M&As and innovation: Evidence from acquiring private firms

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Abstract

This paper shows that acquisitions of private targets increase firms' new patents, exploratory and exploitative innovation, and innovation efficiency. The results are stronger for acquirers possessing expertise from corporate venture capital and facing more competition in product markets. The effects are insensitive to targets' existing patents and acquirers' short-termist pressure. We do not find any increase in innovation for public target acquisitions. The differences in innovation outcomes also explain away the well-known higher announcement return when acquiring private targets. Our results suggest that innovation plays a key role in the value creation of private target M&As.

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1 Introduction

Innovation reflects companies' efforts to develop and accumulate knowledge and it has long been recognized as a key factor of firm growth in today's knowledge economy (see for example, Hall, 1993; Cockburn, Henderson, and Stern, 2000; Gao, Hsu, and Li, 2018). Innovation is also an important motivation for mergers and acquisitions (M&As) through which companies gain rather than develop new ideas (Bena and Li, 2014; Sevilir and Tian, 2012; Phillips and Zhdanov, 2013). Empirical analyses of innovation have so far largely neglected private firms, mostly due to data scarcity. Nevertheless, private firms are economically important players both for innovation activity and as acquisition targets.[2] In this paper, we focus on analyzing acquisitions of private firms and their innovation outcomes. As public versus private firms show different approaches to innovation activities (Gao et al., 2018), we contrast innovation outcomes when acquiring the two types of acquisitions to gain extra insights.

Private firms are smaller, younger, riskier, and less transparent than publicly listed firms. Because they face less short-term pressures from financial markets, they may be more willing to pursue a long investment horizon and engage in risky innovation (Ferreira, Manso, and Silva, 2014; Koeplin, Sarin, and Shapiro, 2000). Publicly listed firms are large and established entities (Koeplin et al., 2000; Maksimovic, Phillips, and Yang, 2013). On the one hand, the easy access to public equity markets relaxes their financial constraints and potentially allows public firms to get involved in risky investments and long-term innovation (Acharya and Xu, 2017). On the other hand, public firms are often pressured to deliver near-term results and so they may sacrifice long-term risky investments and innovation in order to meet

[2]For example, Google's patent portfolio has increased from 38 patents in 2007 to over 50,000 patents by 2013, with many of these patents purchased from the start-up market rather than produced in-house (Wang, 2018).

short-term earnings targets (Gao et al., 2018). It is an open empirical question whether acquiring private firms increases innovation. Our key conjecture is that the differences in innovation strategies of private versus public firms play an important role in the M&A market and reflect in differences in post-acquisition outcomes.

We use a sample of 171,758 firm-year observations which consists of public acquirers of private and public targets and their corresponding matched firms between 1990 and 2010. We combine a sample of all US publicly listed firms that are available on KPSS patent data library (Kogan, Papanikolaou, Seru, and Stoffman, 2017) with a sample of acquirers on SDC, financial data from Compustat and stock prices from CRSP. We use the propensity score procedure to find matched firms with similar pre-acquisition innovation.

We compare innovation outcomes when acquiring public and private targets with their respective matched firms from 5 years prior to 5 years after acquisition announcements. Our results show that acquirers' innovation outcomes increase significantly more after acquisitions of private targets than in matched firms. The increase is economically significant – depending on an innovation measure, it ranges between 9 and 23 percent increase on the pre-acquisition level. The increase is also larger than for acquisitions of public targets. Private target acquisitions are associated with a significant increase in the number of new patents as well as exploratory innovation, which requires new knowledge or a departure from existing knowledge, and exploitative innovation, which builds only on existing knowledge. Moreover, results are similar for innovation efficiency, which is defined as innovation output per unit of R&D input. Acquiring private targets enhances innovation outputs both on extensive and intensive margin.

We also find that the positive increase in innovation outcomes for private target acquisitions comes predominantly from acquirers that undertake both private and public acquisitions during our sample period. This suggests that the innovation

outcome differences are driven by acquirers choosing particular targets rather than by specific characteristics of acquiring firms that exclusively target private and not public targets. In contrast, we find insignificant innovation changes post-acquisition of public targets relative to control firms. This is the case even for acquirers that buy also private targets during our sample period. Thus, public target acquisitions seem on average to be associated with other strategic purposes that are not necessarily related to innovation.[3]

Even though we carefully select the control group of firms such that they have similar innovation to the treatment group of acquiring firms just before their acquisitions, our results could still be driven by innovation inertia of firms that decide to acquire. For example, these firms have high innovation drive and aspirations and they would increase innovation relative to the control group even without the acquisitions. We rule this out by comparing successful acquisitions to exogenously withdrawn ones (Savor and Lu, 2009; Seru, 2014). Because both types aim to acquire, the withdrawn counterfactual should control for innovation inertia of acquirers. Our results show that relative to withdrawn private target acquisitions, innovation outcomes are higher for successful private target acquisitions. In contrast, successful public target acquisitions have no significant effect on acquirers' innovative outcomes.

To understand possible channels through which acquirers of private targets increase innovation outcomes, we perform four further tests. First, we explore the role of corporate venture capital (CVC) in improving acquisition innovation outcomes. CVCs are stand-alone corporate subsidiaries that invest in new ventures on behalf of their corporate parents. They aim to enhance the competitive advantage

[3]To illustrate this point, Apendix B shows two acquisitions by HP, one of a private and one of a public target. The first one is of a private Persist Technologies Inc undertaken in 2003 that pursued high growth prospects in the particular market of e-mail archiving. The second acquisition is of public target Pregrine Systems Inc completed in 2005. Pregrine experienced financial difficulties since 2002. HP saw the potential of becoming a market leader in the segment and of operational synergies through cross-selling to different groups of customers.

of their parent firms by producing new ideas and so their parent companies enjoy the advantage of having continual in-house expertise of new technologies and new entrepreneurial way of thinking (Chemmanur, Loutskina, and Tian, 2014). We find that acquirer CVCs facilitate improvements in post-acquisition innovation regardless of the type of target, but the improvement is significantly larger for private targets. The economic effect is significant. For example, the patent count increases by 78 (40) percent relative to the pre-acquisition level when acquiring private (public) targets and the acquirer has a CVC division. This effect, again, comes mostly due to acquirers that experience both types of acquisitions. Private target acquisitions increase innovation even without CVC presence, but to a smaller extent. The economic effect is an 8 percent increase. This suggests that an important channel for a post-acquisition innovation increase is in-house expertise of new innovation trends, which is amplified when the target is private because CVCs gather expertise mostly among privately owned firms.

Second, we test whether innovation outcomes increase more when firms acquire targets with a proven ability to innovate, that is, when they possess existing patents. Sevilir and Tian (2012) find that the positive relationship between M&A activity and innovation is primarily driven by targets that own patents before being bought. We find that acquiring targets with existing patents is associated with a larger increase in innovation outcomes, but only for private targets and only for exploitative innovation that builds on existing knowledge. Note that acquisitions of private targets without existing patents still result in significant increases across all innovation variables. These tests reveal that it is important to acquire new developing ideas and associated human capital rather than existing patents.

Complementing this inference, we perform a small-scale analysis of patent inventors on a random sample of private target acquisitions. We show that acquiring firms exhibit a large increase in new inventors for patents filed within two years post

acquisition. Some of the new inventors appear on patents of the target firms, but the majority of them is new. This confirms a spur in new innovation activity that is not necessarily reflected in the target patenting activities before the acquisition. It seems that the acquiring firm assimilates target inventors before their first patent or it hires new people around the time of the acquisition. Either way, this anecdotal evidence suggests that the post-acquisition innovation increase is not necessarily conditioned on existing patents, rather it flows through new, not-yet patented ideas and new human capital. Innovation is at the core of these deals.

Third, we explore the impact of investment horizon, in particular, the impact of short-termist pressures on acquirers' innovation outcomes. As we conjecture that acquisitions of private targets aim an increase in innovation, acquirer's short-termist pressures should not have a significant impact on innovation outcomes in these deals. In contrast, public target acquisitions are undertaken for other reasons, and therefore innovation outcomes should be more sensitive to their investors' short-termist pressures. Our results confirm this prediction. The last test explores the effect of industry concentration on innovative outcomes of mergers. We find that high product market concentration impedes on positive innovation outcomes, especially for private targets. The increase in post-acquisition innovation for private targets is larger when the acquirer product market is more competitive, consistent with the 'innovate to escape' motivation for the deals (Wang, 2018).

The final part of our analysis focuses on acquirer announcement abnormal returns. Our main results so far suggest that innovation outcomes for private target acquisitions are significantly higher than for public target acquisitions. Complementing results in the literature (Faccio, McConnell, and Stolin, 2006; Jaffe, Jindra, Pedersen, and Voetmann, 2015), we show that the 5-day announcement abnormal returns are significantly higher for private target acquirers with the largest increase in new patents. Importantly, the higher expectation of improvement in innovation

and the corresponding larger market reaction explain away the higher announcement returns when firms acquire private targets.

Our paper contributes to three streams in the finance literature. First, we contribute to the literature on the relationship between M&As and subsequent innovation (Rajan, Servaes, and Zingales, 2000; Scharfstein and Stein, 2000; Sevilir and Tian, 2012; Phillips and Zhdanov, 2013; Bena and Li, 2014; Mei, 2019). Sevilir and Tian (2012) show that M&As are positively associated with contemporaneous and future innovative outcomes, measured by the number of patents and citations obtained by the acquirers. In contrast, Rajan et al. (2000) and Scharfstein and Stein (2000) argue that M&As are associated with lower innovation because post-acquisition employees tend to have less incentive to generate valuable ideas. The M&A literature has not distinguished between public versus private target deals. We add to this literature by showing a sharp difference in innovation outcomes when acquiring public versus private targets. Only private target acquisitions are associated with significant increases in innovation and the significant effect is driven by acquirers who buy both types of targets. Our results suggest that innovation is one of the core aims when buying private firms. Acquisitions of public firms are most likely motivated by other reasons.

Second, we contribute to the literature on innovation in public versus private firms (Ferreira et al., 2014; Acharya and Xu, 2017; Gao et al., 2018). Gao et al. (2018) show that public firms' patents rely more on existing knowledge, while private firms' patents are more exploratory. They conclude that these differences are mostly due to shorter investment horizon in public equity markets. Acharya and Xu (2017) highlight that innovation in public firms depends on the need for external capital. The literature on innovation in private versus public firms has not investigated the M&A market. Our analysis highlights the crucial role of private firms when publicly listed firms target innovation increases through acquisitions. Our analysis

also emphasizes the M&A exit potential for innovative private firms as analyzed in Wang (2018).

Third, we contribute to the literature on differences in acquiring public versus private targets (Chang, 1998; Fuller, Netter, and Stegemoller, 2002; Moeller, Schlingemann, and Stulz, 2004; Faccio et al., 2006; Jaffe et al., 2015). This literature has focussed on explaining differences in the market reaction to acquisitions of public versus private targets, but has not reached a consensus yet. Our evidence suggests that acquiring firms tend to choose private targets when they search for innovation, while they acquire public targets for other reasons. We further show that the market reacts more positively to acquisitions of private targets with the highest increase in new patents. Importantly, the well-known result of higher announcement returns when acquiring private targets is explained away by the differences in innovation outcomes. Taken together, our paper contributes to explaining the value creation when firms acquire public versus private targets.

The remainder of the paper is organized as follows. Section 2 describes the data and statistics. Section 3 presents and discusses our baseline results. Section 4 explores possible channels for innovation increases after acquisitions of private firms. Section 5 analyzes announcement abnormal returns and Section 6 concludes.

2 Data

To measure innovation output, we rely on patent and citation data that are available in KPSS database covering the period between 1926 and 2010 (Kogan et al., 2017). The M&A data come from SDC Platinum and meet the following requirements: (i) the acquirer is a publicly listed US firm; (ii) the target is a US stand-alone public or private firm; (iii) the deal is not a leveraged buyout, spinoff, recapitalization, exchange offer, self-tender, repurchase acquisition, or privatization; and (iv) the deal

is completed. Finally, financial information comes from Compustat with relatively poor coverage before 1990. Constraints of these three data sets define our time frame: our data start in 1990 (Compustat restriction) and extend to 2010 (KPSS restriction). Note that because we are comparing innovation before versus after acquisitions, we cover all acquisitions between 1995 and 2005 to allow for five years of innovation data at both ends.

We require that all firms in our main sample file at least one patent over the period between 1985 and 2010 because the fraction of listed firms with a patent is relatively small and we do not want to mix innovative with uninnovative firms.[4] Our research question in essence concerns only innovative firms because firms without any patents would by definition have a zero change in innovation variables from before to after acquisitions.

Because determinants of becoming an acquirer may correlate with innovation, we build a sample of control firms such that they have similar innovation characteristics with acquirers. We also require that they do not make any acquisitions during the sample period. We use propensity score matching. As a first step in the procedure, we model the probability of acquiring public and private targets using all firms with at least one filed patent as follows:

$$(1) \quad Prob(Public_{i,t}) = \alpha_1 + X_{i,t-1}\beta_1 + \gamma_1 Size_{i,t-1} + \delta_1 RD_{i,t-1} + a_{1,i} + d_{1,t} + \varepsilon_{1,i,t},$$

$$(2) \quad Prob(Private_{i,t}) = \alpha_2 + X_{i,t-1}\beta_2 + \gamma_2 Size_{i,t-1} + \delta_2 RD_{i,t-1} + a_{2,i} + d_{2,t} + \varepsilon_{2,i,t},$$

where $Public_{i,t}$ ($Private_{i,t}$) is equal to 1 if a firm i is an acquirer of public (private) target in year t and zero otherwise; $X_{i,t-1}$ is a matrix of five innovation measures (patent count, exploratory patent, unknown-class patent, new citation, and scope); $Size_{i,t-1}$ is the natural logarithm of total sales; and $RD_{i,t-1}$ is the natural logarithm

[4]The period between 1985 and 2010 gives us a five year lag before the main sample beginning. Note that our main findings hold also when checking patents filed over the period from 1990 until 2010.

of R&D expenditures. $a_{1,i}$ ($a_{2,i}$) and $d_{1,t}$ ($d_{2,t}$) are industry and year fixed effects, respectively. Table I.1 in the Internet Appendix tabulates estimated coefficients for the two logit regressions in Panel A and summary statistics for the corresponding variables in Panel B. Note that public target acquisitions happen in 6.4 percent of firm-year observations in the sample, while the frequency for private targets is 23.2 percent.

In line with the previous literature (Sevilir and Tian, 2012; Bena and Li, 2014), our first measure of innovation outcome is patent count which represents total number of new patents that a firm applies for in a given year. In addition, we use eight other innovation measures to classify innovation into two types: exploratory innovation, which extends beyond a firm's existing expertise, and exploitative innovation, which exploits existing expertise and does not tap into new territories. We use four alternative measures for each type. All definitions are provided in Appendix A.

As the second step in the propensity score matching procedure, we use the coefficient estimates of the two logit models to calculate the predicted probability of becoming public (private) target acquirer, the propensity score. For each public (private) target acquirer, we find a matched firm that has the closest propensity score and is from the same Fama-French 30 industry and the acquisition announcement year. Table 1 compares acquirers and their matched non-acquiring firms one year prior to the acquisition. Columns 1 to 3 focus on the public target acquirers, while Columns 4 to 6 on the private target acquirers. Panel A shows the fit of the matching procedure. One year before the acquisition, none of the innovation variables of public (private) target acquirers are statistically different from their matched firms. Importantly, the propensity score differences for public (private) target acquirers in Column 3 (6) are not significant. It is noteworthy that innovation between public versus private target acquirers is markedly different. This justifies our research question and construction of two treatment groups – public versus private target

acquirers – and their separate matched groups.

Insert Table 1 about here.

Using the acquirers and their matches, we construct a panel centered on the deal announcement year (t_0) and spreading 5 years back (t_{-5}), and 5 years forward (t_{+5}). Panel B in Table 1 shows growth rates in the innovation variables from 5 years before the acquisition to 1 year before the acquisition for public (private) target acquirers in Column 1 (4) and their matched firms in Column 2 (5). We can see that, except one, the mean differences in the growth rates reported in Columns 3 and 6 are not statistically different. This confirms the main assumption of the difference-in-differences approach that absent acquisitions the average change in the treated versus matched groups would have been the same. In other words, absent acquisitions, the two groups would have continued to experience parallel trends. Figures 1 and 2 lead to the same conclusion. They plot differences in average innovation, and their 95% confidence intervals, between public (private) acquirers and their corresponding matched firms over the event time from t_{-5} to t_{+5}.[5] We can see that, except the case when innovation is measured using depth, differences in innovation between acquirers and their matched firms do not increase before acquisitions for both public and private target acquirers. Panel C in Table 1 shows summary statistics for the whole baseline panel covering 171,758 firm-year observations.[6]

Insert Figures 1 and 2 about here.

Table 2 shows univariate differences in innovation between acquirers versus their corresponding matched firms over the event window. Panel A focusses on public

[5]We run yearly cross-sectional regressions of Ln(1+innovation) on a dummy that indicates public/private acquirers.

[6]The means for public and private target in Panel C indicate the frequency of the two types in the panel. Given the construction with matched firms, the two means should add up to 50%. They add up to 51% because some observations for matched firms are lost due to missing control variables.

target acquirers, while Panel B on private target acquirers. The pre-acquisition figures correspond to the average over t_{-5} to t_{-1}, and the post-acquisition figures to the average over t_0 to t_{+5}. Columns 5 and 6 show the difference between acquirers versus matched firms pre- and post-acquisition, respectively. Columns 7 and 8 show differences between post- versus pre-acquisitions for acquirers and matched firms, respectively. Finally, Column 9 shows the difference in differences.

Insert Table 2 about here.

Panel A shows that despite many significant differences between public target acquirers and their matched firms in Columns 5 to 8, the double differences in Column 9 are not significant for any of the innovation measures. In contrast, Panel B shows that acquirers of private targets increase their innovation significantly from 5 years before to 5 years after the acquisitions relatively to their matched firms. All the double differences in Column 9 are statistically significant. These statistics suggest that acquiring private targets is associated with an improvement in acquirers' innovation outcomes, while acquiring public targets is not.

3 Baseline results

Our main research question aims to test the impact of private target acquisitions on innovation outcomes of acquirers and compare it to the impact of public target acquisitions. We use data 5 years before and 5 years after announcements of acquisitions and control for innovation activity of similar firms that do not engage in acquisitions. Because we are interested in comparing innovation outcomes separately for public and private target acquirers, we use two distinct treatment groups for private- and public-target acquirers, and their corresponding two matched groups

as controls. We estimate the following regression equation:

(3)

$$Innovation_{i,t} = \alpha_1 Post\,public_{i,t} + \beta_1(Public_i \times Post\,public_{i,t}) + \alpha_2 Post\,private_{i,t} + \beta_2(Private_i \times Post\,private_{i,t}) + Y_{i,t}\delta + a_i + d_t + \varepsilon_{i,t},$$

where $Innovation_{i,t}$ is the innovation outcome for firm i in year t – we use 9 innovation outcome measures in logarithmic transformations; $Postpublic_{i,t}$ ($Postprivate_{i,t}$) is equal to 1 in the post-deal period for public (private) targets and their matched firms including the deal announcement year and zero otherwise; $Public_i$ ($Private_i$) is a dummy variable equal to 1 in all event years for a public (private) target acquisition and zero for their matched firms; $Y_{i,t}$ is a matrix of control variables that contains acquirer size, R&D expenditures, leverage, net income and HH index; a_i is the firm fixed effect; d_t is the calendar year fixed effect; and $\varepsilon_{i,t}$ is the error term. Coefficients β_1 and β_2 for the interaction terms $Public_i$ x $Post\ public_{i,t}$ and $Private_i$ x $Post\ private_{i,t}$, respectively, are the coefficients of interests. We drop $Public_i$ and $Private_i$ from the regression because they perfectly correlate with the firm fixed effects.

Panel A in Table 3 shows coefficient estimates for Regression (3) for 9 measures of innovation outcomes.[7] The β coefficients across all innovation measures show that private target acquisitions increase innovation post-deal more than their corresponding matched firms. In contrast, public target acquisitions do not exhibit any significant effect on acquirers' innovative outcomes. The last row in Panel A tests for the difference between the two coefficients ($\beta_2 - \beta_1$). We can see that the differences are always positive and significant for 7 out of the 9 innovation measures. In economic terms, private target acquirers file 5.19 patents more than their matched

[7] All regressions include a set of control variables as reported in Equation (3), but they are not reported to save space. This applies also to all tables in the main text.

firms after acquisitions.[8] Given that the mean patent count for private target acquirers is 47.75 before acquisitions, this effect is economically significant. The highest economic effect is for 'new citations' with private target acquirers having 96.85 more new citations post acquisition than their matched firms. This represents an increase of 23 percent from the mean value for private target acquirers before acquisitions. The lowest economic effect is for the depth variable, only a 9 percent increase.[9]

Insert Table 3 about here.

Panel B in Table 3 explores whether the significant increase in innovation outcomes comes from firms that exclusively focus on private targets. This group represents 55% of all private target deals, while public deals with acquirers which have only public deals within our sample period represent only 13% of all public target deals. We add an extra triple interaction term *Private* x *Post private* x *Private only* with coefficient γ_2, which measures an additional DiD effect for acquirers of private targets when they do not have experience acquiring public targets. In contrast, the double interaction term (β_2) now measures the innovation effect for acquirers that have both types of acquisitions within our sample period. We also add the corresponding triple interaction term *Public* x *Post public* x *Public only* with coefficient γ_1.

We can see that γ_2 is mostly negative and statistically significant across the 9 innovation measures, while β_2 remains significantly positive and increases somewhat relatively to Panel A. We see that the positive increase in innovation outcomes for

[8]Specifically, because $\frac{d[Ln(1+y)]}{dx} = \frac{\frac{1}{1+y}dy}{dx}$ we have that $dy = \frac{d[Ln(1+y)]}{dx} \times (1+y)dx$. For instance, when quantifying the effect of a private target acquisition post-acquisition (dx) on the patent count change (dy), we change x from zero to one, so $dx = 1$. The change in the patent count (dy) from its mean value (72.08) with $\beta_2 = 0.071$ is equal to $0.071 \times (1 + 72.08) \times 1 = 5.19$.

[9]Table I.2 in the Internet Appendix shows in Panel A that the results are very similar when we do not include any control variables in the regressions. Panels B and C show DiD effects when regressions are run separately for the sample of public target acquirers and private target acquirers with their corresponding matched firms, respectively. Table I.3 covers a shorter event window including 3 instead of 5 years before and after the acquisition. Our results hold.

private target acquisitions comes predominantly from acquirers that undertake both private and public acquisitions. β_1 for public targets with experience in both types of acquisitions remains statistically insignificant. The innovation outcome differences between acquisitions of private versus public targets are driven by characteristics of the targets rather than by acquiring firms themselves.

Table 4 investigates how long the change in the innovative outcomes persists. We estimate regressions separately for public and private targets and introduce leads into the baseline Regression (3) as follows:

$$Innovation_{i,t} = \sum_{j=0}^{5} \beta_{1,j} Post\ pub_{i,j} + a_{1,i} + d_{1,i} + \varepsilon_{1,i,t}, \tag{4}$$

$$Innovation_{i,t} = \sum_{j=0}^{5} \beta_{2,j} Post\ priv_{i,j} + a_{2,i} + d_{2,i} + \varepsilon_{2,i,t}, \tag{5}$$

where $Innovation_{i,t}$ is one of the 9 innovation measures for firm i in year t and $Post\ pub_{i,j}$ ($Post\ priv_{i,j}$) is a dummy variable that equals 1 if firm i is an acquirer of public (private) target and the year is j event years away from the year of acquisition, and zero otherwise.[10] As the regressions include all leads starting at $j = 0$, the reference category includes all lags from -5 to -1. Thus, $Post\ pub_{i,j}$ and $Post\ priv_{i,j}$ estimate the increase in particular year relatively to the pre-acquisition period and relative to the same change for matched firms. $a_{p,i}$, $d_{p,i}$, and $\varepsilon_{p,i,t}$, where $p = 1, 2$, are firm fixed effects, year fixed effects, and error terms, respectively. We do not include a separate $Public_i$ ($Private_i$) dummy, because it is perfectly collinear with firm fixed effects since it does not vary across time for a given firm. Similarly, the event-time dummies, i.e. the number of years after acquisition, perfectly correlate with year fixed effects because they do not vary across firms.

Insert Table 4 about here.

[10] Note that $Post\ pub_{i,j}$ ($Post\ priv_{i,j}$) is zero for all matched firms in all years.

Table 4 shows regression results for public and private target acquisitions in Panel A and B, respectively. Panel A confirms our conclusions from Table 3: relative to the average innovation pre-acquisitions, innovation outcomes at public target acquirers do not change significantly differently than in matched firms in any of the lead years. Panel B shows that the lead DiD coefficients for private target acquisitions are positive and majority of them are statistically significant. This suggests that the innovation outcome effects for private target acquisitions are persistent for at least 5 years after acquisitions.

Table 5 provides two further tests. Panel A explores whether our baseline results hold also when considering efficiency of innovation outcomes per unit of input – i.e. innovation outcomes per dollar of R&D expenditure (Chang, Chen, Wang, Zhang, and Zhang, 2019; Hirshleifer, Hsu, and Li, 2013). We construct innovation efficiency measures as a natural logarithm of one plus each measure of innovation over the average R&D expenditure in the past three years. First, Column 1 shows effects of acquisitions on the R&D expenditure.[11] We can see that both public and private target acquirers increase their R&D spending post-acquisition more than the matched firms. However, this increase in innovation input is translated into higher innovation output per unit of input only for private target acquisitions. Majority of the DiD coefficients for private targets are positive and statistically significant,[12] while the corresponding DiD coefficients for public acquirers are, except one, statistically insignificant. Overall, these results suggest that acquiring private targets enhances innovation outputs by allowing acquirers to deploy their R&D investments more efficiently. They increase innovation both on the intensive and extensive margin.

Insert Table 5 about here.

[11] Following Brav, Jiang, Ma, and Tian (2018), we use a logarithmic transformation.

[12] Note that we lose about a third of observations due to missing R&D expenditure data. Replacing missing R&D data with zeros does not help because the average R&D expenditure is in the denominator.

Second, even though we carefully select the control group of firms such that they have similar innovation to the treatment group of acquiring firms just before their acquisitions, our results could still be driven by innovation inertia of firms that decide to acquire. The argument is that these firms have high innovation drive and aspirations and they would increase innovation relative to the control group even without the acquisitions. In other words, the effects we see in Table 3 are not due to combining acquirers with targets, but rather due to internal drive for innovation inherent within the firms that chose to acquire. To test for this possibility, we follow Seru (2014) and Bena and Li (2014), and form a new control group with firms that attempted acquisitions, but these acquisitions were unsuccessful due to exogenous reasons. As this control group includes firms that intend to acquire but are eventually not successful, we have a suitable counterfactual with similar inertia to innovate. Moreover, Seru (2014) argue that selection into the successful versus withdrawn groups is random.

We start with all withdrawn deals due to exogenous reasons and classify them into public versus private target acquisitions.[13] Frequency of withdrawing is relatively low, so this group is significantly smaller than the group of successful deals we use in the baseline DiD regressions in Table 3. As we still want to keep innovation pre-acquisition similar across the treatment and control groups, we match each withdrawn acquisition with a successful acquisition based on innovation and firm characteristics using propensity score matching.[14] Panel B in Table 5 shows results for regressions comparing a subset of successful deals with matched withdrawn deals.

[13]Savor and Lu (2009) document that the main reasons for deal failures are targets' rejection of the offer, failure in negotiations, objection by regulatory bodies, competing offer, and general market conditions. We choose 30 random deals and investigate reasons for their withdrawal in news articles. We do not find these reasons related to innovation at all. Table I.4 in the Internet Appendix lists all withdrawal reasons for the 30 random deals.

[14]We estimate 2 logit models, separately for public and private targets, using all withdrawn and successful deals in our sample. We end up with 498 and 469 withdrawn public and private target acquisitions, respectively, and 325 and 539 successful public and private target acquisitions, respectively.

We can see that the effect for private target acquisitions pertains: all β_2 coefficients are positive and significant. For withdrawn deals, the post-acquisition innovation outcomes are significantly smaller. It is not the inertia to innovate that drives our results.[15]

4 Innovation channels

In this section, we turn our attention to exploring potential channels through which private target acquisitions contribute to innovation increases of their acquiring firms. We perform four tests.

First, we explore innovation outcomes for acquirers with versus without CVCs. CVCs are stand-alone corporate subsidiaries that invest in new ventures on behalf of their corporate parents. Chemmanur et al. (2014) find that CVC-backed firms produce more and higher quality patents than firms backed by independent VCs. Generally, the main strategic mission of CVCs is to enhance the competitive advantage of their parents by gathering and testing new ideas and technologies (Chemmanur et al., 2014). CVCs possess superior industry and technology expertise for nurturing innovation, which flows back to their corporate parents.

We collect information on CVCs from a list of venture capital funds active over the period 1984-2020 provided by Prequin. We manually determine the parent company of CVC funds flagged in the list and match to our acquirer names coming from Compustat. The CVC dummy is set to 1 if an acquirer is classified as a CVC parent company in the announcement year. Overall, only around 5% of our deals are by acquirers that have a CVC unit. The distribution of CVCs between public versus private acquirers is not statistically significantly different. Majority of acquirers with CVCs do both public and private acquisitions. Only 18% (5%) of all private (public)

[15] Table I.5 in the Internet Appendix shows persistency of innovation improvements up to 5 years after private target acquisitions.

target acquisitions with CVCs have no experience with public (private) acquisitions.

Panel A in Table 6 with extra triple interaction terms (γ_1 and γ_2) to capture the additional effect of CVC presence shows that the triple interaction terms are positive and significant for both private and public targets. CVCs are associated with a positive and large additional increase in post-acquisition innovation; their innovation expertise is evident. The overall post-acquisition increase in innovation for acquirers with CVCs, represented by $\beta_1+\gamma_1$ and $\beta_2+\gamma_2$ as reported at the bottom of Panel A, is positive and mostly statistically significant across all 9 innovation measures. The double interaction term for private targets β_2 shows that acquisitions of private targets when acquirers do not possess CVC expertise still result in a positive innovation increase, but of significantly smaller magnitude.

Insert Table 6 about here.

To reconcile the fact that CVCs, which source their innovation expertise in the private sector, are associated with innovation increases after acquisitions of both private and public targets, we further explore the overlap between the CVC presence and the acquirer type (with or without both types of targets). Panel B shows double DiD coefficients from regressions on four sets of private target subsamples. The four subsamples combine (i) CVC presence versus no CVC presence with (ii) acquirer with both private and public target acquisitions versus acquirer with only private acquisitions. We can see that in line with our results in Table 3, the largest post-acquisition innovation increase is associated with acquirers with CVCs who do both types of deals. These acquirers seem to leverage their CVC expertise coming from the private sector also when acquiring public targets. Note again, that only a handful of public target acquisitions with CVCs focus exclusively on public targets. Altogether, the results in Table 6 show that exceptional improvements in innovation outcomes are associated with in-house expertise of new ideas and innovation trends gained

through CVCs, which is usually present in firms that do both private and public acquisitions.

Second, we explore whether the innovation improvement when acquiring private targets depends on acquiring already patented innovation because literature suggests that acquiring targets with filed patents is associated with higher increase in post acquisition innovation outcomes (Sevilir and Tian, 2012; Bena and Li, 2014). In our sample, 18% (43%) of all private (public) targets own patents by the time they are acquired.[16] Table 7 shows results for DiD regressions with extra triple interaction terms, with coefficients γ_1 and γ_2, to capture the additional effect of acquisitions of targets with existing patents. We can see that acquiring targets with existing patents at the time of acquisition has no additional effect on patent count in Column 1, both γ_1 and γ_2 are statistically insignificant. For the exploratory innovation outcomes in Columns 2 to 5, most of the γ coefficients are negative and statistically insignificant. In contrast, 3 out of 4 exploitative innovation variables in Columns 6 to 9 have significant γ_2 coefficient for private targets. γ_1 for public targets remains insignificant. It is noteworthy that β_2 is still highly significant across all innovation variables. Overall, the tests suggest that the significant increase in innovation outcomes is not driven by acquiring targets with existing patents.[17]

Insert Table 7 about here.

Our results suggest that acquired private targets own innovative ideas regardless whether they do or do not file them as patents. To provide anecdotal supporting evidence, we perform a small-scale analysis of patent inventors on a random sample of 9 private targets with existing patents. Table I.6 in the Internet Appendix summarizes patents with corresponding patent inventors for targets and acquirers applied

[16]To identify patents owned by private targets, we also use NBER patent-citation database in addition to KPSS. The NBER database provides information on patent and citation data between 1976 and 2006. We match by company name and state of incorporation and perform a fuzzy match.

[17]The economic magnitudes of the 3 significant DiD effects are between 13 and 14.2 percent of the mean value pre-acquisition.

for within 5 years before the acquisition as well as patents with corresponding patent inventors for the acquirer within 2 years after the acquisition. We can see that post acquisition acquiring firms file more patents with new inventors. Some of the new inventors come from the target firms, but majority of them is new. This suggests a spur in new innovation activity that is not necessarily linked to target innovators with existing patents. It seems that the acquiring firm assimilates target inventors before their first patent. It is also possible that the acquirer hires new people around the time of the acquisition, probably supporting better innovation outcomes. Either way, the post-acquisition innovation increase seems to flow through new, not-yet patented ideas and associated inventors.

In addition, we explore potential technological overlap for the acquirer-target pair, measured as the technical similarity across technological classes of the two firms' patents (Jaffe, 1986). Note that, by construction, we can compute the technological similarity only for targets with existing patents. The technical similarity is, on average, higher for public than private targets, most likely because public targets have more patents at the time of the acquisition. Around 23% (50%) of private (public) targets with patents show positive technological overlap with their acquirer. Zero technological overlap means that the two firms' patents are in unrelated technological classes. Table 8 includes a dummy for positive technological overlap in triple interaction terms in regressions that cover only acquisitions of targets with existing patents. All but 2 triple interaction term coefficients γ_2 are negative and most are statistically significant, while double interaction coefficients β_2 are all positive and 8 are statistically significant. Technological overlap harms rather than improves post-acquisition innovation increases.

Insert Table 8 about here.

Our third innovation channel test concerns acquirer investment horizon. In-

vestment horizon models typically argue that managers of publicly listed firms are pushed, either through a threat of hostile takeover or by short-term shareholders, to care more about their firm's current stock price than about the firm's long-term value (Stein, 1989; Shleifer and Vishny, 1990). Short-termist managers forgo positive NPV projects with long investment horizons, resulting in lower investment levels and lower sensitivity to changes in investment opportunities (Graham, Harvey, and Rajgopal, 2005). These pressures effect their innovation strategy. If it is the case that acquirers aim for higher post-acquisition innovation when they acquire private targets, then these acquisitions' innovation outcomes are less likely to be sensitive to short-termist pressures. In contrast, public target acquisitions, which take place because of other strategic reasons, are more likely to be subject to such pressures.

Stein (1989) predicts that a firm's investment distortion depends on the sensitivity of its share price to its current earnings per share. In line with this prediction, we measure short-termist pressures using the earning response coefficient (ERC), which reflects the sensitivity of share prices to earning news (Asker, Farre-Mensa, and Ljungqvist, 2015). Table 9 with extra triple interaction terms γ_1 and γ_2 to capture the additional effects of short-termist pressures on acquirers' post-deal innovation outcomes confirms our conjectures. Coefficients γ_1 are, except one, all significantly negative, showing a diminishing effect of short-termist pressures on innovation outcomes for public target acquisitions. Still, coefficients γ_2 for private targets are all but one statistically insignificant. These results suggest that even when private target acquirers face short-termist pressures, these pressures are less likely to distort innovation because the acquirers are motivated and determined to improve their innovation outcomes.

Insert Table 9 about here.

The last test concerns effects of industry concentration. Wang (2018), reviewing

the literature on effects of concentration, suggests that if the most substantial gains from innovation accrue in imperfectly competitive markets, potential acquirers in concentrated industries have more incentive to purchase innovation. In contrast, Arrow (1962) argues that a monopolist can increase its profits by acquiring a start-up, but it cannibalizes the profits from its own legacy technology in doing so. If the competitive acquirer can capture the same benefit from innovation, its differential return is higher because it has no profits to cannibalize. Even minor product differentiation in contestable markets enables acquirers, to capture market share (Wang, 2018).

Table 10 includes triple interaction terms with a dummy for low Herfindahl-Hirschman index (HHI), again with coefficients γ_1 and γ_2. The low HHI dummy indicates the lowest HHI quintile based on sales in 3-digit SIC industries. We find that 8 of γ_2 coefficients for private targets are positive and 6 are statistically significant, while only 1 γ_1 coefficient for public targets is significantly positive. We have a large increase in innovation outcomes for acquirers of private firms when their industry is more competitive. Coefficients β_2, reflecting the innovation improvement when acquiring private targets in less competitive industries, remain significantly positive. Table 10 suggests that competitive pressures in acquirer product markets contribute to a higher increase in innovation and so motivate firms to escape the squeeze.

Insert Table 10 about here.

To summarize, our four sets of tests concerning channels through which private-target acquisitions improve innovation outcomes support a conclusion that private target acquisitions are undertaken with an aim to improve innovation. The highest innovation increase is linked to acquirers with expertise in new ideas and technologies explored in new ventures in the private sector. Acquisitions of private firms are

associated with improvements in post-acquisition innovation regardless of existing patents in the target firms. In fact, existing technological overlaps seem to impede on innovation improvements, especially for exploratory innovation. Moreover, innovation outcomes after private target acquisitions are not sensitive to short-termist pressures, which is in line with a strong innovation drive of these deals. Finally, the highest innovation improvements correlate with higher competition in the product market.

5 Acquirer announcement returns

Our final analysis examines whether we can link the significant innovation improvements after private target acquisitions to differences in acquirer announcement abnormal returns between private versus public targets (Faccio et al., 2006; Fuller et al., 2002; Brown and Warner, 1985). Table 11 regresses the acquirer 5-day cumulative abnormal return around deal announcements, adjusted by the value-weighted market index return, on a dummy for private target and a set of control variables following M&A literature (Faccio et al., 2006; Fuller et al., 2002).[18] All specifications include year and firm fixed effects. In Column 1, we add a set of dummy variables indicating quartiles by the relative change in patent count from before to after acquisitions. The first quartile with the lowest improvement in patent count is dropped and constitutes the reference category. Using the set of dummy variables, we assume that the market is able to sort out acquirers into those that are going to improve innovation the most versus those that do not do it at all. We can see that in line with previous literature the private target dummy is significantly positive, indicating that acquisitions of private targets create more value for the acquiring firm shareholders. The 3 quartile dummies are not significant: i.e. we do not have

[18]Table I.7 in the Internet Appendix provides summary statistics for the cross-section of deals used in these regressions.

any overall valuation effect associated with innovation improvement.

Insert Table 11 about here.

In Column 2, we add interaction terms between the quartiles for patent count change and the private target dummy to separate the valuation effect of innovation improvements between public versus private firms. We can see that inclusion of the interaction terms is important. The highest quartile dummy is statistically significant both for public and private targets but with opposite signs. The market reaction is significantly lower for public acquisitions with the highest than in the lowest improvement in patent count.

In contrast, acquisitions of private targets with the highest improvement in patent count enjoy the highest market reaction. Moreover, the standalone private target dummy halves in size and becomes insignificant. The result suggests that the value differences between private and public firms are explained by the differences in innovation improvement. Columns 3 and 4 further control for the change in profitability and industry competition from before to after acquisitions, but the coefficients for quartile 4 do not change. Table I.8 in the Internet Appendix shows results for the other innovation variables.

6 Conclusions

This paper studies the impact of acquiring private firms on acquirers' innovation outcomes. Empirical analysis of innovation has so far largely neglected private firms due to scarce data availability. Our results show that acquisitions of private targets are associated with an increase in the number of new patents as well as exploratory innovation, which requires new knowledge or a departure from existing knowledge, and exploitative innovation, which builds only on existing knowledge. Furthermore,

similar results apply for innovation efficiency. Hence, acquiring private targets enhances innovation outputs both on extensive and intensive margin. In contrast, we do not find any increase in innovation for public targets acquisitions.

The results are stronger for acquirers possessing expertise from corporate venture capital or facing more competition in product markets. In contrast, the results are insensitive to targets' existing patents and acquirers' short-termist pressures. These tests concerning innovation channels suggest that the higher innovation increase when acquiring private targets results from acquirers' innovation strategy, expertise and the long-term orientation, rather than targets' track record of innovation. Our results are robust to using withdrawn deals as matches to mitigate endogeneity issues in target selection.

Importantly, the differences in innovation outcomes also explain away the well-documented empirical pattern of higher announcement returns for acquiring private targets. Taken together, our results suggest that innovation plays a key role in the value creation of private target M&As.

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Table 1. Baseline data set

This table shows means for acquirers and their corresponding matched firms across all innovation and control variables in Panel A and the average growth rates of innovation variables from 5 years to 1 year before the acquisition in Panel B. Columns 1 to 3 cover the public target subsample, while Columns 4 to 6 cover the private target subsample. Panel C provides summary statistics for the baseline panel covering observations from 5 years before to 5 year after acquisitions for acquirers and the matched firms. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. Innovation variables are reported in logarithmic transformations. ***, ** and * indicate significance at the one-, five- and ten-percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Public target			Private target		
	Acquirer	Match	Mean diff.	Acquirer	Match	Mean diff.
Panel A: Matching summary statistics						
Patent count	1.950	1.895	0.054	1.313	1.358	-0.045
Exploratory patent	1.627	1.584	0.043	1.083	1.125	-0.041
Unknown-class patent	0.587	0.592	0.005	0.452	0.475	-0.023
New citation	3.429	3.354	0.075	2.613	2.673	-0.060
Scope	0.456	0.456	0.000	0.403	0.407	-0.004
Exploitative patent	0.716	0.649	0.067	0.392	0.394	-0.002
Known-class patent	1.748	1.632	0.116	1.080	1.102	-0.022
Repeated citation	2.362	2.221	0.141	1.603	1.597	0.006
Depth	0.151	0.145	0.007	0.119	0.119	0.000
Size	20.805	20.792	0.013	19.433	19.387	0.046
R&D expenditure	12.348	11.988	0.360	11.371	11.364	0.008
Propensity score	0.158	0.155	0.003	0.313	0.312	0.001
# observations	1,327	1,327		4,808	4,808	
Panel B: Parallel trend univariate tests						
Patent count	0.043	0.053	-0.010	0.012	0.013	-0.001
Exploratory patent	0.042	0.046	-0.004	0.008	0.007	0.001
Unknown-class patent	0.016	0.012	0.004	-0.008	-0.014	0.006
New citation	0.045	0.050	-0.005	0.014	0.020	-0.006
Scope	0.029	0.035	-0.007	0.010	0.017	-0.008
Exploitative patent	0.062	0.087	-0.025*	0.028	0.021	0.007
Known-class patent	0.047	0.056	-0.009	0.007	0.000	0.007
Repeated citation	0.064	0.082	-0.018	0.028	0.035	-0.007
Depth	0.075	0.105	-0.029	0.045	0.061	-0.016
	# obs.	Mean	St. deviation	25^{th} perc.	Median	75^{th} perc.
Panel C: Baseline panel summary statistics						
Public target	171,758	0.094	0.292			
Private target	171,758	0.417	0.493			
Public only	171,758	0.011	0.106			
Private only	171,758	0.216	0.412			
Acquirer with both types	171,758	0.283	0.451			
Public with patent	171,758	0.041	0.199			
Private with patent	171,758	0.078	0.268			
Patent count	171,758	1.547	1.991	0.000	0.693	2.485
Exploratory patent	171,758	1.279	1.771	0.000	0.693	2.079
Unknown-class patent	171,758	0.469	0.741	0.000	0.000	0.693
New citation	171,758	2.783	2.907	0.000	2.485	5.017
Scope	171,758	0.387	0.342	0.000	0.688	0.693
Exploitative patent	171,758	0.578	1.136	0.000	0.000	0.693
Known-class patent	171,758	1.341	1.988	0.000	0.000	2.079
Repeated citation	171,758	1.887	2.546	0.000	0.000	3.784
Depth	171,758	0.129	0.184	0.000	0.000	0.247
Size	171,758	20.026	2.821	18.433	20.193	22.009
R&D expenditure	171,758	11.162	8.325	0.000	15.464	17.848
Leverage	171,758	0.166	0.189	0.009	0.119	0.257
Net income	171,758	-0.030	0.504	-0.010	0.035	0.078
HH index	171,758	0.227	0.174	0.108	0.184	0.297

Table 2. Acquirers versus matched firms: univariate differences

This table reports means for 9 innovation measures across acquirers of public targets (Panel A), acquirers of private targets (Panel B), and their corresponding matched firms, both pre- and post-activism. Column 5 (Column 6) reports the difference in innovation between acquirers versus matched firms for the pre-acquisition (post-acquisition) period. Column 7 (Column 8) shows the difference in acquirer (matched firm) innovation in the post- versus pre-acquisition periods. Column 9 shows the difference-in-differences. We use a simple OLS regression to test for the mean differences. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pre-acquisition		Post-acquisition		Differences				
	Acquirer	Match	Acquirer	Match	(1) - (2)	(3) - (4)	(3) - (1)	(4) - (2)	(7) - (8)
Panel A: Average innovation for public target acquirer versus matched firm									
Ln(1+patent count)	2.152	2.094	2.245	2.161	0.058	0.084**	0.093***	0.067 *	0.025
Ln(1+exploratory patents)	1.816	1.792	1.842	1.807	0.024	0.035	0.026	0.015	0.011
Ln(1+unknown-class patents)	0.668	0.707	0.547	0.573	-0.039***	-0.025**	-0.120***	-0.134***	0.014
Ln(1+new citations)	3.616	3.504	3.767	3.563	0.112**	0.205***	0.151***	0.058	0.093
Ln(1+scope)	0.464	0.464	0.453	0.443	0.000	0.010*	-0.011**	-0.021***	0.010
Ln(1+exploitative patents)	0.858	0.769	1.026	0.942	0.090***	0.085***	0.168***	0.173***	-0.005
Ln(known+class patents)	1.955	1.853	2.060	1.933	0.102***	0.127***	0.105***	0.080**	0.025
Ln(1+repeated citations)	2.523	2.306	2.895	2.645	0.216***	0.250***	0.372***	0.338***	0.034
Ln(1+depth)	0.147	0.133	0.186	0.165	0.014***	0.021***	0.039***	0.032***	0.007
#Obs	7,405	7,052	8,733	8,486					
Panel B: Average innovation for private target acquirer versus matched firm									
Ln(1+patent count)	1.417	1.389	1.452	1.362	0.028*	0.090***	0.035 **	-0.027*	0.062***
Ln(1+exploratory patents)	1.196	1.168	1.173	1.102	0.029**	0.071***	-0.023*	-0.066***	0.042**
Ln(1+unknown-class patents)	0.497	0.498	0.397	0.373	-0.002	0.024***	-0.099***	-0.125***	0.026***
Ln(1+new citations)	2.633	2.566	2.694	2.477	0.067***	0.216***	0.060 ***	-0.089***	0.149***
Ln(1+scope)	0.381	0.383	0.370	0.356	-0.001	0.015***	-0.011***	-0.027***	0.016***
Ln(1+exploitative patents)	0.467	0.440	0.576	0.512	0.027***	0.064***	0.109 ***	0.072 ***	0.037***
Ln(1+known-class patents)	1.223	1.174	1.269	1.139	0.049***	0.130***	0.046 ***	-0.035**	0.081***
Ln(1+repeated citations)	1.672	1.563	1.922	1.693	0.109***	0.229***	0.250 ***	0.130 ***	0.120***
Ln(1+depth)	0.109	0.107	0.140	0.126	0.003**	0.014***	0.031 ***	0.020 ***	0.011***
#Obs	32,278	30,799	39,353	37,652					

Table 3. Baseline difference-in-differences regressions

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. The regressions include acquirers of public and private targets and their corresponding matched firms for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 171,758 firm-year observations. *Public* (*Private*) is a dummy variable indicating a public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including t_0. *Public only (Private only)* is a dummy variable for acquirers that experience both private and public acquisitions during our sample period. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1$^{\text{th}}$ and 99$^{\text{th}}$ percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
				Panel A: Baseline regressions					
Post public	0.021	0.011	-0.063***	-0.039	-0.011*	0.071***	0.013	0.108**	0.010**
	(0.026)	(0.024)	(0.017)	(0.039)	(0.006)	(0.017)	(0.030)	(0.039)	(0.004)
Public x post public (β_1)	-0.010	-0.009	0.033	0.045	0.003	-0.035	-0.000	-0.024	0.001
	(0.034)	(0.031)	(0.025)	(0.049)	(0.007)	(0.025)	(0.038)	(0.056)	(0.005)
Post private	-0.060***	-0.049***	-0.037***	-0.150***	-0.017***	-0.030***	-0.079***	-0.067**	-0.003
	(0.017)	(0.014)	(0.012)	(0.028)	(0.004)	(0.008)	(0.020)	(0.029)	(0.002)
Private x post private (β_2)	0.071***	0.053***	0.046***	0.160***	0.018***	0.030***	0.087***	0.107***	0.009***
	(0.017)	(0.015)	(0.013)	(0.034)	(0.006)	(0.010)	(0.019)	(0.029)	(0.003)
R^2	0.913	0.893	0.617	0.842	0.610	0.884	0.911	0.855	0.561
$\beta_2 - \beta_1$	0.081**	0.062*	0.013	0.115*	0.015*	0.065**	0.087**	0.131**	0.008

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Panel B: Acquirers with public and private target experience									
Post public	0.023	0.012	-0.064***	-0.035	-0.010*	0.073***	0.015	0.113**	0.011**
	(0.026)	(0.024)	(0.017)	(0.039)	(0.006)	(0.017)	(0.030)	(0.040)	(0.004)
Public x post public (β_1)	0.001	-0.007	0.030	0.057	0.002	-0.023	0.020	0.007	0.005
	(0.035)	(0.032)	(0.026)	(0.051)	(0.007)	(0.026)	(0.040)	(0.058)	(0.005)
Public x post public x	-0.089	-0.015	0.029	-0.084	0.010	-0.093**	-0.173**	-0.262**	-0.029***
public only (γ_1)	(0.060)	(0.058)	(0.039)	(0.104)	(0.016)	(0.039)	(0.065)	(0.094)	(0.009)
Post private	-0.058***	-0.047***	-0.037***	-0.146***	-0.016***	-0.028***	-0.077***	-0.063**	-0.002
	(0.017)	(0.014)	(0.012)	(0.027)	(0.004)	(0.008)	(0.020)	(0.028)	(0.002)
Private x post private (β_2)	0.133***	0.086**	0.021	0.276***	0.033***	0.101***	0.141***	0.233***	0.024***
	(0.032)	(0.030)	(0.018)	(0.046)	(0.008)	(0.022)	(0.036)	(0.050)	(0.005)
Private x post private x	-0.122**	-0.064	0.049*	-0.226***	-0.029***	-0.139***	-0.106*	-0.247***	-0.029***
private only (γ_2)	(0.047)	(0.047)	(0.026)	(0.054)	(0.007)	(0.029)	(0.051)	(0.059)	(0.005)
R^2	0.913	0.893	0.617	0.842	0.610	0.885	0.911	0.855	0.561
$\beta_1 + \gamma_1$	-0.088	-0.022	0.059	-0.027	0.012	-0.116	-0.153	-0.255	-0.024
$\beta_2 + \gamma_2$	0.011***	0.022**	0.07	0.05***	0.004***	-0.038***	0.035***	-0.014***	-0.005***
$(\beta_2 + \gamma_2) - (\beta_1 + \gamma_1)$	0.099***	0.044**	0.011	0.077***	-0.008***	0.078***	0.188**	0.241***	0.019**
$\beta_2 - \beta_1$	0.132***	0.093**	-0.009	0.219***	0.031***	0.124***	0.121**	0.226***	0.019**

multiple acquirers

Table 4. Persistency of changes in innovation outcomes

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. The regressions in Panel A (Panel B) include acquirers of public (private) targets and their corresponding matched firms for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 31,676 (140,082) observations. *Post public*$_j$ (*Post private*$_j$) is a dummy variable that takes a value of 1 if firm i is an acquirer of public (private) target and the observation is j years away from the acquisition announcement year t_0, and zero otherwise. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1$^{\text{th}}$ and 99$^{\text{th}}$ percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Explor. patent	Unknown class	New citation	Scope	Exploit. patent	Known class	Repeated citation	Depth
Panel A: Sub-sample for public target acquisitions									
Post pub$_0$	0.010	0.023	0.026	0.043	0.004	-0.015	0.020	0.016	0.001
	(0.021)	(0.020)	(0.020)	(0.036)	(0.006)	(0.013)	(0.024)	(0.034)	(0.003)
Post pub$_1$	-0.040	-0.034	-0.006	-0.030	-0.005	-0.029	-0.024	-0.049	-0.000
	(0.028)	(0.024)	(0.021)	(0.047)	(0.007)	(0.018)	(0.032)	(0.046)	(0.004)
Post pub$_2$	-0.060*	-0.067*	-0.010	-0.042	-0.003	-0.039*	-0.056	-0.066	0.004
	(0.032)	(0.033)	(0.030)	(0.049)	(0.007)	(0.021)	(0.036)	(0.045)	(0.005)
Post pub$_3$	-0.071	-0.081*	0.028	-0.063	-0.004	-0.052	-0.092*	-0.083	0.003
	(0.043)	(0.041)	(0.028)	(0.060)	(0.008)	(0.030)	(0.047)	(0.064)	(0.005)
Post pub$_4$	-0.078	-0.066	0.040	-0.096	-0.017*	-0.065*	-0.091	-0.126	-0.003
	(0.053)	(0.046)	(0.029)	(0.075)	(0.009)	(0.037)	(0.061)	(0.085)	(0.007)
Post pub$_5$	-0.022	-0.029	0.055	0.027	0.001	-0.047	-0.049	-0.044	0.006
	(0.052)	(0.050)	(0.037)	(0.074)	(0.011)	(0.035)	(0.064)	(0.087)	(0.007)
R^2	0.926	0.909	0.627	0.873	0.646	0.900	0.920	0.878	0.594
Panel B: Sub-sample for private target acquisitions									
Post priv$_0$	0.062***	0.058***	0.030**	0.114***	0.013**	0.022**	0.058***	0.083***	0.005*
	(0.011)	(0.012)	(0.013)	(0.025)	(0.005)	(0.008)	(0.011)	(0.019)	(0.003)
Post priv$_1$	0.053***	0.037***	0.020*	0.104***	0.011	0.020**	0.061***	0.105***	0.011***
	(0.014)	(0.012)	(0.011)	(0.031)	(0.006)	(0.008)	(0.015)	(0.023)	(0.003)
Post priv$_2$	0.034**	0.015	0.023	0.072*	0.004	0.027***	0.061***	0.098***	0.012***
	(0.016)	(0.015)	(0.014)	(0.037)	(0.007)	(0.009)	(0.016)	(0.024)	(0.003)
Post priv$_3$	0.040*	0.021	0.026	0.096**	0.008	0.020	0.061**	0.084**	0.009**
	(0.020)	(0.019)	(0.016)	(0.037)	(0.006)	(0.011)	(0.023)	(0.033)	(0.004)
Post priv$_4$	0.052**	0.028	0.036*	0.127**	0.016*	0.030*	0.060*	0.090*	0.012**
	(0.024)	(0.020)	(0.018)	(0.046)	(0.008)	(0.016)	(0.029)	(0.044)	(0.005)
Post priv$_5$	0.058**	0.036	0.050**	0.155***	0.020**	0.019	0.068**	0.070*	0.009*
	(0.026)	(0.022)	(0.019)	(0.048)	(0.007)	(0.017)	(0.030)	(0.038)	(0.004)
R^2	0.906	0.886	0.610	0.830	0.598	0.875	0.905	0.845	0.550

private firms do not apply for patents before acquisitions, but public targets do

Table 5. Further tests: Innovation efficiency and withdrawn deals

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. In Panel A, all innovation measures are scaled by R&D expenditures and the sample includes public and private target acquisitions and their matches for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 114,887 firm-year observations. Panel B includes withdrawn public and private target acquisitions and their corresponding matched successful acquisitions for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 17,283 firm-year observations. *Public* (*Private*) is a dummy variable indicating a public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including t_0. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1th and 99th percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	R&D exp.	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Panel A: Innovation efficiency										
Post public	0.156***	0.003	0.005	0.017**	-0.364	0.014**	-0.000	-0.039**	-0.189*	0.000
	(0.054)	(0.025)	(0.015)	(0.007)	(0.291)	(0.006)	(0.002)	(0.019)	(0.103)	(0.001)
Public x post public (β_1)	0.201***	0.037	0.026	0.011	0.555	0.005	-0.003	0.029	0.257*	0.000
	(0.061)	(0.033)	(0.018)	(0.008)	(0.383)	(0.007)	(0.003)	(0.028)	(0.133)	(0.002)
Post private	-0.043	-0.090***	-0.063***	-0.029***	-1.341***	-0.016***	-0.005***	-0.071***	-0.291***	-0.001
	(0.033)	(0.014)	(0.010)	(0.006)	(0.183)	(0.005)	(0.001)	(0.010)	(0.063)	(0.001)
Private x post private (β_2)	0.212***	0.053***	0.027**	0.002	0.698***	-0.003	0.003	0.067***	0.282***	-0.001
	(0.037)	(0.019)	(0.013)	(0.007)	(0.231)	(0.006)	(0.002)	(0.013)	(0.079)	(0.001)
R^2	0.679	0.580	0.461	0.299	0.548	0.453	0.460	0.712	0.607	0.422
Panel B: Successful versus withdrawn deals										
Post public		-0.041	-0.051**	-0.024	-0.068	-0.002	-0.001	-0.039	-0.006	0.007
		(0.027)	(0.024)	(0.014)	(0.056)	(0.011)	(0.014)	(0.025)	(0.038)	(0.005)
Public x post public (β_1)		0.059	0.080*	0.050*	0.126	0.025	-0.015	-0.000	-0.027	-0.006
		(0.041)	(0.039)	(0.024)	(0.084)	(0.015)	(0.022)	(0.038)	(0.061)	(0.007)
Post private		-0.047	-0.036	0.007	-0.100	-0.007	-0.029**	-0.048	-0.087*	-0.004
		(0.033)	(0.031)	(0.017)	(0.071)	(0.013)	(0.011)	(0.029)	(0.044)	(0.004)
Private x post private (β_2)		0.141***	0.115***	0.051***	0.362***	0.070***	0.045*	0.096**	0.154**	0.013*
		(0.039)	(0.035)	(0.017)	(0.089)	(0.019)	(0.023)	(0.037)	(0.066)	(0.007)
R^2		0.878	0.851	0.585	0.793	0.603	0.794	0.882	0.823	0.564

economic effect?

Table 6. Corporate venture capital

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. Panel A includes acquirers of public and private targets and their corresponding matched firms for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 171,758 firm-year observations. Panel B focusses on private target acquisitions with 140,082 firm-year observations. *Public* (*Private*) is a dummy variable indicating a public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including t_0. *CVC* is a dummy variable indicating an acquirer that owns a CVC division. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1th and 99th percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Panel A: Full sample with public and private target acquisitions									
Post public	0.015	0.005	-0.048**	-0.046	-0.009	0.056***	-0.005	0.098**	0.009**
	(0.026)	(0.024)	(0.017)	(0.038)	(0.006)	(0.018)	(0.030)	(0.040)	(0.004)
Public x post public (β_1)	-0.043	-0.034	0.009	0.003	-0.000	-0.058**	-0.028	-0.077	-0.002
	(0.032)	(0.029)	(0.025)	(0.048)	(0.007)	(0.024)	(0.036)	(0.055)	(0.005)
Public x post public x CVC (γ_1)	0.485**	0.356*	0.402**	0.620**	0.047*	0.317**	0.379	0.768***	0.052**
	(0.202)	(0.197)	(0.142)	(0.248)	(0.025)	(0.151)	(0.234)	(0.267)	(0.023)
Post private	-0.060***	-0.048***	-0.034***	-0.152***	-0.017***	-0.030***	-0.081***	-0.067**	-0.003
	(0.017)	(0.015)	(0.012)	(0.027)	(0.003)	(0.009)	(0.022)	(0.029)	(0.002)
Private x post private (β_2)	0.049***	0.038**	0.048***	0.136***	0.018***	0.003	0.063***	0.071**	0.007**
	(0.017)	(0.015)	(0.014)	(0.034)	(0.006)	(0.010)	(0.020)	(0.030)	(0.003)
Private x post private x CVC (γ_2)	0.510***	0.363**	-0.004	0.535**	-0.018	0.640***	0.535***	0.860***	0.039*
	(0.142)	(0.143)	(0.112)	(0.193)	(0.025)	(0.107)	(0.171)	(0.213)	(0.021)
R^2	0.913	0.894	0.617	0.842	0.610	0.886	0.911	0.856	0.561
$\beta_1 + \gamma_1$	0.442**	0.322	0.411***	0.623**	0.047*	0.259	0.351	0.691**	0.050**
$\beta_2 + \gamma_2$	0.559***	0.401***	0.044	0.671***	0.00	0.643***	0.598***	0.931***	0.046**
$(\beta_2 + \gamma_2) - (\beta_1 + \gamma_1)$	0.117***	0.079***	-0.367**	0.048***	-0.047	0.384***	0.247***	0.240***	-0.004**
$\beta_2 - \beta_1$	0.092**	0.072**	0.039	0.133**	0.018**	0.061**	0.091**	0.148**	0.009

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Panel B: Sub-sample with private target acquisitions									
CVC & acquirer with both types	0.550***	0.379***	0.041	0.790***	0.016	0.683***	0.798***	1.022***	0.068***
	(0.105)	(0.101)	(0.091)	(0.151)	(0.033)	(0.108)	(0.127)	(0.155)	(0.014)
no CVC & acquirer with both types	0.068**	0.047*	0.061**	0.206***	0.025**	0.006	0.064*	0.121**	0.014***
	(0.029)	(0.026)	(0.023)	(0.054)	(0.009)	(0.018)	(0.032)	(0.047)	(0.005)
CVC & acquirer with private only	0.015	0.044	0.094	0.525	0.104*	-0.187	0.291	-0.033	-0.022
	(0.191)	(0.222)	(0.177)	(0.400)	(0.054)	(0.190)	(0.189)	(0.264)	(0.035)
no CVC & acquirer with private only	0.026	0.027	0.034**	0.054	0.008	-0.002	0.044*	0.017	0.007**
	(0.018)	(0.018)	(0.014)	(0.037)	(0.007)	(0.010)	(0.022)	(0.029)	(0.003)

Table 7. Acquiring targets with existing patents

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. The regressions include acquirers of public and private targets and their corresponding matched firms for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 171,758 firm-year observations. *Public* (*Private*) is a dummy variable indicating a public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including t_0. *Public (Private) with patent* is a dummy variable for acquisitions of public (private) targets with existing patents. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1$^{\text{th}}$ and 99$^{\text{th}}$ percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Post public	0.021	0.011	-0.063***	-0.039	-0.011*	0.071***	0.013	0.108**	0.010**
	(0.026)	(0.024)	(0.017)	(0.039)	(0.006)	(0.017)	(0.030)	(0.039)	(0.004)
Public x post public (β_1)	-0.003	-0.000	0.067**	0.037	0.003	-0.044	0.016	-0.045	-0.003
	(0.038)	(0.036)	(0.027)	(0.057)	(0.008)	(0.026)	(0.043)	(0.056)	(0.005)
Public x post public x	-0.014	-0.020	-0.076***	0.018	-0.001	0.021	-0.035	0.046	0.010
public with patent (γ_1)	(0.051)	(0.049)	(0.026)	(0.080)	(0.011)	(0.035)	(0.052)	(0.073)	(0.006)
Post private	-0.060***	-0.049***	-0.037***	-0.150***	-0.017***	-0.030***	-0.079***	-0.067**	-0.003
	(0.017)	(0.014)	(0.012)	(0.028)	(0.004)	(0.008)	(0.020)	(0.029)	(0.002)
Private x post private (β_2)	0.072***	0.059***	0.054***	0.160***	0.018**	0.016*	0.087***	0.091***	0.007*
	(0.017)	(0.015)	(0.014)	(0.037)	(0.007)	(0.009)	(0.019)	(0.029)	(0.004)
Private x post private x	-0.006	-0.029	-0.041*	0.004	-0.005	0.069***	0.003	0.086*	0.013***
private with patent (γ_2)	(0.038)	(0.038)	(0.020)	(0.057)	(0.008)	(0.022)	(0.038)	(0.047)	(0.004)
R^2	0.913	0.893	0.617	0.842	0.610	0.884	0.911	0.855	0.561
$\beta_1 + \gamma_1$	-0.017	-0.02	-0.010**	0.055	0.002	-0.023	-0.019	0.001	0.007
$\beta_2 + \gamma_2$	0.066***	0.030***	0.013***	0.164***	0.013**	0.085*	0.090***	0.177***	0.02*
$(\beta_2 + \gamma_2) - (\beta_1 + \gamma_1)$	0.083*	0.05	0.022	0.109*	0.011	0.108**	0.109	0.176**	0.013
$\beta_2 - \beta_1$	0.075*	0.059	-0.013	0.123*	0.015	0.06**	0.071	0.136**	0.01

Table 8. Technical similarity for targets with existing patents

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. The regressions include acquirers of public and private targets with existing patents and their corresponding matched firms for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 39,825 firm-year observations. *Public* (*Private*) is a dummy variable indicating a public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including t_0. *High tech similarity* is a dummy variable indicating that the technological similarity for the acquirer-target pair is higher than 0. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Post public	0.019	0.019	-0.056**	-0.054	-0.003	0.069**	-0.038	0.055	0.008
	(0.035)	(0.032)	(0.026)	(0.058)	(0.009)	(0.025)	(0.042)	(0.053)	(0.006)
Public x post public (β_1)	0.020	0.029	0.101**	0.116	0.018	-0.095**	0.101	-0.031	-0.003
	(0.063)	(0.059)	(0.042)	(0.101)	(0.015)	(0.042)	(0.066)	(0.098)	(0.009)
Public x post public x	-0.080	-0.094	-0.139**	-0.123	-0.027*	0.063	-0.149*	0.035	0.012
high tech similarity (γ_1)	(0.076)	(0.072)	(0.050)	(0.109)	(0.014)	(0.055)	(0.079)	(0.110)	(0.010)
Post private	-0.085***	-0.067**	-0.016	-0.207***	-0.018**	-0.059***	-0.096**	-0.103**	-0.004
	(0.030)	(0.029)	(0.024)	(0.047)	(0.006)	(0.016)	(0.037)	(0.043)	(0.004)
Private x post private (β_2)	0.135***	0.122***	0.062**	0.257***	0.027**	0.071***	0.156***	0.169***	0.009
	(0.034)	(0.031)	(0.023)	(0.056)	(0.009)	(0.023)	(0.035)	(0.051)	(0.005)
Private x post private x	-0.177*	-0.245**	-0.096**	-0.199*	-0.016	0.028	-0.202*	-0.057	0.025**
high tech similarity (γ_2)	(0.090)	(0.086)	(0.045)	(0.100)	(0.012)	(0.065)	(0.097)	(0.118)	(0.010)
R^2	0.919	0.900	0.613	0.857	0.609	0.888	0.914	0.867	0.575
$\beta_1 + \gamma_1$	-0.060	-0.065	-0.038**	-0.007	-0.009	-0.032**	-0.048	0.004	0.009
$\beta_2 + \gamma_2$	-0.042***	-0.123***	-0.034**	0.058***	0.011**	0.099***	-0.046***	0.112***	0.034*
$(\beta_2 + \gamma_2) - (\beta_1 + \gamma_1)$	0.018	-0.058	0.004	0.065	0.02	0.131***	0.002	0.108*	0.025
$\beta_2 - \beta_1$	0.115	0.093	-0.039	0.141	0.009	0.166***	0.055	0.200*	0.012

Table 9. Short-termism

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. The regressions include acquirers of public and private targets and their corresponding matched firms for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 171,592 firm-year observations. *Public* (*Private*) is a dummy variable indicating a public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including t_0. *ERC* measures the sensitivity of a firm's stock price to earnings surprises and is higher for more short-termist firms. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Post public	0.011	0.001	-0.064***	-0.066	-0.018**	0.072***	0.010	0.103**	0.011**
	(0.028)	(0.027)	(0.022)	(0.040)	(0.007)	(0.019)	(0.031)	(0.041)	(0.004)
Public x post public (β_1)	0.014	0.013	0.041	0.099*	0.011	-0.026	0.020	0.008	0.003
	(0.037)	(0.034)	(0.027)	(0.052)	(0.008)	(0.027)	(0.040)	(0.060)	(0.005)
Public x post public x ERC (γ_1)	-0.408***	-0.369***	-0.147	-0.852***	-0.117	-0.141	-0.371**	-0.583**	-0.031
	(0.118)	(0.122)	(0.090)	(0.182)	(0.068)	(0.088)	(0.148)	(0.209)	(0.023)
Post private	-0.064***	-0.051***	-0.038***	-0.160***	-0.018***	-0.029***	-0.084***	-0.077**	-0.003
	(0.018)	(0.014)	(0.013)	(0.028)	(0.004)	(0.009)	(0.021)	(0.031)	(0.003)
Private x post private (β_2)	0.073***	0.053***	0.045***	0.171***	0.018***	0.028**	0.092***	0.125***	0.011***
	(0.018)	(0.016)	(0.014)	(0.035)	(0.006)	(0.011)	(0.021)	(0.032)	(0.003)
Private x post private x ERC (γ_2)	-0.073	-0.018	-0.006	-0.250*	-0.025	0.031	-0.085	-0.314**	-0.026*
	(0.062)	(0.059)	(0.051)	(0.135)	(0.026)	(0.060)	(0.067)	(0.119)	(0.015)
R^2	0.913	0.894	0.617	0.842	0.610	0.884	0.911	0.855	0.561
$\beta_1 + \gamma_1$	-0.394***	-0.356***	-0.106	-0.753***	-0.106	-0.167**	-0.351**	-0.575***	-0.028
$\beta_2 + \gamma_2$	0.000	0.035	0.039	-0.079	-0.007	0.059	0.007	-0.189*	-0.015
$(\beta_2 + \gamma_2) - (\beta_1 + \gamma_1)$	0.394***	0.391***	0.145*	0.674***	0.099*	0.226**	0.358**	0.386**	0.013
$\beta_2 - \beta_1$	0.059	0.04	0.004	0.072	0.007	0.054*	0.072*	0.117*	0.008

Table 10. Product market competition

This table shows estimation results for regressions with 9 measures of innovation outcomes as alternative dependent variables. The regressions include acquirers of public and private targets and their corresponding matched firms for years t_{-5} to t_{+5} around the acquisition announcement year (t_0) with 171,758 firm-year observations. *Public* (*Private*) is a dummy variable indicating a public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including t_0. *Low HHI* is a dummy variable for acquirer Herfindahl-Hirschman index in the lowest quintile. All regressions include year and firm fixed effects and the following control variables: low HHI, acquirer size, R&D expenditures, leverage, net income, and additional interaction terms with low HHI. Standard errors are clustered by firm and year and reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patents	Unknown-class patents	New citations	Scope	Exploitative patents	Known-class patents	Repeated citations	Depth
Post public	-0.008	-0.013	-0.063***	-0.070*	-0.016**	0.063***	-0.008	0.089*	0.009*
	(0.025)	(0.022)	(0.018)	(0.039)	(0.006)	(0.020)	(0.033)	(0.044)	(0.005)
Public x post public (β_1)	-0.019	-0.020	0.035	0.026	0.005	-0.045	-0.016	-0.073	-0.003
	(0.034)	(0.031)	(0.028)	(0.052)	(0.007)	(0.028)	(0.040)	(0.059)	(0.006)
Public x post public x low HHI (γ_1)	0.040	0.043	-0.014	0.085	-0.007	0.058	0.061	0.190*	0.016
	(0.070)	(0.069)	(0.059)	(0.101)	(0.015)	(0.051)	(0.069)	(0.103)	(0.010)
Post private	-0.088***	-0.070***	-0.036***	-0.198***	-0.024***	-0.044***	-0.104***	-0.102***	-0.006*
	(0.016)	(0.015)	(0.012)	(0.031)	(0.005)	(0.008)	(0.019)	(0.026)	(0.003)
Private x post private (β_2)	0.052**	0.039**	0.045***	0.144***	0.021***	0.021*	0.066***	0.070**	0.007*
	(0.019)	(0.016)	(0.013)	(0.040)	(0.007)	(0.011)	(0.021)	(0.032)	(0.004)
Private x post private x low HHI (γ_2)	0.124**	0.098**	0.001	0.127	-0.012	0.063*	0.138**	0.235**	0.013*
	(0.054)	(0.045)	(0.027)	(0.089)	(0.012)	(0.038)	(0.049)	(0.087)	(0.008)
R^2	0.913	0.894	0.617	0.842	0.610	0.884	0.911	0.855	0.561
$\beta_1 + \gamma_1$	0.021	0.023	0.021	0.111	-0.002	0.013	0.045	0.117	0.013
$\beta_2 + \gamma_2$	0.176***	0.137***	0.046*	0.271***	0.009	0.084**	0.204***	0.305***	0.02**
$(\beta_2 + \gamma_2) - (\beta_1 + \gamma_1)$	0.155**	0.114	0.025	0.16	0.011	0.071	0.159**	0.188	0.007
$\beta_2 - \beta_1$	0.071*	0.059*	0.01	0.118*	0.016*	0.066**	0.082*	0.143**	0.01

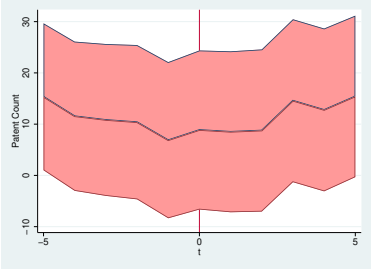
Table 11. Announcement abnormal returns

This table reports OLS estimates with acquirers' 5-day cumulative abnormal returns around announcement dates of public and private target acquisitions as the dependent variable. *Private target* is a dummy variable indicating that the target is a private firm. We split all observations into quartiles by ΔPatent count, which measures the increase in patent count in the post-acquisition period relative to the pre-acquisition period. Q_1 is the reference category. All regressions include year and Fama-French 12 industry fixed effects. Standard errors clustered at firm level are reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)
Private target	0.017***	0.008	0.008	0.008
	(0.003)	(0.006)	(0.006)	(0.006)
ΔPatent count Q_2	-0.004	-0.011	-0.010	-0.011
	(0.003)	(0.008)	(0.008)	(0.008)
ΔPatent count Q_3	-0.003	-0.006	-0.005	-0.006
	(0.003)	(0.008)	(0.008)	(0.008)
ΔPatent count Q_4	0.002	-0.015**	-0.015**	-0.016**
	(0.003)	(0.007)	(0.007)	(0.007)
Private target x ΔPatent count Q_2		0.009	0.008	0.009
		(0.008)	(0.008)	(0.008)
Private target x ΔPatent count Q_3		0.003	0.003	0.003
		(0.008)	(0.008)	(0.008)
Private target x ΔPatent count Q_4		0.022***	0.022***	0.022***
		(0.008)	(0.008)	(0.008)
ΔROA			0.002	
			(0.007)	
ΔHH Index				0.005
				(0.012)
Cash only	0.008***	0.008***	0.008***	0.008***
	(0.003)	(0.003)	(0.003)	(0.003)
Hostile deal	0.005	0.004	0.004	0.004
	(0.022)	(0.022)	(0.022)	(0.022)
Horizontal deal	0.002	0.002	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)
R&D expenditure	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.002***	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.002	-0.001	-0.001	-0.001
	(0.007)	(0.007)	(0.007)	(0.007)
Net income	-0.020***	-0.020***	-0.018***	-0.020***
	(0.005)	(0.005)	(0.005)	(0.005)
HH Index	-0.002	-0.002	-0.002	-0.002
	(0.007)	(0.007)	(0.007)	(0.007)
# observations	7,029	7,029	6,983	7,029
R^2	0.021	0.022	0.022	0.022

Figure 1. Evolution of coefficients from cross-sectional regressions for public target acquirers and their matched firms

This figure plots the evolution of coefficients from yearly cross-sectional regressions of Ln(1+innovation) on a dummy that indicates public target acquirers over the period from t_{-5} to t_{+5}. It plots the estimated dummy coefficients with 95% confidence intervals based on heteroscedasticity-robust standard error.



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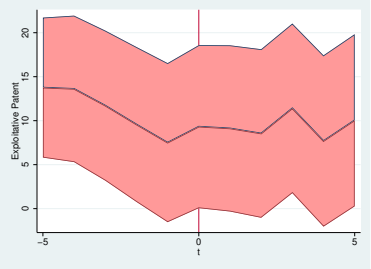

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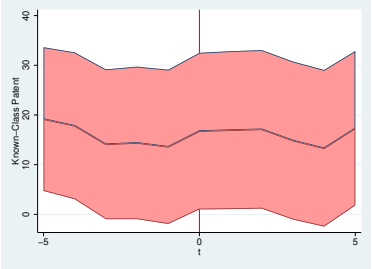

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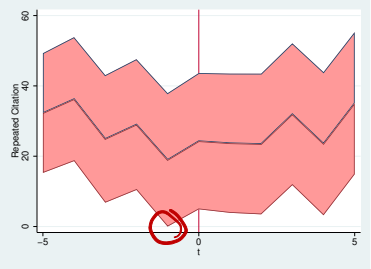

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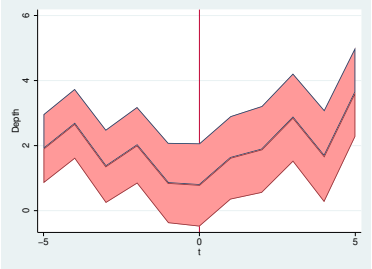

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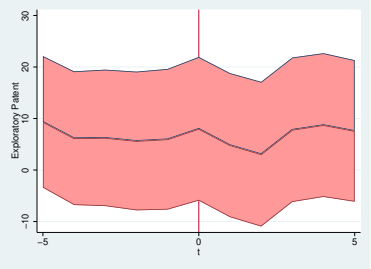

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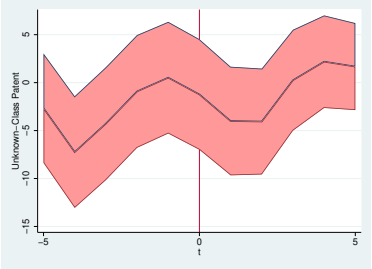

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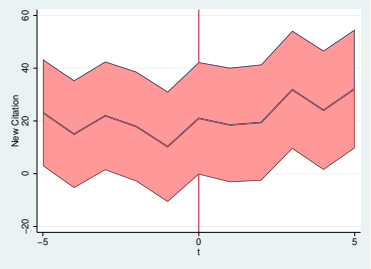

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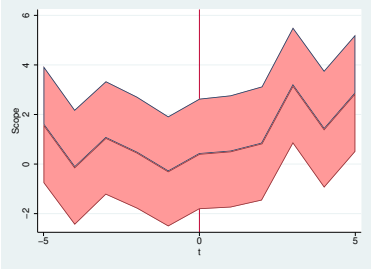
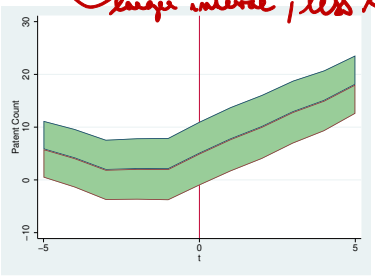


Scope

Figure 2. Evolution of coefficients from cross-sectional regressions for private target acquirers and their matched firms

This figure plots the evolution of coefficients from yearly cross-sectional regressions of Ln(1+innovation) on a dummy that indicates private target acquirers over the period from t_{-5} to t_{+5}. It plots the estimated dummy coefficients with 95% confidence intervals based on heteroscedasticity-robust standard error.



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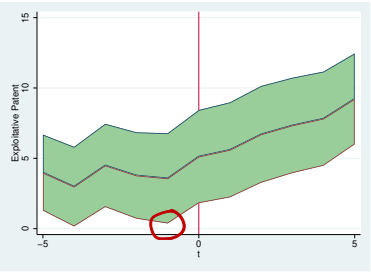

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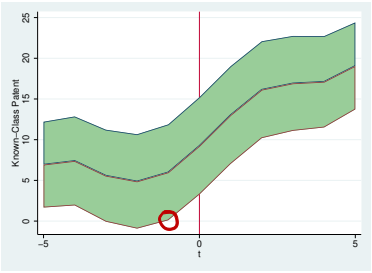

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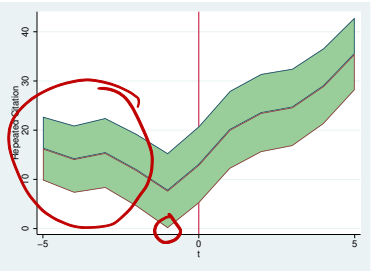

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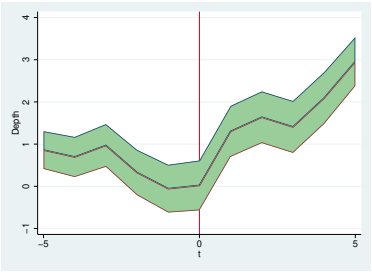

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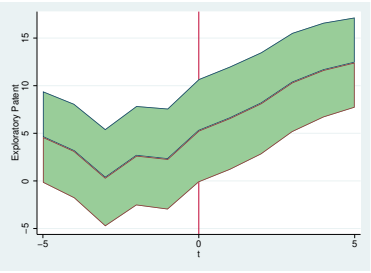
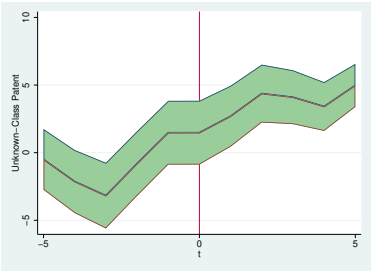


Exploratory Patent



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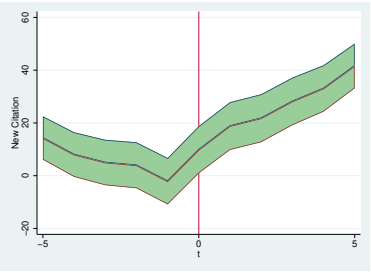

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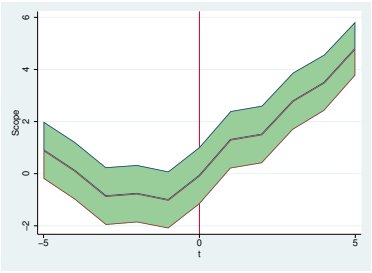

Scope

Appendix A Variable definitions

The table uses the following abbreviations: KPSS for Kogan, Papanikolaou, Seru, and Stoffman patent data library (https://iu.app.box.com/v/patents). NBER for National Bureau of Economic Research (https://www.nber.org/patents/).

Variable	Definition	Source
Panel A: Innovation variables		
Patent count	The total number of new patents that the focal firm applies for in year t.	KPSS, NBER
Exploratory patents	The total number of exploratory patents that the focal firm applies for in year t. A patent is categorized as exploratory if at least 80% of its citations are based on the knowledge outside firms' existing expertise (Gao et al., 2018).	KPSS, NBER
Unknown-class patent	The total number of patents that the focal firm applies for in year t from a technological class previously unknown to the firm (Balsmeier, Fleming, and Manso, 2017).	KPSS, NBER
New citation	The total number of citations that the focal firm makes in year t, which have never been made by the firm in the previous 5 years (Gao et al., 2018).	KPSS, NBER
Scope	The total number of new citations scaled by all citations made by all patents that the focal firm applies for in year t (Katila and Ahuja, 2002).	KPSS, NBER
Exploitative patents	The total number of exploitative patents that the focal firm applies for in year t. A patent is categorized as exploitative if at least 80% of its citations are based on firms' existing expertise (Gao et al., 2018).	KPSS, NBER
Known-class patents	The total number of patents the focal firm applies for in year t, which are from a technological class previously known to the firm (Balsmeier et al., 2017).	KPSS, NBER
Repeated citation	The total number of citations the focal firm makes in year t, which have been made by the firm in the previous 5 years (Gao et al., 2018).	KPSS, NBER
Depth	The total number of repeated citations scaled by all citations made by all patents that the focal firm applies for in year t (Katila and Ahuja, 2002).	KPSS, NBER
R&D expenditure	The total R&D expenditure scaled by total assets. In regressions used as a natural log.	Compustat

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Variable	Definition	Source
Panel B: deal variables		
Public (private) target	A dummy variable for an acquisition of a public (private) target in year t_0.	SDC
Post public (post private)	A dummy variable indicating the period after a public (private) target acquisition including the year of the acquisition announcement.	SDC
Public only (private only)	A dummy variable for acquirers that buy only public (private) targets within our sample period.	SDC
Acquirer with both types	A dummy variable for an acquirer that buys both public and private targets within out sample period.	SDC
CVC	A dummy variable for an acquirer that owns a corporate venture capital division.	Prequin, Compustat
Public with patent (private with patent)	A dummy variable for an acquisition of a public (private) target with existing patents.	SDC, KPSS
Technological similarity	The pairwise cosine similarity based on technological classes of patents by the acquirer-target pair as follows: $$\frac{\Sigma_{k=1}^{K} P_{i,k} P_{j,k}}{\sqrt{\Sigma_{k=1}^{K} P_{i,k}^2}\sqrt{\Sigma_{k=1}^{K} P_{j,k}^2}},$$ where the vector $P_i = (P_{i,1}, ..., P_{i,K})$ consists of ratios of the number of awarded patents applied for by the acquirer i in each technological class $k \in (1, K)$ during the period [-3,-1] to the total number of awarded patents to the acquirer applied for over the same period, and a vector of $P_j = (P_{j,1}, ..., P_{j,K})$ consists of ratios of the number of awarded patents applied for by the target j in each technological class k during the period [-3,-1] to the total number of awarded patents to the target applied for over the same period.	KPSS, NBER
High technological similarity	A dummy variable for the acquirer-target pair having a positive technological similarity.	KPSS, NBER
ERC	The earnings response coefficient measures the sensitivity of share prices to earnings news (Asker et al., 2015) and is estimated separately for each Fama-French 30 industry y and fiscal year t. It is the coefficient β_{yt} in the following regression for all firms i and quarters q in given industry-year: $$CAR_{iytq} = \alpha_{yt} + \beta_{yt} UE_{iytq} + \varepsilon_{iytq},$$ where CAR_{iytq} is firm i's abnormal return in the three-day window centered on the earnings announcement day in quarter q adjusted by the value-weighted market index and UE_{iytq} is firm i's earnings surprise defined as the difference between the realized earnings per share and the median earnings forecast from I/B/E/S.	I/B/E/S, Compustat, CRSP
Low HHI	A dummy variable for Herfindahl-Hirschman index based on net sales within the focal firm's 3-digit SIC industry in the lowest quintile.	Compustat
Panel C: Control variables		
Size	The focal firm's total sales. In regressions used as a natural logarithm.	Compustat
Leverage	The focal firm's long-term debt scaled by total assets.	Compustat
Net income	The focal firm's net income scaled by total assets.	SDC
HH index	The Herfindahl-Hirschman index computed as a sum of the squared market shares based on net sales within the focal firm's 3-digit SIC industry.	Compustat
Panel D: Extra variables in the abnormal return regressions		

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Variable	Definition	Source
CAR(-2,2)	The 5-day cumulative return around the deal announcement date for the acquirer adjusted by the value-weighted market index return.	SDC, CRSP
ΔPatent count	The natural logarithm of the ratio of the average patent count over the post-deal period to the average patent count over the pre-deal period.	KPSS, NBER
ΔROA	The natural logarithm of the ratio of the average return on assets over the post-deal period to the average return on assets over the pre-deal period.	Compustat
ΔHH Index	The natural logarithm of the ratio of the average HH index over the post-deal period to the average HH index over the pre-deal period.	Compustat
Cash only	A dummy variable indicating that the method of payment for the acquisition is cash only.	SDC
Hostile deal	A dummy variable indicating that the deal attitude is classified as hostile.	SDC
Horizontal deal	A dummy variable indicating that the acquirer and target are from the same 3-digit SIC industry.	SDC
ΔInnovation	Computed for all innovation variables except the patent count. It is the natural logarithm of the ratio of the average for the variable over the post-deal period to the variable average during the pre-deal period.	KPSS, NBER

Appendix B Examples of private and public target acquisitions

This section provides a short description for two acquisitions by HP Inc from our data set. The first one is of a private Persist Technologies Inc undertaken in 2003 and illustrates high growth prospects in the particular market of e-mail archiving. The second acquisition is of public target Pregrine Systems Inc completed in 2005. Pregrine experienced financial difficulties since 2002. HP saw the potential of becoming a market leader in the segment and of operational synergies through cross-selling to different groups of customers.

HP Inc acquired Persist Technologies Inc

Following is a quote from a HP's new announcement on 11 November 2003:

> HP today signed a definitive agreement to acquire Persist Technologies, Inc., a leading provider of software designed for long-term storage and access of reference information. The acquisition is expected to improve HP's ability to deliver complete information lifecycle management (ILM) solutions. ILM is HP's strategy to actively manage information from its creation through deletion and according to its changing business relevance over time. With Persist's active archiving software, HP expects to deliver enhanced archiving solutions to assist customers in complying with emerging and stringent data retention regulations and extract business value from large amounts of reference information.

eWeek commented on 10 November 2003:

> Persist spun-off from compliance and electronic discovery firm Zantaz Inc. in 2002. Its customers include the U.S. Army and E-Trade Group Inc., officials previously said.
>
> 'They are very clever. They are going after someone with the technology but that does not burden them with a lot of history, and with a low purchase price,' industry analyst Sara Radicati said, of The Radicati Group Inc., also based in Palo Alto. Regarding the e-mail archiving market: 'We think its a very high-growth area. Its a very big deal,' Radicati said.

HP Inc acquired Peregrine Systems Inc

A quote from a HP's new announcement on 19 December 2005:

> HP today announced the completion of its acquisition of Peregrine Systems, Inc., a leading IT asset and service management software company. Effective immediately, Peregrine will become part of the HP OpenView business unit, which is led by Todd DeLaughter, vice president and general manager. The acquisition, initially announced in September 2005, will add key asset and service management components to the HP OpenView portfolio, a distributed management software suite for business operations and IT. With these components, HP can offer chief information officers more insight into and control over their technology environments in an efficient and cost-effective manner.

The IDC News Service commented on 19 September 2005:

> Peregrine has had a troubled financial past. The company filed for Chapter 11 bankruptcy in September 2002 after accounting irregularities surfaced leading to an investigation by the U.S. SEC. The irregularities eventually totaled $250 million. In order to cut costs during 2002, Peregrine halved its staff, closed offices and sold off its Remedy service management business to BMC Software. Peregrine emerged from Chapter 11 in August 2003 and has been playing catch-up with restating its SEC financial filings ever since. ... DeLaughter noted that HP has been monitoring Peregrine's financial status closely for some time.
>
> ...
>
> There is some overlap between HP's and Peregrine's service management software offerings, according to DeLaughter. HP has a road map to put in place once the deal is approved to merge Peregrine's ServiceCenter with ServiceDesk products and any related software in development at Peregrine over the coming 12 months to 18 months, he said. Since HP has relied on 'an assortment of partners' in the asset management space to date, there's no product overlap with Peregrine's AssetManager, DeLaughter said. AssetManager will form the basis for HP's asset management strategy going forward, he added. ... DeLaughter sees only a 20 percent to 25 percent overlap between the companies' customers on the service management side and none on the asset management side. 'There's a tremendous opportunity to do cross-selling,' he said.
>
> ...
>
> By integrating Peregrine's products into its HP OpenView systems management suite, HP hopes to position itself as one of the market leaders in asset management software.

Internet appendix to

"M&As and innovation: Evidence from acquiring private firms"

(not for publication)

This appendix presents supplementary results not included in the main body of the paper.

Table I.1. Likelihood of acquisitions

This table reports in Panel A coefficient estimates obtained from estimating logit models predicting the probability of acquiring public and private targets over the period between 1995 and 2005. The dependent variable, public (private) target equals to one if a firm acquires a public (private) target in the given year. All explanatory variables are lagged one year. All specifications include Fama-French 12-sector and year fixed effects. Standard errors are reported in parentheses. Panel B shows the mean, standard deviation, 25^{th}, 50^{th} and 75^{th} percentiles for deal frequencies, innovation measures, and control variables for all firms with patents between 1995 and 2005. All variables are defined in Appendix A and winsorized at the 1^{st} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels, respectively.

Panel A: Probability of acquiring

	Public target	**Private target**
Constant	-9.791***	-3.703***
	(0.366)	(0.166)
Ln(1+patent count)	0.130	-0.306***
	(0.120)	(0.073)
Ln(1+exploratory patents)	-0.247**	0.107*
	(0.103)	(0.064)
Ln(1+unknown-class patents)	-0.239***	-0.173***
	(0.060)	(0.041)
Ln(1+new citations)	0.269***	0.304***
	(0.058)	(0.034)
Ln(1+scope)	-0.815***	-0.569***
	(0.223)	(0.123)
Size	0.352***	0.135***
	(0.016)	(0.007)
R&D expenditure	-0.015***	-0.027***
	(0.005)	(0.003)
#Obs	19,158	19,158
Pseudo R^2	0.143	0.0769

Panel B: Summary statistics for all firms with patents

	# obs.	**Mean**	**St.dev.**	**25^{th} perc.**	**Median**	**75^{th} perc.**
Deal frequencies						
Public target	20,823	0.064	0.245	0.000	0.000	0.000
Private target	20,823	0.232	0.422	0.000	0.000	0.000
Innovation variables included						
Ln(1+patent count)	20,823	1.016	1.426	0.000	0.693	1.609
Ln(1+exploratory patents)	20,823	0.798	1.264	0.000	0.000	1.099
Ln(1+unknown-class patents)	20,823	0.342	0.615	0.000	0.000	0.693
Ln(1+new citations)	20,823	2.099	2.389	0.000	1.099	3.951
Ln(1+scope)	20,823	0.353	0.345	0.000	0.656	0.693
Remaining innovation variables						
Ln(1+exploitative patents)	20,823	0.274	0.682	0.000	0.000	0.000
Ln(1+known-class patents)	20,823	0.776	1.373	0.000	0.000	1.099
Ln(1+repeated citations)	20,823	1.249	1.978	0.000	0.000	2.398
Ln(1+depth)	20,823	0.113	0.190	0.000	0.000	0.185
Control variables						
R&D expenditure	20,823	11.399	7.596	0.000	15.047	16.795
Size	20,100	18.137	4.392	16.602	18.581	20.756

Table I.2. Baseline DiD robustness tests

This table replicates Table 3 but we do not include control variables. The data set contains 201,014 firm-year observations in Panel A, 35,596 observations in Panel B and 165,418 observations in Panel C. All regressions include firm and year fixed effects. Standard errors clustered by firm and year are reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patent	Unknown-class patent	New citation	Scope	Exploitative patent	Known-class patent	Repeated citation	Depth
Panel A: Full sample with public and private target acquisitions without controls									
Post public	0.048	0.024	-0.071***	0.037	-0.001	0.086***	0.020	0.190***	0.018***
	(0.046)	(0.039)	(0.023)	(0.086)	(0.014)	(0.018)	(0.039)	(0.058)	(0.005)
Public x post public (β_1)	0.005	-0.000	0.021	0.068	0.010	-0.019	0.002	-0.013	0.003
	(0.034)	(0.030)	(0.022)	(0.053)	(0.008)	(0.023)	(0.038)	(0.051)	(0.005)
Post private	0.001	-0.010	-0.046**	-0.040	-0.002	0.004	-0.038	0.048	0.008
	(0.041)	(0.033)	(0.018)	(0.080)	(0.012)	(0.014)	(0.034)	(0.059)	(0.005)
Private x post private (β_2)	0.083***	0.065***	0.045***	0.197***	0.026***	0.032***	0.091***	0.112***	0.010***
	(0.017)	(0.015)	(0.010)	(0.035)	(0.006)	(0.010)	(0.017)	(0.026)	(0.003)
R^2	0.876	0.861	0.591	0.792	0.552	0.862	0.880	0.814	0.514
$\beta_2 - \beta_1$	0.078**	0.065*	0.024	0.129*	0.016*	0.051**	0.089**	0.125**	0.007
Panel B: Sub-sample with public target acquisitions									
Public x post public with controls	-0.026	-0.023	0.029	0.023	0.001	-0.042	-0.016	-0.047	-0.000
	(0.033)	(0.030)	(0.025)	(0.048)	(0.006)	(0.025)	(0.037)	(0.056)	(0.005)
Public x post public without controls	0.005	-0.000	0.021	0.068	0.010	-0.019	0.002	-0.013	0.003
	(0.034)	(0.030)	(0.022)	(0.053)	(0.008)	(0.023)	(0.038)	(0.051)	(0.005)
Panel C: Sub-sample with private target acquisitions									
Private x post private with controls	0.074***	0.055***	0.046***	0.164***	0.018***	0.031***	0.090***	0.111***	0.010***
	(0.017)	(0.015)	(0.013)	(0.034)	(0.006)	(0.010)	(0.019)	(0.029)	(0.003)
Private x post private without controls	0.083***	0.065***	0.045***	0.197***	0.026***	0.032***	0.091***	0.112***	0.010***
	(0.017)	(0.015)	(0.010)	(0.035)	(0.006)	(0.010)	(0.017)	(0.026)	(0.003)

Table I.3. Shorter event window

This table replicates Table 3 but with an event window from t_{-3} to t_{+3}. Panel A with both public and private target acquisitions includes 129,458 firm-year observations. Panel B reports the double interaction terms from regressions that include only public (23,665 observations) or private (105,793 observations) target acquisitions and their matches. All regressions include firm and year fixed effects and control variables. Standard errors clustered by firm and year are reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Exploratory patent	Unknown-class patent	New citation	Scope	Exploitative patent	Known-class patent	Repeated citation	Depth
Panel A: Full sample with public and private target acquisitions									
Post public	-0.020	-0.014	-0.017	-0.094**	-0.011*	0.033**	-0.040	0.001	0.000
	(0.021)	(0.019)	(0.017)	(0.037)	(0.006)	(0.014)	(0.024)	(0.031)	(0.003)
Public x post public (β_1)	0.023	0.013	-0.002	0.060	0.003	0.009	0.038	0.042	0.007
	(0.026)	(0.025)	(0.022)	(0.045)	(0.008)	(0.019)	(0.027)	(0.041)	(0.005)
Post private	-0.056***	-0.048***	-0.030***	-0.154***	-0.019***	-0.010	-0.074***	-0.063**	-0.001
	(0.014)	(0.013)	(0.009)	(0.022)	(0.005)	(0.007)	(0.016)	(0.026)	(0.003)
Private x post private (β_2)	0.066***	0.063***	0.046***	0.158***	0.019***	0.012	0.081***	0.076***	0.003
	(0.012)	(0.013)	(0.013)	(0.026)	(0.006)	(0.008)	(0.015)	(0.022)	(0.003)
R^2	0.939	0.922	0.674	0.870	0.651	0.919	0.941	0.889	0.608
Panel B: Sub-samples with only public or private target acquisitions									
Public x post public	0.019	0.011	-0.003	0.057	0.003	0.006	0.035	0.037	0.006
	(0.026)	(0.024)	(0.021)	(0.045)	(0.008)	(0.018)	(0.026)	(0.040)	(0.005)
R^2	0.949	0.934	0.687	0.899	0.695	0.929	0.947	0.911	0.656
Private x post private	0.066***	0.063***	0.046***	0.159***	0.020***	0.013	0.082***	0.077***	0.003
	(0.012)	(0.013)	(0.013)	(0.026)	(0.006)	(0.008)	(0.015)	(0.023)	(0.003)
R^2	0.935	0.916	0.667	0.859	0.640	0.914	0.938	0.880	0.595

Table I.4. Withdrawn acquisitions

Date announcement	Target's name	Acquirers's name	Reason for withdrawn
07/02/2000	Amazescape.com Inc	Premier Concepts Inc	Target firm committed a material and substantial breach of the Merger Agreement. Target's progress to date on its business plan has been modest at best and are led to conclude that target is not currently even prosecuting its business plan in a meaningful way. Certain ongoing problems, such as AmazeScape's failure to satisfy its obligations to major suppliers.
06/06/2000	Impac Medical Systems Inc	Varian Medical Systems Inc	Department's Antitrust Division announced its intent to block the transaction, saying it would reduce competition significantly in the sale of radiation oncology management systems software and medical devices known as linear accelerators sold in the United States
08/02/2001	Adexa Inc	Freemarkets Inc	Both companies attributed the failed merger to the slowing economy, sour market conditions and delays in winning regulatory approval from the Securities and Exchange Commission. Instead, FreeMarkets and Adexa have both agreed to enter a nonexclusive partnership that calls for selling each other's software and services to joint clients.
28/03/2001	MAYAN Networks Corp	Ariel Corp	MAYAN Networks notice to Ariel cited the failure of the Merger to close on or before August 31, 2001 as the primary reason for the unilateral termination of the merger agreement. Nasdaq cited their opinion that the combination of Ariel and MAYAN Networks would not meet the initial listing standards for the Nasdaq National Market, and that Ariel failed to meet the continued listing standards for the Nasdaq National Market
22/08/2001	Eos Biotechnology	Pharmacopeia Inc	The merger has faced public opposition from at least one of Pharmacopeia's stockholders, OrbiMed Advisors LLC, which owns about 10 percent of Pharmacopeia's stock.
24/10/2001	Graphco Technologies Inc	PerfectData Corp	N/A
30/04/2002	Cogentrix Energy Inc	Aquila Inc	Both companies agreed that the current uncertainty of the electric power market made proceeding with the transaction impractical and not in either company's best interest.
14/11/2001	Pegasus Pharmacy Inc	Restaurant Teams International Inc	As a result of various irreconcilable circumstances between the Company and management of the two subsidiaries, the Company signed a Settlement and Separation Agreement (the "Separation Agreement") in which ownership of MedEx and Pegasus was returned to the original owners and the Company received a perpetual, paid-up license to utilize, improve, resell, and distribute the technology within a protected territory in the United States consisting of 158 CMSA's in the United States and all international rights.
14/11/2001	MedEx Systems Inc	Restaurant Teams International Inc	As a result of various irreconcilable circumstances between the Company and management of the two subsidiaries, the Company signed a Settlement and Separation Agreement (the "Separation Agreement") in which ownership of MedEx and Pegasus was returned to the original owners and the Company received a perpetual, paid-up license to utilize, improve, resell, and distribute the technology within a protected territory in the United States consisting of 158 CMSA's in the United States and all international rights.

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Date announced	Target's name	Acquirer's name	Reason for withdrawal
08/02/2002	Aspect SemiQuip International	Patriot Scientific Corp	That such an acquisition would not meet the business objectives of either company. With present market conditions and the present strategic direction of PTSC, it was decided the acquisition would not have been productive.
19/02/2002	Incubation Park Business Development Inc	TeleServices Internet Group Inc	The company announced that it had signed a letter of intent to acquire Incubation Park Business Development Inc. ("Incubation Park"), subject to certain terms and conditions (the "Letter of Intent"). The Company has had no success to date in raising the capital needed to fulfill the various terms of the Letter of Intent. On April 3, 2002, Incubation Park notified the Company that they had received an offer of financing from another party. Since the Company has not been able to raise the necessary capital to fulfill the terms of the Letter of Intent, nor is there any prospect it will be able to do so, by mutual agreement between the Company and Incubation Park the Letter of Intent has been cancelled.
27/02/2002	Southwick Management Inc	VPN Communications Corp	All parties decided it was in the best interest of the shareholders of both entities for the companies to pursue separate paths
15/03/2002	BaySpec Inc	Finisar Corp	Current market conditions as well as the outlook for capex spending within the telecommunications industry, make it difficult to complete the BaySpec acquisition as planned," said Jerry Rawls, Finisar's President and CEO
18/03/2002	Screenphone.net Inc	Telco-Technology Inc	During the quarter ended March 31, 2002, the Company obtained loans from certain private parties in the aggregate amount of $85,000. All of such loans bear interest at 6.75% and mature in six months. During the quarter ended March 31, 2002, the Company loaned $35,000 to ScreenPhone in connection with the transaction contemplated by the Letter of Intent. As a result of the decision to not proceed with the proposed business combination
21/03/2002	Reliant Pharmaceuticals Inc	Alkermes Inc	The companies agreed to terminate the merger agreement due to general market conditions.
16/05/2002	Franklin Bank of California	Wal-Mart Stores Inc	A coalition of consumer groups, unions, independent banks, credit unions, and realtors managed a legislative feat in California last month when they pushed through an 11th hour bill to block Wal-Mart's attempt to acquire a small bank. Wal-Mart filed an application with state regulators in April to buy Franklin Bank of California, an industrial bank with $2.5 million in assets and three employees in Orange County. The new law prohibits non-financial firms from buying state-chartered banks.
11/07/2002	IDS Software Systems Inc	HPL Technologies Inc	HPL Technologies, Inc. today reported that the audit committee of the Company has initiated an investigation into financial and accounting irregularities involving revenue reported during prior periods. HPL also announced that, in light of the recent developments, it is unlikely that the Company will be able to complete the pending acquisition of IDS Software Systems.

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Date announced	Target's name	Acquirer's name	Reason for withdrawal
29/08/2002	Bob Baker Auto Group	Asbury Automotive Group Inc	Asbury Automotive Group (NYSE: ABG), one of the largest automotive retailers and service companies in the U.S., today announced that it expects to restructure its previously announced acquisition of the Bob Baker Auto Group. Following Asbury's recently announced agreement to acquire the Bob Baker Auto Group, Asbury requested franchise purchase approval from each relevant manufacturer. Ford Motor Company recently informed Asbury that it does not intend to approve Asbury's pending acquisition of the Bob Baker Ford franchise, contending that Asbury has not complied with its contractual agreement with Ford Motor Company.
12/11/2002	DxCG Inc	I-trax Inc	DxCG terminated the merger agreement because the Company failed to satisfy certain conditions to closing, including third party financing for the cash portion of the purchase price.
07/05/2003	Donobi Inc	Reality Wireless Networks Inc	Reality Wireless Networks, Inc., has failed, inter alia, to satisfy the conditions precedent to the obligations set forth in the proposed definitive agreement and has not cured these breaches. Therefore, Donobi, Inc., has decided to terminate the agreement for Reality Networks, Inc.'s, failure to satisfy the conditions.
26/06/2003	Kiboga Systems Inc	DataLogic International Inc	The Company had attempted to expand via merger and acquisition but was not able to achieve the desired results. The Company had incurred sizable expenses, as paid in capital, for the M&A effort without adding any significant net gain to the bottom line in fiscal 2003. The majority of the expenses were in consulting and legal fees for market research, due diligence and legal representation.
06/02/2004	SunWest Communications Inc	USURF America Inc	Reogranization between USURF and SunWest.
16/03/2004	Argent LLC	MaxxZone.com Inc	As a result of due diligence concerns, MaxxZone has terminated its Letter of Intent to acquire Argent, LLC, enabling MaxxZone to enter into this Letter of Intent with the Target. Established more than 20 years ago, the Target is an international forwarding and logistic company based in Hong Kong and specializing in Sea and Air Freight.
19/04/2004	Apex Sight LLC	VoIP Inc	After extensive time delays and due diligence, Apex Sight LLC is withdrawing from the proposed merger. Henry Cooper, CEO, Apex Sight LLC stated, "After spending considerable time and expense, it was determined that the long term value for the shareholders of Apex Sight LLC would not recognize the potential returns on their investment by completing the merger.

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Date announced	Target's name	Acquirer's name	Reason for withdrawal
18/05/2004	BioHorizons Implant Systems Inc	Encore Medical Corp	The two parties agreed to end the merger when the deadline passed late last week. Davis Henley, vice president of business development for Encore Medical says the deal was quashed, in part, because the Securities and Exchange Commission did not complete its evaluation of the deal by the beginning of September. Additionally, between the time Encore Medical entered into the agreement with BioHorizons, the Austin company acquired St. Paul, Minn.-based medical device company Empi Inc for $360 million, an acquisition that Henley calls an order of magnitude bigger than the BioHorizons deal. Both we and BioHorizons had some concerns about how that acquisition would impact our transaction with BioHorizons," Henley says. "The BioHorizons acquisition became less significant and less important for us."
10/01/2005	Aptus Corp	InsynQ Inc	In April 2005, this deal was rescinded by mutual agreement, and the 40 million shares of common stock were returned to us and we returned the 1,500 "MyBooks" licenses to Aptus Corp. This was done in anticipation of an asset purchase agreement to be executed on April 30, 2005, in which we purchased all the intellectual property rights and applications codes from Aptus Corp, which included the source code of MyBooks.
19/01/2005	Brazos Resources Inc	Opus Communities Inc	Further due diligence on the acquisition showed the cost for the property was higher than expected.
31/01/2005	Omni Oil	Gas Inc	Empiric Energy Inc & Empiric Energy Inc., Dallas, (Pink Sheets: EPRC) has terminated its letter of intent with Dallas-based independent Omni Oil & Gas Inc. Though an acquisition may still occur in the future, the companies have agreed it would not be beneficial for either company at this time.
18/05/2005	South Seas Data Inc	Nayna Networks Inc	Acquisitions may disrupt or otherwise have a negative impact on our business. We plan to use this as a strategy to grow our business. If we buy a company, then we could have difficulty in integrating that company's personnel and operations. In addition, the key personnel of the acquired company may decide not to work for us. An acquisition could also distract our key management and employees and increase our operating and other expenses. Furthermore, we may have to incur debt or issue equity securities to pay for any such future acquisitions, the issuance of which could be dilutive to our existing stockholders. Our common stock price is highly volatile and the current market for our common stock is limited.

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Date announced	Target's name	Acquirer's name	Reason for withdrawal
06/07/2005	Hands On	GoAmerica Inc	The mergers will occur only if stated conditions are met, including the approval of the merger agreement and the mergers by the stockholders of VRS and SLS and the approval of the issuance of the GoAmerica shares to be issued in the mergers by the GoAmerica stockholders, and the absence of any material adverse effect in the businesses of GoAmerica or Hands On. Many of these conditions are outside the control of Hands On and GoAmerica. In addition, both parties also have the right to terminate the merger agreement in certain circumstances. Accordingly, there may be uncertainty regarding the completion of the mergers. This uncertainty may cause customers and suppliers to delay or defer decisions concerning Hands On or GoAmerica, which could negatively affect their respective businesses. Customers and suppliers who dealt with either GoAmerica or Hands On in the past may choose not to continue to do business with the combined company. Any delay or deferral of those decisions or changes in existing relationships could have a material adverse effect on the respective businesses of Hands On and GoAmerica, regardless of whether the mergers are ultimately completed.

Table I.5. Innovation persistency for withdrawn deals

This table replicates Table 4 but for withdrawn public and private target acquisitions and their corresponding matched successful acquisitions. Panel A (Panel B) with 7,391 (8,603) observations includes only public (private) target acquisitions and their matches. *Post* pub_j (*Post* $priv_j$) is a dummy variable indicating that firm i is an acquirer of public (private) target and the observation is j years away from the acquisition announcement year. All regressions include year and firm fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and HH index. Standard errors clustered by firm and year are reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Patent count	Explor. patents	Unknown class	New citations	Scope	Exploit. patents	Known class	Repeated citations	Depth
				Panel A: Sub-sample for public target acquisitions					
Post pub_t0	0.037	0.057*	0.039	0.096	0.018	0.009	-0.012	-0.006	-0.002
	(0.031)	(0.030)	(0.029)	(0.072)	(0.020)	(0.021)	(0.031)	(0.059)	(0.006)
Post pub_t1	0.031	0.046	0.040	0.061	0.009	-0.005	-0.009	-0.015	0.002
	(0.038)	(0.037)	(0.034)	(0.088)	(0.017)	(0.022)	(0.030)	(0.064)	(0.009)
Post pub_t2	0.074	0.079*	0.041	0.165	0.047**	0.002	0.005	0.008	0.003
	(0.044)	(0.042)	(0.027)	(0.097)	(0.018)	(0.021)	(0.041)	(0.063)	(0.007)
Post pub_t3	0.075	0.089	0.036	0.172	0.035	-0.004	0.008	-0.012	-0.003
	(0.058)	(0.052)	(0.031)	(0.110)	(0.021)	(0.027)	(0.060)	(0.089)	(0.009)
Post pub_t4	0.054	0.078	0.030	0.065	-0.000	-0.011	0.024	0.024	-0.004
	(0.056)	(0.053)	(0.030)	(0.107)	(0.020)	(0.030)	(0.057)	(0.083)	(0.008)
Post pub_t5	0.065	0.053	0.025	0.156	0.021	0.022	0.002	0.101	0.011
	(0.061)	(0.057)	(0.041)	(0.150)	(0.028)	(0.032)	(0.053)	(0.090)	(0.010)
R^2	0.895	0.868	0.585	0.816	0.635	0.842	0.901	0.848	0.586
				Panel B: Sub-sample for private target acquisitions					
Post $priv_t0$	0.095***	0.069***	0.030	0.218***	0.048***	0.020	0.068***	0.099**	0.012*
	(0.023)	(0.023)	(0.021)	(0.054)	(0.012)	(0.028)	(0.023)	(0.046)	(0.007)
Post $priv_t1$	0.131***	0.109***	0.070**	0.334***	0.074***	0.023	0.057*	0.096*	0.005
	(0.030)	(0.031)	(0.025)	(0.054)	(0.015)	(0.016)	(0.033)	(0.054)	(0.006)
Post $priv_t2$	0.112**	0.083**	0.049**	0.332***	0.074***	0.055**	0.067	0.169**	0.021**
	(0.043)	(0.037)	(0.021)	(0.110)	(0.020)	(0.020)	(0.039)	(0.070)	(0.008)
Post $priv_t3$	0.113***	0.098**	0.031	0.364***	0.066***	0.027	0.073*	0.103	0.007
	(0.035)	(0.037)	(0.018)	(0.084)	(0.019)	(0.031)	(0.035)	(0.069)	(0.008)
Post $priv_t4$	0.197***	0.126**	0.079***	0.624***	0.125***	0.078**	0.109**	0.313***	0.037***
	(0.047)	(0.045)	(0.026)	(0.103)	(0.018)	(0.036)	(0.042)	(0.071)	(0.009)
Post $priv_t5$	0.216***	0.169**	0.081***	0.659***	0.131***	0.074*	0.117*	0.234*	0.024*
	(0.075)	(0.063)	(0.023)	(0.203)	(0.032)	(0.042)	(0.067)	(0.116)	(0.012)
R^2	0.818	0.787	0.552	0.725	0.532	0.634	0.824	0.755	0.519

Table I.6. Inventor summary

This table summarizes lists of patents and associated inventors for 9 random examples of private target acquisitions with existing patents. For each acquisition, it shows the 7-digit patent number and the corresponding inventors, respectively, at the target firm prior to the acquisition and at the acquiring firm 5 years prior and 2 years after the acquisition. Inventors in red in the last column are new inventors at acquiring firms after acquisitions who did not appear as inventors in patens listed in the other two columns. Inventors in blue are inventors at target firms who become inventors in the acquiring firms post acquisition. Inventors in pink are inventors at target firms who participate in patens at the acquiring firms in the pre- and post-acquisition periods.

Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
Example 1 - Acquirer: Actuant Corp, Target: Kwikee Products Co Inc					
5505476	Malcom Maccabee	6619714	Robert H.Schneider, Jeffrey N.Ashbeck	6805391	Robert H. Schneider
5829822	Robert Tiedge	6655723	Bert Meijer, Haiko Freriksen, Leo de Jong	6844819	Thomas M.Luebke, David L.Wiesemann, George R.Steber
5842709	Malcom Maccabee	6731218	Thomas M.Luebke, David L.Wiesemann, George R.Steber	6896307	Timothy L.Nye, Robert H.Schneider
5860686	Robert L.Tiedge	6739235	Laurentius Andreas Gerardus Mentink	6958449	Bernard J.Ziebart, Michael F.Bedwell, Andrew J.Bonlender
5915774	Robert L.Tiedge	6751953	Laurentius Andreas Gerardus Mentink, Willem Herman Masseling, Daniel van't Veen	7044415	David L.Wiesemann, David A.Huebschen, Debra L.Weich
6050573	Jamez R.Kunz			7071418	Daryl C.Brockman, David A.Huebschen
6213486	Jamez R.Kunz, Benjamin J.Boyce, Malcom Maccabee	6764126	Laurentius Andreas Gerhardus Mentink, Johnny Antonius Jacobus Wiggemans	7144069	Bernardus Martinus Emanuel Meyer, Haiko Freriksen
6471275	Jamez R. Kunz, Brock E. Ferguson	6796590	Robert H. Schneider	7147210	Carl A.Foege, Edward T.Arters, Roger R.Pili
		6812685	George R.Steber, David L.Wiesemann, Thomas M.Luebke	7171890	Tone Oudelaar
		6832806	Laurentius Andreas Gerhardus Mentink, Johnny Antonius Jacobus Wiggemans	7194947	Laurentius Andreas Gerardus Mentink
		6848693	Robert H. Schneider	7295130	Thomas M. Luebke, Patrick John Radle, Daryl Charles Brockman, David Wiesemann, George R.Steber
		6981372	Laurentius Andreas Gerardus Mentink, Johnny Antonius Jacobus Wiggemans	7296784	Gary D. Peter
		6318742	John D. Franzini	7343846	Frantz D. Stanford, Jesus Salvador Gonzalez Sanz, Bruce Edwin Knuth
		6454336	Timothy L.Nye, Robert D.Spore, Douglas R.Graf	7374150	David L. Wiesemann, David A. Huebschen
		6460638	Thomas E.Strunsee, Thomas M.Luebke, Bernard J.Ziebart	7503344	Roger R. Pili, Paul Hohensee, Edmond Charles Miniatt,
		6494518	Craig J.Kreil, Kurt H.Ott, Brian J.Wheeler, Robert H. Schneider	7544902	Frantz D. Stanford
		6497449	Douglas R. Graf, Robert H. Schneider	7004528	Timothy L. Nye, Robert H. Schneider
		6508503	Laurentius Andreas Gerardus Mentink	7100900	Patrick J. Radle, Daryl C. Brockman, David A. Huebschen,
		6511304	Daniel van't Veen	7204083	Laurentius Andreas Gerardus Mentink, Johnny Antonius Jacobus Wiggemans
		6674276	Wayne D. Morgan, Chris W.Martin, Thomas M.Luebke, David L.Wiesemann	7204536	James R. Kunz
		6684439	Dennis J. Jeske, Robert W. Kruse, Allen W. Montgomery, David L. Wiesemann	7216578	Laurentius Andreas Gerardus Mentink
		6863502	Michael B. Bishop, Roger R. Pili, Bruce E. Knuth, Moe K. Barani, Ron Flanary, Laurentius A. G. Mentink, George R. Steber, Martin Piedl	7229123	James R. Kunz
		6926473	Thomas M. Luebke	7234758	Gary D. Peter
		6948580	Rene Hendrikus Plechelmus Scholten, Roeland Mallan	7258382	James R. Kunz, Brock E. Ferguson
		7055637	Roeland Mallan, Aswin Leonard Koebrugge	7296779	Nikesh Bakshi, Adam Tipton, Craig J. Reske
		6863502	Michael B. Bishop, Roger R. Pili, Bruce E. Knuth, Moe K. Barani, Ron Flanary, Laurentius A. G. Mentink,	7497492	Jesus Gonzalez, Luis Sordo
				7610636	James K. Holmes, Douglas J. Yoder, Gary D.Peter
				7614675	James R. Kunz

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
			George R. Steber, Martin Piedl		
		6926473	Thomas M. Luebke		
		6948580	Rene Hendrikus Plechelmus Scholten, Roeland Mallan		
		7055637	Roeland Mallan, Aswin Leonard Koebrugge		
		6299233	Laurentius A. G. Mentink		
		6293611	Robert H. Schneider, Jeffrey N. Ashbeck		
		6601896	Timothy L. Nye, Robert H. Schneider		
		6422636	Laurentius A. G. Mentink		
		6456060	David L. Wiesemann		
		6395222	Marten van Meerveld, Laurentius A. G. Mentink		
		6593754	George R. Steber, Thomas M. Luebke, Stephen J. Skeels, David L. Wiesemann		
		6415675	Robert H. Schneider, Jeffrey N. Ashbeck		
		6224038	Dean R. Walsten, David L. Wiesemann, Timothy E. O'Connell, Stephen J. Skeels		
		6148862	Robert A. Doll		
		6224036	George T. Prince, William J. Gordon		
		6623035	Robert H. Schneider		
		6149221	Laurentius A. G. Mentink		
		6213485	Robert A. Doll, Timothy J. Abhold, Terence A. Bucheger		
		6152709	Laurentius A. G. Mentink		
		6250612	Robert A. Doll		
		6145860	Xudong Yu, Gregory A. Schmidt, Michael S. Schultz		
		6137285	Dean R. Walsten, Thomas M. Luebke, David L. Wiesemann		
		6109381	Douglas G. Stuyvenberg, Suzanne M. Schneider		
		5927141	Dean R. Walsten		
		5957231	Richard L. Conaway, Douglas G. Stuyvenberg		
		6286883	Robert H. Schneider, Richard B. Lahti		
		6109683	Robert H. Schneider		
		5934132	Brian W. Nichol		
		6220613	John D. Franzini		
		5938180	Dean R. Walsten		
Example 2 - Acquirer: Kulicke & Soffa Industries Inc, Target: Probe Technology Corp					
5422574	January Kister	6136681	Eli Razon, Walter Von Seggern	6412683	David T. Beatson, Christian Hoffman,
5644249	January Kister	6165051	Ilan Weishauss, Oded Yehoshua Licht		James E. Eder, John Ditri
5720098	January Kister	6168500	Ilan Weishauss, Oded Yehoshua Licht	6420245	Manor Ran
5742174	January Kister, Jerzy Lobacz	6171456	Ilan Hadar, Beni Sonnenreich	6497356	Amir Miller, Gil Perlberg
5751157	January Kister	6176414	Richard D.Sadler	6509529	Sundar Kamath, David Chazan,
5764072	January Kister	6179197	Eugene M.Toner		Jan I.Strandberg, Solomon I.Beilin
5884395	Krzysztof Dabrowiecki, January Kister, Jerzy Lobacz	6227437	Eli Razon, Vaughn Svendsen, Krishnan Suresh, Robert Kowtko, Kyle Dury	6523733	Amir Miller, Gil Perlberg
				6525552	January Kister
		6234376	Rudolph M. Wicen	6529333	David T. Beatson, Christian Hoffman,

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		6245445	James L. Lykins, II		Michael Woodward, Lawrence B. Brown
		6299053	Sundar Kamath, David Chazan, Jan I.Strandberg, Solomon I.Beilin	6555447	Ilan Weishauss, Ran Manor, Oded Wertheim
				6562698	Ran Manor
		6317331	Sundar Kamath, David Chazan, Solomon I.Beilin	6599561	Richard Dow, David T.Beatson, Tim W.Ellis Michael Hillebrand
		6323435	Jan I. Strandberg, David J.Chazan, Michael P.Skinner		
		6352743	Timothy W. Ellis, Nikhil Murdeshwar, Mark A.Eshelman	6608390	David T.Beatson, Andrew F.Hmiel
		6413576	Timothy W. Ellis, Nikhil Murdeshwar, Mark A.Eshelman, Christian Rheault	6634545	Eli Razon, Vaughn Svendsen, Robert Kowtko, Kyle Dury, Krishnan Suresh
		6419500	January Kister	6715658	Ziv Atsmon, Gil Perlberg, Benjamin Sonnenreich Arie Bahalui
		6033288	Ilan Weisshaus, Oded Yehoshua Licht		
		6039234	Eugene M. Toner	6729527	Sigalit Robinzon, Benjamin Sonnenreich
		6073827	Eli Razon, Yoram Gal	6908364	Gerald W.Back, Son Dang, Bahadir Tunaboylu
		6142138	Masayuki Azuma, Hirofumi Shimoda	6534877	Timothy W.Ellis, Nikhil Murdeshwar, Mark A.Eshelman
		6165892	David J. Chazan, Ted T. Chen, Todd S. Kaplan, James L. Lykins, Michael P. Skinner, Jan I. Strandberg	6641026	David T.Beatson, Christian Hoffman, James E.Eder, John Ditri
		6262579	David J. Chazan, James L. Lykins	6705507	David T.Beatson, Christian Hoffman, James E.Eder, John Ditri
		6354912	Masateru Osada, Masayuki Azuma, Hirofumi Shimoda, Felix Cohen	6712257	David T.Beatson, Christian Hoffman, James E.Eder, John Ditri
		6610930	Jeffrey Michael Seuntjens		
		5973504	Fu Chiung Chong	6729530	David T. Beatson, Deepak Sood, Ashoke Banerjee
		5808379	Wei Zhao	6740543	Claire Rutiser
		5871141	Ilan Hadar, Avishai Shklar	6745462	Claire Rutiser
		5901896	Yoram Gal	6784556	Paul T. Lin
		5931368	Ilan Hadar, Beni Sonnenreich	6885104	Timothy W. Ellis, Nikhil Murdeshwar, Mark A. Eshelman, Christian Rheault
		5950070	Eli Razon, Walter Von Seggern		
		5834862	Robert Eugene Hartzell, Jr.	7229906	Stephen Babinetz, Takashi Tsujimura, Hiroyuki Ohtsubo, Yasuhiro Morimoto
		6062462	Gary Steven Gillotti, Frederick William Kulicke, Jr.		
		5829663	Valery Khelemsky, Ali Reza Safabakhsh		
		5699953	Ali Reza Safabakhsh		
		5890643	Eli Razon, Avner Guez		
		5718546	Yacov Yariv, Eyal Mizrahi		
		5645210	Eugene Michael Toner, Avner Guez		
		5884834	Michael Riley Vinson, Wei Ivy Qin, Lee Robert Levine		
		5832412	Avner Guez		
		6049215	Fariborz Agahdel, Brad Griswold, Syed Husain, Robert Moti, William C. Robinette, Jr., Chung W. Ho		
		5587636	Izhak Bar-Kana, Predrag Filipovic		
		5591920	Susanne F. Price, Hiroshi Munakata, Eli Razon, Gil Perlberg, Igor Fokin		
		5558270	Beni Nachon, Ehud Efrat, Eli Razon, Gil Perlberg		

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
	Example 3 - Acquirer: PMCSierra Inc, Target: Integrated Telecom Technology				
5557607	Brian D. Holden	5889778	Charles Kevin Huscroft, John R.Bradshaw, Kenneth M.Buckland, Riccardo G. Dorbolo, David W. Wong	6075419	Lizhong Sun, Tadeusz Kwasniewski, Kris Iniewski
5570348	Brian D. Holden			6097253	Jurgen Hissen
5583861	Brian D. Holden	5909564	Thomas Alexander, Bradley H. Smith, Calvin S. Taylor	6128171	Kris Iniewski, Marek Syrzycki
5771228	Srini Wishnu Seetharam, Minette Ashley Dannhardt	5910874	Kris Iniewski, Marek Syrzycki	6341296	Michalczyk Michael Joseph, Sharp Kenneth George
		5959490	Anthony B. Candage, George Deliyannides	6467006	Thomas Alexander, Matt Smith
5844901	Brian Holden, Imran Chaudhri, Edward Lennox	5987065	Anthony B. Candage	6490317	Charles Kevin Huscroft
		6049526	Sivakumar Radhakrishnan, Stephen J.Dabecki, David Wong	6510509	Vikram Chopra, Ajay Desai, Raghunath Iyer, Sundar Iyer, Moti Jiandani, Ajit Shelat, Navneet Yadav
		6088369	Stephen Dabecki, Brian Gerson, Barry Hagglund, Charles Kevin Huscroft, Vernon R. Little		
		6104277	Kris Iniewski, Brian D. Gerson, Colin Harris, David LeBlanc	6584521	Jeff D. Dillabough, Steve Lang, Winston Mok
				6601158	Curtis Abbott, Homayoun Shahri
		6108303	Maher Nihad Fahmi, John Richard Bradshaw	6611875	Vikram Chopra, Ajay Desai, Raghunath Iyer, Sundar Iyer, Moti Jiandani, Ajit Shelat, Navneet Yadav
		6134218	Brian D. Holden		
		6188690	Brian D. Holden, Brian D.Alleyne, Darren S.Braun, Kevin Reno, Chee Hu, Raghavan Menon, Steve Sprouse	6633865	Heng Liao
		6188699	Steven Forbes Lang, Winston Ki-Cheong Mok, Larrie Simon Carr, Richard Arthur John Steedman, Glenn Kenneth Bindley	6647019	Nicholas W. McKeown, Costas Calamvokis, Shang-Tse Chuang Steven Lin, Rolf Muralt, Balaji Prabhakar, Anders Swahn, Gregory Watson
		6275861	Imran Chaudri, Srini Wishnu Seetharam	6668297	Travis J. Karr, Richard A. J., Winston Mok Steadman, Martin Chalifoux, Larrie S. Carr
		5706288	Sivakumar Radhakrishnan, Stephen J. Dabecki, David Walden Wong	6680954	Richard Cam, Steven Lang, Charles Kevin Huscroft
		5734541	Kris Iniewski, Brian D.Gerson, Colin Harris, David LeBlanc	6691168	Subhash Bal, Raghunath Iyer, Sunday Iyer Ramana Rao
		5742765	David Wong, Salman Ghufran, Vernon Robert Little	6850523	Travis James Karr, Martin Chalifoux
		5745490	Salman Ghufran, David Wong	6150965	Larrie Carr, Winston Mok
		5760618	George Deliyannides, Kris Iniewski	6342790	Kenneth William Ferguson, Brian Gerson
		5793225	Brian Donald Gerson	6342810	Andrew S.Wright, Bartholomeus T.W.Klijsen, Paul V.Yee, Chun Yeung Kevin Fung, Steven J.Bennet
		5835501	Kamal Dalmia, Andre Ivanov, Brian Donald Gerson, Curtis Lapadat		
		5835602	Kamal Dalmia, Andre Ivanov, Brian Donald Gerson, Curtis Lapadat	6345050	Brian D. Alleyne, Raghavan Menon, Steve Sprouse
				6351142	Curtis Abbott
		5875192	Richard Cam, Steven Lang, Charles Kevin Huscroft	6356146	Andrew S. Wright, Bartholomeus T. W. Klijsen, Paul V. Yee, Chun Yeung Kevin Hung, Steven J. Bennett
		6151301	Brian D. Holden		
		5606563	Rick G. Dorbolo, David Wong, Chris E. Lee	6366996	Richard Frederick Hobson, Allan Robert Dyck
				6396809	Brian D. Holden, Brian D. Alleyne, Darren S. Braun, Nadeem Haq
		5808630	Donald Robert Pannell		
		5815737	Kenneth M. Buckland	6407412	Krzysztof Iniewski, Sebastian Claudiusz Magierowski
		5677650	Tadeus Kwasniewski, Maamoun Abou-Seido, Stephan Iliasevitch	6445705	Brian D.Holden, Brian D.Alleyne, Darren S.Braun, Nadeem Haq, Chee Hu
		6292486	Vernon Robert Little		
		5668797	Maher Nihad Fahmi, John Richard Bradshaw	6449274	Brian D. Holden, Brian D. Alleyne,

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		5640398	Larrie Carr, Winston Mok		Darren S. Braun, Imran Chaudhri, Kevin Reno,
		6002714	Charles Kevin Huscroft		Nadeem Haq, Chee Hu, Raghavan P Menon,
		5751697	Sivakumar Radhakrishnan,		Dinesh Venkatachalam, Steve T Sprouse
			Stephen J. Dabecki	6587514	Andrew S. Wright, Bartholomeus T. W.
		5479590	Tao Lin		Klijsen, Paul V. Yee, Chun Yeung
		5568486	Charles K. Huscroft, David W. Wong,		Kevin Hung, Steven J.Bennett
			Steven F. Lang, Vernon R. Little	6631466	Vikram Chopra, Ajay Desai, Raghunath Iyer,
		5512860	Charles K. Huscroft, Graham B. Smith,		Sundar Iyer, Moti Jiandani, Ajit Shelat,
			Brian D. Gerson		Navneet Yadav
		5586309	Tao Lin	6671758	Richard Cam, Winston Mok, Jonathan Loewen
		5598552	Bahram Fotouhi, Mir B. Ghaderi	6697436	Andrew S. Wright, Bartholomeus T. W.
		5423009	Michael H. Zhu		Klijsen, Paul V. Yee, Chun Yeung
		5489902	Jyn-Bang Shyu, Roubik Gregorian		Kevin Hung, Steven J.Bennett
		5548230	Brian D. Gerson, Kevin Huscroft,	6735212	Costas Calamvokis
			Martin Mallinson	6744787	Winston Mok, Ryan Richard Schatz, John Norman Walsh
		5436597	Frank M. Dunlap, Vincent S. Tso	6798744	Jonathan David Loewen, John Richard
		5548580	Kenneth M. Buckland		Bradshaw, Jeffery John Brown
		5550495	Bahram Fotouhi	6798843	Andrew S. Wright, Bartholomeus T. W.
					Klijsen, Paul V. Yee, Chun Yeung
					Kevin Hung, Steven J.Bennett
				7110358	David Joseph Clinton, Jonathan David Loewen,
					Jeff Dillabough, Minette Ashley Dannhardt
				7185081	Heng Liao
				7188168	Heng Liao
		Example 4 - Acquirer: Hasbro Inc, Target: Tiger Electronics Inc			
4802879	Owen R. Rissman, Henry T. H. Tai	5921843	Joseph F. Skrivan, David J. Ribbe	6089948	A. Franklin LaBarbara, Jr., Georgina M.
4907804	Abraham Arad, Melvin Kennedy	5829830	Kevin V Maloney		Melone, Nash S. Desent, Gregory R. Horton
4968281	Shari L. Smith, Howard J. Morrison	5791326	Robert L. Brown, Michael A. Moore,	6095890	Kevin M. George, Michele P. Trammell
4995844	John P. McNett, Sal Mucaro		Hampton R. Woodhouse	6142869	Karl R. Meyer, Daniel H. Seifert
5083964	Avi Arad, Melvin R. Kennedy	5901693	Joseph J. Smith	6168160	Daniel J. DeOreo, Yoshizo Nagasaka
5569868	Chun S. Leung	6086478	Daniel B. Klitsner, Robert M. Welch	6203395	Craig J.McElhaney
5672108	Clive Lam, Ralph F. Osterhout	5830089	Jeffrey T. Halter, Brian S. Dengler	6238261	Timothy J. G. Lang
5685776	Zarko Stambolic, Shari L. Smith,	5906369	William H. Brennan, Lucinda I. Tavernise,	6248017	Alan P. Roach
	Frank Mercurio, Howard J. Morrison		Frederic W. Stucklen, Robert H. Beck,	6257948	Dana A. Silva
5743796	Zeki Orak, Dan Klitsner		Michael Marra	6296268	Jeffrey M. Ford, Craig J. McElhaney,
5816885	Michael J. Goldman, Robert W. Jeffway, Jr.	5902116	Frederick M. Rieber, Joseph P. Seinowski,		Lee Spielberger
5855513	Clive Lam		Randolph J. Primozic, Jr.	6497607	David Mark Hampton, Caleb Chung
5865677	Martin Ion Goldfarb, Adolph Eddy	5850628	Robert W. Jeffway, Jr.	6537128	David Mark Hampton, Caleb Chung
	Goldfarb	6079985	David J. Wohl, Joseph F. Truchsess,	6544098	David Mark Hampton, Caleb Chung
5893798	Zarko Stambolic, Shari L. Smith,		Alexander L. Baytman, Robert S. Winslow	6244260	Mark Ragoza, Bruce E. Foster,
	Frank Mercurio, Howard J. Morrison	5827136	David J. Wohl, Joseph F. Truchsess,		Peter C. Ferraro
5904621	David Bernard Small, Brian Douglas Farley,		Alexander L. Baytman, Robert S. Winslow	6283872	Michael Lichodziejewski, Seum Lim Gan,
	Jeffrey Jones, Paul S. Rago	5919075	Kevin M. George, Michele P. Trammell		Craig Dennis Sellers, John Wildman,

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
5971855	Victor Ng	5947474	Kazutsugu Kanagawa, Asayoshi Asami,		Scott S. Clark, Karl R. Meyer
5976018	Gil Druckman		Daniel J. DeOreo, Chris Conger	6394874	Takao Kubo, Todd Miller Lustgarten
6042478	Victor Ng	5975068	Jeffrey T. Halter, Joseph J. Smith,	6801815	Andrew S.Filo, David G.Capper
6109925	Gil Druckman, Danny Hershkovitz		Gerard M. O'Shea	7081033	Miriam Mawle, David L Peterson,
6149490	David Hampton, Caleb Chung	5724954	Joseph J. Smith		Franklin La Barbara, Mark Wiesenhahn,
6159101	Mark Christopher Simpson	5994853	David J. Ribbe		David Lewinski, Todd Rywolt
6254485	Kazutsugi Kanagawa, Hideyasu	5701878	Michael A. Moore, David R. Griffin,	7120509	Andrew S. Filo, David G. Capper
	Karasawa, Norihito Yamanaka		Jeffery Dubose		
		5727982	Steven K. Hurt		
		5702282	Ralph A. Beckman, Stephen A. Schwartz,		
			Roseann Radosevich, Michele P. Trammell		
		5668333	Gregory R. Horton, Robert S. Winslow		
		5722874	Gregory R. Horton, James Cartabiano, Nancy Lavey		
		5711285	Randolph C. Stewart, Daniel G. Meiser, Robert L. Brown		
		5803060	Joseph F. Skivran		
		5651716	Kevin B. Mowrer, Nick H. Langdon		
		5676374	David W. Bossa, Christopher A. Down,		
			Edward J. Estabrook, Ralph J. Kulesza,		
			Wayne A. Kuna		
		5782379	JoAnn M. Traub, Craig C. Selvage		
		5715802	Michael A. Moore, Robert L. Brown		
		5791253	Douglas Schultheis, Lee Spielberger		
		5718335	Mark D. Bodreaux		
		5752870	Hideyasu Karasawa, Asayoshi Asami,		
			Tadayuki Watanabe		
		5619373	Dietrich Meyerhofer, Herschel C. Burstyn		
		5501457	Nobuaki Ogihara		
		5458523	Hironobu Aoki, Minoru Sugiyama		
		5697613	Darrell Merino, Dwayne Carr, Randall Moormann		
		5535729	David R. Griffin, Ronald C. Boyle		
		5603176	Fred D. Eddins, Linwood E. Doane, Jr.		
		5738079	Bryan R. Keller, Robert Louis Brown,		
			Daniel G. Meiser, Kurt Wierwille		
		5618219	Dean C. Simone, Rand W. Siegfried,		
			Gerald M. Rodmaker		
		5553643	Adolph E. Goldfarb, David A. Jackson,		
			Martin I. Goldfarb, Fred D. Eddins		
			Linwood E. Doane Jr.		
		5681170	Frederick M. Rieber, Joseph P. Sejnowski,		
			Randolph J. Primozic, Jr.		
		5560055	Scott Ziegler		
		5575738	Charles J. Millington, Melissa M. Morgan		
		5590876	Joseph P. Sejnowski		

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		5470267	Edward P. Busam		
		5507550	Kevin V. Maloney		
		5594976	Nikolay Shkolnik, Baruch Kantor, Domingos Joaquim		
		5383808	David M. DuBois		
		5441289	Lee Spielberger		
		5510812	Kerry D. O'Mara, Paul J. Smalser, Sr.		
		5454745	Lee Spielberger		
		5404731	Jo Ann M. Traub		
		5603507	Steve E. Tice		
		5621207	Kerry D. O'Mara		
		5415632	Ilan Samson		
		5531210	Daniel G. Meiser, Randolph C. Stewart		
		5295701	Frederick M. Reiber, Joseph P. Sejnowski		
		5460430	Charles W. Miga, Jr., Khipra Nichols		
		5458394	Khipra J. Nichols, Lisa M. Perrine		
		5335917	Wayne A. Kuna		
		5409364	Douglas A. Schultheis, Christina M. Beecher		
		5351955	Mary Danby		
		5403018	Joseph P. Sejnowski, Douglas Schultheis		
		5382188	Dalita R. Tomellini		
		5240260	Ned Strongin		
Example 5 - Acquirer: Parker Hannifin Corp, Target: Lokring Corp, General Valve Corp					
4482174	Vijay K.Puri	5386843	John F. Church	5639370	Ronald E. Fall, Mehrdad Jafarabadi,
5110163	Robert W.Benson, Christopher G.	5413031	Bruce E. Kohlmeyer		John M. Ruddock
	Dietemann, Mark J.Beiley,	5413309	Dennis C. Giesler	5647398	Dennis C. Giesler
	Sohel A.Sareshwala	5427501	Yu-Sen J. Chu	5683120	David J. Brock, Kimberly J. Gilbert,
5114191	Sohel A.Sareshwala	5445358	Keith J. Anderson		Lyle E. Parrish
5181752	Robert W.Benson, Mark J.Beiley,	5458767	Walter H.Stone	5693935	William L. Hassler, Jr., Sandra Harper, Eric
	Sohel A.Sareshwala, Steven T.	5472216	Kenneth R. Albertson, Vernon R. Bolinder		Chapman, Michael Nolan, William R. Scley
	Croft, Jack M. Vaughn	5541405	William L. Hassler Jr., Sandra Harper,	5730420	John P. Tow
5305510	Steven T. Croft, Maxwell B. Ho		Eric Chapman, Michael Nolan	5730423	Jing-Chau Wu, Patrick P. Barber,
5285805	George N. Proper		William R. Schley		Lewis L. Aldridge
		5547572	Walter H. Stone	5753120	Michael D. Clausen, Russell D. Jensen
		5550326	Bradley K. Kesel	5758910	Patrick P. Barber, Lewis L. Aldridge
		5570580	Robert T. Mains	5761907	Robert R. Pelletier, Kiran Patwari
		5575833	Gary E. Griffin	5770065	Peter Popoff, David H. Hodgkins, Michael D.
		5584513	Michael A. Sweeny, John R. Greco,		Clausen, Victor R. Oelschlaegel
			Donald E. Washkewicz	5778697	Gary Wantuck
		5598696	Robert E. Stotts	5778753	George Douglas Higgins
		5645718	Steven D. Hardison, Walter H. Stone	5781151	Donald A. Stratton
		5289692	Chester Campbell, Sandra L. Harper,	5781412	Miksa de Sorgo
			Jain Virender, Richard L. Kenyon,	5799696	Andreas A. Weiss
			Alan Matthies, Roy M. Yabuki	5804762	Peter M. Jones, Joseph C. Houle

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		5335513	Chester D. Campbell, Sandra L. Harper, Virender Jain, Richard L. Kenyon, Alan Matthies, Roy M. Yabuki	5807481	David H. Hodgkins, Dale M. Giva
		5362392	Russell D. Jensen	5860796	Michael D. Clausen
		5372508	Manfred Hautzenroder	5877476	Roy M. Yabuki, Virender Jain, Richard L.Kenyon, Michael Nolan
		5390897	Chester D.Campbell, Sandra L.Harper, Virender Jain, Richard L.Kenyon, Alan Matthies, Roger G.Riefler, Roy M.Yabuki, Ashok Zopey	5883800	Lars-Berno Fredriksson
		5413147	Luis Moreiras, Frederick J. Davis, Issac Shilad	5902956	George H. Spies, Richard A. Hamel, Jonathon E. Mitchell, William Lionetta, James A. Bradley
		5435884	Harold C. Simmons, Rex. J. Harvey	6068762	Walter H. Stone, Michael D. Clausen
		5460349	Chester D. Campbell, Sandra L. Harper, Virender Jain, Richard L. Kenyon, Alan Matthies, Roger G. Riefler, Roy M. Yabuki, Ashok Zopey	6081224	Richard Rosenbrock
		5484122	Dennis W. DeSalve	6521164	Thomas L. Plummer, Val C. Comes, George R. Wallace
		5490680	Hiralal V. Patel, Edward M. Fernandes	6955408	Johannes Schmitt
		5537089	Milton J. Greif, Curtis E. Stevens	6992563	Joerg Plumeier
		5540463	Edward Potokar	5740967	Harold C. Simmons, Rex J. Harvey
		5643446	Michael D. Clausen, Russell D. Jensen, Walter H. Stone	5762796	Edward M. Zraik
		5670042	Michael D. Clausen, Walter H. Stone	5763976	Steven R. Huard
		5215660	William M. Mosher, Jim J. Melfi	5847535	Jack Nordquist, Mark C. Calahan, Timothy J. Damiano, Christopher M. Botka
		5345811	George Alexandrovich, Sr., Stanley Sporn, Stanley Wood	5851004	Jing-Chau Wu, Patrick P. Barber, Lewis L. Aldridge
		5374084	Edward Potokar	5858227	Walter H. Stone, Michael D. Clausen
		5295656	Chester D. Campbell, Sandra L. Harper, Virender Jain, Richard L. Kenyon, Alan Matthies, Roger G. Riefler, Roy M. Yabuki, Ashok Zopey	5887876	Lewis L. Aldridge, Kenneth W. Sawyer
		5207898	David H. Hodgkins	5890719	Alan C. Bettencourt
		5171027	Ronald A. Domkowski, George H. Johnson, Vinay K. Nilkanth	5910165	Cary Haramoto, Michael L.Ford, Tom C.Wilson
		5362389	Steven D. Hardison, Walter H. Stone	5910524	John P.Kalinoski
		5404909	Lowell R. Hanson	5944322	Shane J.Coff, Alan C.Bettencourt, Rodney A.Chambers
		5348354	Jean-Pierre Badoureaux	5956830	Donald B.Imbus, Christopher L.Fleece
		5252939	Roger G. Riefler, Kenton L. Durham	5956987	Bernard Anthoine
		5423178	Robert T. Mains	5996407	Martin Hewitt
		5234193	Leonard D. Neal, Jr., John H. Thomas	6005191	Wen-Shian V.Tzeng, Ronald Saccuzzo, Jonathan E. Mitchell
		5255699	Eugene H. Herzan, Dennis C. Giesler	6019399	Michael A. Sweeney
		5105621	Harold C. Simmons, Roger V. Jones	6021635	John H. Gaag, Raman Ras
		5169160	William Gaskill, Robert J. Giovannetti, Thomas F. Stabosz, Jr., Lido Boni	6032363	Timothy E. Volin, James D. Gibson
				6036237	Michael A. Sweeney
				6040676	Jack Nordquist, Mark J. Calahan, Timothy J. Damiano, Christopher M. Botka
				6053334	Peter Popoff, David H. Hodgkins, Michael D. Clausen, Russell D. Jensen, Walter H. Stone, Victor A. Oelschlaegel
				6054198	Michael H. Bunyan, Miksa de Sorgo
				6096414	Kent M. Young
				6099729	Albert F. Cella, Donald J. Gembolis, John A. Trott

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		5258931	William L. Hassler, Jr.	6235192	James J. Melfi, Gary E. Griffin
		5114190	Robert C. Chalmers	6303180	Michael H. Bunyan, John P. Kalinoski
		5123815	Bruce D. Larkin, Paul K. Houtman	6959244	Marko Maschek, Michael Henne
		5035729	David H. Hodgkins	6982628	Heidrun Hacker, Stephan Schmitz
		5149109	Jerry G. Jelinek, Orville J. Bain	7003272	Thomas Mader, Gerhard Kottschlag, Gerhard Pitz
		5127661	David C. Franson, Mark A. Kavanaugh, Wallace K. Snead	7099795	Juergen Gerstenmeier, Matthias Moerbe
		5197443	David H. Hodgkins		
		5365249	Robert S. Benward		
		5244571	John F. Church, Kenneth N. Wynne, Darwin L. Brooks, Walter H. Stone, Peter Popoff		
		5339249	William R. Schaeffer		
		5131145	Jean-Pierre Badoureaux		
		5094143	Robert E. Andersen, Jr.		
		5048791	John E. Ellison, Mai Ujjin		
		5062456	Horise M. Cooke, Richard F. Deiss		
		5193431	John R. Propsting, George D. Higgins		
		5044055	Richard F. Howarth, Robert A. DiDomizio, W. Edward Johnston		
		5036825	Walter H. Stone		
		4976285	John Church, Victor R. Oelschlaegel, J. Donald Emery		
		5092634	William P. Miller		
		5042447	Walter H. Stone		
		5066049	Peter J. Staples		
		5019141	Jeffrey H. Granville, John Church, David H. Hodgkins		
		5092152	William P. Miller, Michael D. Cawley		
		5095632	William L. Hassler, Jr., Stephen F, McCleskey		
		5026022	Clifford F. Bastle		
		5044401	Dennis C. Giesler, Lowell R. Hanson		
		5071327	Darrell W. Brewer		
		5007458	Jerald J. Marcus, John F. Berninger		
		5071174	Gary E. Griffin, David C. Clark		
Example 6 - Acquirer: Coherent Inc, Target: DeMaria ElectroOptics Systems					
5680412	Anthony J. DeMaria, John T. Kennedy, Richard A. Hart	6603498	Tuomo Konnunaho, Harry Asonen, Arto K. Salokatve, Jari Tapani Naeppi	6913794	Anthony P. Hoult, Scott J. Crane
6089076	Eric R. Mueller, Richard A. Hart, William A. Veronesi, Frederick T. Olender	6478452	Matthew O. Richardson, Haiyin Sun, Christopher John Kruger	6671303	Yang Pang
6154307	William A. Veronesi, Frederick T. Olender, Richard A. Hart	6788722	John T. Kennedy, Richard A. Hart, Leon A. Newman, Anthony J. DeMaria	7010194	Serguei G. Anikitchev, Mathew N. Rekow
6192061	Richard A. Hart, John T. Kennedy, Eric R. Mueller, Leon A. Newman	6590911	Luis A. Spinelli, Andrea Caprara, Gary Y. Wang, R. Russel Austin	6784399	Corey M. Dunsky, Hisashi Matsumoto, Richard S. Harris, John T. Kennedy, Vernon A. Seguin, Leon Newman
				6567434	Luis A. Spinelli, Briggs Atherton
				6661830	Murray K. Reed, R. Russel Austin

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		6370168	Luis A. Spinelli	6612719	Matthew O. Richardson, Haiyin Sun, Christopher J. Kruger, Daniel W. Callen
		6526073	Luis A. Spinelli, Briggs Atherton	6898231	Stuart David Butterworth
		6198756	Andrea Caprara, Luis A. Spinelli	6826204	John T. Kennedy, Richard A. Hart, Lanny Laughman, Joel Fontanella, Anthony J. Demaria, Leon A. Newman, Robert Henschke
		6285702	Andrea Caprara, Juan L. Chilla, Luis A. Spinelli	6683901	Andrea Caprara, Juan L. Chilla, Luis A. Spinelli
		6292501	Harold David DuBose	6773142	Mathew N. Rekow
		6272156	Murray K. Reed, Briggs Atherton	6798816	Anthony J. DeMaria, Vernon A. Seguin, Lanny Laughman
		6168832	A. Neil Boucher	7044653	Eugene E. Reis
		6292498	Juergen Pfaff	6782033	Janet G. Ozasa
		6115396	Kevin P. Connors	6687270	Wyndham Robertson, III
		6154318	R. Russel Austin, R. Ian Edmond	6697408	John T. Kennedy, Richard A. Hart, Lanny Laughman, Joel Fontanella, Anthony J. Demaria, Leon A. Newman, Robert Henschke
		6785440	Jorg Lawrenz-Stolz	7058093	John T. Kennedy, Richard A. Hart, Lanny Laughman, Joel Fontanella, Anthony J. DeMaria, Leon A. Newman, Robert Henschke
		6156049	Paul H. Lovato, David Alan Gollnick, Russell Alex Zinner, David P. Thompson, Kevin Connors, Mike Hmelar	7016393	Serguei G. Anikitchev, R. Russel Austin
		6298076	Andrea Caprara, Juan L.Chilla, Luis A.Spinelli	6980358	Tracy F. Thonn, R. Ian Edmond
		6620347	Dominic N. Lo Iacono	6999490	John Kennedy, Lanny Laughman, Anthony DeMaria, Ronald Straayer
		6097742	Andrea Caprara, Juan L. Chilla, Luis A. Spinelli	7221452	Jill D. Berger, Douglas W. Anthon, Fedor A. Ilkov, David A. King
		6130900	John F. Black, George Frangineas, Hartmuth Hecht	7038781	Norman Hodgson, Michael Hertwig, H.Yang Pang
		6055261	Murray Keith Reed, John Roderick Lincoln	7113529	Vernon Seguin, Leon Newman, R. Russel Austin, Anthony DeMaria
		6574255	Andrea Caprara, Juan L. Chilla, Luis A. Spinelli	7180928	Andrea Caprara, Juan L. Chilla Luis A. Spinelli
		6418154	Axel Kneip, Ruediger von Elm	6931035	Charles X. Wang
		6287299	Michael W. Sasnett, R. Russel Austin	7003003	Eric R. Mueller, Ronald Straayer
		6414980	Charles Xiaoyi Wang, Acle V. Hicks, Edward C. Rea, Jr.	7046709	Vernon Seguin, Leon Newman, John Kennedy
		6229831	John L. Nightingale, Michael Hmelar	7039079	Vernon Seguin, Leon Newman, John Kennedy, Joel Fontanella, Anthony DeMaria
		6167068	Andrea Caprara, Juan L. Chilla, Luis A. Spinelli	6940880	Stuart Butterworth, Andrea Caprara, R. Russel Austin
		5991318	Caprara; Andrea, Chilla; Juan L., Luis A. Spinelli	7164108	Jay T. Lofthouse-Zeis, Tracy Francis Thonn
		6031953	Matthew Noel Rekow, John Lawrence Nightingale	7139300	Serguei G. Anikitchev, Andrea Caprara
		6072573	Christopher J. Kruger, Gerald H. Williams, Robert R. Naquin, Charles W. Dennett	6993059	Serguei G. Anikitchev, R. Russel Austin
		6053981	Arto K. Salokatve, David C. Poole	7006549	Serguei G. Anikitchev, R. Russel Austin
		6081379	R. Russel Austin, Boris Golubovic		
		6038241	Rudiger von Elm, Axel Kneip		
		5999555	Kevin P. Connors, James L. Hobart, Edward D. Reed, David Trost		
		5911718	J. Michael Yarborough, R. Rox Anderson		

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
			George Marcellino, Gerald M. Mitchell		
		6115402	Andrea Caprara		
		6141369	Wolf Seelert, Vasiliy Ostroumov		
		6222673	R. Russel Austin, R. Ian Edmond		
		6327293	Arto K. Salokatve, Juan L. A. Chilla		
		6144787	Timothy J. Johnston, John L. Nightingale		
		6027256	John Lawrence Nightingale, Matthew Rekow, Daniel K. Negus, Richard D. Cullins, Michael Jay Finander		
		5772657	Michael Hmelar, Nubar Manoukian		
		5848081	Edward D. Reed, James Hobart		
		6026112	Hartmuth Hecht, Mark Lange, James Hobart		
		5781571	C. David Nabors, George Frangineas		
		5852626	Edward D. Reed		
		6096031	Gerald M. Mitchell, Edward D. Reed, Greg J. Spooner, Michael Hmelar		
		5729643	Michael Hmelar, Ron C. Mehl, Paul Lovato		
		5781574	Kevin P. Connors, James L. Hobart, Edward D. Reed, David Trost, Kenneth J. Bossie, Thomas William McCurnin, Gerald M. Mitchell, J. Michael Yarborough		
		6024751	Paul H. Lovato, David Alan Gollnick, Russell Alex Zinner, David P. Thompson, Kevin Connors, Michael Hmelar		
		6151342	John L. Nightingale, Michael Hmelar, C. David Nabors		
		5949932	Jorg Lawrenz-Stolz		
		5957915	David Trost		
		6081637	Mathew Noel Rekow		
		5754574	Jay T. Lofthouse-Zeis, John K. Johnson		
		5928221	Michael W. Sasnett, R. Russel Austin		
		5966240	Mark H. Lange, Charles K. Langhorn, Dennis G. Fischer, Bruce E. Perilloux		
		6193711	Kevin Connors, Greg Spooner, Ralph Saunders		
		5993904	A. Neil Boucher		
		5805277	Christopher J. Kruger, Gerald H. Williams, Robert R. Naquin, Charles W. Dennett		
		6061374	John Lawrence Nightingale, Matthew Rekow		
		5912912	Andrea Caprara, Luis A. Spinelli		
		5852692	John Lawrence Nightingale, Michael Jansen, Ronii Chris Mehl, Michael Hmelar		
		5930600	Wolf Seelert, Jorg Lawrenz-Stolz, Herry Wilhelm, Kai-Peter Stamer		

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		5912915	Murray Keith Reed, John Roderick Lincoln		
		5642370	Gerald M. Mitchell, Edward D. Reed, Greg J. Spooner, Michael Hmelar		
		5640412	Edward D. Reed		
		5578029	Mario A. Trelles, Dale F. Koop		
		5661737	Hartmuth Hecht, Edward Reed		
		5644585	Gerald M. Mitchell, Edward D. Reed, Greg J. Spooner, Michael Hmelar		
		5889805	Dan Botez, Luke J. Mawst		
		5798877	John Lawrence Nightingale, John Anderson Trail, John Kelly Johnson		
		6135995	Michael Arnett, Robert J. Rorden, Gregory Dumond, Jerzy Orkiszewski, David Dewey, David Trost		
		5754573	J. Michael Yarborough, R. Rox Anderson, George Marcellino, Gerald M. Mitchell		
		5812580	Rashit F. Nabiev, Ian Edmond, Michael Jansen, Fang Fang		
Example 7 - Acquirer: Masco Corp, Target: Behr Process Corp					
4948054	Gregory B. Mills	5983910	Mitchell H. Berger, Dennis L. Foster, David K. Shaffer, Phillip B. Simon, John D. Wheatley	6715699	Ilan Greenberg, Moty Lev, Amir Genosar, John E. Petrovic
4951876	Gregory B. Mills			6390661	Gerard Jay Bellasalma, Joon Taek Kim
6491750	James P. Pace, Mary R. Rice	6295849	Klaus W. Gartner, Larry I. Cutter, Peter J. Phillips	6652988	Dimitris Katsamberis, John G. Finch, Joseph A. Elmer, Patrick A. Sullivan
6563510	Mary R. Rice, James P. Pace	5992902	Francesco Knapp	6394133	Francesco Knapp
6632093	Mary R. Rice, James P. Pace	6143424	Patrick B. Jonte, William K. Grant	6325113	John E. Hathaway, Jeffrey L. Beaver
6740154	James P. Pace, Mary R. Rice	6019132	Francesco Knapp	6556684	Steve S. Macey
6924817	Mary R. Rice, James P. Pace	5971285	Alfons Knapp	6263919	Alfons Knapp
		5927333	Roland Grassberger	6349427	Neil R. Bergstrom
		6033790	Richard P. Welty, John H. Petersen, Patrick Jonte, Carl W. Trendelman	6298879	Francesco Knapp
		5904291	Alfons Knapp	6418861	Steve A. Flam
		5823397	Gil; Amos	6343610	Mitchell H. Berger, Dennis L. Foster, David K. Shaffer, Phillip B. Simon, John D. Wheatley
		5924850	Robin A. French		
		6106958	Rolin W. Sugg, Richard P. Welty, Stephen R. Moysan, III	6557785	Alfons Knapp
		5952111	Rolin W. Sugg, Richard P. Welty, Stephen R. Moysan, III	6276003	Alfons Knapp
		5813435	Alfons Knapp	6536936	Gerard Jay Bellasalma, Joon Taek Kim
		5879532	Dennis Foster, Larry M. McHugh, Heinrich Andreas Moebius	6341731	Alfons Knapp
				6367504	Francesco Knapp
		6004684	Rolin W. Sugg, Richard P. Welty,	6659677	Alejandro Rosales Esposito

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
			Stephen R. Moysan, III	6619173	Jay Bellasalma
		5820177	Charles W. Moon	6460570	Jacob Jones, Kurt Thomas
		5985468	Rolin W. Sugg, Richard P. Welty, Stephen R. Moysan, III	6997690	Gerard Jay Bellasalma, Joon Taek Kim, Lloyd Ramsey
		5989730	Rolin W. Sugg, Richard P. Welty, Stephen R. Moysan, III	6551722	Patrick B. Jonte, James S. Lipe, Guocun Chen
		5922478	Richard P. Welty, John H. Petersen, Patrick Jonte, Carl W. Trendelman	6702566	Gerard Jay Bellasalma, Joon Taek Kim, Lloyd Ramsey
		5928171	Christopher Larsen	6470508	Denis P. Turner
		5867107	Klaus W. Gartner	6435198	Mitchell H. Berger, Dennis L. Foster, David K. Shaffer, Phillip B. Simon, John D. Wheatley
		5872890	Thomas David LaCombe		
		5860634	Garry Marty, Robert Bailey, Otto K. Allmendinger	6527211	Jay Bellasalma
		5927328	Alfred C. Nelson, Stanley J. Brym, Gunther H. Lumb	6536809	Garry Marty, Gerald McNerney, Scott Jones
		5740836	Tage Tang	7293910	Gerard Jay Bellasalma, Joon Taek Kim, Lloyd Ramsey
		5948548	Richard P. Welty, John H. Petersen, Patrick Jonte, Carl W. Trendelman		
		5943711	Phillip Dudley Loizeaux, Thai Ton	6551263	Denis P. Turner
		5931374	Alfons Knapp	6760948	Randall Paul Schmitt
		5810050	Daniel A. Pickerrell, Larry Shock	6588453	Garry R. Marty, Darrell S. Crowe, David M. Hardesty
		5725010	Garry Marty, Diana Smolkin	6618891	Randall Paul Schmitt
		5816289	Alfons Knapp	6460549	Mitchell H. Berger, Dennis L. Foster, David K. Shaffer, Phillip B. Simon, John D. Wheatley
		5876017	Walter Becker, Herbert Reinecke		
		5810257	Thai T. Ton		
		5716333	Christopher Larsen	6517017	Jay Bellasalma
		5797422	Steven John Tokarz	6273394	Raymond A. Vincent, Jeffrey J. Iott, Randall P. Schmitt, John Kirk
		5613520	Alfons Knapp		
		5685031	Jeffrey King Watkins, Walter Richard Cumiskey	6618892	Randall Paul Schmitt
				6547966	Otto Karl Allmendinger, Garry Robin Marty
		5810262	Thai T. Ton		
		5742953	Phillip Dudley Loizeaux, Thai Ton	6516070	Stephen S. Macey
		5669407	Robert W. Bailey	6623685	Gerard Jay Bellasalma
		5901732	Alfons Knapp	6517006	Ing. Alfons Knapp
		5778711	Klaus W. Gartner, Larry I. Cutter, Peter J. Phillips	7046163	Stephen S. Macey
		5685032	Jeffrey King Watkins, Walter Richard Cumiskey, Phillip Dudley Loizeaux		
		5664603	Alfons Knapp		
		5671577	Kenneth L. Todd		
		5615709	Alfons Knapp		
		5628073	John Popovich		
		5692536	Steven J. Tokarz		

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
		5615421	Jeffrey K. Watkins, Walter R. Cumiskey, Phillip D. Loizeaux		
		5684470	Daniel L. DeLand, Paul Heimnick, Curtis T. Moy, Lawrence H. Zuckerman, David G. Grossman, Kurt P. Schuler		
		5592971	Alfons Knapp		
		5477885	Alfons Knapp		
		5464045	James E. Niemann, Anthony G. Spangler		
		5613521	Alfons Knapp		
		5564137	Jeffrey K. Watkins, Walter R. Cumiskey, Phillip D. Loizeaux		
		5398350	Jeffrey K. Watkins, Walter R. Cumiskey		
		5381830	James E. Niemann, Anthony G. Spangler		
		5469889	Tage D. Tang		
		5494076	Alfons Knapp		
		5514315	Jeffrey K. Watkins, Walter R. Cumiskey, Victor B. McCarthy		
		5428849	Jeffrey K. Watkins, Walter R. Cumiskey, Phillip D. Loizeaux		
		5647736	Robin A. French		
		5562314	Graham Wheatland, Hagen Dietrich		
		5458154	James E. Niemann, Anthony G. Spangler		
Example 8 - Acquirer: Thermo Electron Corp, Target: Rupprecht and Patashnick Co, Niton LLC					
4696181	Georg Rupprecht, David Hassel	7119597	Robert A. Barrett, Patrick J. Ryan	7243017	Joseph B. Gehret, Jr.
4836314	Georg Rupprecht, Harvey Patashnick	7476866	Francois Vincent, Antonio Cabras	7454945	Dieter Kita, James H. Grassi, Jeffrey Socha, Bryan A. Marcotte
4838371	Georg Rupprecht, Harvey Patashnick	7504641	Jukka Tuunanen		
5110747	Harvey Patashnick, Georg Rupprecht	6782765	David R. Dussault	7469033	Alex Kulik, Nikolay Baturin, Alexander Joseph Esin, Michael Masterov
5196170	Harvey Patashnick, Georg Rupprecht	6885010	Peter John Traynor, Robert George Wright	7544927	Michael Iwatschenko-Borho
5279970	Harvey Patashnick, Georg Rupprecht			7555933	Etienne Dano
5401468	Harvey Patashnick, Georg Rupprecht	7045788	Michael Iwatschenko-Borho, Norbert Trost, Bernd Friedrich	7714285	Bryan Robert Barnard
5488203	David R. Hassel, Lauren R. Basch			7777867	Phillip Karl Hopke, Jeffrey Lawrence Ambs
5553507	Lauren R. Basch, Harvey Patashnick	7211788	Philip Marriott		
5717147	Lauren R. Basch, Michael J. Gallo	7214022	Achim Melching		
5898114	Lauren R. Basch, Michael J. Gallo	7588726	Robert F. Mouradian, Patrick John Kennedy, K. Stephen Johnson, Jr.	7795783	Wallace Trochesset, Prakash Mistry, Peter E. Zasowski
5970781	John Hiss, III, Harvey Patashnick				
6016688	John Hiss, III, Harvey Patashnick	7152455	Richard H. Bair, III, Byran M. Elwood	7430273	Ravisekhar Yellepeddi
6023982	Lauren R. Basch, Harvey Patashnick			7545152	Evan Grund
6080939	David R. Hassel	7319191	King L. Poon, James R. Harper	7710112	Nikolay Baturin, Alexander J. Esin, Alex Kulik, Michael Masterov
6138521	Lauren R. Basch, Harvey Patashnick	7798584	Ralph Markey		
6151953	Harvey Patashnick, John Hiss, III	7111813	Jianhan Lin	7736602	Dieter Kita, Jeffrey Socha, Bryan A. Marcotte
6205842	Harvey Patashnick, Georg Rupprecht	7433890	Richard H. Bair, III, Bryan M. Elwood, Walter J. Tipton, Ronald W. Luyckx	7737401	Michael Iwatschenko-Borho, Norbert Trost, Ralf Pijahn
6422060	Harvey Patashnick, John Hiss, III				
6439027	John Hiss, III	6878143	Erik Andersen		

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Target pre-acquisition		Acquirer pre-acquisition		Acquirer post-acquisition	
Patent	Inventors	Patent	Inventors	Patent	Inventors
6502450	Harvey Patashnick, Georg Rupprecht	7061236	Andrew Michael Britton		
6651480	Harvey Patashnick, Georg Rupprecht	7552029	Bryan M. Elwood, Richard H. Bair, III		
6761752	Heinrich Fissan, Frank Jordan, Thomas Kuhlbusch		Charles G. Butts		
6769316	William E. Rogers, Adam C. Bailey,	6360890	J. Rockland Proffit		
	Michael S. Cummings, Lauren R. Basch	6482170	Erik Andersen		
6867413	William E. Rogers, Adam C. Bailey,	6511474	Erik Andersen		
	Michael S. Cummings, Lauren R. Basch	6511474	Cesare Marzoli, Giacinto Zilioli		
6898990	William E. Rogers, Adam C. Bailey,	6441365	Luigi Ragaglia, Giacinto Zilioli		
	Michael S. Cummings, Lauren R. Basch	6451614	Konrad Grob, Fausto Munari,		
6965118	Kenneth P. Martin, Anthony		Sorin Trestianu, Paolo Magni		
	Honnellio, Lee Grodzins				
	Example 9 - Acquirer: Astec Industries Inc, Target: Carlson Paving Products Inc				
5096331	Larry Raymond	5931394	Matthew B. Haven, James C. Bremer	6375105	Matthew B. Haven, Patrick Quella,
5215404	Larry Raymond	6033031	Thomas Roger Campbell		Brian P. Jaworski
5259693	Larry Raymond	5967431	Robert G. Stafford, J. Don Brock,	6349819	Jerry D. Nohl, Neil E. Schmidgall,
5308190	Larry Raymond		William R. Gray, Herbert E. Jakob		Darin J. Buss
		5868522	Thomas Roger Campbell	6336560	David J. Schaefer
		6098811	David J. Schaefer	6318928	David Swearingen
		5904904	Malcolm Leland Swanson	6296109	Jerry Nohl
		5642961	Thomas R. Campbell	6561359	Alan R. Egge, Stephen Anderson
		5732896	Herbert E. Jakob, James C. Bremer	6540089	J. Don Brock, William R. Gray
		5851085	Thomas R. Campbell		
		5549734	Thomas A. Standard		
		5575538	Jerry F. Gilbert, Jack D. Smith		
		5564205	Jack D. Smith		
		5596935	Malcolm L. Swanson		
		5533829	Thomas R. Campbell		
		5540394	James C. Bremer, Edward H. Breiling		
		5533828	Thomas R. Campbell		
		5540393	Robert G. Stafford, Henry H. Polzin		
		5522158	Malcolm L. Swanson		
		5553968	Thomas R. Campbell		
		5478530	Malcolm L. Swanson		
		5490635	William R. Gray		
		5480226	John Milstead		
		5615973	Thomas R. Campbell		
		5433575	John Milstead		
		5573396	Malcolm M. Swanson		
		5551166	John Milstead		

Table I.7. Summary statistics for the abnormal return regressions

This table reports mean, standard deviation, 25^{th} percentile, median, and 75^{th} percentile for a cross-section of all deals with public and private targets that is used for the abnormal return regressions. The firm and deal characteristics are lagged by one year relatively to the M&A transaction. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	# obs.	Mean	St. deviation	25^{th} perc.	Median	75^{th} perc.
CAR$(-2, 2)$	7,029	0.007	0.092	-0.032	0.002	0.041
Private target	7,029	0.826	0.379			
ΔPatent count	7,029	0.078	0.867	-0.405	0.018	0.505
ΔExploratory patent	7,029	-0.006	0.807	-0.424	0.000	0.383
ΔUnknown-class patent	7,029	-0.174	0.593	-0.511	-0.118	0.182
ΔNew citation	7,029	0.241	1.479	-0.649	0.174	1.172
ΔScope	7,029	-0.024	0.251	-0.128	-0.023	0.113
ΔExploitative patent	7,029	0.165	0.574	0.000	0.000	0.336
ΔKnown-class patent	7,029	0.073	0.893	-0.300	0.000	0.423
ΔRepeated citation	7,029	0.445	1.378	-0.104	0.084	1.200
ΔDepth	7,029	0.045	0.148	-0.001	0.014	0.134
ΔROA	6,983	-0.011	0.176	-0.080	-0.026	0.021
ΔHH Index	7,029	-0.007	0.092	-0.048	-0.001	0.038
Cash only	7,029	0.199	0.400			
Hostile deal	7,029	0.003	0.051			
Horizontal deal	7,029	0.265	0.441			
R&D expenditure	7,029	12.20	8.12	0.00	16.22	18.35
Size	7,029	20.20	2.56	18.72	20.31	21.90
Leverage	7,029	0.147	0.165	0.004	0.099	0.235
Net income	7,029	0.006	0.257	0.017	0.050	0.089
HH Index	7,029	0.220	0.173	0.103	0.170	0.295

Table I.8. Announcement abnormal returns: other innovation measures

This table reports OLS regressions with acquirers' 5-day cumulative abnormal returns around announcement dates of public and private target acquisitions as the dependent variable. *Private target* is a dummy variable indicating that the target is a private firm. In each column, we split all firms into quartiles by ΔInnovation, which represents the increase in the corresponding innovation variable for the post- versus pre-acquisition period. Q_1 is the reference category. All regressions include year and Fama-French 12 industry fixed effects. Standard errors clustered by firm and year are reported in parentheses. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Explor. patents	Unknown class	New citations	Scope	Exploit. patents	Known class	Repeated citation s	Depth
Private target	0.010*	0.010*	0.014**	0.012*	0.015***	0.009	0.012**	0.014**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
ΔInnovation Q_2	-0.006	-0.016**	0.004	-0.006		-0.008	0.004	-0.003
	(0.008)	(0.007)	(0.007)	(0.007)		(0.009)	(0.008)	(0.008)
ΔInnovation Q_3	-0.007	-0.003	-0.002	-0.004	-0.003	-0.007	-0.002	0.002
	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
ΔInnovation Q_4	-0.011	-0.006	-0.003	-0.022**	-0.002	-0.012*	-0.005	-0.006
	(0.007)	(0.007)	(0.008)	(0.009)	(0.007)	(0.007)	(0.007)	(0.007)
Private target x	0.005	0.015*	-0.005	-0.001		0.008	0.002	0.004
ΔInnovation Q_2	(0.008)	(0.008)	(0.008)	(0.008)		(0.010)	(0.009)	(0.009)
Private target x	0.001	0.005	0.004	0.000	0.002	0.007	-0.000	-0.003
ΔInnovation Q_3	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)
Private target x	0.020***	0.008	0.012	0.025***	0.004	0.018**	0.014*	0.010
ΔInnovation Q_4	(0.008)	(0.008)	(0.008)	(0.009)	(0.007)	(0.008)	(0.008)	(0.008)
Cash only	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Hostile deal	0.004	0.004	0.003	0.002	0.004	0.005	0.003	0.003
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Horizontal deal	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
R&D expenditure	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.001	-0.003	-0.002	-0.003	-0.002	-0.002	-0.002	-0.002
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Net income	-0.020***	-0.020***	-0.021***	-0.020***	-0.020***	-0.020***	-0.020***	-0.020***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
HH Index	-0.002	-0.003	-0.002	-0.003	-0.003	-0.002	-0.003	-0.003
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
#Obs	7,029	7,029	7,029	7,029	7,029	7,029	7,029	7,029
R^2	0.023	0.021	0.021	0.022	0.020	0.021	0.022	0.020