M&As and innovation: Evidence from acquiring private firms

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Abstract

The literature argues that private firms are more suitable for developing new risky innovation because of their tolerance for failure and long-term orientation. Public firms do not possess these qualities, but could acquire private firms with new technologies. This paper shows that acquisitions of private targets are associated with a positive impact on quantity, quality, and value of patents post-acquisition. They also increase synergies. The effects are mostly independent of whether targets possess any granted patents before the acquisition. The results are stronger for acquirers with expertise from corporate venture capital, with more experience, in industries with changing and unstable product markets, and with a higher fraction of products in early stages life cycle stages. We do not find any increase in innovation after public target acquisitions.

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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 the resulting innovation outcomes.

Private firms are more suitable for developing new technologies due to their higher tolerance for failure and long-term orientation of its owners (Holmstrom, 1989; Ferreira, Manso, and Silva, 2014). Public firms are short-termist and do not tolerate failure well, but they can acquire private firms with newly developed technologies at a point when the innovation uncertainty is to a large extent resolved. The bought new ideas may spur additional follow-on innovation. Private firms are willing to sell because access to complementary assets necessary to commercialize their newly developed technologies is costly (Gans and Stern, 2003). Acquirers can also smooth the patenting process, which is usually troublesome for small, inexperienced firms (Jia and Tian, 2018). This kind of combination brings value to both parties. We hypothesize that acquiring private firms is associated with an increase in innovation for the acquiring firms and with innovation synergies created through the combination.

We use a sample of 194,269 firm-year observations which consists of acquisitions

[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).

by public firms of private targets and their corresponding control firms from 5 years prior to 5 years after acquisition announcements. We combine a sample of all US publicly listed firms that are available on the KPSS patent data library (Kogan, Papanikolaou, Seru, and Stoffman, 2017) with a sample of private target acquirers on SDC, financial data from Compustat, and stock prices from CRSP. Due to data availability across the different data sources, our sample runs from 1990 and ends in 2020. We use the propensity score matching procedure to find control firms with similar pre-acquisition innovation.

Our results show that patent quantity, quality, and value increase significantly more after acquisitions of private targets than in control firms. The increase is economically significant – it ranges between 10.4, 4.1, and 9.8 percent increase on the overall mean for the patent quantity, quality, and value, respectively. 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 also relative to withdrawn private target acquisitions, innovation outcomes are higher for successful private target acquisitions.

In addition, we test for synergies. In particular, we combine levels of innovation variables for acquirers and their targets each year in the period before the acquisition and compare the combined values to acquirers' innovation levels post-acquisition. Our results show that private target acquisitions are associated with positive synergies. Given that only 23 percent of the private targets own any granted patents

when they are acquired, we also explore whether the existence of granted patents makes any difference for innovation outcomes. We show that targets with a proven ability to innovate exhibit only a small additional effect and existing patents are not necessary for an acquisition to bring improvements in innovation post-acquisition or for significant takeover synergies. It is important to acquire new developed ideas, which are often not yet patented.

A part of our argument is that public companies are not optimally suitable for risky start-up innovation. This also means that acquisitions of public targets should not correlate with a spur of new innovation, but they may be associated with other innovation-related benefits. For example, they may bring in granted patents that improve acquirers' product portfolio. Additional analysis of public target acquisitions indeed shows small innovation improvements post-acquisition and negative synergies.[3]

To support our baseline results and understand possible channels through which acquirers of private targets increase innovation outcomes, we perform four further tests. The first two tests identify acquirers with expertise to pick suitable innovative targets with developed new technologies and with expertise concerning new innovation trends. We show that acquirers with corporate venture capital (CVC) subsidiaries are associated with better innovation outcomes when acquiring private targets, suggesting an advantage of in-house expertise for new technologies and for new entrepreneurial way of thinking (Chemmanur, Loutskina, and Tian, 2014). In a similar vein, we also show that acquirer expertise in terms of higher number of private target deals is associated with better innovation outcomes. The second pair of

[3]To illustrate innovation outcome differences when acquiring private versus public targets, 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.

tests exploits product and product market characteristics. We show that innovation outcomes are higher in changing and unstable product markets, suggesting motivational factors for the acquisitions (Hoberg, Phillips, and Prabhala, 2014). Finally, we find that good innovation outcomes are associated with firms that have a higher fraction of products in early life cycle stages because these firms are more flexible and able to utilize new ideas (Hoberg and Maksimovic, 2022).

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 markedly 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 that increase innovation the most. 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; Zhao, 2009; 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 arguing that because private firms are a primary source of innovation activity, their acquisitions are associated with positive

innovation increases for public acquirers. In contrast, innovation outcomes are significantly smaller when acquiring public targets. Private firms are incubators of new innovative technologies that are risky to develop. Public firms profit from acquiring private firms with developed ideas, which are less risky but still lead to innovation synergies.

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 for patenting of publicly listed firms. They acquire rather than develop risky new technologies. Our analysis also emphasizes the M&A exit potential for innovative private firms as analyzed in Wang (2018). Many private firms do not file patents themselves, but profit from the know-how of their acquirers.

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 private firms are more suitable for risky innovation and public companies could improve their innovation activities by acquiring private targets. We further show that the market reacts more positively to acquisitions of private targets with higher increases in quantity, quality, and value of patents. Importantly, the well-known result of higher announcement returns when acquiring private tar-

gets 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 reviews the literature and explains our main hypothesis. Section 3 describes the data and statistics. Section 4 presents and discusses our baseline results. Section 5 explores possible channels for innovation increases after acquisitions of private firms. Section 6 analyzes announcement abnormal returns and Section 7 concludes.

2 Hypothesis development

Innovation is risky, unpredictable, long-term, multistage, labor intensive and idiosyncratic (Holmstrom, 1989). Even though innovative projects have low probability of success, they are very profitable when successful (Robinson, 2008; Ferreira et al., 2014). Fostering of innovation requires strong risk-taking incentives, tolerance for failure and rewards for long-term success (Chang, Chen, Wang, Zhang, and Zhang, 2019). The literature has provided more and more evidence that private and small firms are more innovative (see, among others, Holmstrom, 1989; Lerner, Sorensen, and Strömberg, 2011; Phillips and Zhdanov, 2013; Aggarwal and Hsu, 2014; Ferreira et al., 2014; Bernstein, 2015). Publicly listed and larger firms are at a comparative disadvantage in conducting highly innovative research. Reasons listed in the literature are several. Holmstrom (1989) highlights concerns for reputation in the capital market which leads large firms to act more cautiously in taking risks. Ferreira et al. (2014) stress the lower tolerance of failure in publicly listed firms and their preference for projects with higher probability of early success. He and Tian (2013) show that analysts impede innovation and argue that analysts exert too much pressure on managers of public firms to meet short-term goals, impeding firms' investment

in long-term innovative projects. Manso (2011) argues that fostering innovation in public firms requires strong risk-taking incentives, tolerance for failure and rewards for long-term success. Motivating innovation is a challenge for most public firms (He and Tian, 2013). Holmstrom (1989) also points out that because mixing hard to measure activities (innovation) with easy to measure activities (routine) is associated with high costs, large firms prefer serving production and marketing goals, tasks they are better at, rather than innovation.

Ferreira et al. (2014) model managers' incentives to innovate under public or private ownership and show that private ownership creates incentives for innovation, whereas public ownership disincentivizes innovation. The tolerance-for-failure effect is the key determinant of innovation in private companies. Under public ownership, cash flow is observable, and thus there is no tolerance for failure in public companies. Furthermore, the market prices of public securities react quickly to good news, which creates incentives for short-termist behavior with a preference for projects with a higher probability of early success.

Even though publicly traded firms are less motivated to invest in risky early-stage innovation projects, they rely more heavily on acquiring developed technologies externally (Phillips and Zhdanov, 2013; Bernstein, 2015). Acquisition of an innovative firm provides access to knowledge that otherwise may be difficult to develop in house (Cefis and Marsili, 2011). Bernstein (2015) shows that firms that newly enter the public markets gain patents though acquisitions and the acquired patents are of higher quality than the internally produced patents after the IPO.

In this paper, we explore the effect of acquiring private targets on innovation in public firms. The literature suggests that public firms are less prone to innovate because of their low tolerance for failure and short-termism (Ferreira et al., 2014). If acquisitions of private targets result in an increase in acquirer innovation, we need to offer an explanation concerning how the acquisitions affect the underlying fric-

tions and shift the acquiring firms' innovation. Private firms with higher tolerance for failure and long-term horizon are better at developing new technologies (Ferreira et al., 2014). Once a new technology is ready for commercialization, start-up firms may bring the innovation to commercial application, but they may also trade their ideas in the external markets via licensing, strategic partnership, or selling the company (Gans and Stern, 2003). New innovative firms may optimally decide to sell their ideas rather than commercialize them and compete in the product market (Cefis and Marsili, 2011). Importantly, they initiate cooperation at a point where technological uncertainty is sufficiently low but is still hard to imitate (Gans and Stern, 2003). Lack of experience and resources makes commercialization difficult, especially for younger firms. Access to specialized complementary assets, such as distribution or manufacturing capabilities, requires significant investments. Moreover, young firms are also less experienced at filing new patents (Jia and Tian, 2018). All these aspects increase takeover synergies and so serve as incentives to sell.

On the other side of the deal, to acquire these developed technologies is less risky than starting from scratch. Public firms acquire relatively mature ideas, which are not patented yet due to target's lack of patenting experience. The acquisition may also motivate future innovation, but with less risk involved. Thus, acquiring firms do not need to change their tolerance for failure or their investment horizon, but still increase innovation. Both sides profit from the combination.

To summarize, we hypothesize that acquisitions of private targets are associated with an increase in innovation post acquisition and with innovation synergies.

3 Data

To measure innovation output, we primarily rely on patent and citation data from the KPSS database (due to Kogan et al., 2017) covering the period between 1926 and

2020.[4] In addition, we use the Kelly, Papanikolaou, Seru, and Taddy (2021) data (KPST), which covers the period between 1839 and 2015, to source technological classifications.[5] 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; (iv) the deal is completed; and (v) the transactions are reported as equity rather than asset sales. Finally, financial information comes from Compustat with relatively poor coverage before 1990, and stock returns from CRSP. Constraints of the data sources define our time frame: our sample starts in 1990 (Compustat restriction) and extends to 2020 (KPSS restriction) or to 2015 for some variables (KPST restriction). Note that because we are comparing innovation before versus after acquisitions, we cover acquisitions between 1995 and 2015 (or 2010) 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 1990 and 2020. Our research question in essence concerns only innovative firms with patents as firms without any patents would by definition have a zero change in innovation variables from before to after acquisitions. All the data requirements result in 9,945 acquisitions of private targets by 2,429 unique acquirers. Together with control firms and covering 5 years before and after acquisitions, we end up with a panel of 194,269 firm-year observations. Our analysis relies on a set of variables measuring quantity, quality, and value of patents (following, for example, Trajtenberg, Henderson, and Jaffe, 1997; Bena and Li, 2014; Kogan et al., 2017; He and Hirshleifer, 2022).

[4]https://github.com/KPSS2017/Technological-Innovation-Resource-Allocation-and-Growth-Extended-Data

[5]https://github.com/KPSS2017/Measuring-Technological-Innovation-Over-the-Long-Run-Replication-Kit

The literature refers to the patent count as a measure of innovation quantity, while forward citations measure innovation quality – they reflect how a focal patent is important for future ideas. Our forward cites variable measures quality of the overall portfolio of patents by a focal firm in a given year. However, firms with smaller portfolios may be disadvantaged. Forward citations per patent (average forward cites) reflect quality that accounts for the size of the patent portfolio (He and Hirshleifer, 2022). Forward citations need to be scaled due to their truncation in later years in the sample, we use the total citations in the corresponding technological class in the given year as the scaling factor (following, for example, Dong, Hirshleifer, and Teoh, 2021). To reflect effects on the extremes of patenting quality, we define the best patent as the adjusted future citations of the patent with the highest number of future citations of a focal firm in a given year. On the other side of the performance spectrum, the bad patents variable reflects the number of patents with zero future citations (An, Chen, Wu, and Zhang, 2022).

The backward cites variable measures links to past patents. Backward citations are also used to build measures of innovation styles. Exploratory patents reflect the number of patents that rely on knowledge outside of the firm's existing expertise, while exploitative patents rely on existing expertise measured through overlapping backward citations (Gao et al., 2018). In addition, we use the metrics of generality and originality (He and Hirshleifer, 2022; Dong et al., 2021). Innovative generality relies on forward citations and measures the extent to which a firm's patents are cited by subsequent patents across a wide set of technological classes. In contrast, innovative originality relies on backward citations and measures the extent to which a firm's patents cite previous patents that span a wide range of technology classes (Trajtenberg et al., 1997). We round up the set of innovation variables by including the patent dollar value as reported in Kogan et al. (2017). All variable definitions are provided in Appendix A.

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

$$(1) \qquad Private_{i,t} = \alpha + X_{i,t-1}\beta + Z_{i,t-1}\gamma + a_i + d_t + \varepsilon_{i,t},$$

where $Private_{i,t}$ is equal to 1 if a firm i is an acquirer of a private target in year t and zero otherwise; $X_{i,t-1}$ is a matrix of 7 innovation measures (patent count, average forward cites, generality, backward citation, originality, exploratory patent, and exploitative patent); $Z_{i,t-1}$ is a matrix of control variables including the total sales, R&D expenditures, capital expenditures, leverage, and industry concentration; a_i and d_t are industry and year fixed effects, respectively. Table I.1 in the Internet Appendix tabulates estimated coefficients for Regression (1) and summary statistics for the corresponding variables. Note that private target acquisitions happen in 13 percent of firm-year observations in the sample.

As the second step in the propensity score matching procedure, we find a control firm for each private target acquisition that has the closest propensity score, is from the same Fama-French 30 industry, and matches in the acquisition announcement year. In addition, we require that control firms do not acquire private or public targets during our sample period. Table 1 compares acquirers and their matched non-acquiring firms. Columns 1 to 3 show the fit of the matching one year prior to the acquisition. None of the matched innovation variables of acquirers are statistically different from their control firms. Importantly, the propensity score difference (the last row) in Column 3 is insignificant.

Insert Table 1 about here.

Columns 4 to 6 show parallel trend statistics. In particular, Columns 4 and 5 show changes in the innovation variables from 5 years to 1 year before the acquisition for private target acquirers and their matched firms, respectively. We can see that the changes are always with the same sign for the two groups, indicating similar trends, and the mean difference in Column 6 is statistically insignificant. This confirms the main assumption of the difference-in-differences approach that absent acquisitions the average change in the treated versus control groups would have been the same.

Table 2 shows univariate statistics for the whole sample (Columns 1 and 2) and then separately for the pre- versus post-acquisition period (Columns 3 to 6). The pre-acquisition figures correspond to the average from year -5 to year -1, and the post-acquisition figures to the average from year 0 to year $+5$. Columns 7 and 8 show an overall decreasing trend in innovation over time for both acquirers and the control firms. Nevertheless, the double differences in Column 9 are positive and statistically significant, showing that acquisitions of private targets are associated with an increase in innovation relatively to the innovation change in control firms.

Insert Table 2 about here.

4 Baseline results

Our main research question aims to test the impact of private target acquisitions on innovation outcomes of acquirers. 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 private-target acquisitions. We estimate the following specification:

$$\begin{aligned} Innovation_{i,t,y} = \alpha\ & Post\,private_t + \beta\ Private_i \times Post\,private_t + \\ & + Y_{i,t}\delta + c_i + d_y + \varepsilon_{i,t}, \end{aligned} \tag{2}$$

where the unit of observation is a deal i at an event year t that corresponds to a calendar year y. $Innovation_{i,t,y}$ is one of the patent variables for acquirer of deal i in event year t; $Post\ private_t$ is equal to 1 in the post-deal period for both the acquirers and their control firms including the deal announcement year ($t = 0$) and zero otherwise; $Private_i$ is a dummy variable equal to 1 in all event years for private target acquirers and zero for their control firms; $Y_{i,t}$ is a matrix of control variables that contains size (total sales), R&D expenditures, leverage, net income and industry concentration; c_i is the deal fixed effect; d_y is the calendar year fixed effect; and $\varepsilon_{i,t}$ is the error term. Coefficients β for the interaction term $Private_i$ x $Post\ private_t$ are the coefficients of interests. We drop $Private_i$ from the regression because it perfectly correlates with the deal fixed effects.

Panel A in Table 3 shows coefficient estimates for Regression 2 for 9 innovation measures described in Section 3.[6] The β coefficients across all but one innovation measures show that private target acquisitions increase innovation for their acquirers post- versus pre-deal more than their corresponding control firms. All the innovation measures are standardized to a mean of zero and standard deviation of one, so it is easier to compare economic effects across the different measures. The interpretation of a β coefficient is as follows: the increase from 0 (for pre-acquisition and control firms) to 1 (for the post-acquisition period for private target acquirers) results in an increase of β times the standard deviation of the innovation variable from its mean. As most of the innovation variables are in logarithmic transformations,[7] this is an increase in percent of the original innovation variable average (plus 1). For example, the increase for the patent count (Column 1) is $0.053 \times 1.955 = 0.104$, which means that the patent count increases by 10.4 percent on its average value, or by $0.104 \times (4.76 + 1) = 0.69$ patents per year. The quantity of patents increases

[6] We do not report results for exploratory and exploitative patents to save space. The beta coefficients for the two variables are always positive and significant.

[7] Only forward citations, generality, and originality do not use logarithmic transformations.

post-acquisition significantly both in economic and statistical terms.

Insert Table 3 about here.

Columns 2 and 3 show that also the quality of patents, measured through forward citations, increases significantly after acquisitions of private targets. The forward cites measure reflects the focal firm's total future citations of patents filed in the given year scaled by the total future cites of patents filed in the same year and technological class. The average forward cites variable reflects the average scaled future citations per patent and does not increase with the number of patents the focal firm files. Both patent quality variables show positive and significant coefficients and their economic effects are somewhat smaller than for the patent count. Generality measures the spread of technology classes future citations come from. We can see that future citations post-acquisition are spread across a significantly wider range of technological classes.

The best patent variable (Column 5) counts future (technology-class scaled) citations of the best patent for a focal firm in a given year and shows whether a focal firm improves on the high margin. Often, it is better to have one impactfull patent than several mediocre ones. In contrast, the bad patents variable (Column 6) measures the number of patents without any future citations and reflects the left-hand tail of patent quality. We see that private target acquisitions significantly decrease numbers of patents without citations. Patent value (Column 7) is the dollar abnormal value at the announcement of a patent approval cumulated by the year of patent filing. It increases significantly post-acquisition and its economic significance is at 0.034 (or 9.8 percent increase) in between the patent count and average forward cites.

Columns 8 and 9 show the acquisition effect on total backward citations and the spread of citations the new patents make across different technological classes (orig-

inality). Both show a significantly positive β coefficients with large economic effects showing that the post-acquisition patents cite more previous patents from a wider range of technological classes. The spectrum of knowledge widens.[8] Summarizing results in Panel A, we conclude that innovation outcomes are significantly larger after acquisitions of private targets than in comparable non-acquiring firms.

Panel B in Table 3 uses an alternative counterfactual. Even though for Panel A 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 Panel A 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 private target 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 of private targets due to exogenous reasons.[9] The frequency of withdrawing is relatively low, so this group is significantly smaller than the group of successful deals. As we still want to keep innovation pre-acquisition

[8] We also analyze exploitative versus exploratory innovation styles, but do not find any significant and meaningful differences. Both types of variables are significant with similar economic effects suggesting that private target acquisitions increase both exploratory and exploitative innovation.

[9] 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.2 in the Internet Appendix lists all withdrawal reasons for the 30 random deals.

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.[10] In Panel B, we can see that the innovation effect pertains: all β^w coefficients have the predicted sign and all but one are significant. The economic significance of the coefficients is markedly larger than in Panel A. For example, the economic effect is 15.5, 19.7, and 20.5 times the standard deviation for the patent count, average forward cites, and patent value, respectively. Also, the best patents perform better and we have less under-performing patents without any future citations. We conclude that it is not the inertia to innovate that drives our results.

Table I.4 in the Internet Appendix shows innovation outcome effects by event year when comparing to control firms and withdrawn deals in Panel A and B, respectively. The reference category includes all lags from -5 to -1, thus the coefficients estimate the increase in the corresponding year relatively to the pre-acquisition period and relative to the same change for the counterfactuals. We can see that the innovation outcome effects increase in the initial years after the acquisitions and are persistent over the 5-year period. Table I.5 covers a shorter event window including 3 instead of 5 years before and after the acquisition. Our results hold.

Results in Table 3 above confirm our hypothesis that acquiring private targets, which pertain the advantage to engage in development of new innovative technologies due to their higher tolerance for failure and longer-term orientation, is associated with a significant increase in quantity, quality, and value of innovation. To round-up the analysis, Table 4 tests whether acquiring private targets is associated with synergies. We hypothesize that private firms with developed new technologies may decide for a sale instead of commercialization due to lack of experience to commercialize

[10] We estimate a logit model using all withdrawn and successful private target deals in our sample. We end up with 460 withdrawn target acquisitions 575 successful private target acquisitions. Table I.3 reports matching statistics and parallel trends for this sample.

and due to lack of resources to invest in manufacturing or distribution capabilities. The acquiring firms with more patenting know-how can also help with filing new patents. To test for a synergistic effect coming from a combination of the two firms, we combine yearly values of the patent variables for the acquirer and the target in the pre-acquisition period and then explore their increase post-acquisition. Panel A in Table 4 shows that the beta coefficients are all of the right sign and all but two (forward cites and best patent) are statistically significant. The economic effects decrease somewhat but remain meaningfully large. Synergies are positive. Note that we do not have data on the patent value of private targets, so this variable is not reported.

Insert Table 4 about here.

Around 23 percent of the private targets own any granted patents at the time of the acquisition. [11] This raises the question whether the existence of granted patents for the private target firm matters for the acquisition outcomes and synergies. This question is important in the context of existing literature which suggests that acquiring targets with patents is essential for post-acquisition innovation outcomes (Sevilir and Tian, 2012; Bena and Li, 2014). In Panel B of Table 4, we add an extra triple interaction term $Private \times Post\ private \times Target\ with\ patent$ with a coefficient γ, which measures an additional innovation effect for acquirers of private targets that do own patents before the acquisition. In contrast, the double interaction term (β) now measures the innovation effect when acquiring a target without any existing patents. The γ coefficients in Columns 1 and 7 show that acquiring private targets that already own patens does not affect the number of patents filed post-acquisition or the patent value. At the same time, acquiring private targets that already own

[11] To identify patents owned by private targets, we use the KPST patent-citation database in addition to KPSS. We match by company name and state of incorporation and perform a fuzzy match.

patens increases forward citations (Column 2) and forward citations of best patents (Column 5). The forward and backward citations are less spread across technological classes (Columns 4 and 9). Unreported results for exploitative versus exploratory type of innovation show that targets with patents bring in exploitative patents rather than exploratory patents. Importantly, the β coefficients show that acquiring private targets without any approved patents is still associated with increases in quantity, quality, and value of patents.

Overall, Panel B suggests that the significant increase in innovation outcomes we document in Table 3 is not driven by acquiring targets with existing patents. A large part of the synergies created is likely due to filing of patents that are ready to be filed by the target before the acquisition, but the target considers it more optimal to have it done by the more experienced acquirer. A similar effect is not very likely when acquiring public targets because public targets would themselves already possess patent-filing know-how. This could explain the inconsistency of our results with the literature (Bena and Li, 2014). Acquiring firms with patents brings in more exploitative but not exploratory innovation. Table I.7 in the Internet Appendix repeats Panels A and B when comparing to withdrawn deals and shows that our conclusions hold also for the alternative counterfactual.

To provide anecdotal supporting evidence that acquired private targets own innovative ideas regardless whether they do or do not file them as patents, 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 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 during the 2 years after acquisitions, acquiring firms file many patents with new inventors (inventors who did not appear for acquirer patents in the previous 5 years). Some of the new

inventors come from the target firms, but the 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.

Panel C in Table 4 shows synergistic effects as in Panel A, but only for targets with existing patents to establish whether the synergistic effects in Panel A are only due to acquisitions of targets with patenting ideas that get filed shortly after the acquisition. The β coefficients show that the quantity of patents does not increase post-acquisition (Column 1), but forward citations do increase both in overall numbers as reflected in the forward cites variable (Column 2) and when measured per filed patent (Column 3). Acquirers of targets with patents also decrease the number of bad patents (Column 6), but they deteriorate significantly concerning the best patent (Column 5). Panel C is still consistent with innovation synergies, but they seem to come due to higher citations rather than more filed patents.

As an additional test, Table 5 shows innovation outcomes when acquiring public instead of private targets. This exercise may serve as a placebo test because we observe the impact of acquisitions, but of a different type that misses the key ingredients for incubation of innovation. Panel A replicates our baseline specifications from Panel A in Table 3.[12] We can see that post-acquisition innovation outcomes when acquiring public targets are markedly smaller than for private targets, especially concerning the quality of patents. None of the variables based on future citations are significant, while the bad patents variable is positive and significant. The patent

[12]We perform a propensity score matching procedure similar to the one for private targets described in Section 3.

count (Column 1) does increase significantly, but the economic significance of the β^{pl} coefficient is about 60 percent of the corresponding β coefficient in Table 3. The increase in patent value is comparable in size to when acquiring private targets.

Insert Table 5 about here.

Panel B rejects a conjecture that private versus public target acquirers are of special qualities. It shows that innovation outcomes for private target acquisitions are higher for acquirers that do both private and public target acquisitions than for acquirers with only private target acquisitions over the period of our sample. In particular, for the sample of private target acquisitions and their corresponding control firms, we add interaction terms with a dummy variable for acquirers with both types of deals. We can see that the coefficients γ showing additional effect for acquirers with both types of deals are positive and statistically significant.

Panel C focuses on synergies of public target acquisitions. As in Table 4, we combine levels of patent variables for the acquirer and the target during the pre-acquisition period and then compare them to the levels of the variables for the acquirer post acquisition. The synergistic effects for public targets are mostly negative, for the patent count (Column 1) and forward citations (Column 2), significantly negative. Acquisitions of public targets do not create innovation synergies. The sharp difference in innovation outcomes between private versus public target acquisitions is in line with our hypothesis that private targets are more suited for developing risky new technologies due to their higher tolerance to risk and long-term orientation of the owners. Nevertheless, acquirers of public targets may still profit from existing patents of the purchased targets.

5 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 that reinforce our results from Section 4.

First, we explore the effect of deal frequency for a given acquirer. We conjecture that acquirers who strategically look for private firms with new innovative ideas would acquire such targets relatively frequently and gain expertise to spot suitable targets. In contrast, acquirers with one or two private target acquisitions over the 21-year period covered in our data set should not develop such an expertise. For the 2,429 acquirers in our sample, the median number of private target acquisitions is 5, which is on average 1 acquisition every 4 years.

Panel A in Table 6 splits the double interaction term β from our baseline specification into two effects, the first for high frequency acquirers (β_h) and the second for low frequency acquirers (β_l), split by the median value of 5. We can see that the positive innovation outcomes documented in our baseline specifications are concentrated in the high rather than the low deal frequency group. This shows that, for innovation, persistency and expertise is important.

Insert Table 6 about here.

Second, 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 4 percent of our deals are by acquirers that have a CVC unit.

Panel B in Table 6 with extra triple interaction terms γ shows that the additional effect of CVC presence is positive and statistically significant for the patent count, forward citations, best patent, patent value, and backward citations. The economically largest effect is for the patent value, which increases by additional 15.9 percent of its standard deviation. The only statistically negative effect is for the generality – private acquisitions in firms with CVC units decrease the range of technological classes they get citations from. CVCs are associated with a positive and economically large additional increase in post-acquisition innovation; their innovation expertise is evident. The double interaction term β 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.

As a third test, we examine how product market threats shape acquisition innovation outcomes. We use the measure of changes in rival firms' products relative to a focal firm developed by Hoberg et al. (2014). They show that fluidity correlates positively with firm cash balances and negatively with dividend payouts and share repurchases. Paying lower dividends and repurchasing fewer shares while retaining more cash can provide flexibility for firms in less stable product markets, allowing firms to react more aggressively to competitive threats when they materialize. Making acquisitions that improve innovation capabilities when facing changes and instabilities in the product market may be one of effective response tactics. Panel C in Table 6 adds triple interaction terms γ for acquirers with higher than median

fluidity one year before the acquisition. We can see that a more fluid product market is associated with higher acquisition innovation outcomes as measured through quantity, quality, and value of patents. This suggests that higher product market instability serves as a motivation for private target acquisitions with better innovation outcomes.

Our last channel considers product life cycles. An extensive body of literature suggests that companies and their products go through life cycles, and this progression is important in understanding how firms interact with rivals, investment decisions, and the firms' ability to remain flexible (for example, Abernathy and Utterback, 1978; Hoberg and Maksimovic, 2022). Abernathy and Utterback (1978) explain two opposing patterns of technological innovation – radical product innovation with characteristics in flux by a small, technology based unit versus incremental change to a rigid, efficient production system specifically designed to produce a standardized product. Usually, major systems innovations have been followed by countless minor product and systems improvement, and the latter account for more than half of the total ultimate economic gain due to their much greater number. Major new products are not consistent with this pattern of incremental change. New products, which require reorientation of corporate goals or production facilities, tend to originate in small, adaptable organizations with flexible technical approaches and good external communications. This pattern predicts that companies in earlier stages of the product life cycle are more likely to acquire targets with larger innovative outcomes because they are more suitable to absorb and utilize the acquired new technologies. Firms in later product life cycle stages focus more on incremental innovation changes that may not be filed in new patents or reflected in patent citations.

To test this channel, we use the Hoberg and Maksimovic (2022) four product life cycle stages based on computations linguistic methods applied to 10-K filings.

Intuitively, firms with multiple products will have positive exposures to more than one stage of the life cycle, so the overall measure is a four-element vector (Life 1, Life 2, Life 3, Life 4) with the individual elements for the stages summing to one. Panel D in Table 6 includes additional triple interaction terms γ with a dummy for deals in the highest quartile by the acquirer first product fife cycle stage (Life 1) one year before the acquisition.[13] This means that deals with the Life 1 dummy equal to one are among the quarter of deals with the highest index for the first product life cycle stage – firms with large fraction of product innovation. The triple interaction term shows positive and significant coefficients for the patent count, forward citations, patent value, and backward citations. The only significantly negative is the coefficient for the best patent. This means that firms in the early stage of the product life cycle are enjoying higher additional innovation benefits from their acquisitions. As suggested by Abernathy and Utterback (1978), these firms are more suitable to absorb and utilize new technologies. Table I.8 in the Internet Appendix repeats all four sets of tests when comparing to withdrawn deals and shows that our conclusions hold also for the alternative counterfactual.

To summarize, our four sets of tests concerning channels through which private target acquisitions improve innovation outcomes support our hypothesis. The innovation gain is higher for persistent acquirers, for acquirers with expertise in new technologies gained through their CVC units, for acquirers in fluid industries, and for acquirers in early stages of their product life cycles.

6 Acquirer announcement returns

Our final analysis examines whether we can link the significant innovation improvements after private target acquisitions to differences in acquirer announcement ab-

[13]Note that the small number of observations is due to shorter coverage of the life cycle data.

normal returns between private versus public targets. Table 7 regresses the acquirer 5-day cumulative abnormal return around deal announcements, adjusted by the value-weighted market index return, on a dummy for private targets and a set of control variables following the M&A literature (Faccio et al., 2006; Fuller et al., 2002).[14] All specifications include year and industry fixed effects. In Column 1, we add three dummy variables indicating improvement 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 more 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 versus public targets create more value for the acquiring firm shareholders. The three innovation improvement dummies are positive, but only the highest quartile is statistically significant at the 10-percent level. The overall valuation effect associated with innovation quantity improvement is somewhat weak.

Insert Table 7 about here.

In Column 2, we add interaction terms between the quartiles for patent count improvement and the private target dummy to separate the valuation effect of innovation improvements between private versus public firms. We can see that the inclusion of the interaction terms is important. The three quartile dummies are positive and statistically significant, with an increasing trend. The market reaction is significantly higher for acquisitions of private targets with a higher increase in the patent count than in the lowest quartile. This is not the case for acquirers of public targets. Moreover, the stand-alone private target dummy decreases down to

[14]Table I.9 in the Internet Appendix provides summary statistics for the cross-section of deals used in these regressions.

less than 25 percent in size and becomes statistically insignificant. These results suggest that the value differences between private and public firms are explained by innovation quantity improvements. Untabulated results show that controlling for the change in profitability and industry competition from before to after acquisitions does not affect the innovation coefficients. Columns 3 and 4 (Columns 5 and 6) repeat the same two specifications for the change in forward cites (patent value) and draw similar conclusions. In summary, private target acquirers with larger changes in quantity, quality, or value of patents are associated with higher announcement market reactions. In contrast, we do not observe such an effect for public target acquisitions.

7 Conclusions

This paper studies the impact of acquiring private firms on public acquirers' innovation outcomes. Empirical analysis of innovation has so far largely neglected private firms due to scarce data availability. Our results show support for our hypothesis that publicly listed firms, in general short-termist and with low tolerance for failure, increase their innovation activities by acquiring private firms with developed new ideas that may not be patented yet. This spurs follow-on innovation that is less risky. We find that acquisitions of private targets are associated with an increase in the quantity, quality, and value of patents relatively to similar non-acquirer firms. We also find evidence of innovation synergies. The positive innovation outcomes are independent of whether the acquired private targets possess existing patents or not. This suggests that acquired private targets have new technologies ready for patenting and public acquirers provide know-how in submitting patent applications.

In contrast, we do not find any increase in innovation or synergies for public targets acquisitions, which suggests that private targets are indeed more suitable

for start-up risky innovation projects. We address possible endogeneity issues by changing the counterfactual. Following the literature, we compare innovation in private target acquirers to acquisitions of private targets that were withdrawn due to exogenous reasons. Our results hold.

The results are stronger for acquirers with expertise from corporate venture capital or engaging in private target acquisitions more often. Moreover, we show positive additional effects for changing or unstable product markets and for acquirers in earlier stages of product file cycles.

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Table 1. Matching statistics: 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. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. Innovation variables are reported in logarithmic transformations except generality and originality. ***, ** and * indicate significance at the one-, five- and ten-percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Matching differences			Parallel trends		
	Acquirer	Control	Mean difference	Acquirer	Control	Mean difference
Patent count	1.500	1.525	-0.025	0.016	0.022	-0.006
Average forward cites	2.655	2.641	0.013	-0.009	-0.008	-0.001
Generality	0.216	0.217	-0.001	0.011	0.005	0.006
Backward cites	3.140	3.216	-0.077	0.040	0.019	0.021
Originality	0.287	0.295	-0.008	-0.010	-0.004	-0.006
Exploratory patents	1.192	2.985	1.219	0.016	0.018	-0.002
Exploitative patents	0.488	0.486	0.001	0.060	0.058	0.002
Size	20.213	20.183	0.031	0.001	0.001	0.000
R&D expenditure	12.017	12.067	-0.049	0.008	0.006	0.002
Capital expenditure	0.046	0.047	-0.001	-0.017	-0.022	0.005
Leverage	0.143	0.143	0.001	-0.016	-0.010	-0.006
Industry concentration	0.236	0.237	-0.001	-0.009	-0.005	-0.004
Propensity score	0.156	0.156	0.000			

Table 2. Univariate statistics

This table reports means and standard deviations for 13 innovation measures for our full sample with control firms 5 years before and after acquisitions in Columns 1 and 2. Columns 3 to 6 report means for acquirers of private targets and their corresponding matched firms, both pre- and post-activism. Column 7 (Column 8) reports the difference in acquirer (control 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)
	Altogether		Pre-acquisition		Post-acquisition		Differences		
	Mean	St.dev.	Acquirer	Control	Acquirer	Control	(5) - (3)	(6) - (4)	(7) - (8)
Ln(1+patent count)	1.699	1.955	1.690	1.735	1.718	1.659	0.027 **	-0.076***	0.104***
Forward cites	15.052	31.984	17.055	15.676	14.760	13.152	-2.295***	-2.524***	0.229
Ln(1+average forward cites)	2.674	2.415	2.747	2.794	2.602	2.586	-0.146***	-0.209***	0.063***
Generality	0.209	0.206	0.207	0.218	0.205	0.208	-0.001	-0.010***	0.008***
Ln(1+best patent)	0.971	2.152	1.023	1.011	0.957	0.910	-0.066***	-0.101***	0.036 *
Ln(1+bad patents)	4.188	2.680	4.436	4.536	3.897	3.979	-0.539***	-0.557***	0.018
Ln(1+patent value)	2.615	2.886	2.771	2.490	2.788	2.418	0.017	-0.072***	0.089***
Ln(1+backward cites)	3.293	3.095	3.330	3.388	3.298	3.179	-0.031	-0.209***	0.178***
Originality	0.261	0.271	0.291	0.300	0.233	0.232	-0.059***	-0.068***	0.010***
Ln(1+new cites)	3.120	2.887	3.160	3.228	3.107	3.009	-0.052***	-0.220***	0.167***
Ln(1+exploratory patents)	1.361	1.723	1.382	1.419	1.360	1.298	-0.022 **	-0.122***	0.099***
Ln(1+repeated cites)	2.269	2.698	2.210	2.220	2.377	2.251	0.167***	0.031	0.136***
Ln(1+exploitative patents)	0.681	1.195	0.618	0.631	0.754	0.700	0.136***	0.070***	0.066***
# of observations	194,269		44,355	44,054	52,699	53,161			

Table 3. Baseline difference-in-differences regressions

This table shows estimation results for regressions with 9 innovation measures as alternative dependent variables. The regressions include acquisitions of private targets and their controls for years −5 to +5 around the acquisition announcement year ($t = 0$). *Private* is a dummy variable indicating a private target. *Post private* is a dummy variable for the period after the private target acquisition including year 0. All regressions include calendar year and deal fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and industry concentration. 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
Panel A: Baseline regressions with matched controls									
Post private	-0.046***	-0.006	0.002	0.015	-0.013	-0.005***	-0.042***	-0.066***	-0.064***
	(0.006)	(0.005)	(0.009)	(0.011)	(0.009)	(0.002)	(0.006)	(0.007)	(0.012)
Private x post private	0.053***	0.013*	0.017**	0.032**	0.017	-0.004**	0.034***	0.064***	0.045***
(β)	(0.009)	(0.006)	(0.008)	(0.013)	(0.012)	(0.002)	(0.009)	(0.010)	(0.013)
Size	0.019***	0.003	0.016***	0.018***	0.005*	-0.004***	0.015***	0.013***	0.004
	(0.002)	(0.002)	(0.003)	(0.004)	(0.003)	(0.000)	(0.002)	(0.003)	(0.004)
R&D expenditure	0.008***	0.002***	0.006***	0.002	0.004***	-0.001**	0.006***	0.010***	0.010***
	(0.001)	(0.000)	(0.001)	(0.002)	(0.001)	(0.000)	(0.001)	(0.001)	(0.002)
Leverage	-0.081***	-0.012	-0.030	-0.059	0.038	0.005	-0.089***	-0.112***	-0.138***
	(0.018)	(0.014)	(0.019)	(0.036)	(0.026)	(0.004)	(0.018)	(0.024)	(0.035)
Net income	0.005**	0.004***	0.003	-0.001	0.003	0.001	0.005*	0.013**	0.016***
	(0.002)	(0.001)	(0.004)	(0.005)	(0.002)	(0.001)	(0.003)	(0.005)	(0.005)
Industry concentration	0.026	0.053*	0.008	0.026	0.002	-0.009	0.046	-0.015	-0.081
	(0.036)	(0.030)	(0.034)	(0.082)	(0.048)	(0.011)	(0.036)	(0.052)	(0.097)
Constant	-0.370***	-0.023	-0.291***	-0.350***	-0.131**	0.178***	-0.257***	-0.248***	-0.039
	(0.051)	(0.036)	(0.052)	(0.085)	(0.060)	(0.010)	(0.053)	(0.062)	(0.080)
Adjusted R^2	0.895	0.948	0.870	0.495	0.706	0.995	0.875	0.801	0.477
# of observations	194,269	155,351	155,351	194,269	155,351	155,351	194,269	194,269	194,269
Panel B: Compared to acquirers of withdrawn deals									
Post private	-0.008	-0.008	-0.070**	-0.082	-0.039	0.008	-0.016	-0.006	-0.002
	(0.035)	(0.024)	(0.029)	(0.057)	(0.041)	(0.007)	(0.038)	(0.037)	(0.051)
Private x post private	0.155***	0.074	0.197***	0.220***	0.125**	-0.029***	0.205***	0.193***	0.215***
(β^w)	(0.042)	(0.045)	(0.034)	(0.052)	(0.046)	(0.008)	(0.052)	(0.054)	(0.075)
Adjusted R^2	0.760	0.859	0.785	0.449	0.491	0.990	0.719	0.628	0.358
# of observations	9,024	8,374	8,374	9,024	8,374	8,374	9,024	9,024	9,024

Table 4. Synergies and targets with existing patents

This table shows estimation results for regressions with 9 innovation measures as alternative dependent variables. The regressions include acquisitions of private targets and their controls for years −5 to +5 around the acquisition announcement year ($t = 0$). *Private* is a dummy variable indicating an acquisition of a private target. *Post private* is a dummy variable for the period after the acquisition including year 0. *Private with patent* is a dummy variable for acquisitions of private targets with existing patents. In Panels A and C, observations for years −5 to −1 combine innovation of acquirers and their targets. All regressions include year and deal fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income and industry concentration. 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
Panel A: Synergies with all deals									
Private x post private	0.040***	0.009	0.017***	0.018**	0.000	-0.020***		0.045***	0.038***
(β)	(0.006)	(0.006)	(0.005)	(0.008)	(0.007)	(0.001)		(0.007)	(0.009)
Adjusted R^2	0.894	0.948	0.868	0.520	0.703	0.994		0.800	0.491
# of observations	194,269	155,351	155,351	194,269	155,351	155,351		194,269	194,269
Panel B: Targets with existing patents									
Private x post private	0.055***	0.004	0.016***	0.046***	0.010	-0.005***	0.037***	0.066***	0.052***
(β)	(0.006)	(0.006)	(0.006)	(0.009)	(0.007)	(0.001)	(0.006)	(0.007)	(0.010)
Private x post private	-0.011	0.038***	0.008	-0.062***	0.035**	0.006***	-0.013	-0.006	-0.030**
x target with patent (γ)	(0.010)	(0.011)	(0.009)	(0.013)	(0.014)	(0.002)	(0.010)	(0.011)	(0.014)
Adjusted R^2	0.895	0.948	0.870	0.495	0.706	0.995	0.875	0.801	0.477
# of observations	194,269	155,351	155,351	194,269	155,351	155,351	194,269	194,269	194,269
Panel C: Synergies for targets with existing patents									
Private x post private	0.011	0.028**	0.033***	-0.058***	-0.040**	-0.076***		-0.005	0.017
(β)	(0.013)	(0.013)	(0.011)	(0.016)	(0.018)	(0.004)		(0.015)	(0.017)
Adjusted R^2	0.898	0.949	0.876	0.536	0.706	0.992		0.810	0.523
# of observations	45,037	33,935	33,935	45,037	33,935	33,935		45,037	45,037

Table 5. Acquiring public targets

This table shows estimation results for regressions with 9 innovation measures outcomes as alternative dependent variables. The regressions in Panels A and C include acquisitions of public targets while in Panel B they include acquisitions of private targets. All panels include corresponding control firms and cover years -5 to $+5$ around the acquisition announcement year ($t = 0$). In Panel C, observations for years -5 to -1 combine innovation of acquirers and their targets. *Public (Private)* is a dummy variable indicating a deal with public (private) target. *Post public (Post private)* is a dummy variable for the period after the public (private) target acquisition including year 0. *Both types* is a dummy variable indicating acquirers with both private and public target acquisitions during our sample period. All regressions include year and deal fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income, and industry concentration. 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
Panel A: Acquirer innovation outcomes									
Post public	-0.043***	-0.011	0.004	-0.036	0.009	-0.009***	-0.036***	-0.066***	-0.085***
	(0.013)	(0.010)	(0.011)	(0.024)	(0.016)	(0.002)	(0.012)	(0.014)	(0.020)
Public x post public	0.029*	0.012	-0.009	0.006	0.017	0.006*	0.035**	0.056***	0.070***
(β^{pl})	(0.016)	(0.016)	(0.017)	(0.024)	(0.023)	(0.003)	(0.017)	(0.019)	(0.023)
Adjusted R^2	0.892	0.946	0.891	0.533	0.717	0.996	0.857	0.817	0.514
# of observations	24,835	21,462	21,462	24,835	21,462	21,462	24,835	24,835	24,835
Panel B: Acquiring both types of targets									
Private x post private (β)									
Private x post private x both types (γ)									
Adjusted R^2									
# of observations									
Panel C: Synergistic effects									
Public x post public	-0.028*	-0.058***	-0.020	-0.064***	-0.019	-0.043***		-0.006	0.028
(β^{pl})	(0.017)	(0.016)	(0.016)	(0.024)	(0.021)	(0.007)		(0.019)	(0.024)
Adjusted R^2	0.889	0.942	0.883	0.529	0.713	0.991		0.814	0.515
# of observations	24,835	21,462	21,462	24,835	21,462	21,462		24,835	24,835

Table 6. Channel tests

This table shows estimation results for regressions with 9 innovation measures outcomes as alternative dependent variables. The regressions include acquisitions of private targets and their controls for years −5 to +5 around the acquisition announcement year ($t = 0$). *High (low) frequency* is a dummy variable for the total number of private target acquisitions in our data set higher (lower) than the median for the given acquirer and zero otherwise. *CVC* is a dummy for the presence of corporate venture capital subsidiary for the acquirer and zero otherwise. *High fluidity* is a dummy indicating fluidity higher than a median in our sample for year −1. Life 1 is a dummy indicating acquirers in the highest quartile by the first product life cycle index following Hoberg and Maksimovic (2022). *High (low) deal value* is a dummy for higher (lower) than median deal value as reported by SDC. The number of observations changes across the panels due to data restrictions. All regressions include corresponding double interaction terms, year and deal fixed effects, and the following control variables: acquirer size, R&D expenditure, leverage, net income, and industry concentration. 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
Panel A: Frequent versus infrequent private-target acquisitions									
Private x post private	0.092***	0.027***	0.021***	0.022**	0.036***	0.002	0.066***	0.114***	0.097***
x high frequency (β_h)	(0.007)	(0.007)	(0.006)	(0.009)	(0.009)	(0.001)	(0.007)	(0.008)	(0.010)
Private x post private	-0.012	-0.008	0.011	0.048***	-0.011	-0.012***	-0.018**	-0.018*	-0.039***
x low frequency (β_l)	(0.007)	(0.006)	(0.007)	(0.012)	(0.008)	(0.002)	(0.008)	(0.009)	(0.013)
Adjusted R^2	0.895	0.948	0.870	0.495	0.706	0.995	0.876	0.802	0.477
# of observations	194,269	155,351	155,351	194,269	155,351	155,351	194,269	194,269	194,269
Panel B: Corporate venture capital									
Private x post private	0.048***	0.010***	0.017***	0.034***	0.015**	-0.003***	0.026***	0.057***	0.044***
(β)	(0.003)	(0.003)	(0.004)	(0.007)	(0.006)	(0.001)	(0.003)	(0.004)	(0.007)
Private x post private	0.073***	0.079***	0.021	-0.065**	0.086***	-0.006	0.159***	0.137***	-0.003
x CVC (γ)	(0.016)	(0.014)	(0.020)	(0.033)	(0.031)	(0.004)	(0.017)	(0.021)	(0.034)
Adjusted R^2	0.895	0.948	0.870	0.495	0.706	0.995	0.875	0.802	0.477
# of observations	194,269	155,351	155,351	194,269	155,351	155,351	194,269	194,269	194,269
Panel C: High fluidity									
Private x post private	0.016**	0.006	-0.004	0.035***	0.024**	0.002	0.007	0.033***	0.045***
(β)	(0.007)	(0.008)	(0.007)	(0.013)	(0.010)	(0.001)	(0.008)	(0.009)	(0.013)
Private x post private	0.037***	0.005	0.047***	0.022	-0.021	-0.007***	0.023**	0.025*	-0.007
x high fluidity (γ)	(0.010)	(0.009)	(0.010)	(0.018)	(0.014)	(0.002)	(0.011)	(0.013)	(0.018)
Adjusted R^2	0.900	0.950	0.871	0.496	0.690	0.994	0.882	0.805	0.480
# of observations	171,687	137,529	137,529	171,687	137,529	137,529	171,687	171,687	171,687
Panel D: Early product life cycle									
Private x post private	0.024***	-0.009	0.012	0.022*	0.021*	-0.001	0.030***	0.052***	0.053***
(β)	(0.008)	(0.009)	(0.009)	(0.013)	(0.012)	(0.001)	(0.009)	(0.010)	(0.014)
Private x post private	0.103***	0.032**	0.022	0.034	-0.065**	-0.001	0.059***	0.068***	0.068**
x Life 1 dummy (γ)	(0.017)	(0.015)	(0.017)	(0.026)	(0.031)	(0.003)	(0.017)	(0.021)	(0.027)
Adjusted R^2	0.913	0.962	0.894	0.528	0.735	0.996	0.893	0.825	0.522
# of observations	96,175	61,193	61,193	96,175	61,193	61,193	96,175	96,175	96,175

Table 7. Announcement abnormal returns

This table reports OLS estimates with the acquirer 5-day cumulative abnormal return around the deal announcement date for private and public 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 changes in the patent count in Columns 1 and 2, by forward cites in Columns 3 and 4, and by patent value in Columns 5 and 6. ΔInnovation measures the increase in one of the 3 innovation variables from the pre- to post-acquisition period. Q_1 is the reference category. All regressions include year and Fama-French 12 industry fixed effects. Standard errors clustered at the 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)	(5)	(6)
	Patent count		Forward cites		Patent value	
Private target	0.013***	0.003	0.013***	0.008	0.013***	0.004
	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)
ΔInnovation Q_2	0.003	-0.008	0.003	0.001	0.003	-0.007
	(0.002)	(0.007)	(0.003)	(0.007)	(0.002)	(0.006)
ΔInnovation Q_3	0.003	-0.009	0.003	0.000	0.006**	-0.005
	(0.002)	(0.007)	(0.003)	(0.007)	(0.002)	(0.007)
ΔInnovation Q_4	0.004*	-0.008	0.007**	-0.006	0.005**	-0.007
	(0.002)	(0.006)	(0.003)	(0.007)	(0.002)	(0.006)
Private target x ΔInnovation Q_2		0.012*		0.002		0.012
		(0.007)		(0.007)		(0.007)
Private target x ΔInnovation Q_3		0.014**		0.003		0.012
		(0.007)		(0.007)		(0.007)
Private target x ΔInnovation Q_4		0.014**		0.015**		0.014**
		(0.006)		(0.007)		(0.006)
Cash only	0.006***	0.006***	0.006***	0.006***	0.006***	0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Hostile deal	-0.005	-0.005	-0.004	-0.007	-0.006	-0.006
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Horizontal deal	0.002	0.002	0.002	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
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)
Size	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	0.003	0.003	0.003	0.003	0.002	0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Net income	-0.005	-0.005	-0.005	-0.005	-0.005	-0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
HH Index	-0.003	-0.003	-0.002	-0.002	-0.003	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
# observations	9,045	9,045	9,045	9,045	9,045	9,045
R^2	0.016	0.016	0.016	0.017	0.016	0.017

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
Forward cites	The total number of future citations that each patent receives scaled by the total citation count of all patents in the same technological class and year; summed across all patents filed by the focal firm in yeat t.	KPSS, KPST
Avg. forward cites	The average number of future adjusted citations per patent, which is the average over all patents filed by the focal firms in year t of the total number of future citations per patent divided by the total citation count per patent in the same technological class and year.	KPSS, KPST
Generality	A measure of future citations' spread across different technological classes. Equals 1 minus the Herfindahl-Hirschman index based on fractions of future citations across technological classes received by all patents by the focal firm filed in year t (Trajtenberg et al., 1997; Seru, 2014; He and Hirshleifer, 2020).	KPSS, KPST
Best patent	The total number of future citations of the best patent filed by the focal firm in year t. The best patent is defined as the patent that receives the highest number of future scaled citations in year t.	KPSS, KPST
Bad patents	The total number of patents filed by the focal firm in year t that receive zero future citations.	KPSS, KPST
Patent value	The cummulative dollar value of all patents filed by the focal firms in year t based on stock market reactions to patent grants following Kogan et al. (2017).	KPSS
Backward cites	The total number of citations made by patents filed by the focal firm in year t (Lanjouw and Schankerman, 2004).	KPSS
Originality	A measure of backward citations' spread across different technological classes. Equals 1 minus the Herfindahl-Hirschman index based on fractions of citations made by the focal firm in year t across all technological classes (Trajtenberg et al., 1997; Seru, 2014; He and Hirshleifer, 2020).	KPSS, KPST
New cites	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
Exploratory patent	The total number of exploratory patents that the focal firm applies for in year t. A patent is exploratory if at least 80% of its citations are made to patents that were not cited by the firm before (Gao et al., 2018).	KPSS
Repeat cites	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
Exploitative patent	The total number of exploitative patents that the focal firm applies for in year t. A patent is exploitative if at least 80% of its citations are made to patents cited by the focal firm before (Gao et al., 2018).	KPSS
Panel B: deal variables		
Private (public)	A dummy variable for an acquisition of a private (public) target that happened in year t0.	SDC
Post private (post public)	A dummy variable indicating the period after a private (public) target acquisition including the year of the acquisition announcement.	SDC
Target with patent	A dummy variable for an acquisition of a private target with existing patents.	SDC, KPST
High frequency	A dummy variable for the number of private target acquisitions by the focal firm within our sample above the median.	SDC
Low frequency	A dummy variable for the number of private target acquisitions by the focal firm within our sample below the median.	SDC
CVC	A dummy variable for an acquirer that owns a corporate venture capital division.	Prequin, Compustat

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Variable	Definition	Source
High fluidity	A dummy variable for deals with fluidity at year t–1 above the samle median (Hoberg et al., 2014).	HDPL
Life 1 dummy	A dummy variable for deals in the highest quartile by the acquirer first product life-cycle stage in year t–1 (Hoberg and Maksimovic, 2022).	HMPLC
Deal value	Natural logarithm of the total transaction value.	SDC
High deal value	A dummy variable for deals with the transaction value above the sample median.	SDC
Low deal value	A dummy variable for deals with the transaction value below the sample median.	SDC
Panel C: Control variables		
Size	The focal firm's total sales. In regressions used as a natural logarithm.	Compustat
R&D expenditure	The focal firm's R&D expenditure. In regressions used as a natural logarithm.	Compustat
Capital expenditure	The focal firm's property, plant, and equipment scaled by total assets.	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.	Compustat
Industry concentration	The Herndahl-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		
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
ΔInnovation	The natural logarithm of the ratio of the average patent count (or forward cites or patent value) 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

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 Column 1 coefficient estimates and standard errors obtained from estimating logit models predicting the probability of acquiring private targets over the period between 1995 and 2015. The dependent variable *Private target* equals to 1 if a firm acquires a private target in the given year and 0 otherwise and has a mean value of 0.129. All explanatory variables are lagged one year and we include firm and year fixed effects. Standard errors are reported in parentheses. Columns 2 to 4 show the number of observations, mean, and standard deviation for the explanatory variables. All variables are defined in Appendix A and winsorized at the 1st and 99th percentiles. ***, ** and * indicate significance at the one-, five- and ten-percent levels, respectively.

	(1)	(2)	(3)	(4)
	Regression	Summary statistics		
	Private	# observations	Mean	St.deviation
Patent count	-0.392***	51,553	1.177	1.426
	(0.063)			
Average forward cites	0.028**	51,553	2.326	2.142
	(0.012)			
Generality	-0.189**	51,553	0.214	0.217
	(0.092)			
Backward cites	0.139***	51,553	2.564	2.642
	(0.018)			
Originality	-0.178**	51,553	0.245	0.278
	(0.082)			
Exploratory patents	0.233***	51,553	0.880	1.223
	(0.046)			
Exploitative patents	0.125***	51,553	0.367	0.699
	(0.034)			
Size	0.133***	51,553	18.933	3.831
	(0.007)			
R&D expenditure	-0.022***	51,553	12.316	7.399
	(0.002)			
Capital expenditure	-1.269***	51,553	0.046	0.050
	(0.300)			
Leverage	-0.442***	51,553	0.154	0.206
	(0.077)			
Industry concentration	0.118	51,553	0.220	0.182
	(0.076)			
Constant	-4.443***			
	(0.165)			

Table I.2. Reasons for withdrawing 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.3. Matching statistics: withdrawn counterfactual

This table shows means for acquirers of successful versus withdrawn deals 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. All variables are defined in Appendix A and winsorized at the 1^{th} and 99^{th} percentiles. Innovation variables are reported in logarithmic transformations except generality and originality. ***, ** and * indicate significance at the one-, five- and ten-percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Matching differences			Parallel trends		
	Successful	Withdrawn	Mean difference	Successful	Withdrawn	Mean difference
Patent count	0.134	0.184	-0.050	0.027	-0.038	0.065
Average forward cites	0.391	0.403	-0.013	-0.013	0.002	-0.016
Generality	0.045	0.039	0.006	-0.056	-0.009	-0.047
Backward cites	0.324	0.408	-0.085	-0.058	0.068	-0.126*
Originality	0.039	0.042	-0.003	-0.125	-0.123	-0.001
Exploratory patents	0.105	0.150	1.219	-0.054	-0.065	0.011
Exploitative patents	0.030	0.042	-0.012	0.053	0.185	-0.132
Size	17.74	18.16	-0.41**	0.000	0.001	-0.001
R&D expenditure	3.803	3.052	0.750*	-0.016	-0.033	0.017
Capital expenditure	0.051	0.058	-0.007	0.022	-0.016	0.038
Leverage	0.163	0.140	0.023*	0.034	-0.017	0.052
Industry concentration	0.223	0.218	0.005	-0.013	-0.010	-0.003
Propensity score	0.239	0.214	0.025			

Table I.4. Persistency of changes in innovation outcomes

This table shows estimation results for regressions with 9 innovation measures as alternative dependent variables. The regressions include acquisitions of private targets and their controls (withdrawn deals) for years −5 to +5 around the acquisition announcement year 0 in Panel A (Panel B). *Post priv*$_j$ is a dummy variable equal to 1 for private target acquisitions j years away from the acquisition announcement year 0, and 0 otherwise. All regressions include year and deal fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income, and industry concentration. 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
	Panel A: Compared to matched controls								
Post priv$_0$	0.026***	0.008	0.001	0.006	0.019	0.001	0.012	0.031**	0.017
	(0.008)	(0.006)	(0.012)	(0.020)	(0.014)	(0.002)	(0.011)	(0.013)	(0.027)
Post priv$_1$	0.041***	0.016**	0.035**	0.048**	0.027	-0.007***	0.027***	0.053***	0.046***
	(0.009)	(0.007)	(0.014)	(0.021)	(0.018)	(0.002)	(0.009)	(0.011)	(0.015)
Post priv$_2$	0.058***	0.020***	0.023*	0.054**	-0.004	-0.003	0.043***	0.071***	0.063***
	(0.009)	(0.006)	(0.013)	(0.020)	(0.016)	(0.003)	(0.010)	(0.012)	(0.021)
Post priv$_3$	0.049***	0.007	0.015	0.038**	0.041**	-0.002	0.036***	0.056***	0.039*
	(0.011)	(0.007)	(0.013)	(0.018)	(0.016)	(0.002)	(0.011)	(0.013)	(0.021)
Post priv$_4$	0.074***	0.016*	0.022*	0.028	-0.004	-0.006***	0.042***	0.087***	0.051**
	(0.012)	(0.009)	(0.012)	(0.026)	(0.019)	(0.002)	(0.012)	(0.016)	(0.020)
Post priv$_5$	0.082***	0.008	0.008	0.016	0.024	-0.005	0.051***	0.101***	0.063***
	(0.015)	(0.013)	(0.019)	(0.025)	(0.022)	(0.003)	(0.017)	(0.019)	(0.020)
# of obs.	0.895	0.948	0.870	0.495	0.706	0.995	0.875	0.802	0.477
Adjusted R^2	194,269	155,351	155,351	194,269	155,351	155,351	194,269	194,269	194,269
	Panel B: Compared to acquirers of withdrawn private-target deals								
Post priv$_0$	0.165***	0.038	0.098**	0.127*	0.038	-0.005	0.215***	0.187***	0.232*
	(0.048)	(0.033)	(0.043)	(0.072)	(0.071)	(0.008)	(0.067)	(0.066)	(0.124)
Post priv$_1$	0.172***	0.052	0.123**	0.078	0.065	-0.017*	0.260***	0.215***	0.215**
	(0.061)	(0.041)	(0.044)	(0.048)	(0.065)	(0.008)	(0.094)	(0.072)	(0.095)
Post priv$_2$	0.144**	0.091*	0.290***	0.250***	0.156*	-0.047**	0.141**	0.174*	0.199**
	(0.061)	(0.045)	(0.062)	(0.068)	(0.081)	(0.017)	(0.063)	(0.091)	(0.096)
Post priv$_3$	0.069	0.098	0.215***	0.278**	0.114	-0.032***	0.129**	0.106	0.099
	(0.049)	(0.064)	(0.050)	(0.118)	(0.074)	(0.011)	(0.058)	(0.070)	(0.103)
Post priv$_4$	0.191**	0.108*	0.232***	0.314***	0.278**	-0.040***	0.228**	0.235**	0.263**
	(0.080)	(0.056)	(0.061)	(0.104)	(0.107)	(0.012)	(0.095)	(0.098)	(0.111)
Post priv$_5$	0.186**	0.094	0.308***	0.405***	0.179**	-0.050***	0.256***	0.244***	0.281***
	(0.068)	(0.062)	(0.071)	(0.115)	(0.072)	(0.017)	(0.080)	(0.082)	(0.098)
# of obs.	0.760	0.859	0.786	0.451	0.492	0.990	0.720	0.629	0.360
Adjusted R^2	9,024	8,374	8,374	9,024	8,374	8,374	9,024	9,024	9,024

Table I.5. Shorter event window

This table shows results with a shorter event window: the regressions include acquisitions of private targets and their controls for years −5 to +5 around the acquisition announcement year 0. All regressions include firm and deal fixed effects and control variables as in Table 3. Standard errors clustered by firm and year are 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
				Panel A: Full matched sample					
Post private	-0.034***	0.002	-0.003	0.012	-0.020**	-0.002	-0.034***	-0.050***	-0.041***
	(0.005)	(0.004)	(0.007)	(0.015)	(0.009)	(0.001)	(0.005)	(0.007)	(0.011)
Private x post private	0.038***	-0.001	0.013	0.031**	0.026**	-0.004***	0.022***	0.047***	0.031**
	(0.007)	(0.005)	(0.008)	(0.012)	(0.011)	(0.001)	(0.008)	(0.010)	(0.012)
Size	0.014***	0.001	0.013***	0.025***	0.003	-0.004***	0.009***	0.010***	0.002
	(0.002)	(0.001)	(0.003)	(0.005)	(0.003)	(0.001)	(0.002)	(0.003)	(0.005)
R&D expenditure	0.007***	0.001	0.006***	0.001	0.005***	-0.001***	0.004***	0.008***	0.007***
	(0.001)	(0.000)	(0.001)	(0.003)	(0.002)	(0.000)	(0.001)	(0.002)	(0.002)
Leverage	-0.033*	-0.007	-0.047**	-0.084**	0.012	0.011***	-0.049***	-0.061**	-0.096**
	(0.018)	(0.014)	(0.018)	(0.041)	(0.028)	(0.004)	(0.017)	(0.029)	(0.039)
Net income	0.013**	0.004**	0.005	-0.000	0.000	0.001	0.010**	0.026***	0.023*
	(0.005)	(0.002)	(0.006)	(0.008)	(0.004)	(0.001)	(0.004)	(0.009)	(0.012)
HH index	-0.002	-0.028	-0.004	0.066	-0.053	-0.003	0.088**	-0.033	-0.118
	(0.038)	(0.030)	(0.051)	(0.109)	(0.078)	(0.010)	(0.033)	(0.056)	(0.129)
Constant	-0.308***	0.056*	-0.208***	-0.509***	-0.075	0.194***	-0.176***	-0.208***	-0.024
	(0.046)	(0.028)	(0.059)	(0.119)	(0.053)	(0.011)	(0.051)	(0.070)	(0.106)
Adjusted R^2	0.913	0.957	0.881	0.512	0.721	0.996	0.888	0.815	0.470
# of observations	136,668	115,285	115,285	136,668	115,285	115,285	136,668	136,668	136,668
				Panel B: Yearly innovation outcomes					
Post priv$_0$	0.029***	0.002	0.009	0.015	0.022	-0.002*	0.015**	0.037***	0.009
	(0.006)	(0.005)	(0.010)	(0.016)	(0.014)	(0.001)	(0.007)	(0.009)	(0.018)
Post priv$_1$	0.029***	0.003	0.022*	0.038**	0.037***	-0.005***	0.017*	0.042***	0.029**
	(0.008)	(0.006)	(0.011)	(0.016)	(0.013)	(0.001)	(0.009)	(0.012)	(0.014)
Post priv$_2$	0.046***	-0.001	0.018*	0.042**	0.023*	-0.004**	0.028***	0.052***	0.046**
	(0.007)	(0.007)	(0.011)	(0.019)	(0.013)	(0.002)	(0.009)	(0.011)	(0.018)
Post priv$_3$	0.048***	-0.009	0.003	0.034*	0.022	-0.004**	0.029**	0.061***	0.046**
	(0.010)	(0.012)	(0.013)	(0.018)	(0.020)	(0.002)	(0.012)	(0.014)	(0.019)
Adjusted R^2	0.913	0.957	0.881	0.512	0.721	0.996	0.888	0.815	0.470
# of observations	136,668	115,285	115,285	136,668	115,285	115,285	136,668	136,668	136,668

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. Synergies with withdrawn deals

This table shows estimation results for regressions with 9 innovation measures as alternative dependent variables. The regressions include acquisitions of withdrawn and successful private target deals, matched based on innovation variables at $t = -1$, for years -5 to $+5$ around the acquisition announcement year 0. *Private* is a dummy variable indicating a successful private target deal versus a withdrawn deal. *Post private* is a dummy variable for the period after the private target acquisition including year 0 for both successful and withdrawn deals. In Panel A, observations for years -5 to -1 combine innovation of successful acquirers and their targets. *Private with patent* in Panel B is a dummy variable for acquisitions of private targets with existing patents. All regressions include year and deal fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income, and industry concentration. 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
Panel A: Synergistic effects									
Private x post private	0.155***	0.074	0.197***	0.218***	0.125**	-0.029***		0.193***	0.216***
(β^w)	(0.038)	(0.046)	(0.032)	(0.042)	(0.049)	(0.007)		(0.041)	(0.048)
Adjusted R^2	0.760	0.859	0.785	0.468	0.491	0.990		0.628	0.366
# of observations	9,024	8,374	8,374	9,024	8,374	8,374		9,024	9,024
Panel B: Targets with existing patents									
Private x post private	0.155***	0.008	0.166***	0.194***	0.082*	-0.025***	0.200***	0.198***	0.240***
(β^w)	(0.038)	(0.037)	(0.033)	(0.043)	(0.046)	(0.007)	(0.040)	(0.042)	(0.048)
Private x post private	-0.004	0.537**	0.252***	0.212	0.348**	-0.034*	0.037	-0.040	-0.197
x target with patent (γ^w)	(0.093)	(0.257)	(0.085)	(0.140)	(0.162)	(0.018)	(0.104)	(0.100)	(0.122)
Adjusted R^2	0.760	0.863	0.786	0.449	0.492	0.990	0.719	0.628	0.358
# of observations	9,024	8,374	8,374	9,024	8,374	8,374	9,024	9,024	9,024

Table I.8. Channels with withdrawn deals

This table shows estimation results for regressions with 9 innovation measures as alternative dependent variables. The regressions include withdrawn and successful private target deals, matched based on innovation variables at $t = -1$. The sample covers years -5 to $+5$ around the acquisition announcement year 0. *Private* is a dummy variable indicating a successful private target deal versus a withdrawn deal. *Post private* is a dummy variable for the period after the private target acquisition including $t = 0$ for both successful and withdrawn deals. *High (low) frequency* is a dummy variable for the total number of private target acquisitions in our data set higher (lower) than the median for the given acquirer and zero otherwise. *CVC* is a dummy for the presence of corporate venture capital subsidiary for the acquirer and zero otherwise. *High fluidity* is a dummy indicating fluidity higher than a median in our sample for year -1. Life 1 is a dummy indicating acquirers in the highest quartile by the first product life cycle index following Hoberg and Maksimovic (2022). The number of observations changes across the panels due to data restrictions. All regressions include year and deal fixed effects and the following control variables: acquirer size, R&D expenditure, leverage, net income, and industry concentration. 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	Forward cites	Average fwrd.cites	Gene–rality	Best patent	Bad patents	Patent value	Backward cites	Origi–nality
Panel A: Deal frequency									
Private x post private	0.217***	-0.058*	0.178***	0.289***	0.141**	-0.017**	0.337***	0.300***	0.478***
x high frequency (β_h)	(0.043)	(0.032)	(0.045)	(0.077)	(0.055)	(0.008)	(0.056)	(0.051)	(0.073)
Private x post private	0.135***	0.122**	0.204***	0.198***	0.119**	-0.033***	0.162***	0.158***	0.129**
x low frequency (β_l)	(0.043)	(0.058)	(0.037)	(0.048)	(0.058)	(0.008)	(0.043)	(0.047)	(0.052)
Adjusted R^2	0.760	0.860	0.785	0.449	0.491	0.990	0.720	0.628	0.360
# of observations	9,024	8,374	8,374	9,024	8,374	8,374	9,024	9,024	9,024
Panel B: Corporate venture capital									
Private x post private	0.145***	0.077*	0.199***	0.218***	0.125***	-0.029***	0.193***	0.180***	0.203***
(β)	(0.025)	(0.046)	(0.024)	(0.036)	(0.039)	(0.005)	(0.027)	(0.031)	(0.040)
Private x post private	2.335***	-0.673***	-0.486	0.486	-0.158	-0.056	3.094***	2.997***	2.742***
x CVC (γ)	(0.396)	(0.051)	(0.371)	(0.568)	(0.589)	(0.078)	(0.428)	(0.489)	(0.641)
Adjusted R^2	0.761	0.859	0.785	0.449	0.491	0.990	0.722	0.629	0.359
# of observations	9,024	8,374	8,374	9,024	8,374	8,374	9,024	9,024	9,024
Panel C: High fluidity									
Private x post private	0.200***	0.055	0.202***	0.223***	0.198***	-0.023***	0.247***	0.232***	0.265***
(β)	(0.048)	(0.050)	(0.039)	(0.054)	(0.063)	(0.008)	(0.053)	(0.056)	(0.065)
Private x post private	-0.105	0.103	-0.090	-0.153	-0.186	-0.017	-0.137	-0.103	-0.156
x high fluidity (γ)	(0.097)	(0.111)	(0.090)	(0.109)	(0.152)	(0.023)	(0.095)	(0.103)	(0.121)
Adjusted R^2	0.772	0.858	0.785	0.445	0.505	0.990	0.722	0.631	0.354
# of observations	7,706	7,127	7,127	7,706	7,127	7,127	7,706	7,706	7,706
Panel D: Early product life cycle									
Private x post private	0.084*	-0.011	0.141**	0.014	-0.123	-0.017	0.121**	0.065	0.009
(β)	(0.048)	(0.042)	(0.058)	(0.083)	(0.116)	(0.011)	(0.060)	(0.055)	(0.078)
Private x post private	-0.354**	0.078	-0.005	0.349*	0.612**	0.034*	-0.177	-0.342**	-0.251
x Life 1 dummy (γ)	(0.179)	(0.115)	(0.123)	(0.180)	(0.307)	(0.020)	(0.132)	(0.150)	(0.177)
Adjusted R^2	0.733	0.880	0.815	0.482	0.339	0.992	0.685	0.663	0.419
# of observations	3,053	2,299	2,299	3,053	2,299	2,299	3,053	3,053	3,053

Table I.9. 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