset composition. For example, a firm is likely to learn over time from the acquisition experience of its industry rivals, and positive takeover gains may be more readily available in the presence of mature assets that are ripe for consolidation. These effects suggest a positive relationship between firm age and acquirer returns. It also suggests that late entrants into our sample of acquisitions may be less skilled than earlier entrants. The latter is generally consistent with our finding that failure to control for changing sample composition brings down the unconditional average takeover gain.

Panel A of Table 9 shows the results of regressing acquirer returns on *Ln(Acquirer age) (CRSP)* and *Ln(Acquirer age) (foundation)*. The former is the number of years that the acquirer has been covered by CRSP, while the latter age is the number of years since the firm was founded. Data on the year of foundation, which are maintained by Jay Ritter and Laura Field (Field and Karpoff, 2002; Loughran

and Ritter, 2004), are downloaded from Jay Ritter's website. When the foundation date in the Field-Ritter dataset is unavailable, we use the foundation year provided by Capital IQ. When the latter is also unavailable, we use the first year the firm appears on CRSP.

Since the year trend variable is collinear with age in a firm fixed effects specification, Panel A of Table 9 drops the firm fixed effects from the regression analysis. Acquirer fixed effects are, however, brought back in Panel B where the two age variables are replaced by two proxies for acquirer maturity: *Acquirer RE/TE* and *Acquirer life Cycle*. *Acquirer RE/TE* follows DeAngelo, DeAngelo, and Stulz (2006) and uses the ratio of retained earnings to total equity (a measure of the mix of earned and contributed capital) as a proxy for firm maturity. *Acquirer life Cycle* is an ordinal variable (with values between 1 and 5) developed by Dickinson (2011) based on the signs of cash flows from operating, financing, and investing activities. Higher values of *Acquirer life Cycle* indicates later (more mature) life cycle stages. As *Acquirer life Cycle* requires Compustat cash-flow-statement information, it is available from year 1988 onwards.

In the first two columns in Panel A of Table 9, we re-estimate the coefficient on the year trend variable after replacing acquiring firm fixed effects with acquirer cohort (year of birth) fixed effects. If the time trend we document in a firm fixed effects specification is related to the age of the firm, we should be able to uncover the same temporal trend in acquirer returns when using cohort fixed effects instead. Columns (1) and (2) in Panel A show that this is not the case: in both columns, the coefficient estimate on the year trend variable is only 6 bps—similar to the 5 bps in our baseline specification with industry fixed effects in Table 6 above. Thus, it appears that the time trend in acquirer gains is unrelated to acquirer age. In columns (3) and (4) of Panel A we directly test whether (the log of) acquirer age has any explanatory power for the cross-section of acquirer returns in the usual acquirer CAR specification with control variables and industry fixed effects. In both cases the coefficients on the age variables are indistinguishable from zero.

Panel B of Table 9 further confirms that the temporal trend in acquirer gains that we uncover in a firm fixed effects specification is unrelated to learning-by-doing, age, or maturity effects. The year trend coefficient estimate remains at 0.14 bps in the first three columns and drops only slightly to 0.13 bps in Column (4). Neither *Acquirer RE/TE* in Column (2) nor *Acquirer life Cycle* in Column (4) adds explanatory power to the regression.

5.2 Trends in corporate governance

The extant literature points to a potential for better corporate governance to improve acquisition decisions. For example, Datta, Iskandar-Datta, and Raman (2001) show that acquirers whose managers have a higher fraction of equity-based compensations make better acquisitions, while Masulis, Wand, and Xie (2007) report that acquirers with more antitakeover defences, such as staggered boards, tend to make worse acquisition decisions.

There has been a trend towards improved governance over our sample period, including a decline in the frequency of staggered boards (Cremers, Litov, and Sepe, 2017), an increase in board independence (Duchin, Matsusaka, and Ozbas, 2010), and increased equity-based compensation (Edmans, Gabaix, and Jenter, 2017). Shareholder oversight may also have improved with the rise of institutional ownership (Lewellen, 2011) in general, and by increased investor activism in particular (Brav, Jiang, Ma, and Tian, 2018). Below, we examine whether the time trend in acquirer returns is associated with these types of governance improvements.

In Table 10, we augment our baseline year trend specification (with acquiring firm fixed effects) with various proxies for corporate governance quality, each time re-estimating the baseline model on the same sample for comparability. We use four governance proxies that exhibit a trend over time, namely, institutional blockholder ownership, board independence, the presence of a staggered board, and CEO equity-based compensation. The table starts with institutional blockholder ownership, *Acquirer inst. block. own*, in Column (2) since this variable is available for almost the entire acquisition sample. The source of Institutional blockholder ownership is Thomson Reuters 13F holdings. Surprisingly, *Acquirer inst. block. own* receives a significantly *negative* coefficient in our firm fixed effects specification. Moreover, inclusion of this variable raises the time trend coefficient estimate in Column (1) slightly, from 15bps to 16bps. Thus, we conclude that the temporal trend in acquirer gains is not related to the temporal increase in institutional ownership.

In columns (4) and (6) of Table 10, we explore the role of board independence and staggered boards. Board independence is the fraction of outside directors on the board. The sources of board information are Boardex (which covers a large cross-section of firms but starts only in the year 2000) and Institutional Investor Services (ISS, which provides directors data for larger firms back to 1997). Each firm is restricted to a single board data source. Given our firm fixed effects specification, this restriction ensures that there

are no structural breaks in board independence within firm.

Notice first that, for the subsample of firms with board independence data, the baseline year-trend estimate is 16bps in Column (3). Adding the fraction of outside directors, *Acquirer % outside dir.*, in Column (4) lowers the time trend estimate only slightly to 13bps. The coefficient estimate for *Acquirer % outside dir.* is statistically insignificant. However, since Dahya, Golubov, Petmezas, and Travlos (2017) show that the effect of outside directors on the board is positive within public firm acquisitions, we also interact *Acquirer % outside dir.* with an indicator for public targets. This interaction term receives a positive and significant coefficient, suggesting that board independence is associated with higher acquirer returns when the target is public. At the same time, the year-trend coefficient declines from 16bps to 13bps. Given the limited magnitude of this decline, and the fact that the majority of our sample represents private or subsidiary targets, we conclude that increased board independence can explain only a small part of the run-up in bidder gains.

Turning to Column (6), we collect information on staggered boards from ISS and from the (hand-collected) staggered board data for newly public firms in Johnson, Karpoff, and Yi (2018).[12] Column (5) establishes that the baseline year-trend estimate for the subsample of firms with data on staggered boards is only 9 bps per year and only statistically significant at the 5% level. Adding the indicator variable *Acquirer staggered board* for staggered boards in Column (6) does not change inference as coefficient on this variable is statistically insignificant. Thus, the time trend in acquirer returns is largely unaffected by whether firms have staggered boards or not.

Finally, in Column (8) of Table 10, we explore whether an increase over time in the fraction of CEO equity-based compensation is associated with the positive time trend in acquirer returns. Our data sources are Execucomp (which covers large firms only) Capital IQ People Intelligence. People Intelligence provides only limited information on the value of option awards and stock grants. Thus, whether the data source is Execucomp or People Intelligence, our proxy variable for the fraction of equity-based compensation, *Acquirer CEO EBC*, is total compensation minus salary and cash bonus, divided by total compensation. Once again, to avoid structural breaks in proxy variable, we restrict each firm to a single compensation-data source.

Notice first that the time trend estimate for the subsample with compensation data in Column (7) is 6 bps per year and significant at the 5% level only. Moreover, in Column (8), *Acquirer CEO EBC* receives

[12]We thank the authors for sharing this variable with us.

an insignificant coefficient, and the time trend coefficient of 6bps is now also statistically insignificant. For one thing, this fails to support the conclusion of Datta, Iskandar-Datta, and Raman (2001) in a firm fixed effects specification and a larger sample. There is no evidence in Table 10 that the time trend in acquirer returns is statistically related to increased equity-based CEO compensation.

5.3 Trends in industry concentration

Gutiérrez and Philippon (2017) and Grullon, Larkin, and Michaely (2019) show that U.S. industries have become more concentrated over time. This increase in industry concentration may be the result of industry rivals expanding output—internally or externally though merger—in order to realize scale economies. The expansion causes product prices to decline and *ex post* inefficient competitors to exit the industry, hence the greater concentration of output. Under the alternative 'merger-for-market-power' view, the increase in industry concentration is driven by enhanced product differentiation and/or significant output-contraction by dominant firms—designed to prop up product prices in the presence of entry barriers—following horizontal merger.

Since CARs represent discounted profits (the difference between revenues and costs), estimates of merger-induced CARs to bidder and target firms do not identify whether the source of the merger profits emanates from lower costs or higher product prices. However, the evidence in Table 5 above fails to support market power scenarios since the temporal increase in the common component of bidder gains is just as present in cross-industry and cross-border transactions as in horizontal mergers and deals between domestic firms. More generally, the merger literature going back to Eckbo (1983, 1985) and Eckbo and Wier (1985) rejects the market power hypothesis. Specifically, this literature rejects predictions of market power theories for merger-induced CARs to the industry rivals, upstream suppliers and downstream consumers of merging firms.[13]

For our purposes, the trend toward higher industry concentration is of interest primarily because the degree of product market competition may constrains corporate mismanagement (Giroud and Mueller, 2010, 2011). Since firms in highly competitive industries operate with thin profit margins, there is more room for mismanagement of free cash flow in monopolistic industries where profits are abundant. Mismanagement of target firms may provide profit-opportunities for bidders (Manne, 1965; Scharfstein,

[13]Eckbo (1992), Fee and Thomas (2004), Shahrur (2005), Atkas, de Bodt, and Roll (2007), Bhattacharyya and Nain (2011), and Becher, Mulherin, and Walkling (2012). See Betton, Eckbo, and Thorburn (2008) for a review of the associated predictions and test results.

1988; Kini, Kracaw, and Mian, 2004), while mismanagement of bidders lowers expected acquirer returns (Jensen, 1986a; Masulis, Wand, and Xie, 2007). Therefore, we test whether time-series variation in industry concentration helps explain the common component acquirer returns.

In Table 11, we augment our baseline regression specification for the year-trend variable (full set of controls, firm fixed effects) with 2-digit SIC industry variables such as the sales-based Herfindahl-Hirschman index (HHI), the number of firms in the industry, and industry profit margins (using a 3-digit SIC industry definition yields similar inferences). The variables are introduced one at a time to avoid multi-collinearity. In Column (2), we add the HHI of acquirer and target industries (*Target SIC2 HHI* and *Acquirer SIC2 HHI*). As shown, while acquirer and target industry concentration help explain some of the cross-sectional variation in bidder gains, they do not change the the baseline 0.15 bps estimate of the year trend from Column (1). While the coefficient on $Year\ trend$ is unaffected, acquirer returns are higher when the target industry is more concentrated, which is consistent with both economies of scale and target managerial slack hypotheses.

In column (3) we replace HHI with the (log) number of firms in an industry (*Target SIC2 Ln (# of firms)* and *Acquirer SIC2 Ln (# of firms)*) and obtain results that are largely consistent with those in Column (1): Acquirer returns are higher when there are fewer firms in the target industry, and they are lower when there are fewer firms in the acquirer industry. Inclusion of these explanatory variables causes the year-trend coefficient estimate to *increase* to 20 basis points per year. Finally, in column (4) we use industry profit margins as a proxy for competitiveness (*Target SIC2 EBIT/Sales* and *Acquirer SIC2 EBIT/Sales*). Once again, we find that the coefficient on the year trend variable is unaffected relative to the baseline specification in Column (1). The coefficients estimates for the industry profit margin variables are both statistically insignificant. In sum, the temporal increase in the common component of acquirer returns is unrelated to the recent trend toward increased industry concentration.

5.4 Trends in the market for M&A advisory

Several studies point to the importance of financial advisors in complex transactions such as mergers and acquisitions, and document advisor effects in bidder returns (Servaes and Zenner, 1996; Rau, 2000; Kale, Kini, and Ryan, 2003; Golubov, Petmezas, and Travlos, 2012). In this section, we examine the possibility that changes in the market for M&A advisors—perhaps towards improved financial advice—may have affected bidders gains over time. For example, during the 1980s and 1990s, several major investment

banking houses changed legal form from partnerships to corporations, and subsequently went public (Morrison and Wilhelm, 2008), fundamentally changing the industry's *modus operandi*. The industry has also been impacted by mergers between securities and advisory firms during the late 1990s and early 2000s, and by the entry of "boutique" M&A advisors concentrating on merger advisory as opposed to full-service investment banks (Song, Wei, and Zhou, 2013). During this industry transformation, traditional investment banking relationships appear to have become increasingly transactional, with acquirers switching advisors more frequently (Corwin and Stegemoller, 2014).

Bao and Edmans (2011) document that M&A advisors are significantly differentiated in terms of the quality of their M&A advice—producing significant advisor-specific components (advisor fixed effects) in acquirer returns. Sibilkov and McConnell (2014) further show that, not only are investment banks characterized by persistent client performance, but bidders appear to seek out this information when selecting future advisors. That is, advisors whose clients exhibit higher takeover gains attract more advisory mandates going forward. We therefore examine whether the temporal increase in bidder gains (the common year-trend) documented in this paper is related to advisor heterogeneity—as more qualified advisors capture a greater share of the advisory market over time.

We collect information on investment banks that advised our sample bidders. Since SDC does not report advisor codes consistently (e.g., Lazard can be referred to as LAZ, LAZARD, LAZARD-BRO, LAZARD-HOUSES, etc.), we manually go over all unique advisor codes and collapse them to a much coarser set of advisor IDs. We do so by cross-checking advisor codes against the full advisor name reported by SDC, coupled with extensive internet searches in order to take into account name changes. Through this process, we also account for mergers and acquisitions between financial advisors.[14] Initially, advisor information is available for 9,757 deals advised by 739 unique advisors (an additional 407 deals are flagged as "in-house" deals where no advisor was retained). After collapsing advisor IDs and eliminating singleton advisors (as well as singleton bidders in this reduced sample) we are left with 7,662 deals advised by 283 unique advisors.

Table 12 shows the result of augmenting our bidder return regression with advisor fixed effects in

[14]The latter requires certain judgement to be exercised. Our guiding principle is to retain the same advisor ID when the reorganization is unlikely to have led to major changes to the investment banking operations (e.g. a simple transfer of control), and to assign a new advisor ID when the converse is true. For example, when a commercial bank without significant investment banking operations acquires an investment bank, we retain the same advisor ID. In contrast, when two major financial advisors merge (e.g. Bank of America and Merrill Lynch in 2008), we assign a new advisor ID to the merged entity. A complete record of this process is available from the authors upon request.

order to control for the possibility that the composition of advisors is changing over time. As before, we begin in Column (1) with a baseline regressions for the subsample of firms. It shows a baseline year trend effect of 12 bps in the sample of 7,662 deals, significant at the 5% level. Adding advisor fixed effects in Column (2), the time trend coefficient drops to 9 bps and loses statistical significance. This is consistent with the hypothesis that the rising trend in bidder gains is related to advisor composition. That is, higher bidder gains over time are to some extent explained by advisor heterogeneity: bidders are gravitating towards higher fixed effect advisors over time. Equivalently, higher fixed effect advisors are gaining market share over time and/or high fixed effect advisors are entering the market in the later parts of our sample.

Is the reduction of the coefficient on the year trend from 12 bps in Column (1) to 9bps in Column (2) of Table 12 statistically significant? One way to assess this question is to control for "random" advisor fixed effect. We perform 1,000 permutation tests whereby we randomly assign advisor IDs across deals and rerun the advisor fixed effects specification. Figure 5 reports the distribution of resulting year trend coefficients. None of the 1,000 permutations result in a year trend coefficient as low as 9 basis points, and the distribution is centered around 12 basis points, which is the value of the year trend coefficient in our baseline specification without advisor fixed effects altogether. This suggests that the reduction in the coefficient on the year trend variable we observe in the real data is not a statistical artifact. Rather, a consistent explanation is that competitive forces in the market for merger advisory services have shifted mandates towards more qualified advisors, resulting in improved bidder performance over time.

Notwithstanding the results in Column (2) of Table 12, the notion that bidders are gravitating toward better advisors over time is at best a partial explanation for the positive time trend in acquirer returns. The reason is that, in Column (3), which uses the part of our total sample for which we do not have advisor identities, we continue to observe a significantly positive year trend effect of 14 bps per year. A significant portion of the acquisitions in Column (3) are likely "in-house" deals, in which the acquirers is not advised by an investment bank.

6 Are takeover synergies becoming less bidder-specific?

6.1 An intuitive conceptual integration

Our empirical decomposition of the unconditional average acquirer return into common and firm-specific components suggests an interesting economic interpretation of the time-series and composition effects in terms of merger synergies and their specificity. Generally speaking, each merger party brings to the bargaining table resources that are deemed necessary to generate deal synergies. The uniqueness of these resources, in turn, determines that party's bargaining power. For example, deal synergies are mostly target-specific when a financially constrained target owns a unique technology (e.g., a patent) and the primary role of the bidder is to fund further technological developments. In this case, target-specificity is high and bidder-specificity is low. Competition among financially unconstrained bidders drives the bulk of deal synergies to the target shareholders. In contrast, suppose the bidder owns a unique downstream distribution network for the target's product. Absence of other potential bidders with a similarly cost-effective distribution network locks the target and the bidder in a bilateral, monopsonistic bargaining game. Synergy gains are now more bidder-specific, and the bidder has considerable power to extract a larger share of them.

In the above empirical analysis, none of the characteristics in $\mathbf{X}$ directly measure the degree of bidder uniqueness in terms of generating deal synergies. This uniqueness is an unobservable firm-specific characteristic. Therefore, much as Golubov, Yawson, and Zhang (2015), we interpret bidder fixed effect estimates as reflecting latent bidder-specific resources—unique assets or management skill unobservable to the econometrician—that the bidder contributes to the generation of synergies. This is also consistent with the notion that only bidders with unique resources should be able to systematically generate positive returns from acquisition activity. With this interpretation, our evidence of declining average bidder fixed effects (Figure 3 above) suggests that bidder uniqueness has declined during our sample period, resulting in merger synergies that are less bidder-specific.

The above interpretation, while intuitive, raises the following question. If bidder uniqueness has declined over time, competition among bidders should have driven down the winning bidder's gains, resulting in lower average acquirer CARs in our sample. As shown in Figure 1 above, *unconditional* average bidder returns remain modestly positive today, just as they were in the 1980s. It is as if bidder returns have *not* declined on average to reflect the putative lower bidder specificity. To resolve this

apparent inconsistency, we conjecture that the decline in bidder-specificity has been offset by an increase in average total deal synergies over time. In other words, we hypothesize that a general trend towards greater total merger synergies has allowed the *common* component of bidder CARs to increase, effectively offsetting the decline in the average bidder-specific component, so as to leave the unconditional average bidder CAR unchanged over time. In the remainder of this section, we first develop a simple theoretical framework linking announcement returns to total acquisition-induced synergies and the sharing of those gains between the bidder and target firms, respectively. We then use this framework to guide empirical tests of the above conjecture.

6.2 Formalizing the conceptual integration

Consider the following simple takeover setting: A merger of two firms—the acquirer A and the target T—has just been announced to the market. The announcement drives the market's prior deal probability from zero to one—there is no market deal anticipation and a zero conditional risk of deal failure. Suppose also that the deal announcement does not alter the market's prior assessment of the stand-alone values of A (V_A) and T (V_T). The announcement reveals merger synergies totalling S dollars, generated by combining the resources of A with those of T. The acquirer A will receive the fraction $\theta \in (0, 1)$ of the total synergies S, and the target T will receive the fraction $(1 - \theta)$. Thus, the announcement returns to the two parties are given by $CAR_A = \theta S/V_A$ and $CAR_T = (1 - \theta)S/V_T$.

Deals are agreed to as follows. For a given target, there is one or more possible bidders. Bidders do not undertake negative NPV investments. Hence, A is willing to offer up to the stand-alone value V_T plus the full value of synergies S (net of transaction costs), equivalent to $\theta \approx 0$. The target does not accept a bid that is less attractive than its outside option, i.e. its participation constraint is $V_T + (1 - \theta)S \geq K$. Here, K is the value that T can extract from a combination with another bidder $\bar{A}$ (K is bounded from below by V_T if no other bidder exists). The alternative transaction generates synergies $\bar{S}$, and $\bar{A}$'s ability to pay is limited by the same participation constraint of non-negative NPV. It follows that the highest synergy bidder reaches a deal with the target; observing a deal between A and T implies that $S \geq \bar{S}$.

In this framework, the notion of bidder- and target-specific synergies is summarized by the equilibrium synergy-sharing parameter θ. First, consider a case of synergies S that are not unique to any particular bidder: all bidders are perfect substitutes and a merger of T with any of them generates the same synergy $\bar{S} = S$. In this case, the target's outside option $K = V_T + \bar{S}$ forces the successful bidder A to offer the

full value of synergies S (net of transaction costs), resulting in $\theta \approx 0$. In contrast, suppose the synergies S are fully bidder-specific: the bidder A is so unique that only a merger of A and T creates any value, while a merger between $\bar{A}$ and T offers no synergies ($\bar{S} = 0$). Since no alternative bidders exist, the value of the target's outside option K is its stand-alone value V_T. Therefore, A offers the bid $V_T + \epsilon$ (where ϵ is infinitesimal when bid revisions are costless), which the target accepts, resulting in $\theta \approx 1$.

In intermediate cases, whereby $S > \bar{S} > 0$, A's offer is competed up to the valuation of the second-best bidder plus ϵ, resulting in $0 < \theta < 1$. The smaller the difference $S - \bar{S}$ offered by the second-best combination, the closer to zero θ will be. Hence, the equilibrium outcome θ is also a measure of A's bargaining power in the negotiations with T. This bargaining outcome reflects the degree of substitutability among bidders and, in particular, between the winning bidder A and the best alternative bidder $\bar{A}$ (if one exists).

6.3 Empirical testing

In the above framework, bidder and target announcement returns are a function of the total synergy pie S and the synergy sharing paramater θ. For the sake of the argument, suppose that the global sample average of CAR_A is 1.04% as shown in Table 2 above. Moreover, suppose that, after controlling for observable firm and deal characteristics, the average bidder CAR relative to the 1980s remains largely stable over the period 1990-2017 (as in the lower left panel of Figure 1). Within this stable average, however, there may be considerable variation in both θ and S for individual takeovers. Our conjecture is that S has increased while θ has declined.

The evidence in Panel A of Table 13 corroborates this particular interpretation of the data. In the table, we ask whether (i) total merger synergies have increased unconditionally, while (ii) the share of synergies captured by the bidder (target) has declined (risen), again unconditionally. As in Bradley, Desai, and Kim (1988), our proxy for the merger synergies S is the combined firm abnormal return (bidder-target portfolio). Moreover, we follow Ahern (2012) and use the difference between bidder and target *dollar* gains, scaled by the combined market capitalization of the bidder and the target, as a proxy for θ. The latter captures the extent to which bidder dollar gains exceed or trail those of the target, holding the size of the two firms constant. Naturally, these tests are limited to acquisitions of public targets only.

In Column (1) of Panel A, we regress our proxy for synergies—the combined firm abnormal return—on

the year trend variable and a set of control variables that mimics the covariates used in Table 5, but we omit bidder fixed effects (replaced with industry fixed effects) to obtain estimates of unconditional changes over time.[15] The coefficient on the year trend indicator is positive and highly statistically significant, implying that combined firm gains (S) have unconditionally increased. The magnitude of 0.12 suggests that the increase is 12 basis points per year, on average. That is, over a 27-year period since the 1980s, combined firm gains have increased by a cumulative 3.25 percentage points. Compared to the overall sample average of 2 percent, this increase is highly economically relevant. Interestingly, the coefficient obtained here is very similar to the coefficient on the year trend variable in the conditional bidder returns regression. This corroborates our interpretation of the rising common trend as resulting from an increase in merger synergies.

In Column (2) of Panel A, we use our proxy for relative bidder gains (θ in the above framework) as the dependent variable. Here, the coefficient on the year trend variable is negative and statistically significant, implying that the relative share of bidder gains has unconditionally declined. It appears that bidders are indeed capturing a lower share of merger synergies over time. Finally, in column (3) we directly test the notion that bidder fixed effects proxy for bidder specificity and, consequently, for the share of synergies it can extract. Specifically, we regress the estimated bidder fixed effect on the relative bidder share of synergies. The resulting coefficient is positive and statistically significant, suggesting that the share of synergies θ a bidder extracts in a given deal predicts its overall sample fixed effect.

Overall, the results of these tests are consistent with our conceptual framework for interpreting the rising common and declining bidder-specific components of acquirer returns. Merger synergies may have increased, while bidder specificity may have declined, with the two forces counteracting each other to produce largely constant bidder gains over time. To buttress this interpretation, we turn to our final tests that further explore the notion of bidder-specific synergies. In particular, the framework above suggests that the bargaining parameter θ is determined by bidder uniqueness—the distance between the synergies offered by the winning bidder and the second-best alternative ($S - \bar{S}$). We therefore test whether bidder uniqueness has explanatory power for the cross-section of acquirer returns.

To proxy for bidder uniqueness, we build on the work of Hoberg and Phillips (2010, 2016) who conduct text-based analysis of product descriptions for the universe of Compustat firms starting from

[15]The only modification in the set of controls is that the method of payment-listing status interactions are replaced with just the method of payment indicator since all targets are public. The cross-border indicator is further omitted because all deals are domestic.

1996. Specifically, they identify product market peers based on product descriptions to the same level of granularity as 2-digit SIC industries and provide cosine similarity for each pair of peers. For each bidder in our sample, we consider all of its product market peers as potential alternative bidders $\bar{A}$ (disregarding peers that happen to be the target). We then use the median similarity between the bidder and all of its peers as an *inverse* proxy for $S - \bar{S}$. The idea behind this proxy is that bidders with similar product portfolios should offer similar product market synergies with a given target. An added advantage of this proxy for $S - \bar{S}$ (and therefore θ) is that it is not limited to acquisitions of public targets. To align the direction of the proxy with the notion of bidder uniqueness, in the regressions below we use one minus the median similarity score, labelled *Acquirer HP uniqueness*.

Panel B of Table 13 reports the results. In Column (1) of Panel B we regress acqurier CAR on the proxy for bidder uniqueness, our full set of controls $\mathbf{X}$, as well as industry and year fixed effects. The coefficient estimate on *Acquirer HP uniqueness* is positive and statistically significant, indicating that more unique bidders indeed earn higher announcement returns. This result, which is consistent with our framework above, is new to the literature on the cross-sectional determinants of acquirer returns. Hoberg and Phillips (2010) find that greater product overlap between two firms increases the likelihood that the two firms will merge. Column (1) in Panel B of Table 13 shows that a bidder whose product portfolio is unique (dissimilar) *relative to other potential bidders* tends to earn greater acquisition returns, possibly because competition on the buyer side of the transaction is lower.

In column (2) we replace industry fixed effects with bidder fixed effects. Recall that, according to our interpretation, bidder fixed effects capture θ via its relationship with $S - \bar{S}$. Consistent with this conjecture, the coefficient on *Acquirer HP uniqueness* loses statistical significance and changes sign from positive to negative when bidder fixed effects are added. In other words, the explanatory power of our proxy for bidder uniqueness is related to bidder fixed effects. In column (3) we examine directly whether bidder uniqueness is a characteristic behind the bidder fixed effect. The answer is affirmative: more unique bidders exhibit higher estimates of firm fixed effects in bidder returns. This empirical result suggests that bidder uniqueness helps explain the cross-sectional variation in bidder gains—possibly due to bargaining power in the negotiations with the target.

7 Conclusion

The seemingly unchanged average acquirer returns over the last four decades mask two fundamental shifts in the market for corporate control. Controlling for bidder composition, we find that the common component of acquirer returns has actually increased by as much as five percentage points relative to the 1980s. This conditional increase is broad-based: it is equally present in deals involving public and private targets, cash and stock deals, diversifying and focused acquisitions, and domestic and cross-border deals. Working against this increase, the average bidder-specific component of acquirer returns has declined. These two opposing trends produce an unconditional average bidder return that is largely unchanged.

We undertake a comprehensive search for the economic drivers of the conditional increase in bidder gains. Interestingly, hypotheses ranging from acqurier learning and maturity to industry concentration and improved corporate governance fail to explain this upward trend. There is, however, some evidence that the run-up in the common component of acquirer returns is related to heterogeneity of investment bank advisors, implying that acquirers gravitate towards higher valued-added advisors over time.

Finally, we develop and test a single, unifying conceptual framework that helps interpret our findings of time-series and composition effects in acquirer returns. Specifically, we argue that the evidence is consistent with a general increase in merger synergies that have become less bidder-specific over time. In line with this interpretation, we show that combined firm gains (synergies) have unconditionally increased, while the share of synergies captured by the bidder has unconditionally declined. This framework also predicts that bidder-specificity of merger gains is a determinant of acquirer returns—a prediction that we confirm in the data using product similarity between acquirers and potential rival bidders.

Overall, the anatomy of bidder returns and their evolution over time documented here contributes to our understanding of the persistently low unconditional average acquirer gains from takeover activity. It also suggests that empirical proxies for bidder/target uniqueness can help explain relative bargaining power in merger negotiations—a fruitful avenue for future research.

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Figure 1: Evolution of average acquirer announcement returns

The four panels plot the coefficients $\mathbf{\Theta}$ for the vector $\mathbf{Y}$ of year dummies corresponding to the CAR regressions reported in Table 5, as follows:

$$
\begin{aligned}
&\text{Top left panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \epsilon_i \\
&\text{Top right panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + \epsilon_i \\
&\text{Bottom left panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + IndFE + \epsilon_i \\
&\text{Bottom right panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + BidderFE + \epsilon_i.
\end{aligned}
$$

The vector Y includes indicator variables for deal announcement years from 1990 to 2017, with all of the 1980s as the omitted category. Thus, coefficients Θ estimate the change in average acquirer CAR [−3, +3] relative to acquisitions announced during the 1981-1989 period. Grey-shaded areas correspond to a 99% confidence interval. The sample consists of 28,570 acquisitions announced by US-domiciled publicly traded acquirers from the Thomson Reuters SDC M&A Database, 1981-2017. All sample acquirers make two or more acquisitions over the total sample period.

Figure 2: Evolution of average acquirer announcement returns: Mergers only

The four sub-figures plot the coefficients $\mathbf{\Theta}$ for the vector $\mathbf{Y}$ of year dummies corresponding to the CAR regressions similar to those reported in Table 5 but restricted to deals classified as "merger" by SDC, as follows:

$$
\begin{aligned}
&\text{Top left panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \epsilon_i \\
&\text{Top right panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + \epsilon_i \\
&\text{Bottom left panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + IndFE + \epsilon_i \\
&\text{Bottom right panel:} && CAR[-3,+3]_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + BidderFE + \epsilon_i.
\end{aligned}
$$

The vector Y includes indicator variables for deal announcement years from 1990 to 2017, with all of the 1980s as the omitted category. Thus, coefficients Θ estimate the change in average acquirer CAR $[-3, +3]$ relative to acquisitions announced during the 1981-1989 period. Grey-shaded areas correspond to a 99% confidence interval. The sample consists of 11,447 acquisitions announced by US-domiciled publicly traded acquirers from the Thomson Reuters SDC M&A Database, 1981-2017. All sample acquirers make two or more acquisitions over the total sample period.

Figure 3: Evolution of average bidder fixed effects

The three sub-figures plot the coefficients $\mathbf{\Theta}$ for the vector $\mathbf{Y}$ from a regression of estimated bidder fixed effects on year dummies, as follows:

$$\begin{aligned}
&\text{Top left panel:} && BidderFE_i = \alpha + \mathbf{\Theta Y_i'} + \epsilon_i \\
&\text{Top right panel:} && BidderFE_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + \epsilon_i \\
&\text{Bottom left panel} && BidderFE_i = \alpha + \mathbf{\Theta Y_i'} + \mathbf{\Gamma X_i'} + IndFE + \epsilon_i.
\end{aligned}$$

The vector Y includes indicator variables for deal announcement years from 1990 to 2017, with all of the 1980s as the omitted category. Thus, coefficients Θ estimate the change in the average bidder fixed effect for all bidders conducting deals in a given year relative to the average bidder fixed effect during the 1981-1989 period. Bidder fixed effects are estimated in a regression specification reported in column (4) of Table 5. Grey-shaded areas correspond to a 99% confidence interval. The sample consists of 28,570 acquisitions announced US-domiciled publicly traded acquirers from the Thomson Reuters SDC M&A Database, 1981-2017. All sample acquirers make two or more acquisitions over the total sample period.

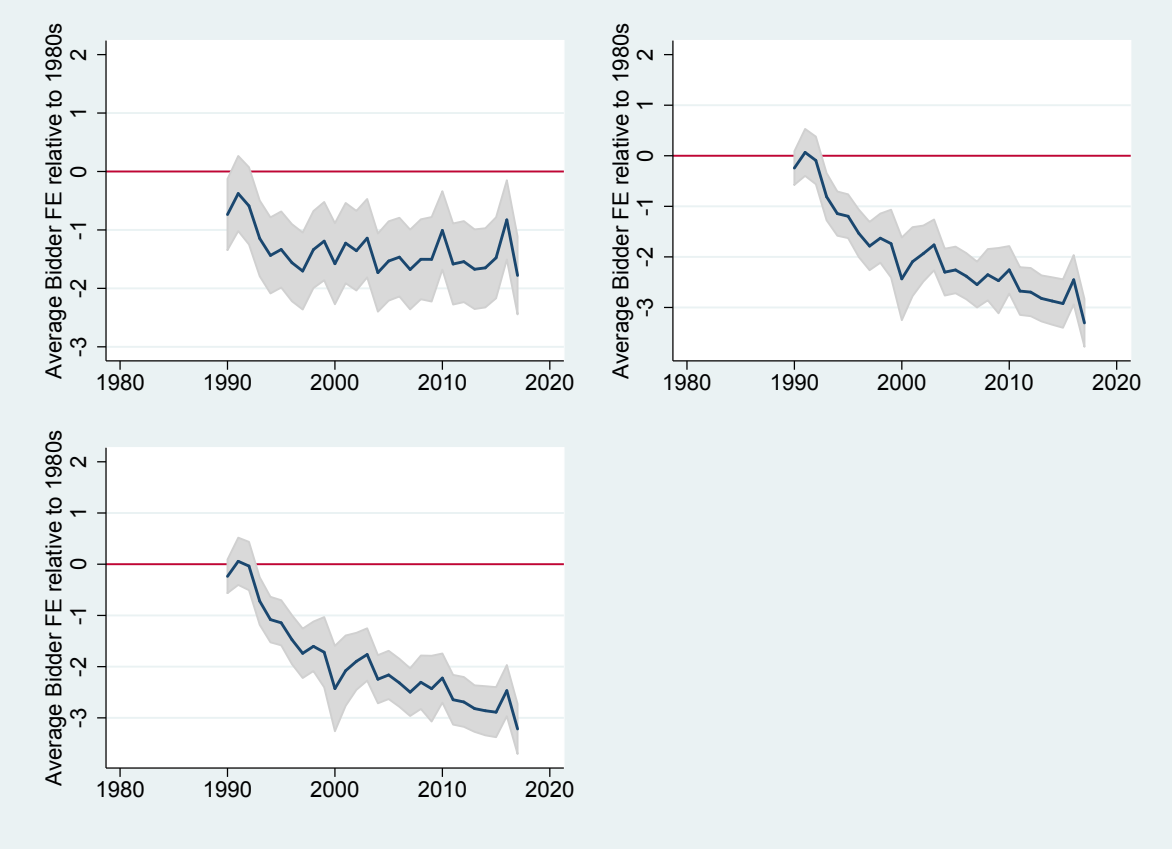

Figure 4: Permutation analysis: Randomizing acquirer IDs

The histogram presents the distribution of the coefficient on the year trend variable in a firm fixed effects specification across the permutations. One thousand permutations of the data are performed: each time the acquiring firm identifiers are randomly shuffled across firms within a given year. The vertical red line indicates the coefficient on the year trend variable in the firm fixed effects specification run on the actual data.

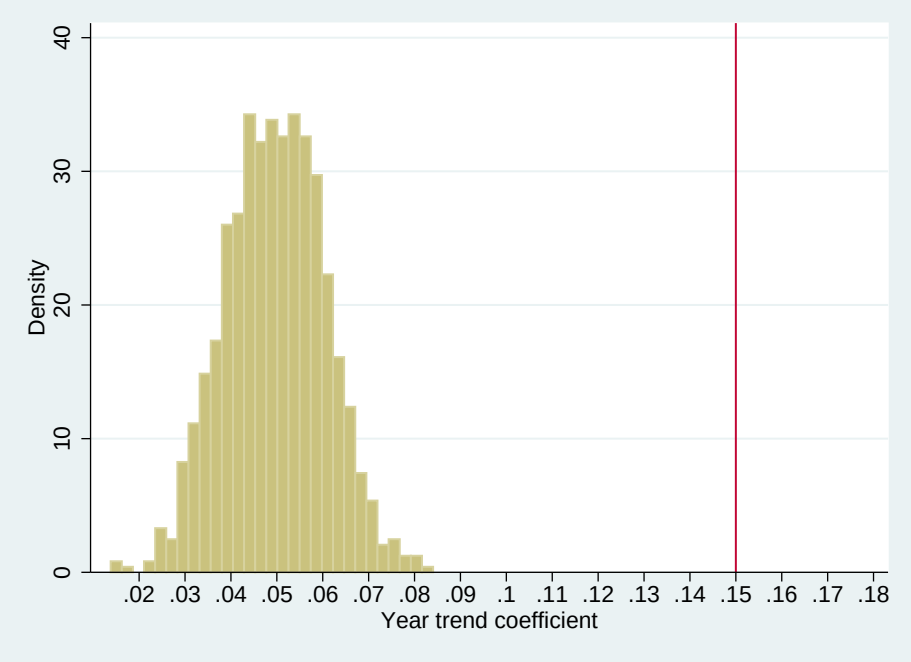

Figure 5: Permutation analysis: Randomizing advisor IDs

The histogram presents the distribution of the coefficient on the year trend variable in a firm fixed effects and advisor fixed effects specification across the permutations. One thousand permutations of the data are performed: each time advisor identifiers are randomly shuffled across observations. The vertical red line indicates the coefficient on the year trend variable in the firm fixed effects and advisor fixed effects specification run on the actual data.

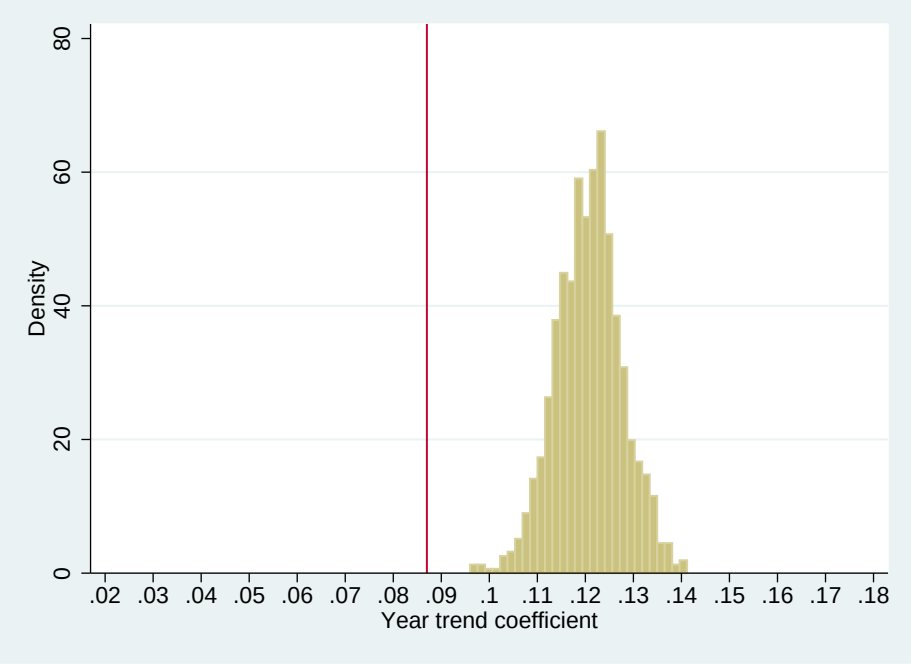

Table 1: M&A sample: panel structure

The table describes the panel structure of our sample of U.S. M&A deals over the period 1981-2017. All bidders are U.S. public firms with common stock listed on NYSE, Nasdaq, or Amex with a market capitalization of at least $1 million. All targets are either U.S. or foreign public, private, and subsidiary firms. Deals with missing transaction values, as well deals worth less than U.S. $1 million or smaller than 1% of acquirer market capitalization are excluded. Panel A presents the distribution of the number of deals per bidder. Panel B presents the distribution of the mean time between successive deals, as well as the time between first and last deal of a given bidder.

Panel A: Number of deals per bidder

Deals per bidder	**N of bidders**	**%**	**Cum %**	**N of deals**	**%**	**Cum %**
2	2,056	33.56	33.56	4,112	14.39	14.39
3	1,212	19.78	53.34	3,636	12.73	27.12
4	745	12.16	65.5	2,980	10.43	37.55
5	533	8.7	74.2	2,665	9.33	46.88
6	402	6.56	80.76	2,412	8.44	55.32
7	275	4.49	85.25	1,925	6.74	62.06
8	193	3.15	88.4	1,544	5.40	67.46
9	151	2.46	90.86	1,359	4.76	72.22
10	117	1.91	92.77	1,170	4.10	76.31
11	81	1.32	94.09	891	3.12	79.43
12	77	1.26	95.35	924	3.23	82.67
13	64	1.04	96.39	832	2.91	85.58
14	40	0.65	97.05	560	1.96	87.54
15	33	0.54	97.58	495	1.73	89.27
16	29	0.47	98.06	464	1.62	90.90
17	31	0.51	98.56	527	1.84	92.74
18	13	0.21	98.78	234	0.82	93.56
19	11	0.18	98.96	209	0.73	94.29
20+	64	1.05	100.00	1,631	5.71	100.00
Total	6,127	100.00		28,570	100.00	

Panel B: Distribution of time between deals of a given bidder

	Mean	**10 pctl.**	**25 pctl.**	**Median**	**75 pctl.**	**90 pctl.**
Mean t between deals	23.05	1.37	4.20	11.47	28.33	59.07
t between 1st and last deals	84.42	7.07	18.83	52.20	126.50	209.30

Table 2: M&A sample: descriptive statistics

The table presents descriptive statistics for a sample of U.S. M&A deals over the period 1981-2017. All bidders are U.S. public firms with common stock listed on NYSE, Nasdaq, or Amex with a market capitalization of at least $1 million. All targets are either U.S. or foreign public, private, and subsidiary firms. Deals with missing transaction values, as well deals worth less than U.S. $1 million or smaller than 1% of acquirer market capitalization are excluded. All variables are defined in Table 3.

	N	**Mean**	**St. Dev.**	**10 pctl.**	**25 pctl.**	**Median**	**75 pctl.**	**90 pctl.**
Deal value (U.S.$ mil.)	28,570	469.0	3,105.6	5.0	13.9	45.0	173.5	625.0
Public target X stock	28,570	0.16	0.36	0	0	0	0	1
Public target X cash	28,570	0.07	0.25	0	0	0	0	0
Private target X cash	28,570	0.18	0.39	0	0	0	0	1
Private target X stock	28,570	0.28	0.45	0	0	0	1	1
Subsidiary target X cash	28,570	0.21	0.41	0	0	0	0	1
Subsidiary target X stock	28,570	0.10	0.30	0	0	0	0	0
Relative size	28,570	0.39	1.99	0.02	0.04	0.09	0.26	0.70
Same industry	28,570	0.61	0.49	0	0	1	1	1
Cross-border	28,570	0.13	0.33	0	0	0	0	1
Hostile	28,570	0.02	0.14	0	0	0	0	0
Tender offer	28,570	0.04	0.20	0	0	0	0	0
Acquirer CAR % [-3, +3]	28,570	1.04	9.54	-8.86	-3.66	0.38	4.96	11.79
Acquirer size (U.S.$ mil.)	28,570	3,388.3	15,246.1	42.0	131.6	480.7	1,726.9	5,771.4
Acquirer run-up	28,570	0.12	0.53	-0.34	-0.16	0.02	0.24	0.60
Acquirer idiosyncratic vol.	28,570	0.03	0.02	0.01	0.02	0.02	0.04	0.05
Acquirer Tobin's Q	28,570	2.60	6.04	1.00	1.13	1.57	2.43	4.20
Acquirer leverage	28,570	0.22	0.20	0.00	0.05	0.19	0.34	0.50
Acquirer cash holdings	28,570	0.16	0.19	0.01	0.03	0.08	0.23	0.46
Acquirer cash flow	27,209	0.05	0.15	-0.04	0.02	0.08	0.12	0.16
Acquirer SA-index	28,570	-3.32	0.82	-4.52	-3.89	-3.32	-2.81	-2.29
Acquirer investment-grade	28,570	0.31	0.46	0	0	0	1	1
Acquirer inst. block. own.	27,664	0.13	0.13	0.00	0.00	0.10	0.20	0.31
Acquirer staggered board	11,081	0.58	0.49	0	0	1	1	1
Acquirer % outside dir.	9,391	0.70	0.17	0.50	0.57	0.71	0.86	0.89
Acquirer CEO EBC	11,985	0.58	0.29	0.08	0.39	0.64	0.82	0.90
Acquirer age (CRSP)	28,570	14.90	15.72	1	4	10	21	35
Acquirer age (foundation)	28,570	33.68	35.86	5	10	20	41	92
Acquirer RE/TE	27,749	-0.15	2.52	-0.93	-0.04	0.31	0.64	0.88
Acquirer life cycle	23,561	2.45	0.93	1	2	2	3	4
Deal exper.	28,570	4.54	4.37	1	2	3	6	10
Time since last deal	22,883	1.89	2.61	0.12	0.35	0.94	2.31	4.84
Deal exper. 5 yr.	28,570	2.12	2.61	0	0	1	3	5
Target SIC2 HHI	28,325	0.17	0.16	0.04	0.07	0.11	0.19	0.42
Acquirer SIC2 HHI	28,338	0.16	0.16	0.04	0.07	0.10	0.19	0.42
Target SIC2 # of firms	28,325	60.46	55.37	8	21	53	88	109
Acquirer SIC2 # of firms	28,338	60.38	53.67	8	22	53	94	110
Target SIC2 EBIT/Sales	28,325	0.09	0.10	0.02	0.04	0.07	0.11	0.18
Acquirer SIC2 EBIT/Sales	28,338	0.09	0.09	0.02	0.04	0.07	0.11	0.17
Combined CAR % [-3, +3]	4,956	2.00	8.99	-6.98	-2.38	1.16	6.02	12.39
Target CAR % [-3, +3]	4,959	21.76	23.67	-1.91	6.85	18.47	32.66	49.74
Offer premium % (4 wk.)	4,910	45.91	38.81	5.29	20.19	37.30	61.07	92.00

Table 3: Variable definitions

Variable	Definition
Acquirer characteristics	
Acquirer CAR % [−3, +3]	Cumulative abnormal return on the acquiring firm stock in the event window [−3, +3] centered on the announcement day. Abnormal returns are computed using the market model with parameters estimated over the period starting 300 days and ending 46 days prior to the announcement. CRSP-value weighted index is used as the market return. For firms with multiple classes of common stock we use the weighted-average cumulative abnormal return on the different classes with market capitalizations of the respective classes as weights (from CRSP).
Acquirer size	Market capitalization of the acquiring firm 4 days prior to the announcement (in U.S. $ million), computed as the stock price times the number of shares outstanding (from CRSP).
Acquirer Tobins Q	Tobins Q of the acquiring firm computed as book value of assets minus book value of common equity (from Compustat) plus the market value equity (from CRSP) divided by the book value of assets (from Compustat).
Acquirer leverage	Leverage ratio of the acquiring firm computed as total debt divided by total assets (from Compustat).
Acquirer cash holdings	Cash holdings of the acquiring firm computed as cash and cash equivalents divided by total assets (from Compustat).
Acquirer idiosyncratic vol.	Idiosyncratic stock return volatility of the acquiring firm computed as the standard deviation of market model residuals. The market model is estimated over the period starting 300 days and ending 46 days prior to the announcement using CRSP value-weighted index as the market return (from CRSP).
Acquirer run-up	Buy-and-hold abnormal return on the acquiring form stock over the period starting 300 days and ending 46 days prior to the announcement. CRSP value-weighted index is the market return (from CRSP).
Acquirer age (CRSP)	Number of years the acquiring firm stock has been covered in CRSP, defined as the year of the acquisition minus the year the stock first appeared in CRSP.
Acquirer age (foundation)	Number of years since the firm was founded, defined as the year of the acquisition minus the foundation year. We use the foundation year from the Field-Ritter dataset in the first instance (from Jay Ritters website), the foundation year from Capital IQ when the latter is unavailable, and the year the firms stock first appeared in CRSP as the last resort.
Acquirer inst. block own.	Percentage of acquiring firms shares owned by institutional blockholders, defined as institutions holding at least 5% of the outstanding shares (from Thomson Reuters 13f holdings).
Acquirer % outside dir.	Percentage of outside directors on the acquiring firm board of directors (from Boardex and ISS).
Acquirer staggered board	Indicator variable taking the value of one when the acquiring firm has a staggered (classified) board and zero otherwise (from ISS and Johnson, Karpoff and Yi (2018)).
Acquirer CEO EBC	Equity-based compensation of the acquiring firm CEO, defined as total compensation minus salary and bonus divided by total compensation (from Execucomp and People Intelligence).
Acquirer RE/TE	Mix of earned and contributed capital of the acquiring firm, defined as the ratio of retained earnings to total shareholders equity following DeAngelo, DeAngelo, and Stulz (2006) (from Compustat).
Acquirer life cycle	Life cycle stage of the acquiring firm based on the signs of cash flows from operating, financing, and investing activities following Dickinson (2011). This is an ordinal variable taking the values between 1 and 5, with higher values indicating later life cycle stages (from Compustat).
Acquirer HP uniqueness	One minus the median product similarity between the bidder and all of its product market peers at the level of granularity equivalent to 2-digit SIC industries (from Hoberg and Phillips (2010, 2016)).
Deal exper.	Deal experience of the acquiring firm, defined as the number of deals conducted by the acquirer since the beginning of our sample in 1981 (from Thomson Reuters SDC).
Deal exper. (5-yr.)	5-year deal experience of the acquiring firm, defined as the number of deals conducted by the acquirer in the 5 years preceding the announcement (from Thomson Reuters SDC).
Time since last deal	Time (in years) elapsed since the acquiring firms most recent acquisition (from Thomson Reuters SDC).

Table 3: Variable definitions (continued)

Variable	Definition
Deal characteristics	
Deal value	Transaction value (in U.S. $ million) (from Thomson Reuters SDC).
Public target	Indicator variable taking the value of one when the target firm is a public firm and zero otherwise (from Thomson Reuters SDC).
Private target	Indicator variable taking the value of one when the target firm is a private firm and zero otherwise (from Thomson Reuters SDC).
Subsidiary target	Indicator variable taking the value of one when the target firm is a subsidiary firm and zero otherwise (from Thomson Reuters SDC).
Cash	Indicator variable taking the value of one when the consideration offered is 100% cash and zero otherwise (from Thomson Reuters SDC).
Stock	Indicator variable taking the value of one when consideration offered includes acquiring firm stock and zero otherwise (from Thomson Reuters SDC).
Relative size	Relative size of the deal, defined as transaction value (from Thomson Reuters SDC) divided by acquiring firm market capitalization 4 days prior to the announcement (from CRSP).
Same industry	Indicator variable taking the value of one when the acquiring and target firms share the same 2-digit SIC code and zero otherwise (from Thomson Reuters SDC).
Cross-border	Indicator variable taking the value of one when the target firm is foreign and zero otherwise (from Thomson Reuters SDC).
Hostile	Indicator variable taking the value of one when the transaction is flagged as hostile or unsolicited (from Thomson Reuters SDC).
Tender offer	Indicator variable taking the value of one when the transaction is flagged as a tender offer (from Thomson Reuters SDC).
Combined CAR % [−3, +3]	Cumulative abnormal return of the combined firm in the event window [−3, +3] centered on the announcement day, defined as the weighted-average of Acquirer CAR % [−3, +3] and Target CAR % [−3, +3] with market capitalizations 4 days prior to the announcement as weights (from CRSP).
Target CAR % [−3, +3]	Cumulative abnormal return on the target firm stock in the event window [−3, +3] centered on the announcement day. Abnormal returns are computed using the market model with parameters estimated over the period starting 300 days and ending 46 days prior to the announcement. CRSP-value weighted index is used as the market return. For firms with multiple classes of common stock we use the weighted-average cumulative abnormal return on the different classes with market capitalizations of the respective classes as weights (from CRSP).
Offer premium % (4 wk.)	Offer premium relative to the target stock price 4 weeks prior to the announcement (from Thomson Reuters SDC). Following Officer (2003) values below 0% and above 200% are winsorized.
Relative Bidder Share	Relative bidder share of synergies following Ahern (2012): Bidder dollar gain (Acquirer CAR [−3, +3] times acquirer market capitalization 4 days prior to the announcement) minus target dollar gain (Target CAR [−3, +3] times target market capitalization 4 days prior to the announcement), divided by the combined firm market capitalization 4 days prior to the announcement (from CRSP).
Year trend	Counter variable taking the value of zero for deals announced during the years 1981-1989 and incrementing by one for each subsequent year. When the estimation sample starts later than 1981 due to the availability of another variable of interest, Year trend is redefined such that it takes the value of one for deals announced in the first five available years and increments by one in each subsequent year.
Industry characteristics	
Target SIC2 HHI	Sales-based Herfindahl-Hirschman index of the target firm industry based on 2-digit SIC code (from Compustat).
Acquirer SIC2 HHI	Sales-based Herfindahl-Hirschman index of the acquiring firm industry based on 2-digit SIC code (from Compustat).
Target SIC2 # of firms	Number of firms in the target firm industry based on 2-digit SIC code (from Compustat).
Acquirer SIC2 # of firms	Number of firms in the acquiring firm industry based on 2-digit SIC code (from Compustat).
Target SIC2 EBIT/Sales	Profit margins, defined as EBIT divided by sales, in the target firm industry based on 2-digit SIC code (from Compustat).
Acquirer SIC2 EBIT/Sales	Profit margins, defined as EBIT divided by sales, in the acquiring firm industry based on 2-digit SIC code (from Compustat).

Table 4: Acquirer announcement returns by year

The table presents average acqurier returns and deal activity by year for a sample of U.S. M&A deals over the period 1981-2017. All bidders are U.S. public firms with common stock listed on NYSE, Nasdaq, or Amex with a market capitalization of at least $1 million. All targets are either U.S. or foreign public, private, and subsidiary firms. Deals with missing transaction values, as well deals worth less than U.S. $1 million or smaller than 1% of acquirer market capitalization are excluded. All variables are defined in Table 3.

Year	Mean CAR	Median CAR	N of Deals	Mean Deal Val.	Median Deal Val.	Total Deal Val.
1981	-1.77	-1.44	251	529.44	73.67	132,891
1982	0.55	0.08	296	230.18	50.49	68,132
1983	0.29	-0.02	417	183.30	50.36	76,435
1984	0.17	-0.41	469	406.57	58.53	190,680
1985	-0.40	-1.07	293	939.01	274.42	275,131
1986	0.66	0.04	394	584.77	152.42	230,400
1987	1.16	-0.30	357	583.78	135.33	208,410
1988	0.52	-0.27	380	465.50	130.45	176,891
1989	0.23	-0.30	477	582.59	75.91	277,895
1990	0.36	-0.29	440	272.05	37.38	119,703
1991	2.58	0.88	482	202.08	39.28	97,405
1992	2.77	1.16	718	168.54	31.81	121,014
1993	1.98	0.80	906	318.92	33.81	288,942
1994	1.31	0.49	1,238	227.62	35.90	281,788
1995	1.10	0.21	1,289	353.83	41.86	456,083
1996	1.85	0.84	1,555	383.62	45.58	596,535
1997	1.82	1.04	1,957	419.54	46.22	821,038
1998	0.57	-0.41	1,898	882.80	56.05	1,675,554
1999	1.36	0.46	1,513	1,088.92	78.32	1,647,542
2000	-1.09	-0.61	1,299	1,150.95	86.53	1,495,089
2001	1.32	0.44	910	783.55	71.60	713,030
2002	0.78	0.28	867	334.59	52.39	290,088
2003	1.02	0.54	797	450.21	67.05	358,814
2004	0.52	0.21	936	630.79	64.98	590,415
2005	0.88	0.35	917	742.52	71.65	680,891
2006	0.56	0.33	949	717.60	77.38	681,003
2007	1.06	0.22	898	549.77	72.69	493,695
2008	0.55	0.21	645	681.98	66.77	439,879
2009	1.31	0.33	447	1,135.43	65.86	507,537
2010	0.81	0.35	568	558.40	110.08	317,174
2011	1.06	0.63	588	811.86	94.72	477,372
2012	1.65	0.95	621	471.64	94.54	292,889
2013	1.73	1.16	529	506.24	106.83	267,801
2014	1.69	0.77	694	1,204.80	113.92	836,134
2015	1.35	1.05	605	1,421.84	134.72	860,213
2016	1.37	0.91	509	1,294.12	149.52	658,705
2017	1.01	0.92	461	843.04	152.28	388,641
1981-1989	**0.23**	**-0.38**	**3,334**	**490.96**	**92.48**	**1,636,863**
1990-2017	**1.15**	**0.50**	**25,236**	**652.04**	**62.71**	**16,454,975**

Table 5: Estimation of the time trend in acquirer announcement returns using year dummies

The table presents the results of regression analysis of acquirer announcement returns and related variables for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return of the acquirer in the 7-day event window centered on the announcement date. The main explanatory variables in all columns are a linear trend variable and its interaction with a particular deal characteristic. All regressions include acquirer- and deal-specific controls and acquiring firm fixed effects. t-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	No controls (1)	Controls (2)	Controls + ind. FE (3)	Controls + acq. FE (4)
Public target X stock		-3.80***	-3.70***	-3.46***
		(-10.04)	(-8.72)	(-6.16)
Public target X cash		-1.27***	-1.27***	-1.11***
		(-4.65)	(-4.79)	(-3.20)
Private target X cash		-1.23***	-1.23***	-0.97***
		(-5.88)	(-5.90)	(-3.34)
Private target X stock		-0.88***	-0.82***	-0.40*
		(-4.66)	(-4.61)	(-1.88)
Subsidiary target X cash		-0.55***	-0.61***	-0.46*
		(-2.70)	(-2.89)	(-1.82)
Relative size		0.05	0.05	0.07
		(0.81)	(0.77)	(1.09)
Same industry		-0.02	0.14	0.22
		(-0.16)	(0.93)	(1.08)
Cross-border		-0.31	-0.35	-0.23
		(-1.38)	(-1.58)	(-0.93)
Hostile		-0.23	-0.27	-0.59
		(-0.55)	(-0.66)	(-1.27)
Tender offer		0.60	0.54	0.52
		(1.68)	(1.51)	(1.50)
Ln (Acquirer size)		-0.46***	-0.46***	-1.50***
		(-6.16)	(-6.14)	(-5.74)
Acquirer run-up		-1.74***	-1.74***	-1.75***
		(-5.58)	(-5.47)	(-4.31)
Acquirer idiosyncratic vol.		32.79**	34.28***	16.17
		(2.57)	(2.73)	(0.89)
Acquirer Tobin's Q		-0.03	-0.03	0.01
		(-0.83)	(-0.71)	(0.30)
Acquirer leverage		1.46***	1.49***	1.44*
		(3.56)	(3.99)	(1.98)
Acquirer cash holdings		-0.83	-0.58	0.91
		(-1.68)	(-1.20)	(1.55)
Year FEs included	**SEE FIGURE 1**	**SEE FIGURE 1**	**SEE FIGURE 1**	**SEE FIGURE 1**
N (without singletons)	28,570	28,570	28,570	28,570

Table 6: Estimation of the time trend in acquirer announcement returns using a linear trend structure

The table presents the results of regression analysis of acquirer announcement returns for a sample of U.S. acquirers over the 1981-2015 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return on the acquiring firm stock in the 7-day event window centered on the announcement date. In the first column the only explanatory variable is a linear trend variable that takes the value of zero for the period 1981-1989 and increments by one every subsequent year. In the second column the only explanatory variables are piecewise linear trend variables that increment by one only within the specified 7-year period. In the third and fourth columns a set of acquirer- and deal-specific control variables is added to the two specifications. In the fifth and sixth columns acquirer industry fixed effects (2-digit SIC level) are further added to the two specifications. In the seventh and eight columns acquirer industry fixed effects are replaced with acquiring firm fixed effects. t-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	No controls (1)	No controls (2)	Controls (3)	Controls (4)	Controls + ind. FE (5)	Controls + ind. FE (6)	Controls + acq. FE (7)	Controls + acq. FE (8)
Overall trend								
Year trend	**0.01**		**0.05*** **		**0.05*** **		**0.15*** **	
	(0.43)		**(3.32)**		**(4.13)**		**(4.87)**	
Piecewise trend by period								
Year trend 1990-1996		0.15***		0.13**		0.14**		0.36***
		(3.13)		(2.24)		(2.33)		(5.74)
Year trend 1997-2003		-0.20***		-0.09*		-0.10*		0.01
		(-3.81)		(-1.98)		(-1.84)		(0.11)
Year trend 2004-2010		0.14**		0.14*		0.14**		0.17**
		(2.32)		(1.92)		(2.04)		(2.16)
Year trend 2011-2017		0.03		0.09		0.08		0.16
		(0.65)		(1.42)		(1.57)		(1.62)
N (without singletons)	28,570	28,570	28,570	28,570	28,570	28,570	28,570	28,570

Table 7: Acquirer announcement returns by deal type

The table presents the results of regression analysis of acquirer announcement returns and related variables for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return of the acquirer in the 7-day event window centered on the announcement date. The main explanatory variables in all columns are a linear trend variable and its interaction with a particular deal characteristic. All regressions include acquirer- and deal-specific controls and acquiring firm fixed effects. *t*-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A	Target status	Payment method	Industry relatedness	Geography
Year trend	**0.15*** **	**0.15*** **	**0.14*** **	**0.15*** **
	(4.95)	**(4.48)**	**(4.28)**	**(5.00)**
Year trend x Public target	-0.01			
	(-0.34)			
Year trend x Cash		0.00		
		(0.12)		
Year trend x Same industry			0.02	
			(0.97)	
Year trend x Cross-border				-0.01
				(-0.57)
Controls	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES
N (without singletons)	28,570	28,570	28,570	28,570
Panel B	Mega-deals	Large rel. size	Financials	High-tech
Year trend	**0.13*** **	**0.11*** **	**0.14*** **	**0.16*** **
	(4.52)	**(3.56)**	**(4.17)**	**(4.36)**
Year trend x Mega Deals	0.07**			
	(2.60)			
Year trend x Large Rel. Size		0.06***		
		(3.18)		
Year trend x Financial			0.07**	
			(2.40)	
Year trend x High-Tech				-0.05
				(-1.23)
Controls	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES
N (without singletons)	28,570	28,570	28,570	28,570
Panel C	Positive CAR only	Negative CAR only	Pr(CAR<10 pct.)	Pr(CAR<25 pct.)
Year trend	**0.14*** **	**0.06*** **	**-0.35*** **	**-0.51*** **
	(3.89)	**(3.10)**	**(-3.03)**	**(-4.10)**
Controls	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES
N (without singletons)	28,570	28,570	28,570	28,570

Table 8: Acquirer announcement returns: effects of prior deal experience

The table presents the results of regression analysis of acquirer announcement returns for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return of the acquirer in the 7-day event window centered on the announcement date. The main explanatory variable in all columns is a linear trend variable. All regressions include acquirer- and deal-specific controls and acquiring firm fixed effects. The first, third, and fifth columns report the benchmark year trend effect before additional regressors are added. In the second column the natural logarithm of deal experience is included. In the fourth column the time elapsed since the most recent acquisition is added. In the sixth column the natural logarithm of deal experience in the preceding five years is added. In the eighth column a set of dummies for the number of deals conducted in the previous 5 years is included. t-statistics in parentheses are based on standard errors double clustered by acquirer industry (2 digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Baseline (1)	Exper. (2)	Baseline (3)	Exper. + Time (4)	Baseline (5)	Exper. 5yr (6)	Exper. 5yr (7)
Year trend	**0.15*** (4.87)**	**0.18*** (4.42)**	**0.13*** (4.25)**	**0.16*** (3.42)**	**0.14*** (4.33)**	**0.14*** (4.37)**	**0.15*** (4.28)**
Ln (Deal exper.)		-0.41 (-1.56)		-0.5 (-1.35)			
Time since last deal				0.12 (0.98)			
Ln (Deal exper. 5 yr)						-0.45** (-2.44)	
1 deal in prior 5 yr							-0.4 (-1.68)
2 deals in prior 5 yr							-0.62*** (-2.86)
3 deals in prior 5 yr							-0.87*** (-3.21)
4 deals in prior 5 yr							-0.74** (-2.47)
5 deals in prior 5 yr							-0.42 (-1.06)
6-10 deals in prior 5 yr							-0.95* (-2.00)
11-15 deals in prior 5 yr							-1.18 (-1.30)
16-20 deals in prior 5 yr							0.9 (0.79)
21+ deals in prior 5 yr							-0.48 (-0.25)
Controls	YES	YES	YES	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES	YES	YES	YES
N (without singletons)	28,570	28,570	20,956	20,956	26,694	26,694	26,694

Table 9: Acquirer announcement returns: age and maturity effects

The table presents the results of regression analysis of acquirer announcement returns for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return of the acquirer in the 7-day event window centered on the announcement date. The main explanatory variable in all columns is a linear trend variable. All regressions in the table include acquirer- and deal-specific controls. In Panel A, the first two columns additionally include acquirer cohort fixed effects. The second two columns of Panel A include acquirer industry (2-digit SIC level) fixed effects instead of acquirer cohort fixed effects, as well as measures of acquirer age. In Panel B, all regressions include acquiring firm fixed effects. The first and third columns report the benchmark year trend effect before additional regressors are added. In the second column a measure of the mix of earned and contributed capital is added. In the fourth column a measure of acquiring firm life cycle stage is added. t-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Age	Cohort FEs (1)	Cohort FEs (2)	Age 1 (3)	Age 2 (4)
Year trend	**0.06*** (4.17)**	**0.06*** (4.42)**	**0.05*** (4.06)**	**0.05*** (3.94)**
Ln (Acquirer age (CRSP))			0.07 (0.81)	
Ln (Acquirer age (foundation))				0.08 (1.26)
Controls	YES	YES	YES	YES
Acquirer FEs	NO	NO	NO	NO
Cohort (year of birth) FEs	YES	YES	NO	NO
Industry FEs	NO	NO	YES	YES
N (without singletons)	28,570	28,570	28,570	28,570
Panel B: Maturity	Baseline (1)	Maturity 1 (2)	Baseline (3)	Maturity 2 (4)
Year trend	**0.14*** (4.66)**	**0.14*** (4.59)**	**0.14*** (4.26)**	**0.13*** (4.48)**
Acquirer RE/TE		-0.01 (-0.31)		
Acquirer Life Cycle				0.17 (1.00)
Controls	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES
N (without singletons)	27,616	27,616	23,296	23,296

Table 10: Acquirer announcement returns and corporate governance characteristics

The table presents the results of regression analysis of acquirer announcement returns for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return of the acquirer in the 7-day event window centered on the announcement date. The main explanatory variable in all columns is a linear trend variable and various proxies for acquiring firm governance quality. All regressions include acquirer- and deal-specific controls and acquiring firm fixed effects. The first, third, fifth, and seventh columns report the benchmark year trend effect before additional regressors are added. In the second column acquirer institutional blockholder ownership is added. In the fourth column the fraction of outside directors on the acquiring firm board and its interaction with a public target indicator are added. In the sixth column and indicator variable for acquiring firms with a staggered (classified) board is added. In the eighth column acquiring firm CEO equity-based compensation is added. t-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Baseline (1)	Inst. block own. (2)	Baseline (3)	Board indep. (4)	Baseline (5)	Stagg'd board (6)	Baseline (7)	CEO EBC (8)
Year trend	**0.15*** (4.61)**	**0.16*** (4.96)**	**0.16*** (3.17)**	**0.13* (1.93)**	**0.09** (2.22)**	**0.08** (2.16)**	**0.06** (2.09)**	**0.06 (1.55)**
Acquirer inst. block. own.		-1.77** (-2.16)						
Acquirer % outside dir.				0.42 (0.33)				
Acquirer % outside dir. x Public target				5.17*** (3.25)				
Acquirer staggered board						-0.52 (-0.98)		
Acquirer CEO EBC								0.28 (0.47)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES	YES	YES	YES	YES
N (without singletons)	27,527	27,527	8,688	8,688	10,683	10,683	11,415	11,415

Table 11: Acquirer announcement returns and industry concentration

The table presents the results of regression analysis of acquirer announcement returns for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return of the acquirer in the 7-day event window centered on the announcement date. The main explanatory variable in all columns is a linear trend variable. All regressions include acquirer- and deal-specific controls and acquiring firm fixed effects. The first column reports the benchmark year trend effect before additional regressors are added. In the second column the Herfindahl-Hirschman index of the target and acquirer industries are included. In the third column the natural logarithm of the number of firms in the target and acquirer industries are added. In the fourth column the average profit margins in the target and acquirer industries are added. Industries are defined at the 2-digit SIC level. *t*-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Baseline (1)	HHI (2)	# of firms (3)	Profit margin
Year trend	**0.15*** (5.01)**	**0.15*** (5.19)**	**0.20*** (5.57)**	**0.15*** (4.70)**
Target SIC2 HHI		1.46*** (2.91)		
Acquirer SIC2 HHI		-2.28* (-1.69)		
Target SIC2 Ln (# of firms)			-0.19* (-1.95)	
Acquirer SIC2 Ln (# of firms)			1.35** (2.58)	
Target SIC2 EBIT/Sales				-0.26 (-0.27)
Acquirer SIC2 EBIT/Sales				-1.15 (-0.46)
Controls	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES
N (without singletons)	28,164	28,164	28,164	28,164

Table 12: Acquirer announcement returns and M&A advisor fixed effects

The table presents the results of regression analysis of acquirer announcement period returns for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in all columns is Acquirer CAR % [−3, +3], which is the cumulative abnormal return of the acquirer in the 7-day event window centered on the announcement date. The first column reports the benchmark year trend effect before advisor fixed effects are added. In the second column, advisor fixed effects are added (283 unique non-singleton advisors). The third column reports the year trend effect for the subsample of in-house deals and deals with missing advisor information. All regressions include acquirer- and deal-specific controls and acquiring firm fixed effects. *t*-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively

	Baseline	Advisor FEs	No advisor info
	(1)	(2)	(3)
Year trend	**0.12****	**0.09**	**0.14*****
	(2.44)	**(1.63)**	**(3.79)**
Controls	YES	YES	YES
Acquirer FEs	YES	YES	YES
Advisor FEs	NO	YES	NO
N (without singletons)	7,662	7,662	17,670

Table 13: Synergies, relative bidder share, and bidder uniqueness

The table presents the results of regression analysis of various merger-related outcome variables for a sample of U.S. acquirers. The estimation in Panel A is limited to public deals only. The dependent variable in the first column is the Combined CAR % [-3, +3], which is the announcement period abnormal returns of the bidder-target portfolio with market capitalizations as weights. In the second column the dependent variable is the relative bidder share of synergies as in Ahern (2012), which is the difference between bidder and target dollar gains, scaled by the combined market capitalization. In the third column, the dependent variable is the estimated bidder fixed effect. All regressions include acquirer- and deal-specific controls and acquirer industry (2-digit SIC level) fixed effects. The estimation in Panel B is limited to bidders for which Hoberg-Phillips product similarity data are available (from 1996). The dependent variable in the first and second columns is Acquirer CAR % [-3, +3]. The dependent variable in the third column is the bidder fixed effect estimated in column (4) of Table 5. Acquirer HP uniqueness is defined as one minus the median product similarity between the bidder and each of its product market peers (at the level of granularity equivalent to 2-digit SIC industries) following Hoberg and Phillips (2010, 2016). All regressions include acquirer- and deal-specific controls, year fixed effects, and either acquirer industry (2-digit SIC level) or acquiring firm fixed effects as indicated. *t*-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A	Combined CAR	Relative Bidder Share	Estimated Bidder FE
	(1)	(2)	(3)
Year trend	**0.12*** **	**-0.04** **	
	(6.00)	**(-2.20)**	
Relative Bidder Share			**20.28*** **
			(13.26)
Controls	YES	YES	YES
Industry FEs	YES	YES	YES
N (without singletons)	4,780	4,780	4,780
Panel B	Acqurier CAR	Acquirer CAR	Estimated Bidder FE
	(1)	(2)	(3)
Acquirer HP uniqueness	**9.23** **	**-6.36**	**8.94** **
	(2.48)	**(-0.98)**	**(2.59)**
Controls	YES	YES	YES
Year FEs	YES	YES	YES
Industry FEs	YES	YES	YES
Bidder FEs	NO	YES	NO
N (without singletons)	17,088	17,088	17,088

Appendix Table 1: Robustness of year trend in acquirer announcement returns

The table presents the robustness of the baseline results on the trend in acquirer gains to varying definitions of the dependent variable and sample filters. In the first column the only explanatory variable is a linear trend variable that takes the value of zero for the period 1981-1989 and increments by one every subsequent year. In the second column a set of acquirer- and deal-specific control variables is added to the specification. In the third column acquirer industry fixed effects (2-digit SIC level) are added. In the fourth column acquirer industry fixed effects are replaced with acquiring firm fixed effects. In Panel A the dependent variable is Acquirer CAR % [−1, +1], which is the cumulative abnormal return on the acquiring firm stock in the 3-day event window centered on the announcement date. In Panel B the dependent variable is Acquirer CAR % [−2, +2], which is the cumulative abnormal return on the acquiring firm stock in the 5-day event window centered on the announcement date. In Panel C the dependent variable is Acquirer CAR % [−5, +5], which is the cumulative abnormal return on the acquiring firm stock in the 11-day event window centered on the announcement date. In Panel D the dependent variable is acquirer market-adjusted return [−3, +3], which is the cumulative market-adjusted return on the acquiring firm stock in the 7-day event window centered on the announcement date. In Panel E the dependent variable is acquirer dollar gains [−3, +3], which is the cumulative abnormal return on the acquiring firm stock in the 3-day event window centered on the announcement date multiplied by the acquiring firm market capitalization 4 days prior to the announcement. In Panel F the dependent variable is acquirer dollar gains [−3, +3] scaled by deal value. In Panel G the sample is restricted to deals worth at least U.S. $10 million. In Panel H the sample is restricted to deals worth at least 5% of acquirer market capitalization. In Panel I the sample is restricted to acquirers with at least 5 deals in the sample. In Panel J the sample is restricted to deal types "Merger" according to SDC. t-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Appendix Table 1: (continued)

	No controls (1)	Controls (2)	Controls + ind. FE (3)	Controls + acq. FE (4)
Panel A: Dependent variable is Acquirer CAR [-1, +1]				
Year trend	0.01	0.04***	0.04***	0.10***
	(0.61)	(3.07)	(3.89)	(5.28)
Panel B: Dependent variable is Acquirer CAR [-2, +2]				
Year trend	0	0.04***	0.04***	0.11***
	(0.24)	(3.16)	(3.26)	(5.79)
Panel C: Dependent variable is Acquirer CAR [-5, +5]				
Year trend	0.01	0.05***	0.05***	0.15***
	(0.57)	(3.15)	(3.45)	(6.02)
Panel D: Dependent variable is market-adjusted acquirer return [-3, +3]				
Year trend	0.00	0.04**	0.04***	0.13***
	(-0.21)	(2.56)	(2.89)	(4.49)
Panel E: Dependent variable is acquirer dollar gains [-3, +3]				
Year trend	0.09	1.75**	1.79**	5.11*
	(0.13)	(2.45)	(2.07)	(1.92)
Panel F: Dependent variable is acquirer dollar gains [-3, +3] scaled by deal value				
Year trend	22.03	38.26	34.92	129.47**
	(1.31)	(1.54)	(1.66)	(2.38)
Panel G: Sample restricted to deals worth at least U.S. $10 million (N=23,373)				
Year trend	0.02	0.05***	0.05***	0.12***
	(1.59)	(2.91)	(2.82)	(4.49)
Panel H: Sample restricted to deals worth at least 5% of acquirer market capitalization (N=19,251)				
Year trend	0.02	0.06***	0.06***	0.17***
	(0.97)	(3.47)	(4.49)	(6.14)
Panel I: Sample restricted to acquirers with at least 5 deals (N=19,117)				
Year trend	0.02	0.04***	0.04***	0.11***
	(1.24)	(3.01)	(2.89)	(3.99)
Panel J: Sample restricted to deal type "Merger" (N=11,447)				
Year trend	0.02	0.06***	0.06***	0.16***
	(1.33)	(2.92)	(4.06)	(3.37)

Appendix Table 2: Robustness of year trend in acquirer returns: extended event windows

The table presents the results of regression analysis of acquirer announcement period returns for a sample of U.S. acquirers over the 1981-2017 period. The dependent variable in the first column is acquirer CAR for the period [−3, +21] trading days around the announcement. The dependent variable in the second column is acquirer CAR for the period [−3, +42] trading days around the announcement. The dependent variable in the third column is acquirer CAR for the period [−3, +63] trading days around the announcement. The dependent variable in the fourth column is the acquirer CAR starting from 3 days prior to the announcement and ending 3 days following the resolution (completion/withdrawal) of the deal. All regressions include acquirer- and deal-specific controls and acquiring firm fixed effects. t-statistics in parentheses are based on standard errors double clustered by acquirer industry (2-digit SIC level) and year. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	[Ann -3, Ann +21] (1)	[Ann -3, Ann +42] (2)	[Ann -3, Ann +63] (3)	[Ann -3, Resol +3] (4)
Year trend	**0.32*** (6.04)**	**0.55*** (6.06)**	**0.72*** (6.20)**	**0.62*** (7.87)**
Controls	YES	YES	YES	YES
Acquirer FEs	YES	YES	YES	YES
N (without singletons)	28,570	28,570	28,570	28,339