EFFICIENCY AND VALUE CREATION IN ACQUISITIONS AND DIVESTITURES: EVIDENCE FROM THE US PROPERTY-LIABILITY INSURANCE INDUSTRY

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Abstract

This paper analyzes acquisitions and divestitures in the US property-liability insurance industry during the period 1997-2003. It estimates the valuation effects of firms’ structural changes using an event study methodology and analyzes the effects of diversification versus focus over the dimensions of geographical areas and business sectors. The paper also analyzes the relationship between a firm’s pre-acquisition efficiency and its event-induced abnormal returns. It finds that acquirers, targets and divesting firms all earn significant positive abnormal returns. Acquisitions that focus both geography and business earn the highest abnormal returns, while other types of acquisitions earn close-to-zero abnormal returns. Firms that sell units unrelated to their core-businesses earn higher abnormal returns, and the value created from divestitures is not from buyers’ overpayment. Acquirers with higher cost or revenue efficiency earn higher abnormal returns, while divesting firms with higher revenue efficiency earn lower abnormal returns.

Keywords: Mergers and acquisitions, value creation, divestitures, strategic focus, event study

1. Introduction

Since the early 1990s there has been a spectacular wave of acquisitions and divestitures in the US property-liability (P-L) insurance industry. Traditionally, the US insurance market has been less restrictive on mergers and acquisitions (M&As) than its counterparts in Europe and Japan, which implies that this wave of M&As was not motivated by regulatory changes. The Gramm-Leach-Bliley Act in 1999, which strengthened financial integration between the banking and life insurance industries, has had much less impact on the P-L insurance industry than on the life insurance industry. The integration between the P-L insurance industry and other financial intermediaries is not dramatic, and most M&As happen either within the P-L insurance sector or between the P-L insurance and other insurance sectors such as life-health insurance.

Despite the noticeable ongoing changes in the market structure of the US P-L insurance industry, little research has been done on the economic impacts of these changes. There is some empirical work on what motivates M&As in this industry (Chamberlain and Tennyson (1998), BarNiv and Hathorn (1997)), but many important questions are left unanswered. For example, do
M&As create value for the shareholders of acquirers and targets? How are the losses and gains shared by them? Do divestitures create value for sellers? Can we distinguish acquisitions and divestitures that create shareholder value from those that do not? Do the characteristics of a transaction influence its wealth effects? Is there any relationship between the stock market reaction to M&A activities and the operating efficiency of firms? Close scrutiny of these questions provides both stockholders and regulators valuable insight into M&A activities in the US P-L insurance industry, which they can use when making decisions about future activities.

This paper examines four issues. First, we look at the valuation effects of acquisitions and divestitures (particularly sell-offs of subsidiaries and units) in the US P-L insurance industry between 1997 and 2003 using an event study method. We consider acquisitions and divestitures together rather than studying them separately because it potentially enables us to improve the test of synergistic versus nonsynergistic effects of takeovers (Mulherin and Boone (2000)). If we find that acquisitions and divestitures have a symmetric positive effect on shareholder wealth, then the class of value-maximization theories—such as the corporate control (Jensen (1988)) and financial constraint (Myers and Majluf (1984)) theories—might be right; otherwise, the non-value-maximizing conjectures such as the agency cost theory (Jensen (1986)) and hubris hypotheses (Roll (1986)) might more accurately reflect reality. Our analysis shows that during our sample period, the acquirers, targets, combined acquirers-targets, and divesting firms all experience significantly positive abnormal returns, implying that the structural changes in this industry do benefit shareholders.

Second, we try to identify the types of acquisitions or divestitures that add value to shareholders. Since a firm becomes either more diversified or more focused through acquisitions and divestitures, we compare the effects of diversification versus focus, in terms of both geographical areas and business lines. This study is especially important for the insurance
industry, which experienced a conglomeration trend during the 1960s through 1980s but has more recently been readopting a focusing strategy. How the market has reacted to such movements is under-researched. Some studies on diversification and focus in the insurance industry compare the efficiency of firms offering both life-health and P-L insurance with that of firms specializing in one of the major industry segments. In general, these studies find that strategic focus is a better strategy than conglomeration (e.g. Cummins, Weiss and Zi (2003)). This paper provides further evidence on the issue in the context of market value. We find that acquisitions that focus both geography and business create higher value for shareholders around the announcement date than those that diversify geography, business, or both. We also find that business focus-enhancing divestitures create more value than the diversifying ones; however, the “diversification discount” is not significant in this industry since diversifying acquisitions and divestitures have no effect on stock returns around the announcement.

Third, we perform a cross-sectional analysis to test the robustness of the diversification versus focus effects by controlling a set of variables such as the method of payment, firm size, relative size of acquirer-target or seller-target, insider ownership, and acquirer’s or seller’s frequency of appearance in the market. The focus advantage is still significant after controlling for these other characteristics of the transactions.

Lastly, we examine the relationship between wealth creation in acquisitions and divestitures and the efficiency of firms engaged in these transactions. Banker and Johnson (1995) find some evidence that a firm’s productivity and profitability are highly correlated. Since a firm’s profitability is reflected in its stock price, it is natural to test whether a firm’s cost efficiency and revenue efficiency are correlated with its stock market performance. If the market expects that a firm’s efficiency can be improved after an acquisition or divestiture, the firm’s stock price will go up at the announcement, and the firm will then earn a positive abnormal
return. We estimate technical, scale, cost and revenue efficiencies of firms using data envelopment analysis (DEA) (see Cooper, Seiford and Tone (2000)) and use these scores as proxies for operational performance. Previous studies use Tobin’s Q to proxy for firms’ investment opportunities or managerial performance (Datta, Iskandar-Datta and Raman (2003), Hughes, et al. (2003)), but the validity of Q is often challenged because there is no consensus on the calculation of a firm’s replacement costs and the market value of its assets. By testing the relationship between efficiency and event-induced stock returns, we aim to provide an alternative economic indicator to predict the effects of such events. We find that for acquirers, cost efficiency and revenue efficiency before acquisitions are positively related to their abnormal returns from -1 day before to +1 day after the announcements. The relationship is negative for divesting firms. The divesting firms that are more revenue efficient tend to earn lower abnormal returns around the announcements.

This study contributes to the recent literature on P-L insurance M&As (BarNiv and Hathorn (1997), Chamberlain and Tennyson (1998), and Akhigbe and Madura (2001)) by using more recent data and a much larger sample of deals. Focusing on one industry and studying a set of relatively homogeneous firms enable us to gain more insight into the within-group differences by reducing contamination effects from other industries. Moreover, this study extends the literature in two meaningful ways: by analyzing diversification versus strategic focus in a market value context, and by testing the relationship between stock market performance and efficiency.

The paper proceeds by discussing the theoretical rationale for why acquisitions or divestitures might create value for shareholders and why diversification or focus might help destroy or increase firm value. Section 3 describes the sample and the methodology used in this study. Section 4 presents the overall wealth effects and the wealth effects of diversification versus focus. Section 5 provides regression analysis. Section 6 tests the relationship between
firms’ abnormal returns and their efficiencies. The final section concludes.

2. Hypotheses

2.1. Value creation of acquisitions and divestitures

Whether acquisitions or divestitures create value for shareholders depends on the underlying motivation of the transaction. According to the perfect market finance theory, the risks of both public companies and their stockholders are well diversified because any given company is held by a large group of shareholders and each shareholder potentially holds a market portfolio consisting of shares of all companies in the economy. If the value of a firm is determined by its future cash flows, the shareholders should be indifferent between receiving cash flows from two separate firms and receiving them from a merged firm.

The production theory extends the perfect market theory and suggests that M&As might create value even under the perfect market assumption because they might increase the future cash flows of firms. Acquisitions and divestitures may result in cost savings, revenue increases, and profit increases, and then they actually create value for shareholders. The improvement in economies of scale and scope helps bring down costs, and acquisitions and divestitures are quick alternatives to achieve optimal scale or scope compared to organic growth. A recent study by Andrade and Stafford (2004) finds that mergers play both “contractionary” and “expansionary” roles in industry restructuring. When an industry experiences excessive capacity, mergers often play a “contractionary” role resulting in consolidation of the industry. At other times, if an industry faces strong growth opportunity and high profitability, mergers play an “expansionary” role to raise new capital. Acquisitions or divestitures can also create value when they bring X-efficiency to firms. For example, a merger can improve the performance of the target by replacing inefficient management teams, introducing new technology and know-how, or restructuring corporate assets to meet requirements of new market conditions, if the managers of
acquiring firms are more capable or if it is easier for the new management teams to perform the required reform (Shleifer and Vishny (1988), Jensen (1988)).

Relaxing the perfect market assumption gives additional rationale for acquisitions and divestitures. First, firms often face financial constraints. Because of information asymmetries between firms and outside investors, a firm’s capacity to raise money from external financial markets is restricted, limiting its ability to invest in new projects. M&As, especially marriages of slack-rich and slack-poor firms, provide an efficient way to overcome such constraints (Myers and Majluf (1984)). Second, firms face financial distress costs in practice. Firms in financial distress may lose their smooth relationships with their customers, investors, and suppliers. The situation is particularly worrisome for insurance companies because their solvency is perhaps the most important indicator of their reliability. If M&As can reduce the probability of bankruptcy, the value of firms will increase as the expected bankruptcy cost is reduced. M&As can help preserve the financially distressed insurers in the market. BarNiv and Hathorn (1997) find that during the period 1984-1992, mergers serve as an alternative to insolvency for 20 to 46 percent of the merged insurers. If buyers with adequate capital or free cash flow select their potential targets carefully in this situation, their value will increase since the transactions might have the potential to strengthen their core business, bring them new business, increase their market power, and give them tax benefits. The targets will also benefit since they are rescued from insolvency.

The theory of the firm (Hart (1995)) provides another explanation for why M&As might create value. It predicts that when contracts of two firms are incomplete and there are significant nonhuman assets in the relationship between them, *ceteris paribus*, one of the firms might prefer to acquire the assets of the other firm to receive a greater fraction of surplus from relationship-specific investments. It also predicts that highly complementary assets (assets with synergies) should be under common ownership. In the insurance industry, pre-existing relationships are
quite common among firms that merge. For example, the acquiring firm might have already owned some of the equity of the target, or they might have reinsurance relationships. In this case, the integration of two firms might create more value than if each of them operates separately.

M&As may destroy shareholder value if motives other than value maximization dominate. The class of non-value-maximization theories is based on the models of managerial self-interest (Jensen (1986), Shleifer and Vishny (1989)) and managerial hubris hypotheses (Roll (1986)). The former argues that in some cases M&As are simply the outcome of managers’ self-interest. Managers of acquiring firms may attempt to build large empires to satisfy their own ambition. They may also intentionally acquire assets that necessitate their personal skills to protect themselves from labor market competition, even though the assets are not profitable for shareholders. The hubris hypothesis argues that sometimes even managers who want to work for the best interests of their shareholders might make wrong decisions about M&As because of their hubris. For instance, they might overestimate the benefits from M&As and overpay the targets; they might overestimate their own ability to control and operate a large organization, or underestimate the post-merger integration costs. In these cases, M&As only result in wealth transfer from acquirers to targets, and will not create value for acquirers’ shareholders.

Divestitures in general result in positive wealth effects, though the value increase might depend on how efficiently the divesting firms utilize the cash flow created (Jensen (1986)) or how they allocate the proceeds from the sale (Lang, Poulsen and Stulz (1995)). Two complementary hypotheses predict that divestiture will create shareholder value. First, divesting firms could benefit from a successful corporate restructuring. For example, they might operate with higher profits after selling the unprofitable assets or the assets with lower marginal profits (Fluck and Lynch (1999)), or strengthen their core businesses by divesting non-core assets and allocating the rest of their resources more efficiently. Second, divesting firms might sell their
assets at a premium. If the divested assets better fit a buyer’s business, the buyers can operate it more efficiently and the sellers therefore could share part of the premiums from the value created.

However, if managers value running a large firm, they might be reluctant to sell assets only for the reason of efficiency. Asset sales often serve as a source of liquidity for firms in financial distress, or a source of finance for projects for which no cheaper alternative source can be found. They can also be used by managers to manipulate their balance sheets to please outside shareholders. Therefore, although a successful sell-off is good news, the shareholders might not capture all the gains from the sale if part of the proceeds from the sale is abused by the managers. In this case, the stock market might not have a positive reaction to the divestiture.

In sum, if value-maximizing motives dominate the non-value-maximizing behavior of managers, we should find symmetric positive wealth effects for acquirers, targets, divesting firms and combined acquirers-targets; otherwise, we should find asymmetric wealth effects on firms involved in acquisitions and divestitures: acquirers lose, targets gain, combined acquirers-targets either lose or break even, and divesting firms either gain or break even.

The valuation effect of M&As in other financial institutions, especially in the banking industry, has been well examined. In general, these studies find that targets experience value increase, acquirers break even or experience losses, and combined returns of acquirers and targets are slightly positive or negligible (Houston, James and Ryngaert (2001), Becher (2000), Madura and Wiant (1994)). Studies on divestitures generally find that sellers experience positive abnormal returns between 0.5% and 3% around the announcement date (Alexander, Benson and Kampmeyer (1984), Jain (1985), Lang, Poulsen and Stulz (1995), Datta, Iskandar-Datta and Raman (2003), Mulherin and Boone (2000)), but divesting firms in the banking industry usually report close-to-zero excess returns (Slovin, Sushka and Polonchek (1991)).

2.2. Types of acquisitions and divestitures that create value—diversification vs. focus
Acquisitions and divestitures can change the corporate structure by making corporate assets either more diversified or more focused. There are two types of diversification: geographical diversification and business diversification. (‘Conglomeration’ is associated with diversification across different industries). A diversifying merger or acquisition includes market expansion to different locations (geographical diversification) or business expansion to different industries or business lines (business diversification), or both. A similar categorization applies to focus. A focusing merger or acquisition occurs when the acquirer and target engage in similar business (business focus) or do business in the same market (geographical focus).

Theoretically, a firm may choose to diversify in order to reap the benefits of economies of scope, to reduce firm risk by not putting all their eggs in one basket, and to increase market power. Diversification can also create an internal capital market that helps alleviate financial constraints when external capital is more expensive. Based on their model of allocating capital (surplus) for insurance companies, Myers and Read (2001) argue that geographical diversification or diversification through adding lines of business (with low correlation of losses, or high correlations of losses with asset returns) can reduce a company’s surplus (equity capital) requirement. The net gains of such diversification are high in the beginning, decrease as more new lines and geographical areas are added, and become negative at some point. Therefore, there is an optimal level of diversification at which the marginal gains of reduction in required surplus equal the increase in costs of operation and administration. Given that surplus is costly because of double taxation and that insurance companies have to maintain a certain surplus level to meet regulation requirements, diversification helps create value by producing an optimal surplus level, which might enhance a firm’s cost efficiency. On the revenue side, diversification might help create a “one-stop” shopping benefit, which reduces the searching costs of customers and generates more revenues for firms. In the insurance industry, customers usually have less
information and they rely on agents and brokers to select insurance products. Therefore, it might be less costly for them to buy an insurance package from the same firm. In addition, through diversification, a firm can adequately exploit the value of “goodwill”; that is, it can take advantage of its brand name and use existing customers’ information to market a new product.

The rationales for diversification mentioned above fall into the category of value-maximization motives of M&As. However, all these possible benefits from diversification must be balanced by the costs that might be incurred. On the negative side, diversification may aggravate the agency problem when the M&As are motivated by managers’ self-interests. Diversification enables managers to pursue their private benefits by over-investing the free cash flows that could otherwise become shareholders’ wealth or by adding new divisions that require their personal skills to protect their human capital in the firm. Despite the advantage of an internal capital market, diversification can create a value-destroying cross-subsidization mechanism within the firm. Capital might be allocated inefficiently among different divisions. It might be more profitable to sell off poorly performing sectors than to keep them operating continuously. The cross-subsidization also creates a moral hazard problem. Access to cross-subsidies might give some managers less incentive to make profits because the opportunity cost of raising money is too low. The revenue advantage of diversification has become less important since the 1990s, because technology development—especially the proliferation of online shopping—has made information less costly. Customers today can shop wisely by comparing price and value of an insurance product among different insurers. In contrast, strategic focus might enable firms to develop more expertise in their core businesses and core competencies and therefore provide high-quality services to their customers.

Therefore, diversification may enhance or reduce shareholder value. The benefits from diversification such as capital savings, economies of scope, benefits of an internal capital market,
reduction of insolvency risk, and potential revenue increase of “one-stop” shopping must be balanced by the potential increase in costs, such as coordination and extra administration costs, agency costs, costs of cross-subsidization, and the loss of expertise.

While evidence on valuation effects of corporate diversification is mixed in the literature (see the review by Martin and Sayrak (2003)), it is more supportive of a “diversification discount.” Matsusaka (1993) finds that shareholders of acquirers that engaged in diversifying acquisitions earned a positive abnormal return at the time of announcements during the conglomerate merger wave of the late 1960s, while those engaged in focusing acquisitions did not. However, most studies on M&As find that the market favors focus-enhancing transactions. DeLong (2001) finds that in the banking industry in the late 1980s and early 1990s, focusing mergers enhanced shareholder value at the announcement, while diversifying ones did not. John and Ofek (1995) study the relationship between asset sales, stock market return and post-selling performance of sellers in the late 1980s and find that focus-increasing asset sales tended to improve sellers’ performance and were positively related to the stock returns at the announcement date. They also find evidence that part of the sellers’ gains came from the better fit between the divested asset and the buyers’ business. Comment and Jarrell (1995) and Berger and Ofek (1995) find a similar relationship between corporate focus and firm value. Daley, Mehrotra and Sivakumar (1997) find significantly more value creation around the announcements of cross-industry spinoffs than own-industry spinoffs for transactions during the 1980s and early 1990s. Vijh (1999) and Vijh (2002) find that excess returns are higher for carveouts when the parent and subsidiary businesses are unrelated, and long-term returns of carve-outs increase with the number of distinct business segments of the pre-carveout firm.

Since there is not a unified regulation system in the US insurance market, the geographical diversification costs are relatively high. Insurance companies operating in different
states must comply with state-specific regulations, increasing their operational and administrative costs. Moreover, the cost of integrating after a merger or acquisition will also be higher because of the regulation “barriers.” Given that the marginal benefit from diversifying into different locations diminishes for giant companies (who are generally more active in acquisition activities and more geographically diversified), following the “diversification discount” literature, we expect that geographically diversifying acquisitions might not increase firm value while focusing ones might. Similarly, acquisitions within P-L insurance sectors might create more value than acquisitions between different insurance sectors because the acquirers in general are well diversified in business lines in the P-L insurance industry, and the marginal benefit from adding different lines might be small.

A firm divests its assets for various reasons. It often divests an asset that is not performing well, that is not vital to the company's core businesses, or that is worth more to a potential buyer. These reasons have more to do with business restructuring than with geographical restructuring. We do not have a clear-cut prediction on the wealth effect of divestitures that sell home state or other countries/states assets because geographical restructuring is often entangled with business restructuring. The types of business divested might matter. Divesting assets related to core businesses might be a signal that the firm is experiencing hard times, that the overall performance of the firm is poor, or that its negotiation position with buyers is weak. We then do not expect value gains for such firms. If the divested assets are non-core businesses, then the divesting firm might make positive abnormal returns since the market would consider the transaction to be a strategic restructuring of the firm to strengthen its core business, get rid of poor-performance assets, or alleviate agency problems.

3. Sample and methodology

3.1. Data and sample selection
This paper analyzes acquisitions and divestitures of the US P-L insurance industry from 1997-2003, as reported by the SNL DataSource-Merger and Acquisition database for the insurance industry maintained by the SNL Financial. We require that at least one of the partners – buyer, target, or seller – was a P-L insurance company, as identified by their primary insurance sectors in the database. The transactions used in our analysis must be complete and must have resulted in the change of control over targets. Under these conditions, 401 transactions are identified. From the frequency distribution of buyer-target (Table 1.1) and seller-target (Table 1.2) by insurance sectors, we observe that most transactions took place within the P-L industry.

Since we focus on the stock market reaction to the events, we further require that at least one of the transaction partners was a listed company. We identify 285 transactions, including 207 buyers, 47 targets, and 165 sellers that were traded companies. We define a divesting firm as a seller that sells only part of its assets (subsidiaries), and only the sold assets change in control. Under this condition, 119 divesting firms were identified. Our sample has no problem of double counting in traded targets and traded divesting firms. Table 2 reports the sample size of the listed buyers, targets, sellers, divesting firms, matched buyer-target and matched buyer-divesting firms, where “All” means all listed companies in the sample, and “P-L” means only the P-L companies. The “All” category includes 14 multi-line\(^1\) buyers and 8 multi-line divesting firms.

For each merger and acquisition deal, we also collect the following data. Transaction information such as announcement date, completion date, payment method, transaction value, and percentage acquired comes from the SNL DataSource. Insider ownership (total percentage of shares held by insiders) is calculated from the proxy statements. Stock market data are obtained from Center for Research in Security Prices (CRSP). Book value data are collected from COMPUSTAT, the SNL DataSource, and the National Association of Insurance Commissioners.

\(^1\) Large insurance companies that have significant amounts of both Life-Health and Property-Casualty business are classified as multi-line firms by the SNL DataSource.
(NAIC) regulatory statements. Table 3 presents the summary statistics of listed firms. The median transaction value of our public targets is much higher than their median equity value before takeover, implying that the majority of the public targets are sold at a premium. In terms of relative size, about half of the public targets are smaller than 13.2 percent of their buyers. This number becomes 6.4 percent if we pool public targets and private targets together. The median size of the divested firms is about 2.9 percent of their sellers’ size.

We calculate the Herfindahl index across business lines\(^2\) and across states\(^3\) to show how diversified the buyers, targets and divesting firms are before takeover announcements. The average line Herfindahl is 0.28 for public buyers and 0.29 for public divesting firms, which are far below the industry average level of 0.51. This indicates that the buyers and the divesting firms in our sample are very well diversified in business lines. The average line Herfindahl of public targets is 0.41, which is lower than the industry average level, but higher than the buyers’ index. This implies that buyers are more likely to acquire firms with some concentration in some particular lines than to acquire very well diversified firms. As to the geographical diversification level, we find that the buyers, the public targets and the divesting firms are all very well diversified and are more diversified than the industry average level. The average surplus ratio of public buyers shows no big difference from that of the public targets. We also look at the Best’s rating of the firms before acquisitions and divestitures, and find that the majority of the public buyers, public divesting firms and public targets are very sound firms with good ratings.

### 3.2. Event study methodology

Standard event study methodology is used in this paper to estimate wealth changes for the buyers, targets and divesting firms at the announcement of acquisitions and divestitures. We

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\(^2\) Line Herfindahl for a company is calculated as the sum of the squares of the premium written in line \(i\) divided by its total premiums written. The bigger the value, the more concentrated the firm’s production across lines.

\(^3\) Geographical Herfindahl for a company is measured as the sum of the squares of the premium written in state \(i\) divided by its total premiums written. The bigger the value, the more concentrated the firm’s production across geographical areas.
compute abnormal returns for each firm in our sample using data from CRSP, and use the market model to get benchmark returns (MacKinlay (1997)).

\[ R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt} \]  \hspace{1cm} (1)

Where

- \( R_{jt} \): the return on jth stock on day t;
- \( R_{mt} \): the CRSP equally weighted stock index of returns including dividends, as a proxy of market index;
- \( \alpha_j \) and \( \beta_j \): OLS parameters for stock j, representing the idiosyncratic return and beta coefficient of stock j, respectively;
- \( \varepsilon_{jt} \): Residual for stock j on day t, iid through time t and meets the assumption of jointly multivariate normal across stocks, with \( E(\varepsilon_{jt}) = 0 \), \( \text{VAR}(\varepsilon_{jt}) = \sigma^2_{\varepsilon_j} \).

\( \alpha_j \) and \( \beta_j \) are estimated for each stock j (the listed buyers, targets, or divesting firms) in our sample using pre-event returns for a 150 trading day period (starting from 31 days before the announcement day).

The abnormal return on day t in the event window (e.g., if t is within the window \( \tau_1 \) to \( \tau_2 \)) for stock j is then defined as:

\[ AR_{jt} = R_{jt} - \hat{\alpha}_j - \hat{\beta}_j R_{mt} \]  \hspace{1cm} (2)

Conditional on the market return over the event window, the abnormal returns will be jointly normally distributed with a zero conditional mean and a conditional variance equal to

\[ \sigma^2_{AR_{jt}} = \sigma^2_{\varepsilon_j} + \frac{1}{L_1} \left[ 1 + \frac{(R_{mt} - \bar{R}_m)^2}{\hat{\sigma}^2_m} \right] \]  \hspace{1cm} (3)

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4 The market adjust model is performed as a robustness test. The result is consistent with that of the market model.
where $L_i$ is the length of estimation window. As $L_i$ increases, the second term of (3) goes to zero.

The most important value used in this study is cumulative abnormal returns (CAR), which are obtained by aggregating abnormal returns through time or across securities.

When performing cross-sectional analysis, we calculate the CAR over the event window for each security $j$, i.e.,

$$CAR_j(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AR_{jt}$$  \hspace{1cm} (4)

and its asymptotic variance is:

$$\sigma_{CAR_j(\tau_1, \tau_2)}^2 = (\tau_2 - \tau_1 + 1) \sigma_{e_j}^2$$  \hspace{1cm} (5)

To test the overall impact of the events, we aggregate abnormal returns both through time and across securities. The value we generally report is the mean CAR ($\overline{CAR}$) across all $N$ securities over the event window.

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{N} \sum_{j=1}^{N} CAR_j(\tau_1, \tau_2)$$  \hspace{1cm} (6)

$$VAR(\overline{CAR}(\tau_1, \tau_2)) = \frac{1}{N^2} \sum_{j=1}^{N} \sigma_{CAR_j(\tau_1, \tau_2)}^2$$  \hspace{1cm} (7)

In addition to the time-series standard deviation test on the null hypothesis that $\overline{CAR}$ is zero, we perform several modified tests, such as Patell’s $Z$ test (Patell (1976)), which standardizes each abnormal return using its estimated standard deviation to correct the potential influence of any single firm; the standardized cross-sectional test (Boehmer, Masumeci and Poulsen (1991)), which compensates for the potential event-induced variance increase by incorporating a cross-sectional variance adjustment; and the generalized sign test (Cowan (1992)), which controls for the asymmetry of positive and negative abnormal returns.

3.3. Estimation of firm efficiency

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To test the relationship of firms’ efficiency and their stock returns, we first estimate a variety of measures of efficiency for firms such as technical efficiency, scale efficiency, cost efficiency and revenue efficiency. These measures tell how well a firm uses technology and know-how to maximize productivity, minimize costs or maximize revenues compared with the “best practice” firms in an industry. We adopt the method of Data Envelopment Analysis (DEA), a non-parametric method to estimate firm efficiencies.\textsuperscript{5} DEA efficiency of a firm is measured by its distance to the frontier estimated from the observed sample. Here we give a brief summary of the linear programming problems for a set of efficiencies and their relationships.

Suppose there are $N$ firms in the industry and each firm uses $k$ inputs $x = (x_1, x_2, \ldots, x_k) \in \mathbb{R}^k$ to produce $m$ outputs $y = (y_1, y_2, \ldots, y_m) \in \mathbb{R}^m$. Denote the input price vector as $w = (w_1, w_2, \ldots, w_k) \in \mathbb{R}^k$, and the output price vector as $p = (p_1, p_2, \ldots, p_m) \in \mathbb{R}^m$. The task of DEA is to construct a frontier (production, cost, or revenue frontier) on or below which all observed firms lie. Firms lying on the frontier have an efficiency score of 1 and are regarded as “best practice” firms. Firms below the frontier are inefficient firms relative to the “best practice” firms in the sample. We define the efficiency in a way that all efficiency scores are bounded by 0 and 1.

DEA technical efficiency and cost efficiency employ the input-oriented distance function introduced by Shephard (1970), which relies on the input attainability assumption that all output vectors can be obtained from rescaling any non-zero input vectors. Let the correspondence $y \rightarrow V(y) \in \mathbb{R}^k_+$ denote the production technology that transforms inputs into outputs. For any $y \in \mathbb{R}^m_+$, $V(y)$ is the subset of all input vectors $x \in \mathbb{R}^k_+$ that yield at least $y$ in output. The input distance function is therefore defined

\textsuperscript{5} For details of the method, refer to Cooper, Seiford and Tone (2000).
as \( D(x, y) = \sup \left\{ \phi : \left( \frac{x}{\phi}, y \right) \in V(y) \right\} = \frac{1}{\inf \left\{ \theta : (\theta x, y) \in V(y) \right\}} \), and Farrell (1957)’s input-oriented technical efficiency is defined as \( \text{TE}(x, y) = \inf \{ \theta : (\theta x, y) \in V(y) \} \).

The technical efficiency score tells how well a firm performs in employing the best available production technology in the market, that is, in using as few inputs as possible to produce a certain bundle of outputs. The linear programming for technical efficiency is:

\[
\text{TE}(x, y) = \min \theta \\
\text{Subject to} \quad \sum_{j=1}^{N} \lambda_j y_{j} \geq y_{i} \quad \forall i=1, \ldots, m \\
\sum_{j=1}^{N} \lambda_j x_{j} \leq \theta x_{i} \quad \forall r=1, \ldots, k \\
\lambda_j \geq 0 \quad \forall j=1, \ldots, N
\]

This estimation produces a constant returns to scale (CRS) production frontier. Adding another constraint, \( \sum_{i=1}^{N} \lambda_i = 1 \), we estimate a variable returns to scale (VRS) production frontier; firms on this frontier may operate with increasing returns to scale (IRS), constant returns to scale, or decreasing returns to scale (DRS). If we impose \( \sum_{i=1}^{N} \lambda_i \leq 1 \), then we estimate a non-increasing returns to scale (NIRS) production frontier; firms on this frontier can operate either with CRS or DRS. A firm’s technical efficiency measured relative to the VRS production frontier is called pure technical efficiency (PTE). Technical efficiency can be decomposed into PTE and scale efficiency (SE), where \( \text{TE} = \text{PTE} \times \text{SE} \). If \( \text{SE} = 1 \), we say the firm operates with CRS. If \( \text{SE} < 1 \) and if \( \text{PTE} = \text{NIRSTE} \) (technical efficiency relative to the NIRS production frontier), then the firm operates with DRS. If \( \text{SE} < 1 \) and if \( \text{PTE} \neq \text{NIRSTE} \), then the firm operates with IRS (Aly, Grabowski, Pasurka and Rangan (1990)).

DEA cost efficiency (CE) measures how well a firm chooses input quantities to minimize
cost, holding constant input prices and output quantities. It is calculated as \( \frac{\sum_{r=1}^{k} w_{r_{j_k}} x_{r_{j_k}}^*}{\sum_{r=1}^{k} w_{r_{j_k}} x_{r_{j_k}}} \)

where \( x_{j_k} = \{x_{1_{j_k}}, x_{2_{j_k}}, ..., x_{r_{j_k}}, ..., x_{k_{j_k}} \} \) is the observed input quantity vector of the firm, and

\( x_{j_k}^* = \{x_{1_{j_k}}^*, x_{2_{j_k}}^*, ..., x_{r_{j_k}}^*, ..., x_{k_{j_k}}^* \} \) is the cost-minimizing input vector that comes from the program:

\[
\begin{align*}
\text{Min} & \quad \sum_{r=1}^{k} w_{r_{j_k}} x_{r_{j_k}}^* \\
\text{Subject to} & \quad \sum_{j=1}^{N} \lambda_j y_{ij} \geq y_{ij} \quad \forall i=1,...,m \\
& \quad \sum_{j=1}^{N} \lambda_j x_{rj} \leq x_{rj}^* \quad \forall r=1,...,k \\
& \quad \lambda_j \geq 0 \quad \forall j=1,...,N
\end{align*}
\]

Cost efficiency can be decomposed into technical efficiency and allocative efficiency (AE), i.e., \( \text{CE}=\text{TE}^*\text{AE} \). A firm may fail to minimize its cost because it is not using the best technology (technical inefficiency) and/or because it is not using the most efficient input mix (allocative inefficiency).

We also estimate the revenue efficiency for insurance firms. Revenue efficiency is output-oriented, based on the “output attainability” assumption that all input vectors are feasible in producing any rescaled nonzero output vector. It measures how well a firm chooses output quantities to maximize revenue, holding constant output prices and input quantities. Revenue efficiency is calculated as \( \frac{\sum_{i=1}^{m} p_{j_i} y_{i_j}}{\sum_{i=1}^{m} p_{j_i} y_{i_j}^*} \)

where \( y_{j_i} = \{y_{1_{j_i}}, y_{2_{j_i}}, ..., y_{r_{j_i}}, ..., y_{m_{j_i}} \} \) is the observed output quantity vector of the firm, and \( y_{j_i}^* = \{y_{1_{j_i}}^*, y_{2_{j_i}}^*, ..., y_{r_{j_i}}^*, ..., y_{m_{j_i}}^* \} \) is the revenue-maximizing output vector from the revenue maximizing program:

\[
R^*(x, y) = \text{Max}_{\lambda, y_{j_i}^*} \sum_{i=1}^{m} p_{j_i} y_{i_j}^*
\]
Subject to
\[ \sum_{j=1}^{N} \lambda_j y_{ij} \geq y_{ij}^* \quad \forall \; i=1,\ldots,m \]
\[ \sum_{j=1}^{N} \lambda_j x_{ij} \leq x_{ij} \quad \forall \; r=1,\ldots,k \]
\[ \lambda_j \geq 0 \quad \forall \; j=1,\ldots,N \]

We follow standard procedures from the insurance efficiency literature in defining inputs, input prices, outputs, and output prices. See the Appendix for details.

4. Wealth effects

4.1. Overall wealth effects of buyers, targets and divesting firms

Table 4 presents the overall wealth effects of buyers, targets and divesting firms. The CARs are compiled over various lengths of event windows. The event period is from 30 days before the announcement of a transaction to 30 days after the announcement of a transaction.

We find that acquirers during the sample period 1997-2003 on average earn a positive abnormal return (about 1%) around the announcement, as shown in windows (0,1), (-1,+1) and (-5,+5). The insignificance of mean CAR for windows before the announcement may imply that there is almost no information leakage before the announcements of the transactions.

As predicted by takeover theories, M&As create value for target shareholders. The target firms on average earn significant positive abnormal returns (above 20% for all (0, 1), (-1, +1), (-5, +5), (-10, 10) and (-15, 15) windows) around the announcement. There might be some information leakage from the targets because targets earn significant positive abnormal returns even before the announcement, and this is invariant to the length of the estimation window, the event window and the estimation model selected.\(^6\) This is plausible because market participants may know some information when target companies start looking for potential buyers or when they show some sign of willingness to sell. Our results for acquirers and targets are consistent

\(^6\) We originally calculate the benchmark returns using 255 trading days’ estimation window, starting 90 days before the announcement of a transaction. The results do not show any significant difference.
with the findings of Akhigbe and Madura (2001) for the US insurance industry, where both acquirers and targets earn positive abnormal returns during the period 1985-1995.

Analysis of divesting firms shows that asset sales create value for the shareholders of the sellers. The mean CAR of divesting firms is about 1.31% over the (-1, 1) window. This falls within the range of general findings in corporate asset sales. The pre-announcement abnormal returns of divesting firms are not significantly different from zero, which might suggest either that the divesting firms, on average, do not underperform the market before asset sell-offs, or that the market receives no bad signals about these companies before the transactions.

Overall, all parties involved in the acquisitions and divestitures during the period 1997-2003 benefit, indicating that these acquisitions and divestitures were mainly pursuing synergies rather than seeking private benefits of management.

4.2. Wealth effect of diversification vs. focus

Having established that acquisitions and divestitures in the insurance industry can create value for shareholders, we want to know more about the types of acquisitions and divestitures that create or destroy value. To test whether the phenomenon of “diversification discount” exists in the insurance industry, we break down acquirers and divesting firms into groups according to the characteristics of the transactions—whether a transaction is diversification-increasing or focus-enhancing in terms of the firm’s geographical areas, business lines, or both.

4.2.1 Wealth effect of diversifying vs. focusing acquisitions

An acquisition is geographically diversifying if the headquarters of an acquirer and its target are located in different countries/states, and geographically focusing if the headquarters of

---

7 After screening the divesting firms, we delete two suspicious firms—Frontier Insurance Group (1999) and Reliance Group Holdings (2000). The stock price of both firms fall below one dollar around the announcement dates.

8 The window (-10,-1) is shown in table 4. The not-shown windows (-30,-1) and (-20,-1) give the similar estimation.
both the acquirer and the target are in the same country and state.\footnote{This is adjusted by whether the majority of premium written of the target falls into the first three states where the acquirer writes business. The information on business by states comes from \textit{Best’s Key Rating Guide}.} An acquisition is considered to be business diversifying if the acquirer and the target belong to different insurance sectors, and is business focusing if the acquirer and the target belong to the same insurance sector, as identified by the SNL DataSource. The mean CAR and the test statistics are presented in Table 5.

We first check whether geography-diversifying and geography-focusing acquisitions make any difference for acquirers in terms of changes in market value. Table 5 shows that geography-focusing acquisitions increase the value of acquirers, and geography-diversifying deals neither create nor destroy value. Buyers who engage in geography-focusing acquisitions on average have a statistically significant positive abnormal return around the announcement, e.g., 4.25\% for the (-1, +1) window, while the geography-diversifying acquisitions on average get positive but near-zero abnormal returns (0.43\% for the (-1,+1) window). The market also responds differently to business-focusing acquisitions and business-diversifying ones. Buyers who engage in acquisitions that increase their business focus earn a significant positive abnormal return around the announcement, e.g., 1.21\% for the (-1, +1) window, while those who become more diversified on average have positive but close-to-zero abnormal returns (0.37\% for the (-1, +1) window), which is not statistically significant.

The analysis above suggests that the market does favor geography-focusing acquisitions over diversifying ones in the US P-L industry. The market also favors business-focusing acquisitions over diversifying ones. Therefore, on the one hand, our analysis provides some support for the “diversification discount.” On the other hand, the results also indicate that the “diversification discount” is not very great in the P-L insurance industry. Although focus tends to enhance firm value, diversification neither creates nor destroys firm value.

We next check whether the market acts differently over different combinations of
geography and business diversification. We divide our acquirers into four mutually exclusive categories: acquisitions that focus both geography and business, acquisitions that diversify geography but focus business, acquisitions that focus geography but diversify business, and acquisitions that diversify both geography and business. The corresponding wealth effects are also reported in Table 5. The mean CARs of the four combinations provide further evidence that the market favors focusing acquisitions over diversifying ones. Acquirers engaged in both geography- and business-focusing acquisitions earn significant positive abnormal returns (6.27% for the (-1, 1) window); those engaged in geography-diversifying but business-focusing acquisitions earn a 0.44% abnormal return over the window (-1, 1), which is weakly significant at the 5% level under the Patell Z test. Acquirers that focus geography and diversify business and acquirers that diversify both geography and business all earn near-zero abnormal returns. The results confirm that most of the positive abnormal returns for acquirers come from the positive reaction of the market to the acquisitions that focus both geography and business. When this set of firms is excluded from the sample, the remaining firms earn an average 0.42% abnormal return that is not significantly different from zero.

In order to understand how focus-enhancing acquisitions create more value, we examine the characteristics of acquirers that focus both business lines and geographical areas (see Table 6). These firms in general have a good rating, as other acquirers do. The majority of them operate with decreasing returns to scale, as almost all acquirers do. Though not shown in the table, these acquirers commonly use the independent agency distribution system to sell their products. When the market shares of their business lines are calculated, it turns out that some acquirers gain more market share through acquisitions. For example, the Fremont Insurance Corporation acquired two companies specializing in workers’ compensation business in 1997 and 1998, and its market share in workers’ compensation increased from 3.04% in 1996 to
3.73% in 1999. The FPIC insurance group, which specialized in medical malpractice insurance, adopted a similar acquisition strategy. The Herfindahl index by lines and Herfindahl index by states vary among these firms, but the CARs of these firms show that the market favors acquirers who have a specialty in certain business lines and continue to adopt a focus strategy to increase their core competencies. On possible explanation is that although most of these firms operate with decreasing returns to scale at the firm level, there might be economies of scale in certain business lines that have not been exhausted, which we cannot detect. Or it is possible that the market believes that specialized firms can develop superior expertise and high service quality that are valued more by consumers than “one-stop” shopping. This potential revenue increase is augmented by the possibility of cost savings when an acquirer and a target are located in the same state. In this case, the acquirer and the target face the same regulatory environment and the integration costs would be lower than if the acquirer entered a new state. It is also easier for an acquirer to reallocate its resources within the state and cut over-lapping branches and offices.

4.2.2 Wealth effect of matched acquirers and targets

In addition to the types of acquisitions that create value for shareholders, we examine how gains and losses are shared between acquirers and targets. With a limited number of public targets in the sample, we get only 32 matched transactions. On average the targets of these matched transactions are 18% of their buyers’ size. We calculate the combined cumulative abnormal return for each transaction pair as a weighted return of buyers and targets, with the weight being the relative equity value of buyers and targets at the end of one month prior to the takeover announcement. The average CAR of the combined acquirers and targets is presented in Table 7. On average, the combined partners earn a 3.71% abnormal return for the (-1, +1) window, which is significant at the 1% level. This further confirms that acquisitions in the U.S. P-L insurance industry produce synergies between acquirers and targets, and do not simply
transfer wealth from acquirers to targets. The classification of the combined partners according
to their diversification and focus provides further support that focus-enhancing acquisitions
create more value. Geography-focusing acquisitions earn a little more (4.08%) than the
diversifying ones (3.64%); business-focusing acquisitions earn a lot more (5.01%) than the
business-diversifying acquisitions (-0.20%). The transactions that focus on both geography and
business earn the highest abnormal returns (8.96%). This analysis provides additional evidence
that the market expects more synergies in geography- and business-focusing acquisitions.

4.2.3 Wealth effect of diversifying vs. focusing divestitures

Table 8 illustrates the wealth effects of various types of divestitures by comparing
different combinations of diversification vs. focus. The divesting firms are divided into groups
according to the geographical areas and businesses sectors of the assets that are divested. “Sell
other countries/states assets” refers to a firm selling assets that are located in a state different
from its headquarters; “sell same states assets” refers to a firm divesting assets that are located in
the same state as its headquarters; “sell related assets” indicates that the divested assets and the
seller belong to the same insurance sector; “Sell unrelated assets” indicates that the divested
assets and the seller belong to different insurance sectors, as identified by SNL DataSource.

The mean CAR shows that firms that sell assets in another country or state on average
earn a 1.03% abnormal return for the (-1, 1) window, and 0.81% for the (0, 1) window, while
firms that divest home state assets on average earn a 1.94% abnormal return for the (-1, 1)
window, and 1.49% for the (0, 1) window. All these results are significant under the standard
time series t test. However, all the parametric tests and non-parametric tests show no significant
difference between the mean/median abnormal returns of the two types. We therefore conclude
that the market tends to be neutral to geography-diversifying and -focusing sell-offs.

Firms selling core business-related assets on average earn a 1.21% abnormal return for
the (-1, +1) window, significant at the 10% level under the time-series standard deviation test. Firms divesting non-core business on average earn a 1.41% abnormal return around the announcement for the (-1, +1) window, which is significant under all tests. This might suggest that the market appreciates business-focusing sell-offs more than business-diversifying ones.\(^{10}\)

The combination of geography and business diversification versus focus further indicates that the market reacts positively only to the sell-offs of unrelated assets. Firms that divest assets located in other countries/states that are related to their core businesses and firms that divest assets located in the same state that are related to their core businesses on average earn slightly positive abnormal returns. This result is statistically insignificant, because of the big dispersion among firms. Firms that divest non-core business assets in other countries/states on average earn a 0.79% abnormal return for the (-1, 1) window, and firms that divest non-core business assets located in the same state as sellers earn a 3.42% abnormal return around the announcement. Both findings are significant under certain types of statistical tests.

The combination of tables 5, 7 and 8 shows that the abnormal returns on average are higher for focus-enhancing acquisitions and divestitures, implying that focus increases firm value in the P-L industry. There is no significant evidence of “diversification discount.” Diversifying acquisitions or divestitures generally have no effect on stock returns.

4.3. Robustness check

Some scholars (Copeland and Mayers (1982), Duggal and Millar (1999)) use post-event stock returns to generate benchmark returns. They argue that pre-event returns might bias the estimation if the betas of merging firms might change after takeovers (Mandelker (1974), Dodd and Ruback (1977)). As a robustness check, we run an event study using stock returns 31 days after the completion date of a transaction with a 150 trading days’ estimation window. The mean

\(^{10}\) A median test shows that the difference is significant at 5% level.
average abnormal returns are similar to the results we report above. Our results are also robust using the Fama-French (FF) three-factor model and the FF calendar-time portfolio regressions.

The literature on M&As in the banking industry often argues that interest rates and interest rate risk affect the level of acquisition activity and the pricing of the acquisitions (Esty, Narasimhan and Tufano (1999)). Staking and Babbel (1995) find that the market value of equity (measured by Tobin’s Q) first declines with interest rate risk (measured by the surplus duration) and then rises at high levels of interest rate risk. It is often believed that interest rate changes will affect acquisition activity. On the one hand, a low interest rate lowers the cost of borrowing money, so that it is easier for acquiring firms to finance the transaction; on the other hand, a low interest rate, *ceteris paribus*, means higher equity returns to firms, which forces acquiring firms to pay a higher price to targets. We run a two-factor model parameter event study using the interest rate (proxied by the holding period return on 1-year constant maturity Treasury bonds\(^{11}\)) as the second factor. The mean abnormal returns of buyers, targets and divesting firms are not significantly different from the basic event study. Other robustness checks such as using the industry index as the second factor are also performed, but this does not change our results.

5. Regression analysis

Although diversification and focus affect firm value at the announcement of acquisitions and divestitures, other factors may also affect the market’s reaction to such transactions. Those often mentioned include the method of payment, the managerial ownership, the relationship between acquirers and targets before takeover, the firm’s performance before the announcement, the relative size of targets to acquirers, and the relative size of divested assets to divesting firms.\(^{12}\) We perform a regression analysis to control for the effects of these characteristics.

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\(^{11}\) The result is robust to other proxies such as the holding period return on 10-year constant maturity Treasury bonds, the yield of 1-year constant maturity Treasury bonds and the yield of 10-year constant maturity Treasury bonds.

\(^{12}\) Performance is usually proxied by Tobin’s Q (Datta, et al. (2003); Hughes, et al. (2003)).
5.1. Factors affecting acquirers' abnormal returns

5.1.1. Method of payment

According to Myers and Majluf (1984), firms with free cash flow but no profitable projects can seek opportunities through marriages with firms that have good projects but are unable to finance them. They also show that firms will issue stock only when their stock is overvalued, since managers work in favor of old shareholders and there is asymmetric information between managers and the market. Conversely, firms will perform cash acquisitions if their stock is undervalued. Therefore, the method of payment becomes a signal to the market of whether a stock is overvalued or undervalued. As a result, a positive excess return around the announcement of a cash acquisition is expected. Jensen (1988) reaches the same conclusion from a different angle. He argues that without diversifying mergers or acquisitions or other profitable investment opportunities, acquiring firms’ managers will invest free cash flow internally in unprofitable projects. Therefore, even if a merger or acquisition generates no synergies between acquirers and targets, the shareholders benefit from the transaction that prevents wasteful investments. In this sense, the stock market will exhibit a positive or at least a less negative reaction to the announcement of a merger or acquisition with cash payments.

However, the method of payment may be endogenously affected by the characteristics of acquirers and targets. Martin (1996) finds that the payment method is affected by the mode of acquisition and the acquiring firms’ investment opportunities. Tender offers tend to be cash financed to preempt competition, and firms with more investment opportunities tend to use stock financing in acquisitions because it gives more flexibility to managers for current and future investing plans. Therefore, stock financing does not necessarily mean that the firm is overvalued.

The empirical findings on the method of payment are mixed. Studies by Akhigbe and
Madura (2001), Becher (2000) and Hubbard and Palia (1995) find that the method of payment has no effect on post-merger performance or announcement CARs, while Loughran and Vijh (1997) and Servaes (1991) report a higher return for a cash payment than for a stock payment.

Interestingly, in our sample there are very few mergers or acquisitions solely financed by stock. They are either completely financed by cash, or financed by a cash and stock mixture. As a result, we include a cash dummy variable in the regression, which is equal to 1 if an acquisition is 100 percent financed by cash and 0 if otherwise.

5.1.2. Managerial ownership

When managers have no ownership in a company, a principal-agent conflict emerges. Managers will choose to maximize their own utility, which may induce them to consume more perquisites, make sub-optimal decisions to reduce their personal job risk, or put in less effort at work. The agency problem can be alleviated if managers are endowed with company stock that aligns their personal interests with those of the other shareholders. Such an alignment of interest increases as the managerial ownership increases, as more effort will be made to maximize the company’s stock value. This aligned interest between managers and shareholders predicts that during M&As, managers of acquiring firms that own a large stake of the firm will be more devoted to maximizing firm value and seeking synergies from the transactions rather than pursuing their own interests. As a consequence, the market would react positively.

However, if the percentage of managerial ownership increases to a sufficiently high level, managers start to hold a large non-diversified financial portfolio in the company, giving them more control over the firm and easier access to agency goods. They might then pursue more private benefits or diversify their personal portfolios through M&As. In this situation, their M&A decisions might not maximize shareholder value. This “entrenchment effect” therefore predicts a negative relationship between stock returns and insider ownership at high levels.
In general, the literature on insider ownership predicts a non-monotonic relationship between abnormal returns and the percentage of company stock held by management. In this study, we follow the Morck, Shleifer and Vishny (1988), Hughes, et al. (2003) method to divide insider ownership into three levels: 0-5%, 5-25% and above 25%. The frequency distribution shows that this is a valid division in the P-L insurance industry. We predict that for acquiring firms, abnormal returns around announcement and insider ownership will be positively related over the range of 0-5%, and negatively related over the range of 5-25%. The relationship would be either positive or have no effect for firms with higher than 25% insider ownership, as managers’ private interests might be counterbalanced by the benefits they earn as shareholders.

5.1.3. Tobin’s Q

Many studies (such as Servaes (1991)) find that the abnormal returns of target, bidder and combined partners can be explained by a relative measure of a firm’s Q value. Specifically, the abnormal returns are larger when targets have a low Q ratio and bidders have a high Q ratio, after controlling for other variables such as the method of payment and relative size of targets and bidders. To test for diversification effects, we choose to control for the potential effect of a firm’s Q value. The Q value we use is the one at the end of the year prior to the initial announcement of a takeover attempt. To reduce the number of missing observations, we follow Morck, Shleifer and Vishny (1988) and Servaes (1991) and define a firm’s Q value as the ratio of the market value of assets to the book value of assets, where the market value of assets is defined as “book value of assets-book value of equity+market value of equity.”

5.1.4. Ownership of acquirers in targets before takeover

According to Hart (1995), if acquirers and targets have a business relationship before the takeover, their mergers tend to create more value than if the acquirers and targets are unrelated.

\[13\] Book equity = total assets – (total liabilities + preferred stock) + deferred taxes + convertible Debt.
Detailed business relationship information between acquirers and targets, such as reinsurance arrangements, is not available. Therefore, we only look at whether the acquirers partially own the assets of their targets before acquisitions. The model includes a dummy variable equal to 1 if an acquirer has ownership in its target before takeover, and zero otherwise.

5.1.5. Other control variables

We also control for other characteristics of firms in our regression: firm size, relative size of target to acquirers and whether acquirers are “frequent buyers” in the market, etc.

The dependent variable in our regression is the cumulative abnormal returns for the event window (-1, +1). We define four mutually exclusive dummy variables representing different combinations of geographical and business diversification and focus. The omitted dummy in the regression is for acquisitions that focus on both geography and business. The regressions are reported in Table 9. The coefficients of the three diversification/focus dummies are all negative and significant, implying that acquisitions that focus both geography and business enhance shareholders’ value most.\(^{14}\) This is consistent with the results of the wealth effect section. We find no effect from the payment method and ownership. “Frequent buyers” in the market tend to earn lower abnormal returns. It may be because the market thinks that the “frequent buyers” have a problem of promptly and efficiently integrating the target firms into their existing business. It may also be because the market doubts the value-maximizing motives of these “acquisition lovers.” In addition, we do not find support for the “alignment of interest” hypothesis. The sign and significance of other variables do not change if we delete the insider variables from the regression. High Q firms tend to earn less from a transaction, suggesting that the market might think such firms should be pursuing “organic growth” instead of M&As.

\(^{14}\) As a robustness check, we add year dummies (with the year 1997 as the omitted variable) in the regression model. The sign and significance of the three diversification and focus dummies are not affected. Another robustness check is to include a dummy variable that separates the years 1997 and 1998, and the other years. The reasons for this classification are: (1) the years 1997 and 1998 are the peak time of M&As in the US P-L insurance industry, and (2) the Gramm-Leach-Billey Act was passed in 1999. The results do not change in these tests either.
5.2. Factors affecting divesting firms’ abnormal returns

5.2.1. Focus hypothesis test

A cross-sectional analysis is performed to test the focus hypothesis for divesting firms. The dependent variable is CAR for the (-1, +1) window for divesting firms. The independent variables are similar to those in the acquirers’ regression, but we exclude the method of payment and the ownership variables from the model. For divesting firms, we do not have a clear relationship between abnormal returns and insider ownership. If the divestiture is a strategic restructuring, shareholders can enjoy most of the value created. Otherwise, the shareholders might not get all of the value from the transaction, and the stock market may then have no significant reaction to the announcement of a divestiture.

The regression results for divesting firms are reported in Table 10, panel A. We perform two sets of regressions. The first regression defines four dummy variables indicating whether a sell-off is diversified or focused over geographical areas and business lines, with the default dummy being divesting assets in a different geographical area and unrelated to the core businesses of sellers. Compared with the default category, only one dummy variable is significantly negative, which is the one associated with divesting assets in the same geographical area and related to the core businesses of the sellers. In the second regression, we include only a dummy variable indicating whether the divested assets are related to the core businesses of divesting firms. The significance of this variable shows that firms that sell non-core businesses earn a higher abnormal return. We also find that the relative size of the sold assets to divesting firms is positively related to divesting firms’ abnormal returns. This might imply that the market values major corporate restructurings more than minor changes of firms.

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15 Two other regressions are also performed as robustness checks. One is to include only the geography dummy in the regression, and the other is to include both the geography dummy and the business-relatedness dummy in the regression. The geography dummy is insignificant in both cases.
5.2.2 Fitness between divested assets and acquirers’ business

In this section we examine whether the value increase for divesting firms comes from sources other than the strategic focus. Early studies (Alexander, Benson and Kampmeyer (1984), John and Ofek (1995)) discover that fitness between the divested assets and buyers is one source of gains in sell-offs. Under this hypothesis, additional value is created because acquirers can operate the divested assets more efficiently, and divesting firms therefore can sell the assets for a better price. We have shown in previous sections that focus-increasing acquisitions can increase acquirers’ value. Therefore, one possible reason that acquirers can operate the divested assets more efficiently is that the divested assets fit the acquirers’ core businesses and increase either the business focus or geography focus of the acquirers.

The fitness between divested assets and acquirers is defined as a dummy variable indicating whether the divested assets fit the acquirers’ core businesses.\textsuperscript{16} The regression results are reported in Table 10, panel B. The fitness variable is not significant whether we include the business focus dummy in the regression or not. Therefore, the primary source of value increase for sellers comes from their focus strategy rather than from the overpayments by buyers.

6. Abnormal returns and efficiency of firms

Economic theory assumes that all firms use the best production technology available to them. They select optimal input and output bundles to minimize costs and maximize revenues and profits. In reality, some firms may not perform at the optimal level. The efficiency method is therefore adopted to measure a firm’s efficiency relative to the production frontier. Theoretically, a firm’s profitability should be positively related to its efficiency. Banker and Johnston (1995) demonstrate such a relationship in the airline industry. Corporate valuation theory suggests that a

\textsuperscript{16} Two other fitness variables are also defined and tested in the regression: whether the location of divested assets fit that of the acquirer’s main business area, and whether the divested assets fit the acquirer’s core businesses but are non-core businesses of divesting firms. The results are not significant and not reported here.
firm’s value is determined by the present value of its future cash flows. The more profitable a firm, the more cash flow created. If a firm’s intrinsic value is reflected in its stock prices, *ceteris paribus*, the efficient firm should have a higher stock price. Alam and Sickles (1998) analyze the relationship between stock returns and technical efficiency in the US airline industry and find that efficiency news in a quarter and stock performance in the following two months are related.

This paper contributes to the literature by testing for a relationship between efficiency and the event-induced change of stock prices. Under the semi-strong form of the efficient market hypothesis, when an acquisition or divestiture is announced, the stock market adjusts the valuation of firms involved in the transaction based on all the available public information. If the efficiency conveys some information about the performance of the firm, the market can utilize such information to determine whether the ongoing transaction will potentially increase the net cash flow of a firm in the future.

We estimate the efficiency of insurance firms based on their regulatory annual statements filed with the National Association of Insurance Commissioners (NAIC). Property-casualty and life-health firms are estimated separately. For firms that have business in both insurance sectors, we calculate a weighted efficiency score with the weights being their proportion of premium earned in each insurance sector. Four types of efficiency—technical, scale, cost, and revenue efficiency—are estimated. We do not report allocative efficiency because it can be imputed from the technical efficiency and cost efficiency.

The summary statistics of efficiency for acquirers and targets are reported in Table 11, which reveals several features about acquirers. First, the geography-focusing acquirers and geography-diversifying acquirers show no significant difference in efficiencies before takeover,

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17 An alternative way to calculate the weighted efficiency of multi-line firms is to weight cost efficiency by their proportion of costs in each insurance sector, weight revenue efficiency by their proportion of revenues in each insurance sector, and weight technical and scale efficiency by inputs. We rerun the regressions in tables 13 and 14 with the newly weighted efficiency scores. The results are almost identical, except that we find a weakly significant positive relationship between revenue efficiency in the year of takeover and the acquiring firms’ abnormal returns.
while business-focusing acquirers are more scale efficient than business-diversifying ones. The four categories of combined geography- and business-diversifying or focusing acquirers show no significant efficiency differences. This implies that the focus effect for acquirers found in the previous section is not confounded by the pre-acquisition performance of acquirers. Second, the average efficiency level of the buyers is indifferent from that of the targets. Both of them are slightly lower than the industry average level of 1995-2002, but not significantly so. Third, the acquirers that earn positive abnormal returns around the announcement date are more cost and revenue efficient than those that earn negative abnormal returns. In addition, high Q acquirers (Q>1) are significantly less scale efficient than low Q acquirers (Q<1), and they are less cost and revenue efficient than low Q acquirers but statistically insignificant. High Q targets (Q>1) are significantly less scale efficient than low Q targets (Q<1), and they are less technical and cost efficient but more revenue efficient than low Q targets, though these differences are insignificant.

Fourth, the majority of the acquirers operate with DRS, and only a few acquirers operate with CRS and IRS, suggesting that most firms were unlikely to realize scale economies from M&As.

Table 12 illustrates the summary statistics of efficiency for divesting firms. The four mutually exclusive categories of divesting firms show some differences in scale efficiency, cost efficiency, and revenue efficiency. The differences are mainly caused by the divesting firms that sell subsidiaries in their home states. These firms have higher scale efficiency but lower cost efficiency before divestitures. The average efficiency level of divesting firms shows no big difference from that of the acquirers, but do show larger variation. We do not find efficiency differences between divesting firms that earn positive abnormal returns and those that earn negative abnormal returns, neither between firms that have high Q value and those that have low Q value. No divesting firms operate with IRS, and only four of them operate with CRS.

Since the various types of efficiency are highly correlated, we use only one of them each
time in the regression. When interpreting the results, we need to keep in mind that although scale
efficiency and technical efficiency are important indicators, what matters in the end is cost
efficiency and revenue efficiency. Cost and revenue efficiency have incorporated other types of
efficiency and in the end determine the profitability of firms.

The regression results for acquirers are reported in Table 13. The dependent variable in
the model is the cumulative abnormal return from -1 day to +1 day after an acquisition
announcement. The independent variables are similar to those discussed in section 5; except that
this time a firm’s Q value is replaced by its efficiency value. The efficiency measure provides
an optional proxy for a firm’s comprehensive ability to make profits as compared with its peers.
It summarizes the past successful or unsuccessful profit-making experience of a firm, while the
Q value is more of an indicator of future profitability as perceived by investors’ expectations.

The regression shows that most efficiency variables, in particular the cost efficiency and
revenue efficiency, are positively related to firms’ abnormal returns around the announcement of
acquisitions. This confirms that the efficiency measure conveys some information to market
participants, and they believe the efficient buyers will be more successful in the post-acquisition
integration. This is consistent with the corporate control theory of takeovers, which suggests that
the efficient management teams of buyers could improve the efficiency of a combined firm, and
also enlightens that the source of value increase might come from cost savings, revenue increase,
or both. The result also suggests that the market believes efficient acquirers are more likely than

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18 We also estimate the relative efficiency of buyers and targets. However, we lose the majority of the observations
because the targets are foreign firms or affiliated single companies, or because the buyers are not insurance firms.
As a result, we obtained only 26 matched buyers and targets for which the efficiency estimation is available.
Controlling for other factors, the relative cost efficiency of buyer-target is positively related to buyers’ CAR for the
event window (-1, +1). Other types of relative efficiency are not significantly related to buyers’ CAR.
19 The bilateral correlation shows that, for acquirers, the Q value (at the end of one year prior to the announcement)
is significantly negatively correlated with efficiency (at the end of one year prior to the announcement). The
correlation is insignificant for divesting firms.
20 The negative sign on the scale efficiency at the year of takeover is more of a signal that the firm is operating with
DRS and, therefore, any further M&As do no good to scale economies.
inefficient acquirers to seek synergies from M&As.

The analysis for divesting firms is presented in Table 14. We find that the revenue efficiency of a firm prior to a divestiture is significantly negatively related to its value created in the sell-off. A possible explanation is that if a firm is efficient in maximizing revenues, it should not sell the asset but rather retain the business to exploit its efficiency advantage. On the other hand, if a firm is inefficient before the divestiture, the market might think that its efficiency can be improved by restructuring its assets. Selling inefficient assets will make the firm get rid of bad synergies with such assets and potentially improve revenues by focusing more on the remaining assets and developing more expertise. The technical efficiency of a divesting firm before divestiture is negatively related to its abnormal returns. The relationship between a firm’s cost efficiency and its divestiture abnormal returns is also negative but statistically insignificant.

7. Conclusion

During the period 1997-2003, acquisitions and divestitures in the US P-L insurance industry produce value for the shareholders of buyers, targets and sellers (divesting firms). Moreover, the market distinguishes between various types of transactions based on the categories of diversification and focus over both geography and business dimensions. We have found that acquirers that engage in acquisitions focusing both geography and business earn the highest abnormal returns (6.27% for the (-1, +1) window), and sellers that sell non-core business assets earn higher abnormal returns (1.41% for the (-1, +1) window) than those that sell core-business assets. Cross-sectional analysis suggests that the value created for sellers does not result from the overpayment of buyers. Therefore, strategic focus is valued more than diversification in our sample period. Diversification neither creates nor destroys firm value during this period.

Along with diversification and focus, the cross-sectional analysis shows that some other characteristics of firms and transactions can affect the abnormal returns. For acquirers, those that
buy frequently within a brief time period tend to be “discounted” by the market. For sellers, abnormal returns increase with the relative size of divested assets to sellers. The method of payment has no effect on the stock price change around the announcement. Insider ownership has some effects for acquirers, but its effects for sellers are negligible.

We also analyze the relationship between a firm’s efficiency and its event-induced change in stock returns. Acquiring firms with higher cost or revenue efficiency earn higher abnormal returns around the announcement, while divesting firms with higher revenue efficiency get lower abnormal returns. This result is consistent with the takeover literature: efficient buyers are more likely to pursue synergies and realize potential synergies than inefficient buyers, and inefficient sellers could potentially improve their efficiency by restructuring their assets.

In summary, the valuation effects in acquisitions and divestitures are positive in the US P-L insurance industry from 1997-2003. The primary source of the value increase is the focus strategy adopted by the firms, which shows that the market values “expertise” in this industry. In addition, the acquirers that are more efficient before acquisitions earn higher abnormal returns, and the sellers that are less efficient before divestitures experience more value increase through corporate restructurings.

Future work could test whether buyers or sellers that experience efficiency improvement after the transactions actually earned higher abnormal returns at the time of the announcements, or, whether those that earned higher abnormal returns at the announcement date experience efficiency improvements afterwards. A long-term efficiency change around takeover events can be estimated to test whether focus-enhancing acquisitions or divestitures improve firms’ efficiency. Another extension would be to test the relationship between efficiency and stock returns for all publicly traded firms over a long period of time. This would provide a joint test of the efficient market hypothesis and the validity of efficiency scores as measures of performance.
Appendix: Definition of inputs and outputs of insurance firms

We define five outputs and four inputs for P-L insurance companies. We measure the output of firms using the value-added approach (Cummins and Weiss (2000), Cummins and Nini (2002), Cummins, Tennyson and Weiss (1999)), which considers all asset and liability categories that have significant value-added components as important outputs, as judged by operating cost allocations. Insurance firms provide three principal services: risk pooling and risk bearing, real financial services relating to insured losses, and financial intermediation service. Four outputs are calculated as proxies of outputs related to risk pooling, risk bearing and real financial services--personal lines short-tail losses, personal lines long-tail losses, commercial lines short-tail losses, and commercial lines long-tail losses. The tail refers to the length of the loss redistribution period, as defined by Schedule P of the NAIC regulatory statements. The payout proportion of a line is calculated from Best’s Aggregates and Averages using the Chain-ladder method (Lemaire (1985)). Loss discounting factors are computed from US Treasury yield curves released by Federal Reserve Board of Governors. The quantity of intermediary output is measured by the average of beginning and ending year invested assets. All five outputs are deflated to real 2000 values using the Consumer Price Index (CPI).

We define the price of each insurance output as the difference between the real premiums earned and the real present value of losses and loss adjustment expenses incurred for the output divided by the real present value of losses and loss adjustment expenses incurred. This approach is consistent with the risk premium concept for insurance services. The price of the intermediary output is defined as a weighted average of the expected stock returns and other invested assets’ returns, with the weights equal to the proportion of assets invested in stocks and other assets, respectively.

One criticism of using losses as an output proxy is that losses are random, which has the potential of creating an “errors-in-variable” bias. In this paper, we use an alternative, smoothed pattern of losses as a robustness check for any distortions that might be caused by loss randomness. The procedure is: first, we rank companies by their market share of premium earned; those that fall into the top 95th percentile are considered as competitive companies. We then determine the 10th, 25th, 75th and 90th percentiles of the price ratio (premiums earned divided by present value of losses incurred) of these competitive companies. For small companies, if their price ratios fall between the 25th and 75th percentile, we then use their real price ratios; if their price ratios fall below the 25th percentile and above the 75th percentile, we use the 25th percentile and 75th percentile, respectively. For a competitive company, if its price ratio is below the 10th percentile or above the 90th percentile, we use the 10th percentile or 90th percentile, respectively. Second, we fit a linear time trend to the new price ratio series and then calculate a smoothed price ratio series. Third, we divide the company's actual premiums earned by the new smoothed price ratio as an estimate of the smoothed losses of the company.

Insurance inputs are classified into four groups—administrative labor (home office labor), agent labor, materials and business services, and financial equity capital. We measure the current price of administrative labor by using the US Department of Labor average weekly wage rate for Standard Industrial Classification—property and liability insurance companies (SIC 6331). The category became NAICS 524126 (North American Industry Classification System) in 2001. The current price of agent labor is measured using the US Department of Labor average weekly wage rate for insurance agents (SIC 6411, NAICS 524210 since 2001). The national average
weekly wage rates are used here to reduce missing observations. All these wage variables are deflated to real 2000 values by the CPI to get the real prices of the inputs. The current price of the materials and business services input is calculated as a weighted average of price indexes for business services from component indices representing the various categories of expenditures from the expense page of Best’s Aggregate and Averages. The base year of the price index is 2000. The quantities of inputs of an insurer are then imputed from its dollar value of related expenses, i.e., the quantity of an input is defined as the current dollar expenditures related to this input divided by its current price.

The last input is financial equity capital. The quantity of this input is measured by the average of the beginning and ending year capital level, deflated by the CPI. The ideal cost of capital is the market return of the equity capital. Since the majority of firms in the P-L insurance industry are not publicly traded, we adopt an approach that assumes a constant cost of equity across all firms in the industry for a given year, which is calculated as the average 30-day Treasury bill rate in the year, plus the long-term (1926 to the end of the year) average market risk premium on large company stocks from Ibbotson Associates.

Some firms in our sample that are classified by the SNL DataSource as “multi-line” also wrote life insurance business. To avoid bias in the regression results we also estimate their life insurance operational efficiencies. The life insurance outputs are defined as the incurred benefits plus additions to reserves. They are classified into five categories: individual life insurance, individual annuities, group life insurance, group annuities, and accident and health insurance. Their prices are defined as the loading per dollar outputs. The life intermediary output quantity and price are similar to the P-L intermediary output. The life inputs are defined similarly to the P-L inputs, except the wage of home labor for life insurance firms is the US Department of Labor average weekly wage rate for life insurance carriers (SIC 6311, and NAICS 524113 since 2001) and the business service price is based on the expense exhibit of the life-health industry.

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21 Some studies (e.g., Cummins and Nini (2002) use home state wage rate for administrative labors, and state-weighted average weekly wage rate for agent labors. However, Cummins, Tennyson, and Weiss (1999) make a robustness check for all three types of wages rate in the US life insurance industry and conclude that the alternative labor price variables do not materially change the results.

22 See Cummins and Weiss (2000) for more detailed discussion on measuring the cost of capital.
Table 1.1

Number of transactions by insurance sector—acquirers vs. targets, 1997-2003

<table>
<thead>
<tr>
<th></th>
<th>Property &amp; Liability</th>
<th>Life &amp; Health</th>
<th>Financial Guaranty</th>
<th>Title</th>
<th>Mortgage Guaranty</th>
<th>Multi-line</th>
<th>Managed Care</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquirers</td>
<td>246</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>37</td>
<td>2</td>
<td>55</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>Targets</td>
<td>25</td>
<td>11</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life &amp; Health</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Guaranty</td>
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<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Title</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: “Multi-line” means that a firm has substantial business in both life-health and property-liability segments.

Table 1.2

Number of transactions by insurance sector—sellers vs. targets, 1997-2003

<table>
<thead>
<tr>
<th></th>
<th>Property &amp; Liability</th>
<th>Life &amp; Health</th>
<th>Financial Guaranty</th>
<th>Title</th>
<th>Others</th>
<th>Managed Care</th>
<th>Multi-line</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sellers</td>
<td>243</td>
<td>15</td>
<td>1</td>
<td>49</td>
<td>3</td>
<td>39</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>Targets</td>
<td>19</td>
<td>17</td>
<td>2</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life &amp; Health</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Guaranty</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Title</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortgage</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guaranty</td>
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<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-line</td>
<td>266</td>
<td>33</td>
<td>2</td>
<td>1</td>
<td>55</td>
<td>3</td>
<td>41</td>
<td>401</td>
</tr>
</tbody>
</table>

Data source: From the SNL DataSource—M&As in insurance industry. For the 401 deals, at least one of the partners—acquirer, target, or seller—belonged to the P-L insurance industry.

Table 2

Sample size—number of public firms and matched partners, 1997-2003

<table>
<thead>
<tr>
<th>Year</th>
<th>Acquirers</th>
<th>Targets</th>
<th>Matched Acquirers and Targets</th>
<th>Sellers</th>
<th>Divesting Firms</th>
<th>Matched Acquirers and Divesting Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>P-L</td>
<td>All</td>
<td>P-L</td>
<td>All</td>
<td>P-L</td>
</tr>
<tr>
<td>1997</td>
<td>47</td>
<td>34</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>1998</td>
<td>56</td>
<td>40</td>
<td>14</td>
<td>14</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>1999</td>
<td>34</td>
<td>24</td>
<td>14</td>
<td>14</td>
<td>11</td>
<td>9</td>
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<tr>
<td>2000</td>
<td>24</td>
<td>18</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2001</td>
<td>16</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2002</td>
<td>16</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2003</td>
<td>14</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>207</td>
<td>107</td>
<td>37</td>
<td>37</td>
<td>28</td>
<td>28</td>
</tr>
</tbody>
</table>

Data Source: From the SNL DataSource—M&As in insurance industry. Tabulated from the 285 deals where at least one of the partners—acquirer, target, or seller—was a public company out of the 401 deals. “All” refers to all listed companies from the sample, and “P-L” means only the listed P-L companies are included. A divesting firm is a seller that sells only part of its assets (subsidiaries), and only the sold assets change in control. This guarantees no double counting of targets and divesting firms.
# Table 3

## Summary statistics of public acquirers, targets, and divesting firms, 1997-2003

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acquirers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of transaction (million $)(^a)</td>
<td>169</td>
<td>467.7</td>
<td>2,146.95</td>
<td>54.6</td>
<td>0.0</td>
<td>22,339.7</td>
</tr>
<tr>
<td>Value of assets (million $)(^b)</td>
<td>171</td>
<td>49,564.1</td>
<td>119,772.1</td>
<td>4,599.3</td>
<td>55.1</td>
<td>716,937</td>
</tr>
<tr>
<td>Value of equity (million $)(^c)</td>
<td>180</td>
<td>20,540.8</td>
<td>58,027.7</td>
<td>1,795.8</td>
<td>2.9</td>
<td>332,709.1</td>
</tr>
<tr>
<td>Line Herfindahl(^a)</td>
<td>136</td>
<td>0.28</td>
<td>0.21</td>
<td>0.20</td>
<td>0.08</td>
<td>1.00</td>
</tr>
<tr>
<td>Geography Herfindahl(^b)</td>
<td>134</td>
<td>0.17</td>
<td>0.23</td>
<td>0.08</td>
<td>0.04</td>
<td>1.00</td>
</tr>
<tr>
<td>Surplus/asset ratio(^c)</td>
<td>146</td>
<td>0.32</td>
<td>0.15</td>
<td>0.30</td>
<td>0.04</td>
<td>0.96</td>
</tr>
<tr>
<td><strong>Targets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of transaction (million $)(^a)</td>
<td>45</td>
<td>1,423</td>
<td>4,012.8</td>
<td>236.6</td>
<td>10.4</td>
<td>22,339.7</td>
</tr>
<tr>
<td>Value of assets (million $)(^b)</td>
<td>40</td>
<td>2,514.9</td>
<td>6,527.2</td>
<td>1,136.7</td>
<td>33.6</td>
<td>41,459.0</td>
</tr>
<tr>
<td>Value of equity (million $)(^c)</td>
<td>46</td>
<td>1,107.8</td>
<td>2,743.2</td>
<td>176.6</td>
<td>7.9</td>
<td>16,822.6</td>
</tr>
<tr>
<td>Line Herfindahl(^a)</td>
<td>33</td>
<td>0.41</td>
<td>0.26</td>
<td>0.35</td>
<td>0.11</td>
<td>1.00</td>
</tr>
<tr>
<td>Geography Herfindahl(^b)</td>
<td>32</td>
<td>0.25</td>
<td>0.26</td>
<td>0.17</td>
<td>0.04</td>
<td>1.00</td>
</tr>
<tr>
<td>Surplus/asset ratio(^c)</td>
<td>33</td>
<td>0.35</td>
<td>0.14</td>
<td>0.34</td>
<td>0.11</td>
<td>0.85</td>
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<tr>
<td><strong>Divesting firms</strong></td>
<td></td>
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<tr>
<td>Value of transaction (million $)(^a)</td>
<td>97</td>
<td>197.3</td>
<td>479.7</td>
<td>30.5</td>
<td>0.4</td>
<td>3,450.0</td>
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<tr>
<td>Value of assets (million $)(^b)</td>
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<td>82,303.1</td>
<td>6,934.2</td>
<td>14.6</td>
<td>437,006.0</td>
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<tr>
<td>Value of equity (million $)(^c)</td>
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<td>17,018.1</td>
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<td>1,881.6</td>
<td>3.3</td>
<td>581,098.9</td>
</tr>
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<td>Line Herfindahl(^a)</td>
<td>86</td>
<td>0.29</td>
<td>0.22</td>
<td>0.21</td>
<td>0.08</td>
<td>1.00</td>
</tr>
<tr>
<td>Geography Herfindahl(^b)</td>
<td>85</td>
<td>0.20</td>
<td>0.27</td>
<td>0.08</td>
<td>0.04</td>
<td>1.00</td>
</tr>
<tr>
<td>Surplus/asset ratio(^c)</td>
<td>92</td>
<td>0.29</td>
<td>0.16</td>
<td>0.28</td>
<td>0.04</td>
<td>0.98</td>
</tr>
<tr>
<td><strong>Relative size of transactions:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative size of public targets/ acquiring firms (%)(^*)</td>
<td>32</td>
<td>37.9</td>
<td>90.8</td>
<td>13.2</td>
<td>0.5</td>
<td>516.1</td>
</tr>
<tr>
<td>Relative size of all targets/ acquiring firms (%)(^**)</td>
<td>148</td>
<td>26.0</td>
<td>73.1</td>
<td>6.4</td>
<td>0.0</td>
<td>737.7</td>
</tr>
<tr>
<td>Relative size of private targets/ divesting firms (%)(^***)</td>
<td>88</td>
<td>14.3</td>
<td>31.9</td>
<td>2.9</td>
<td>0.0</td>
<td>241.1</td>
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<tr>
<td>Excluding extreme values(^d)</td>
<td></td>
<td></td>
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<tr>
<td>Relative size of public targets/ acquiring firms (%)(^*)</td>
<td>29</td>
<td>17.6</td>
<td>17.9</td>
<td>11.4</td>
<td>0.5</td>
<td>56.2</td>
</tr>
<tr>
<td>Relative size of all targets/ acquiring firms (%)(^**)</td>
<td>138</td>
<td>12.4</td>
<td>17.0</td>
<td>5.4</td>
<td>0.0</td>
<td>88.9</td>
</tr>
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<td>Relative size of private targets/ divesting firms (%)(^***)</td>
<td>84</td>
<td>10.4</td>
<td>18.3</td>
<td>2.6</td>
<td>0.0</td>
<td>90.7</td>
</tr>
<tr>
<td>Industry Level (1996-2002)</td>
<td></td>
<td></td>
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<tr>
<td>Line Herfindahl(^a)</td>
<td>6340</td>
<td>0.51</td>
<td>0.30</td>
<td>0.42</td>
<td>0.08</td>
<td>1.00</td>
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<td>Geography Herfindahl(^b)</td>
<td>6128</td>
<td>0.63</td>
<td>0.38</td>
<td>0.75</td>
<td>0.03</td>
<td>1.00</td>
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<tr>
<td>Surplus/asset ratio(^c)</td>
<td>6340</td>
<td>0.45</td>
<td>0.19</td>
<td>0.41</td>
<td>0.05</td>
<td>1.00</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Acquirers (146)</td>
<td>144</td>
<td>80</td>
<td>26</td>
<td></td>
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</tbody>
</table>

Notes: a: Value of transaction is the deal value at the announcement date of a transaction, as reported by the SNL DataSource; b: Value of assets is the total assets of a firm at the end of one year prior to the announcement date, as reported by COMPUSTAT; c: Value of equity is the market value of a firm at the end of one month prior to the announcement date, which equals stock price one month prior to the announcement times shares outstanding, as reported by CRSP; d: deals whose relative size of target/acquiring firms or relative size of target/divesting firms exceeds 100 percent are excluded; \(^*\)Equals the market value of equity of targets divided by the market value of equity of acquiring firms; \(^**\) Equals the transaction value divided by the market value of equity of acquiring firms; \(^***\) Equals the transaction value divided by the market value of equity of divesting firms because targets (subsidiaries sold by the divesting firms) are not publicly traded.

(a) Herfindahl index across business lines. It is the value at the end of one year before the takeover announcement; (b) Herfindahl index across geographical areas (states). It is the value at the end of one year before the takeover announcement. (c) Surplus/asset ratio = policyholders’ surplus/total assets; (cc) P-L industry surplus ratio during the period 1995-2002.
### Table 4
Overall wealth effect of acquirers, targets and divesting firms, 1997-2003

<table>
<thead>
<tr>
<th>Days</th>
<th>N</th>
<th>Mean CAR</th>
<th>Precision weighted CAAR</th>
<th>Median CAR (+): (-)</th>
<th>Patell Z</th>
<th>SCS Z</th>
<th>t</th>
<th>Generalized sign Z</th>
</tr>
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<tbody>
<tr>
<td><strong>Panel A: Acquirers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-10,-1)</td>
<td>180</td>
<td>0.10%</td>
<td>0.19%</td>
<td>-0.22%</td>
<td>86:94</td>
<td>0.398</td>
<td>0.45</td>
<td>0.181</td>
</tr>
<tr>
<td>(-1,0)</td>
<td>180</td>
<td>0.22%</td>
<td>0.17%</td>
<td>-0.17%</td>
<td>80:100</td>
<td>0.891</td>
<td>0.603</td>
<td>0.846</td>
</tr>
<tr>
<td>(0,0)</td>
<td>180</td>
<td>0.15%</td>
<td>0.19%</td>
<td>-0.13%</td>
<td>87:93</td>
<td>1.436</td>
<td>0.778</td>
<td>0.825</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>180</td>
<td>0.87%</td>
<td>0.83%</td>
<td>0.07%</td>
<td>92:88</td>
<td>4.432</td>
<td>2.380</td>
<td>3.355</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>180</td>
<td>0.94%</td>
<td>0.81%</td>
<td>-0.15%</td>
<td>89:91</td>
<td>3.515</td>
<td>2.170</td>
<td>2.954</td>
</tr>
<tr>
<td>(-5,+5)</td>
<td>180</td>
<td>1.19%</td>
<td>1.21%</td>
<td>0.89%</td>
<td>99:81</td>
<td>2.660</td>
<td>1.955</td>
<td>1.964</td>
</tr>
<tr>
<td>(-10,+10)</td>
<td>180</td>
<td>0.27%</td>
<td>0.65%</td>
<td>0.54%</td>
<td>96:84</td>
<td>0.962</td>
<td>0.849</td>
<td>0.322</td>
</tr>
<tr>
<td>(-15,+15)</td>
<td>180</td>
<td>0.50%</td>
<td>0.54%</td>
<td>-0.02%</td>
<td>90:90</td>
<td>0.646</td>
<td>0.608</td>
<td>0.486</td>
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<tr>
<td><strong>Panel B: Targets</strong></td>
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<tr>
<td>(-10,-1)</td>
<td>46</td>
<td>2.94%</td>
<td>3.06%</td>
<td>1.92%</td>
<td>26:20</td>
<td>2.759</td>
<td>2.440</td>
<td>2.192</td>
</tr>
<tr>
<td>(-1,0)</td>
<td>46</td>
<td>9.55%</td>
<td>8.62%</td>
<td>3.64%</td>
<td>32:14</td>
<td>17.965</td>
<td>3.499</td>
<td>15.899</td>
</tr>
<tr>
<td>(0,0)</td>
<td>46</td>
<td>8.57%</td>
<td>7.98%</td>
<td>2.58%</td>
<td>29:17</td>
<td>23.622</td>
<td>3.281</td>
<td>20.170</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>46</td>
<td>23.35%</td>
<td>18.62%</td>
<td>16.44%</td>
<td>41:5</td>
<td>38.885</td>
<td>6.667</td>
<td>38.872</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>46</td>
<td>24.33%</td>
<td>19.26%</td>
<td>18.36%</td>
<td>42:4</td>
<td>32.727</td>
<td>6.747</td>
<td>33.075</td>
</tr>
<tr>
<td>(-5,+5)</td>
<td>46</td>
<td>25.51%</td>
<td>20.58%</td>
<td>17.55%</td>
<td>40:6</td>
<td>17.767</td>
<td>6.873</td>
<td>18.107</td>
</tr>
<tr>
<td>(-10,+10)</td>
<td>46</td>
<td>27.15%</td>
<td>21.99%</td>
<td>17.11%</td>
<td>40:6</td>
<td>13.306</td>
<td>6.818</td>
<td>13.949</td>
</tr>
<tr>
<td>(-15,+15)</td>
<td>46</td>
<td>30.21%</td>
<td>24.98%</td>
<td>21.00%</td>
<td>40:6</td>
<td>12.050</td>
<td>7.090</td>
<td>12.773</td>
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<tr>
<td><strong>Panel C: Divesting firms</strong></td>
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<td></td>
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</tr>
<tr>
<td>(-10,-1)</td>
<td>106</td>
<td>0.08%</td>
<td>0.05%</td>
<td>0.45%</td>
<td>55:51</td>
<td>0.101</td>
<td>0.091</td>
<td>0.099</td>
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<tr>
<td>(-1,0)</td>
<td>106</td>
<td>0.74%</td>
<td>0.73%</td>
<td>0.51%</td>
<td>65:41</td>
<td>2.717</td>
<td>2.442</td>
<td>2.018</td>
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<tr>
<td>(0,0)</td>
<td>106</td>
<td>0.45%</td>
<td>0.54%</td>
<td>0.20%</td>
<td>58:48</td>
<td>2.817</td>
<td>1.994</td>
<td>1.721</td>
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<tr>
<td>(0,+1)</td>
<td>106</td>
<td>1.02%</td>
<td>0.55%</td>
<td>-0.01%</td>
<td>53:53</td>
<td>2.004</td>
<td>1.272</td>
<td>2.767</td>
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<tr>
<td>(-1,+1)</td>
<td>106</td>
<td>1.31%</td>
<td>0.75%</td>
<td>0.27%</td>
<td>60:46</td>
<td>2.238</td>
<td>1.793$</td>
<td>2.914</td>
</tr>
<tr>
<td>(-5,+5)</td>
<td>106</td>
<td>0.76%</td>
<td>-0.08%</td>
<td>-0.56%</td>
<td>50:56</td>
<td>-0.086</td>
<td>-0.077</td>
<td>0.881</td>
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<tr>
<td>(-10,+10)</td>
<td>106</td>
<td>-0.04%</td>
<td>-1.21%</td>
<td>-1.34%</td>
<td>46:60</td>
<td>-1.279</td>
<td>-1.152</td>
<td>-0.035</td>
</tr>
<tr>
<td>(-15,+15)</td>
<td>106</td>
<td>-0.27%</td>
<td>-2.04%</td>
<td>-2.85%</td>
<td>42:64</td>
<td>-1.681$</td>
<td>-1.680$</td>
<td>-0.184</td>
</tr>
</tbody>
</table>

Note: The symbols $, *, **, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.

The sample consists of the public firms from the 285 deals where at least one of the partners—acquirer, target or seller—was a US P-L insurance firm. The sample size of acquirers, targets and divesting firms in the table is less than the number in Table 2 because we lose some observations due to their data availability when estimating the market model. The abnormal returns are calculated using the standard event study methodology market model (MacKinlay (1997)). The Patell Z (Patell (1976)), SCS Z (Boehmer, Masumeci and Poulsen (1991)), t test, and generalized sign Z (Cowan (1992)) are used to test whether the mean CARs are statistically different from zero.
Table 5  
Cumulative Average Abnormal Returns (CAAR) for acquirers according to their geographical and business diversification, 1997-2003

<table>
<thead>
<tr>
<th>Days</th>
<th>N</th>
<th>Mean CAR</th>
<th>Precision weighted CAAR</th>
<th>Median CAR</th>
<th>Positive: Negative</th>
<th>Patell Z</th>
<th>SCS Z</th>
<th>t</th>
<th>Generalized sign Z</th>
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<tr>
<td>Geographical Focus</td>
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<td></td>
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<tr>
<td>(-1,0)</td>
<td>24</td>
<td>2.34%</td>
<td>1.49%</td>
<td>0.28%</td>
<td>13:11</td>
<td>2.688**</td>
<td>1.818$</td>
<td>2.359*</td>
<td>0.83</td>
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<tr>
<td>(0,0)</td>
<td>24</td>
<td>1.99%</td>
<td>1.37%</td>
<td>0.37%</td>
<td>14:10</td>
<td>3.528***</td>
<td>1.797$</td>
<td>2.828**</td>
<td>1.24</td>
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<tr>
<td>(0,+1)</td>
<td>24</td>
<td>3.90%</td>
<td>3.40%</td>
<td>1.45%</td>
<td>14:10</td>
<td>6.156***</td>
<td>2.164*</td>
<td>3.926***</td>
<td>1.24</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>24</td>
<td>4.25%</td>
<td>3.51%</td>
<td>1.37%</td>
<td>15:09</td>
<td>5.180***</td>
<td>2.146*</td>
<td>3.499***</td>
<td>1.650$</td>
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<tr>
<td>(-1,0)</td>
<td>156</td>
<td>-0.11%</td>
<td>-0.02%</td>
<td>-0.25%</td>
<td>67:89</td>
<td>-0.098</td>
<td>-0.067</td>
<td>-0.39</td>
<td>-1.273</td>
</tr>
<tr>
<td>(0,0)</td>
<td>156</td>
<td>-0.13%</td>
<td>0.02%</td>
<td>-0.24%</td>
<td>73:83</td>
<td>0.159</td>
<td>0.088</td>
<td>-0.675</td>
<td>-0.312</td>
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<td>(0,+1)</td>
<td>156</td>
<td>0.40%</td>
<td>0.47%</td>
<td>-0.02%</td>
<td>78:78</td>
<td>2.346*</td>
<td>1.441</td>
<td>1.469</td>
<td>0.489</td>
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<td>156</td>
<td>0.43%</td>
<td>0.43%</td>
<td>-0.34%</td>
<td>74:82</td>
<td>1.744$</td>
<td>1.218</td>
<td>1.271</td>
<td>-0.152</td>
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<td>Business Focus</td>
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<tr>
<td>(-1,0)</td>
<td>121</td>
<td>0.36%</td>
<td>0.36%</td>
<td>-0.19%</td>
<td>52:69</td>
<td>1.545</td>
<td>0.934</td>
<td>1.141</td>
<td>-1.06</td>
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<td>0.40%</td>
<td>-0.05%</td>
<td>59:62</td>
<td>2.484*</td>
<td>1.177</td>
<td>1.298</td>
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<td>121</td>
<td>1.14%</td>
<td>1.16%</td>
<td>0.03%</td>
<td>61:60</td>
<td>5.061***</td>
<td>2.415*</td>
<td>3.592***</td>
<td>0.578</td>
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<tr>
<td>(-1,+1)</td>
<td>121</td>
<td>1.21%</td>
<td>1.12%</td>
<td>-0.30%</td>
<td>58:63</td>
<td>3.968***</td>
<td>2.193*</td>
<td>3.115**</td>
<td>0.032</td>
</tr>
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<td>Business Diversification</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>59</td>
<td>-0.08%</td>
<td>-0.21%</td>
<td>-0.09%</td>
<td>28:31</td>
<td>-0.657</td>
<td>-0.646</td>
<td>-0.193</td>
<td>-0.024</td>
</tr>
<tr>
<td>(0,0)</td>
<td>59</td>
<td>-0.14%</td>
<td>-0.23%</td>
<td>-0.22%</td>
<td>28:31</td>
<td>-1.049</td>
<td>-0.954</td>
<td>-0.5</td>
<td>-0.024</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>59</td>
<td>0.31%</td>
<td>0.17%</td>
<td>0.15%</td>
<td>31:28</td>
<td>0.494</td>
<td>0.402</td>
<td>0.793</td>
<td>0.758</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>59</td>
<td>0.37%</td>
<td>0.19%</td>
<td>0.50%</td>
<td>31:28</td>
<td>0.456</td>
<td>0.407</td>
<td>0.778</td>
<td>0.758</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>16</td>
<td>3.21%</td>
<td>2.07%</td>
<td>-0.05%</td>
<td>8: 8</td>
<td>2.837**</td>
<td>1.663$</td>
<td>2.468*</td>
<td>0.318</td>
</tr>
<tr>
<td>(0,0)</td>
<td>16</td>
<td>3.11%</td>
<td>2.33%</td>
<td>0.58%</td>
<td>11: 5</td>
<td>4.536***</td>
<td>2.139*</td>
<td>3.384***</td>
<td>1.822$</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>16</td>
<td>6.17%</td>
<td>5.45%</td>
<td>3.70%</td>
<td>10: 6</td>
<td>7.478***</td>
<td>2.415*</td>
<td>4.749***</td>
<td>1.321</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>16</td>
<td>6.27%</td>
<td>5.19%</td>
<td>2.62%</td>
<td>10: 6</td>
<td>5.799***</td>
<td>2.114*</td>
<td>3.939***</td>
<td>1.321</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>105</td>
<td>-0.07%</td>
<td>0.13%</td>
<td>-0.32%</td>
<td>44:61</td>
<td>0.551</td>
<td>0.336</td>
<td>-0.21</td>
<td>-1.262</td>
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<tr>
<td>(0,0)</td>
<td>105</td>
<td>-0.14%</td>
<td>0.15%</td>
<td>-0.25%</td>
<td>48:57</td>
<td>0.896</td>
<td>0.43</td>
<td>-0.579</td>
<td>-0.48</td>
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<tr>
<td>(0,+1)</td>
<td>105</td>
<td>0.38%</td>
<td>0.61%</td>
<td>-0.10%</td>
<td>51:54</td>
<td>2.514*</td>
<td>1.377</td>
<td>1.119</td>
<td>0.106</td>
</tr>
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</table>
### Geographical Focus and Business Diversification

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<thead>
<tr>
<th></th>
<th>105</th>
<th>0.44%</th>
<th>0.59%</th>
<th>-0.38%</th>
<th>48:57</th>
<th>1.996*</th>
<th>1.266</th>
<th>1.076</th>
<th>-0.48</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-1,0)</td>
<td>8</td>
<td>0.61%</td>
<td>0.54%</td>
<td>0.66%</td>
<td>5:3</td>
<td>0.643</td>
<td>0.731</td>
<td>0.528</td>
<td>0.99</td>
</tr>
<tr>
<td>(0,0)</td>
<td>8</td>
<td>-0.27%</td>
<td>-0.18%</td>
<td>-0.43%</td>
<td>3:5</td>
<td>-0.305</td>
<td>-0.224</td>
<td>-0.327</td>
<td>-0.431</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>8</td>
<td>-0.65%</td>
<td>0.08%</td>
<td>-0.03%</td>
<td>4:4</td>
<td>0.087</td>
<td>0.047</td>
<td>-0.568</td>
<td>0.28</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>8</td>
<td>0.22%</td>
<td>0.80%</td>
<td>1.19%</td>
<td>5:3</td>
<td>0.771</td>
<td>0.548</td>
<td>0.156</td>
<td>0.99</td>
</tr>
</tbody>
</table>

### Geographical Diversification and Business Diversification

<table>
<thead>
<tr>
<th></th>
<th>51</th>
<th>-0.18%</th>
<th>-0.33%</th>
<th>-0.15%</th>
<th>23:28</th>
<th>-0.962</th>
<th>-0.927</th>
<th>-0.455</th>
<th>-0.417</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-1,0)</td>
<td>51</td>
<td>-0.12%</td>
<td>-0.24%</td>
<td>-0.14%</td>
<td>25:26</td>
<td>-1.008</td>
<td>-0.943</td>
<td>-0.414</td>
<td>0.144</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>51</td>
<td>0.46%</td>
<td>0.18%</td>
<td>0.23%</td>
<td>27:24</td>
<td>0.496</td>
<td>0.441</td>
<td>1.146</td>
<td>0.704</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>51</td>
<td>0.40%</td>
<td>0.09%</td>
<td>0.17%</td>
<td>26:25</td>
<td>0.185</td>
<td>0.171</td>
<td>0.804</td>
<td>0.424</td>
</tr>
</tbody>
</table>

Note: The symbols $, *, **, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.

The sample consists of the 180 listed acquirers from the 285 deals where at least one of the partners—acquirer, target or seller—was a US P-L insurance firm, and whose abnormal return can be estimated by the market model using CRSP data. The sample is divided into groups according to their geographical diversification and business diversification:

Geographical Focus (Geography-focusing acquisition): the headquarters of an acquirer and its target are in different countries/states;
Geographical Diversification (Geography-diversifying acquisition): the headquarters of an acquirer and its target are in the same state;
Business Focus (Business-focusing acquisition): an acquirer and its target belong to the same insurance sector;
Business Diversification (Business-diversifying acquisition): an acquirer and its target belong to different insurance sectors.

Data source: the SNL DataSource.
### Table 6
Acquirers that focus both business lines and geographical areas

<table>
<thead>
<tr>
<th>Buyer name</th>
<th>Year of deal</th>
<th>Target name</th>
<th>Target business</th>
<th>Buyer state</th>
<th>Buyer country</th>
<th>Line Herfindahl (a)</th>
<th>Geography Herfindahl (b)</th>
<th>Best’s rating (c)</th>
<th>Scale type (d)</th>
<th>Deal value ($M)</th>
<th>CAR (-1,+1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXEL Limited</td>
<td>1997</td>
<td>GCR Holdings Limited</td>
<td>Marine, Other P&amp;C</td>
<td>Bermuda</td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>644.4</td>
<td>9.19%</td>
</tr>
<tr>
<td>Fremont General Corporation</td>
<td>1997</td>
<td>Citation National Insurance Company</td>
<td>Automobile, Liability, Multi-peril, Workers’ comp</td>
<td>CA</td>
<td>USA</td>
<td>0.9186</td>
<td>0.2089</td>
<td>A</td>
<td>DRS</td>
<td>7.5</td>
<td>-1.74%</td>
</tr>
<tr>
<td>Fremont General Corporation</td>
<td>1997</td>
<td>Industrial Indemnity Holdings Inc.</td>
<td>Workers' comp</td>
<td>CA</td>
<td>USA</td>
<td>0.9186</td>
<td>0.2089</td>
<td>A</td>
<td>DRS</td>
<td>365</td>
<td>7.43%</td>
</tr>
<tr>
<td>ACE Limited</td>
<td>1998</td>
<td>CAT Limited Mid Ocean Limited</td>
<td>Other P&amp;C</td>
<td>Bermuda</td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>644.1</td>
<td>14.90%</td>
</tr>
<tr>
<td>EXEL Limited</td>
<td>1998</td>
<td>FPIC Insurance Group, Inc.</td>
<td>Professional Assurance Association, Inc.</td>
<td>FL</td>
<td>USA</td>
<td>0.5788</td>
<td>0.9988</td>
<td>A-</td>
<td>DRS</td>
<td>13.8</td>
<td>8.86%</td>
</tr>
<tr>
<td>Fremont General Corporation</td>
<td>1998</td>
<td>UNICARE Specialty Services, Inc.</td>
<td>Workers' comp</td>
<td>CA</td>
<td>USA</td>
<td>0.9311</td>
<td>0.2331</td>
<td>A-</td>
<td>DRS</td>
<td>100</td>
<td>0.12%</td>
</tr>
<tr>
<td>MGIC Investment Corporation</td>
<td>1998</td>
<td>Wisconsin Mortgage Assurance Corporation</td>
<td>Financial</td>
<td>WI</td>
<td>USA</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>2</td>
<td>-5.94%</td>
</tr>
<tr>
<td>Superior National Insurance Group, Inc. Professionals Group Inc. Trenwick Group Inc.</td>
<td>1998</td>
<td>Business Insurance Group, Inc.</td>
<td>Workers' comp</td>
<td>CA</td>
<td>USA</td>
<td>1</td>
<td>0.8258</td>
<td>B+</td>
<td>DRS</td>
<td>285</td>
<td>26.28%</td>
</tr>
<tr>
<td>National Security Group, Inc.</td>
<td>2000</td>
<td>Liberty Southern Insurance</td>
<td>Automobile</td>
<td>AL</td>
<td>USA</td>
<td>0.3454</td>
<td>0.1906</td>
<td>B++</td>
<td>IRS</td>
<td>0.7</td>
<td>-0.37%</td>
</tr>
<tr>
<td>Company, Inc.</td>
<td>Year</td>
<td>Business Line</td>
<td>State</td>
<td>USA</td>
<td>Rating</td>
<td>Type of Returns to Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>------</td>
<td>---------------</td>
<td>-------</td>
<td>-----</td>
<td>--------</td>
<td>--------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21st Century Holding Company</td>
<td>2001</td>
<td>American Vehicle Insurance Company</td>
<td>FL</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>0.5</td>
<td>32.91%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hallmark Financial Services, Inc.</td>
<td>2002</td>
<td>Phoenix Indemnity Insurance Company</td>
<td>TX</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>7</td>
<td>15.98%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RenaissanceRe Holdings Ltd.</td>
<td>2002</td>
<td>Overseas Partners Cat Ltd.</td>
<td>Bermuda</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>25</td>
<td>-3.46%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odyssey Re Holdings Corporation</td>
<td>2003</td>
<td>General Security Indemnity Company</td>
<td>NY</td>
<td>0.0851</td>
<td>0.0770</td>
<td>B+</td>
<td>DRS</td>
<td>NA</td>
<td>-1.08%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This table illustrates the information of acquirers that focus both geographical areas and business lines.
(a) Herfindahl index across business lines, calculated from NAIC statutory statements data. It is the value at the end of one year before the takeover announcement;
(b) Herfindahl index across geographical areas (states), calculated from NAIC statutory statements data. It is the value at the end of one year before the takeover announcement.
(c) The rating given by A.M. Best Company. It is the rating at the end of one year before the takeover announcement.
(d) The types of returns to scale for a firm before takeover, calculated from NAIC statutory statements data using Data Envelopment Analysis (DEA) method. IRS=increasing returns to scale, DRS=decreasing returns to scale.
Table 7
Cumulative Average Abnormal Returns (CAAR) for combined acquirers-targets according to their geographical and business diversification, 1997-2003

<table>
<thead>
<tr>
<th>Days</th>
<th>N</th>
<th>Combined mean CAR</th>
<th>Std dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Matched Sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>32</td>
<td>2.52%$</td>
<td>7.10%</td>
<td>-3.83%</td>
<td>37.65%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>32</td>
<td>2.17%$</td>
<td>7.21%</td>
<td>-3.53%</td>
<td>37.63%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>32</td>
<td>3.36%*</td>
<td>7.70%</td>
<td>-5.19%</td>
<td>36.44%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>32</td>
<td>3.71%**</td>
<td>7.56%</td>
<td>-3.58%</td>
<td>36.47%</td>
</tr>
<tr>
<td>Weight-acquirer</td>
<td>32</td>
<td>82.40%</td>
<td>18.58%</td>
<td>16.23%</td>
<td>99.54%</td>
</tr>
<tr>
<td>Weight-target</td>
<td>32</td>
<td>17.60%</td>
<td>18.58%</td>
<td>0.46%</td>
<td>83.77%</td>
</tr>
<tr>
<td>Geographical Focus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>5</td>
<td>3.71%</td>
<td>4.40%</td>
<td>-2.07%</td>
<td>9.51%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>5</td>
<td>3.40%</td>
<td>5.76%</td>
<td>-3.53%</td>
<td>10.89%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>5</td>
<td>3.77%</td>
<td>8.22%</td>
<td>-5.19%</td>
<td>11.90%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>5</td>
<td>4.08%</td>
<td>6.75%</td>
<td>-3.58%</td>
<td>10.52%</td>
</tr>
<tr>
<td>Geographical Diversification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>27</td>
<td>2.30%</td>
<td>7.53%</td>
<td>-3.83%</td>
<td>37.65%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>27</td>
<td>1.95%</td>
<td>7.52%</td>
<td>-3.19%</td>
<td>37.63%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>27</td>
<td>3.28%</td>
<td>7.76%</td>
<td>-4.71%</td>
<td>36.44%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>27</td>
<td>3.64%</td>
<td>7.82%</td>
<td>-3.09%</td>
<td>36.47%</td>
</tr>
<tr>
<td>Business Focus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>24</td>
<td>3.28%</td>
<td>8.02%</td>
<td>-3.83%</td>
<td>37.65%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>24</td>
<td>3.06%</td>
<td>8.11%</td>
<td>-2.93%</td>
<td>37.63%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>24</td>
<td>4.79%</td>
<td>8.22%</td>
<td>-2.19%</td>
<td>36.44%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>24</td>
<td>5.01%</td>
<td>8.19%</td>
<td>-2.16%</td>
<td>36.47%</td>
</tr>
<tr>
<td>Business Diversification</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>8</td>
<td>0.24%</td>
<td>1.96%</td>
<td>-2.07%</td>
<td>3.84%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>8</td>
<td>-0.48%</td>
<td>1.94%</td>
<td>-3.53%</td>
<td>1.49%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>8</td>
<td>-0.92%</td>
<td>3.59%</td>
<td>-5.19%</td>
<td>3.03%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>8</td>
<td>-0.20%</td>
<td>3.07%</td>
<td>-3.58%</td>
<td>5.26%</td>
</tr>
<tr>
<td>Geographical Focus and Business Focus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>3</td>
<td>6.39%</td>
<td>2.94%</td>
<td>3.67%</td>
<td>9.51%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>3</td>
<td>7.13%</td>
<td>3.54%</td>
<td>3.86%</td>
<td>10.89%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>3</td>
<td>9.69%</td>
<td>1.92%</td>
<td>8.43%</td>
<td>11.90%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>3</td>
<td>8.96%</td>
<td>1.36%</td>
<td>8.11%</td>
<td>10.52%</td>
</tr>
<tr>
<td>Geographical Diversification and Business Focus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>21</td>
<td>2.84%</td>
<td>8.45%</td>
<td>-3.83%</td>
<td>37.65%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>21</td>
<td>2.48%</td>
<td>8.45%</td>
<td>-2.93%</td>
<td>37.63%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>21</td>
<td>4.09%</td>
<td>8.55%</td>
<td>-2.19%</td>
<td>36.44%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>21</td>
<td>4.45%</td>
<td>8.62%</td>
<td>-2.16%</td>
<td>36.47%</td>
</tr>
<tr>
<td>Geographical Focus and Business Diversification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>2</td>
<td>-0.32%</td>
<td>2.49%</td>
<td>-2.07%</td>
<td>1.44%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>2</td>
<td>-2.18%</td>
<td>1.90%</td>
<td>-3.53%</td>
<td>-0.84%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>2</td>
<td>-5.11%</td>
<td>0.11%</td>
<td>-5.19%</td>
<td>-5.03%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>2</td>
<td>-3.24%</td>
<td>0.47%</td>
<td>-3.58%</td>
<td>-2.91%</td>
</tr>
<tr>
<td>Geographical Diversification and Business Diversification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>6</td>
<td>0.43%</td>
<td>1.99%</td>
<td>-1.57%</td>
<td>3.84%</td>
</tr>
<tr>
<td>(0,0)</td>
<td>6</td>
<td>0.08%</td>
<td>1.73%</td>
<td>-3.19%</td>
<td>1.49%</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>6</td>
<td>0.47%</td>
<td>2.95%</td>
<td>-4.71%</td>
<td>3.03%</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>6</td>
<td>0.82%</td>
<td>2.87%</td>
<td>-3.09%</td>
<td>5.26%</td>
</tr>
</tbody>
</table>

Note: The symbols $, *, **, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.
The sample consists of 32 M&As where both the acquirers and the targets are listed firms. The Combined CAR = weight-acquirer*CAR of acquirer + weight-target*CAR of target, where weight-acquirer = equity value of acquirer/(equity value of acquirer + equity value of target); weight-target = equity value of target/(equity value of acquirer + equity value of target); All equity values are calculated as the value at the end of one month prior to the takeover announcement.
### Table 8
Cumulative Average Abnormal Returns (CAAR) for divesting firms according to their geographical and business diversification, 1997-2003

<table>
<thead>
<tr>
<th>Days</th>
<th>N</th>
<th>Mean CAR</th>
<th>Precision weighted CAR</th>
<th>Median CAR</th>
<th>Positive: Negative Patell Z</th>
<th>SCS Z</th>
<th>t</th>
<th>Generalized sign Z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sell other countries/states assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>73</td>
<td>1.02%</td>
<td>0.70%</td>
<td>0.45%</td>
<td>47:26</td>
<td>2.300*</td>
<td>2.546*</td>
<td>2.417*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.813**</td>
</tr>
<tr>
<td>(0,0)</td>
<td>73</td>
<td>0.80%</td>
<td>0.55%</td>
<td>0.22%</td>
<td>39:34</td>
<td>2.548*</td>
<td>2.084*</td>
<td>2.675**</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>73</td>
<td>0.81%</td>
<td>0.40%</td>
<td>-0.24%</td>
<td>35:38</td>
<td>1.276</td>
<td>1.047</td>
<td>1.919$</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>73</td>
<td>1.03%</td>
<td>0.56%</td>
<td>0.26%</td>
<td>42:31</td>
<td>1.464</td>
<td>1.486</td>
<td>1.996*</td>
</tr>
<tr>
<td><strong>Sell same state assets</strong></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>33</td>
<td>0.14%</td>
<td>0.82%</td>
<td>0.68%</td>
<td>18:15</td>
<td>1.449</td>
<td>0.971</td>
<td>0.169</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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<td>0.715</td>
</tr>
<tr>
<td>(0,0)</td>
<td>33</td>
<td>-0.32%</td>
<td>0.51%</td>
<td>0.18%</td>
<td>19:14</td>
<td>1.259</td>
<td>0.706</td>
<td>-0.56</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>33</td>
<td>1.49%</td>
<td>0.97%</td>
<td>0.68%</td>
<td>18:15</td>
<td>1.694$</td>
<td>0.774</td>
<td>1.830$</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>33</td>
<td>1.94%</td>
<td>1.28%</td>
<td>0.90%</td>
<td>18:15</td>
<td>1.833$</td>
<td>1.074</td>
<td>1.955$</td>
</tr>
<tr>
<td><strong>Sell related assets</strong></td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>51</td>
<td>0.87%</td>
<td>0.47%</td>
<td>0.24%</td>
<td>29:22</td>
<td>1.224</td>
<td>0.934</td>
<td>1.473</td>
</tr>
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<td></td>
<td>1.16</td>
</tr>
<tr>
<td>(0,0)</td>
<td>51</td>
<td>0.47%</td>
<td>0.23%</td>
<td>0.10%</td>
<td>27:24</td>
<td>0.839</td>
<td>0.513</td>
<td>1.131</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>51</td>
<td>0.81%</td>
<td>0.43%</td>
<td>-0.31%</td>
<td>24:27</td>
<td>1.123</td>
<td>0.603</td>
<td>1.374</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>51</td>
<td>1.21%</td>
<td>0.67%</td>
<td>0.14%</td>
<td>26:25</td>
<td>1.435</td>
<td>0.977</td>
<td>1.671$</td>
</tr>
<tr>
<td><strong>Sell unrelated assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>55</td>
<td>0.63%</td>
<td>0.99%</td>
<td>0.80%</td>
<td>36:19</td>
<td>2.592*</td>
<td>2.899**</td>
<td>1.156</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.677**</td>
</tr>
<tr>
<td>(0,0)</td>
<td>55</td>
<td>0.43%</td>
<td>0.83%</td>
<td>0.26%</td>
<td>31:24</td>
<td>3.102**</td>
<td>2.660**</td>
<td>1.111</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>55</td>
<td>1.21%</td>
<td>0.66%</td>
<td>0.30%</td>
<td>29:26</td>
<td>1.701$</td>
<td>1.338</td>
<td>2.236$</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>55</td>
<td>1.41%</td>
<td>0.82%</td>
<td>0.85%</td>
<td>34:21</td>
<td>1.723$</td>
<td>1.697$</td>
<td>2.128$</td>
</tr>
<tr>
<td><strong>Sell other countries/state, related assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>31</td>
<td>1.14%</td>
<td>0.50%</td>
<td>0.19%</td>
<td>18:13</td>
<td>1.123</td>
<td>0.983</td>
<td>1.668$</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.088</td>
</tr>
<tr>
<td>(0,0)</td>
<td>31</td>
<td>0.78%</td>
<td>0.21%</td>
<td>-0.21%</td>
<td>15:16</td>
<td>0.672</td>
<td>0.44</td>
<td>1.614</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>31</td>
<td>0.99%</td>
<td>0.23%</td>
<td>-0.68%</td>
<td>12:19</td>
<td>0.522</td>
<td>0.366</td>
<td>1.444</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>31</td>
<td>1.35%</td>
<td>0.52%</td>
<td>-0.21%</td>
<td>15:16</td>
<td>0.966</td>
<td>0.836</td>
<td>1.61</td>
</tr>
<tr>
<td><strong>Sell same state, related assets</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>20</td>
<td>0.44%</td>
<td>0.41%</td>
<td>0.98%</td>
<td>11:9</td>
<td>0.558</td>
<td>0.355</td>
<td>0.424</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.501</td>
</tr>
<tr>
<td>(0,0)</td>
<td>20</td>
<td>-0.01%</td>
<td>0.26%</td>
<td>0.64%</td>
<td>12:8</td>
<td>0.503</td>
<td>0.275</td>
<td>-0.014</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>20</td>
<td>0.53%</td>
<td>0.85%</td>
<td>0.75%</td>
<td>12:8</td>
<td>1.143</td>
<td>0.471</td>
<td>0.51</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>20</td>
<td>0.98%</td>
<td>1.00%</td>
<td>0.69%</td>
<td>11:9</td>
<td>1.091</td>
<td>0.577</td>
<td>0.771</td>
</tr>
<tr>
<td><strong>Sell other countries/state, unrelated assets</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>42</td>
<td>0.92%</td>
<td>0.87%</td>
<td>0.81%</td>
<td>29:13</td>
<td>2.066*</td>
<td>3.005**</td>
<td>1.654$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.774**</td>
</tr>
<tr>
<td>(0,0)</td>
<td>42</td>
<td>0.80%</td>
<td>0.82%</td>
<td>0.43%</td>
<td>24:18</td>
<td>2.781**</td>
<td>2.972**</td>
<td>2.042*</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>42</td>
<td>0.67%</td>
<td>0.53%</td>
<td>0.33%</td>
<td>23:19</td>
<td>1.233</td>
<td>1.169</td>
<td>1.205</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>42</td>
<td>0.79%</td>
<td>0.59%</td>
<td>0.76%</td>
<td>27:15</td>
<td>1.1</td>
<td>1.289</td>
<td>1.156</td>
</tr>
<tr>
<td><strong>Sell same state, unrelated assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-1,0)</td>
<td>13</td>
<td>-0.33%</td>
<td>1.42%</td>
<td>0.43%</td>
<td>7:6</td>
<td>1.617</td>
<td>1.153</td>
<td>-0.235</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.519</td>
</tr>
<tr>
<td>(0,0)</td>
<td>13</td>
<td>-0.80%</td>
<td>0.86%</td>
<td>0.11%</td>
<td>7:6</td>
<td>1.382</td>
<td>0.781</td>
<td>-0.801</td>
</tr>
<tr>
<td>(0,+1)</td>
<td>13</td>
<td>2.95%</td>
<td>1.13%</td>
<td>-0.20%</td>
<td>6:7</td>
<td>1.281</td>
<td>0.69</td>
<td>2.090*</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>13</td>
<td>3.42%</td>
<td>1.69%</td>
<td>0.90%</td>
<td>7:6</td>
<td>1.568</td>
<td>1.083</td>
<td>1.978*</td>
</tr>
</tbody>
</table>

Note: The symbols $, *, **, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tail test.

The sample consists of the 106 listed divesting firms from the 285 deals where at least one of the partners—acquirer, target or seller—is a US P-L insurance firm, and whose abnormal return can be estimated by market model using CRSP data. The sample is divided into groups according to the geographical areas and the businesses sectors of the assets that are divested. “Sell other countries/states assets” means that a firm sells off assets that are located in a state different from its headquarters; “Sell same state assets” means that a firm divests assets that are located in the same state as its headquarters; “Sell related assets” indicates that the divested assets and the seller belong to the same insurance sector; “Sell unrelated assets” indicates that the divested assets and the seller belong to different insurance sectors, as identified by the SNL DataSource.

Two outlier firms—Frontier Insurance Group, Inc. (1999) and Reliance Group Holdings, Inc. (2000)—are deleted from the sample.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Acquirers’ abnormal return</th>
<th>Estimation 1</th>
<th>Estimation 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>0.1661***</td>
<td>0.1451***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0219)</td>
<td>(0.0206)</td>
</tr>
<tr>
<td>Geography-diversifying and business-focusing acquisition</td>
<td>-0.0895***</td>
<td>-0.0938***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0095)</td>
<td>(0.0107)</td>
</tr>
<tr>
<td>Geography-diversifying and business-diversifying acquisition</td>
<td>-0.0903***</td>
<td>-0.0873***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0113)</td>
<td>(0.0121)</td>
</tr>
<tr>
<td>Geography-focusing and business-diversifying acquisition</td>
<td>-0.0721***</td>
<td>-0.0715***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0118)</td>
<td>(0.0167)</td>
</tr>
<tr>
<td>Relative size of target to acquirer (log value)</td>
<td>0.0003</td>
<td>-0.0016</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0020)</td>
<td>(0.0021)</td>
</tr>
<tr>
<td>Cash payment dummy</td>
<td>0.0038</td>
<td>0.0042</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0042)</td>
<td>(0.0044)</td>
</tr>
<tr>
<td>Whether acquirer has ownership in target before takeover</td>
<td>-0.0111</td>
<td>-0.0098</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0083)</td>
<td>(0.0089)</td>
</tr>
<tr>
<td>Acquirer buys more than once within a year</td>
<td>-0.0106**</td>
<td>-0.0167***</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(0.0049)</td>
<td>(0.0048)</td>
</tr>
<tr>
<td>Size of acquirer (log equity)</td>
<td>-0.0038***</td>
<td>-0.0019</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0014)</td>
<td>(0.0013)</td>
</tr>
<tr>
<td>Tobin Q of acquirer</td>
<td>-0.0174*</td>
<td>-0.0261**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0089)</td>
<td>(0.0113)</td>
</tr>
<tr>
<td>Insidera (0-5%)</td>
<td>-0.0064***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0021)</td>
<td></td>
</tr>
<tr>
<td>Insiderb (5-25%)</td>
<td>-0.0004</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0004)</td>
<td></td>
</tr>
<tr>
<td>Insiderc (&gt;25%)</td>
<td>0.00044***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0002)</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.5702</td>
<td>0.4926</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>103</td>
<td>107</td>
<td></td>
</tr>
</tbody>
</table>

Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level; Standard errors of coefficients of regressions appear in parentheses.

This table presents the weighted-least-square (WLS) regression analysis to test the focus hypothesis for acquirers after controlling a set of variables that relate to acquirers’ characteristics. The dependent variable is the cumulative abnormal returns of acquirers over the event window (-1, +1). The independent variables include a set of dummy variables that indicate whether an acquisition is (1) Geography-diversifying and business-focusing; (2) Geography- and business-diversifying; (3) Geography-focusing and business-diversifying. The omitted category is acquisitions that focus both geography and business. Other independent variables include the payment method (=1 if cash payment; and 0 for others), the size of an acquirer, relative size of a target to its acquirer, the relationship of an acquirer and its target before takeover (=1 if an acquirer has ownership in its target before takeover, and 0 otherwise), and whether an acquirer is a “frequent buyer” in the market. The Q value is included as a proxy of a firm’s performance before an acquisition announcement. Three variables for insider ownership are defined following Morck, Shleifer and Vishny (1988) and Hubbard and Palia (1995) to control for the effect of managerial incentives on the abnormal returns at the announcement of a transaction.

The weight used is the reciprocal of the absolute value of OLS residuals.
### Table 10
Factors affecting divesting firms' abnormal returns—WLS regression analysis

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Divesting firms' abnormal return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimation 1</td>
</tr>
<tr>
<td><strong>Panel A: Focus hypothesis</strong></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.0449</td>
</tr>
<tr>
<td>(0.0476)</td>
<td>(0.0343)</td>
</tr>
<tr>
<td>Divest different geographical area and related assets</td>
<td>-0.0022</td>
</tr>
<tr>
<td>(0.0131)</td>
<td>(0.0111)</td>
</tr>
<tr>
<td>Divest same geographical area and unrelated assets</td>
<td>0.01711*</td>
</tr>
<tr>
<td>(0.0090)</td>
<td>(0.0091)</td>
</tr>
<tr>
<td>Divest same geographical area and related assets</td>
<td>-0.0220*</td>
</tr>
<tr>
<td>(0.0130)</td>
<td>(0.0100)</td>
</tr>
<tr>
<td>Divest unrelated assets</td>
<td></td>
</tr>
<tr>
<td>(0.0090)</td>
<td>(0.0090)</td>
</tr>
<tr>
<td>Relative size of divested assets to divesting firm (log)</td>
<td>0.01823***</td>
</tr>
<tr>
<td>(0.0032)</td>
<td>(0.0039)</td>
</tr>
<tr>
<td>Divesting firm sells more than once within a year</td>
<td>0.0019</td>
</tr>
<tr>
<td>(0.0100)</td>
<td>(0.0091)</td>
</tr>
<tr>
<td>Tobin Q of divesting firm</td>
<td>-0.0175</td>
</tr>
<tr>
<td>(0.0304)</td>
<td>(0.0212)</td>
</tr>
<tr>
<td>Size of divest firm (log equity)</td>
<td>-0.0053</td>
</tr>
<tr>
<td>(0.0032)</td>
<td>(0.0028)</td>
</tr>
<tr>
<td>Insiders (0-5%)</td>
<td>0.0025</td>
</tr>
<tr>
<td>(0.0048)</td>
<td>(0.0038)</td>
</tr>
<tr>
<td>Insiders (5-25%)</td>
<td>-0.0013</td>
</tr>
<tr>
<td>(0.0011)</td>
<td>(0.0010)</td>
</tr>
<tr>
<td>Insiders (&gt;25%)</td>
<td>0.0006</td>
</tr>
<tr>
<td>(0.0004)</td>
<td>(0.0006)</td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.7111</td>
</tr>
<tr>
<td>Observations</td>
<td>57</td>
</tr>
</tbody>
</table>

| **Panel B: Fitness hypothesis** | | | | |
| Intercept | 0.07541** | 0.0480 | 0.0599 | 0.0261 |
| (0.0346) | (0.0290) | (0.0483) | (0.0271) |
| Divest unrelated assets | 0.0144 | 0.01788* | | |
| (0.0098) | (0.0093) | | |
| Relative size of divested assets to divesting firm (log) | 0.01740*** | 0.01663*** | 0.01858*** | 0.01899*** |
| (0.0030) | (0.0025) | (0.0034) | (0.0033) |
| Divesting firm sells more than once within a year | 0.0023 | 0.0035 | 0.0003 | -0.0004 |
| (0.0085) | (0.0086) | (0.0096) | (0.0093) |
| Tobin Q of divesting firm | -0.0533*** | -0.0169 | -0.0340 | -0.0104 |
| (0.0143) | (0.0203) | (0.0251) | (0.0211) |
| Size of divest firm (log equity) | -0.0057 | -0.0073*** | -0.0053 | -0.0048** |
| (0.0035) | (0.0022) | (0.0036) | (0.0022) |
| Divested assets related to buyer’s core businesses | 0.0065 | 0.0052 | 0.0055 | 0.0088 |
| (0.0086) | (0.0089) | (0.0094) | (0.0083) |
| Insiders (0-5%) | 0.0031 | | 0.0039 | |
| (0.0036) | (0.0053) | | |
| Insiders (5-25%) | -0.0013 | | -0.0020 | |
| (0.0011) | (0.0012) | | |
| Insiders (>25%) | 0.0003 | | 0.0005 | |
| (0.0005) | (0.0005) | | |
| Adjusted R-square | 0.6869 | 0.5374 | 0.6046 | 0.5723 |
| Observations | 57 | 60 | 57 | 60 |

Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level; Standard errors of coefficients of regressions appear in the parentheses.

This table presents the weighted-least-square (WLS) regression analysis to test the focus hypothesis and fitness hypothesis for divesting firms after controlling a set of variables that relate to divesting firms’ characteristics. The dependent variable is the cumulative abnormal returns of divesting firms over the event window (-1, +1). In panel A, the independent variables include a set of dummy variables that indicate whether a divestiture (1) divests different geographical areas and related assets; (2) divests same geographical areas and unrelated assets; (3) divests the same geographical area and related assets. The default category is divesting the different geographical area and unrelated assets. Since the abnormal returns of divesting firms are insignificantly related to the geographical dummy, as a robustness check, we also run a set of regressions including only the business relatedness variable (whether the divested assets are related to the core businesses of the divesting firms, 1 if unrelated and 0 otherwise). Other independent variables include the relative size of the divested assets to the divesting firm and whether the divesting firm is a “frequent seller” in the market. The Q value is included as a proxy of a firm’s performance before its divestiture announcement. Three variables for insider ownership are defined following Morck, Shleifer and Vishny (1988) and Hubbard and Palia (1995) to control for the effect of managerial incentives on the abnormal returns at the announcement of a transaction. In panel B, to test the fitness hypothesis, we define a dummy variable measuring the fitness between the divested assets and the core businesses of a buyer: 1 if divested assets are related to the buyer’s core businesses and 0 otherwise.
### Table 11
Summary statistics of efficiency for acquirers and targets

#### Panel A

<table>
<thead>
<tr>
<th>Acquirers</th>
<th>Geographical focus and business focus</th>
<th>Geographical diversification and business focus</th>
<th>Geographical diversification and Business diversification</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>8</td>
<td>4</td>
<td>83</td>
</tr>
<tr>
<td>Mean</td>
<td><strong>0.6783</strong></td>
<td><strong>0.6205</strong></td>
<td><strong>0.6455</strong></td>
</tr>
<tr>
<td>SE</td>
<td><strong>0.7739</strong></td>
<td><strong>0.8197</strong></td>
<td><strong>0.8463</strong></td>
</tr>
<tr>
<td>CE</td>
<td><strong>0.4445</strong></td>
<td><strong>0.5307</strong></td>
<td><strong>0.4719</strong></td>
</tr>
<tr>
<td>RE</td>
<td><strong>0.4446</strong></td>
<td><strong>0.3537</strong></td>
<td><strong>0.3602</strong></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE</td>
<td><strong>0.1135</strong></td>
<td><strong>0.1531</strong></td>
<td><strong>0.1475</strong></td>
</tr>
<tr>
<td>SE</td>
<td><strong>0.1873</strong></td>
<td><strong>0.1332</strong></td>
<td><strong>0.1042</strong></td>
</tr>
<tr>
<td>CE</td>
<td><strong>0.0951</strong></td>
<td><strong>0.1785</strong></td>
<td><strong>0.1318</strong></td>
</tr>
<tr>
<td>RE</td>
<td><strong>0.2416</strong></td>
<td><strong>0.0969</strong></td>
<td><strong>0.1382</strong></td>
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</tbody>
</table>

#### Panel B

<table>
<thead>
<tr>
<th>Acquirers</th>
<th>Positive CAR</th>
<th>Negative CAR</th>
<th>Tobin Q &gt;1</th>
<th>Tobin Q &lt;1</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>66</td>
<td>70</td>
<td>101</td>
<td>27</td>
</tr>
<tr>
<td>Mean</td>
<td><strong>0.6548</strong></td>
<td><strong>0.6217</strong></td>
<td><strong>0.6336</strong></td>
<td><strong>0.6313</strong></td>
</tr>
<tr>
<td>SE</td>
<td><strong>0.8345</strong></td>
<td><strong>0.8112</strong></td>
<td><strong>0.8086</strong></td>
<td><strong>0.8820</strong></td>
</tr>
<tr>
<td>CE</td>
<td><strong>0.4937</strong></td>
<td><strong>0.4479</strong></td>
<td><strong>0.4512</strong></td>
<td><strong>0.4938</strong></td>
</tr>
<tr>
<td>RE</td>
<td><strong>0.3965</strong></td>
<td><strong>0.3306</strong></td>
<td><strong>0.3572</strong></td>
<td><strong>0.3839</strong></td>
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<tr>
<td>Standard Deviation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE</td>
<td><strong>0.1509</strong></td>
<td><strong>0.1483</strong></td>
<td><strong>0.1420</strong></td>
<td><strong>0.1907</strong></td>
</tr>
<tr>
<td>SE</td>
<td><strong>0.1183</strong></td>
<td><strong>0.1226</strong></td>
<td><strong>0.1169</strong></td>
<td><strong>0.1244</strong></td>
</tr>
<tr>
<td>CE</td>
<td><strong>0.1386</strong></td>
<td><strong>0.1257</strong></td>
<td><strong>0.1333</strong></td>
<td><strong>0.1204</strong></td>
</tr>
<tr>
<td>RE</td>
<td><strong>0.1544</strong></td>
<td><strong>0.1316</strong></td>
<td><strong>0.1464</strong></td>
<td><strong>0.1666</strong></td>
</tr>
</tbody>
</table>

#### Panel C

<table>
<thead>
<tr>
<th>Acquirers</th>
<th>CRS</th>
<th>DRS</th>
<th>IRS</th>
</tr>
</thead>
<tbody>
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<td>N</td>
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<td>128</td>
<td>3</td>
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<td>Mean</td>
<td><strong>0.8814</strong></td>
<td><strong>0.6334</strong></td>
<td><strong>0.4163</strong></td>
</tr>
<tr>
<td>SE</td>
<td><strong>1.00</strong></td>
<td><strong>0.8130</strong></td>
<td><strong>0.9298</strong></td>
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<tr>
<td>Targets</td>
<td>DRS</td>
<td>IRS</td>
<td></td>
</tr>
<tr>
<td>N</td>
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<td>4</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td><strong>0.6742</strong></td>
<td><strong>0.8713</strong></td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td><strong>0.7974</strong></td>
<td><strong>0.8838</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CE</td>
<td>RE</td>
<td>CAR</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Value</td>
<td>55.95</td>
<td>0.4708**b</td>
<td>0.2901***c</td>
</tr>
<tr>
<td></td>
<td>0.5315***a</td>
<td>0.3586</td>
<td>0.2504***c</td>
</tr>
<tr>
<td></td>
<td>-0.0300*a</td>
<td>0.0090</td>
<td>-0.0016</td>
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</table>

<table>
<thead>
<tr>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 0.2652 0.1313 0.2400</td>
</tr>
<tr>
<td>CE 0.1703 0.1260 0.2652</td>
</tr>
<tr>
<td>CAR 0.0364 0.0499 0.0181</td>
</tr>
</tbody>
</table>

Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level; they refer to the significance level of difference within groups, as indicated by the one-way ANOVA analysis;

a: comparison between CRS and DRS firms; b: Comparison between DRS and IRS firms; c: Comparison between IRS and CRS firms.

@: comparison between positive CAR buyers and negative CAR buyers;
@@: comparison between Tobin Q>1 buyers (targets) and Tobin Q<1 buyers (targets);
©: comparison between business-focusing acquisitions and business-diversifying acquisitions.

This table presents the summary statistics of efficiency for acquirers and targets.

In panel A, we divide the acquirers into groups according to their geographical diversification and business diversification:
- Geographical focus (Geography-focusing acquisition): the headquarters of an acquirer and its target are in different countries/states;
- Geographical diversification (Geography-diversifying acquisition): the headquarters of an acquirer and its target are in the same state;
- Business focus (Business-focusing acquisition): an acquirer and its target belong to the same insurance sector;
- Business diversification (Business-diversifying acquisition): an acquirer and its target belong to different insurance sectors.

In panel B, we divide acquirers into groups according to whether they earn a positive abnormal return around the 3-day window (-1, +1), or whether their Q value is greater than 1 at the end of one year before takeover. Similar classification is done for public targets.

In panel C, we tabulate the efficiency and cumulative abnormal returns versus the returns to scale of firms, where CRS=constant returns to scale, DRS=decreasing returns to scale, IRS=increasing returns to scale.

The efficiency of a firm is the efficiency score at the end of one year prior to the acquisition announcement, where TE=technical efficiency; SE=scale efficiency; CE=cost efficiency; RE=revenue efficiency.

The CAR in this table is the cumulative abnormal return for the 3-day event window (-1, +1).
Table 12
Summary statistics of efficiency for divesting firms

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Sell other countries/state, unrelated assets</th>
<th>Sell other countries/state, related assets</th>
<th>Sell same state, unrelated assets</th>
<th>Sell same state, related assets</th>
<th>Sell other countries/states assets</th>
<th>Sell same state assets</th>
<th>Sell unrelated assets</th>
<th>Sell related assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>30</td>
<td>30</td>
<td>9</td>
<td>17</td>
<td>60</td>
<td>26</td>
<td>39</td>
<td>47</td>
</tr>
<tr>
<td>Mean</td>
<td>0.6406</td>
<td>0.6454</td>
<td>0.7065</td>
<td>0.6301</td>
<td>0.6430</td>
<td>0.6565</td>
<td>0.6558</td>
<td>0.6399</td>
</tr>
<tr>
<td>SE</td>
<td>0.7905*a</td>
<td>0.7837</td>
<td>0.8992**b</td>
<td>0.8603*c</td>
<td>0.7871</td>
<td>0.8738***@</td>
<td>0.8156</td>
<td>0.8114</td>
</tr>
<tr>
<td>CE</td>
<td>0.4993</td>
<td>0.5047</td>
<td>0.4846</td>
<td>0.4005*c</td>
<td>0.5020</td>
<td>0.4296*@</td>
<td>0.4959</td>
<td>0.4670</td>
</tr>
<tr>
<td>RE</td>
<td>0.3815</td>
<td>0.3654</td>
<td>0.5461**b</td>
<td>0.3874</td>
<td>0.3734</td>
<td>0.4423</td>
<td>0.4195</td>
<td>0.3733</td>
</tr>
<tr>
<td>Standard Deviation</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE</td>
<td>0.1533</td>
<td>0.1158</td>
<td>0.2610</td>
<td>0.1872</td>
<td>0.1347</td>
<td>0.2136</td>
<td>0.1819</td>
<td>0.1439</td>
</tr>
<tr>
<td>SE</td>
<td>0.1330</td>
<td>0.1436</td>
<td>0.1530</td>
<td>0.0980</td>
<td>0.1373</td>
<td>0.1183</td>
<td>0.1435</td>
<td>0.1332</td>
</tr>
<tr>
<td>CE</td>
<td>0.1802</td>
<td>0.1400</td>
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<td>0.1117</td>
<td>0.1600</td>
<td>0.1777</td>
<td>0.1981</td>
<td>0.1388</td>
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<tr>
<td>RE</td>
<td>0.1938</td>
<td>0.1370</td>
<td>0.3033</td>
<td>0.2229</td>
<td>0.1666</td>
<td>0.2592</td>
<td>0.2302</td>
<td>0.1710</td>
</tr>
<tr>
<td>Panel B</td>
<td>Positive CAR</td>
<td>Negative CAR</td>
<td>Tobin Q &gt;1</td>
<td>Tobin Q &lt;1</td>
<td>All listed divesting</td>
<td>All listed targets</td>
<td>All listed buyers</td>
<td>Industry average</td>
</tr>
<tr>
<td>N</td>
<td>50</td>
<td>36</td>
<td>62</td>
<td>18</td>
<td>86</td>
<td>32</td>
<td>136</td>
<td>6340</td>
</tr>
<tr>
<td>Mean</td>
<td>0.6421</td>
<td>0.6540</td>
<td>0.6502</td>
<td>0.6349</td>
<td>0.6471</td>
<td>0.6436</td>
<td>0.6378</td>
<td>0.6708</td>
</tr>
<tr>
<td>SE</td>
<td>0.8061</td>
<td>0.8233</td>
<td>0.8103</td>
<td>0.8379</td>
<td>0.8133</td>
<td>0.8729</td>
<td>0.8225</td>
<td>0.8966</td>
</tr>
<tr>
<td>CE</td>
<td>0.4668</td>
<td>0.4986</td>
<td>0.4599</td>
<td>0.5179</td>
<td>0.4801</td>
<td>0.4649</td>
<td>0.4701</td>
<td>0.4959</td>
</tr>
<tr>
<td>RE</td>
<td>0.3956</td>
<td>0.3924</td>
<td>0.4007</td>
<td>0.4018</td>
<td>0.3943</td>
<td>0.3692</td>
<td>0.3626</td>
<td>0.4412</td>
</tr>
<tr>
<td>Standard Deviation</td>
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<td></td>
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</tr>
<tr>
<td>TE</td>
<td>0.1563</td>
<td>0.1702</td>
<td>0.1605</td>
<td>0.1904</td>
<td>0.1614</td>
<td>0.1692</td>
<td>0.1499</td>
<td>0.1966</td>
</tr>
<tr>
<td>SE</td>
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<td>0.1201</td>
<td>0.1425</td>
<td>0.1320</td>
<td>0.1371</td>
<td>0.1124</td>
<td>0.1207</td>
<td>0.1275</td>
</tr>
<tr>
<td>CE</td>
<td>0.1640</td>
<td>0.1737</td>
<td>0.1484</td>
<td>0.2298</td>
<td>0.1679</td>
<td>0.1576</td>
<td>0.1336</td>
<td>0.1816</td>
</tr>
<tr>
<td>RE</td>
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<td>0.2295</td>
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<td>0.2553</td>
<td>0.2001</td>
<td>0.1717</td>
<td>0.1464</td>
<td>0.2142</td>
</tr>
</tbody>
</table>

Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level; they refer to the significance level of difference within groups, as indicated by the one-way ANOVA analysis. a comparison between Sell other countries/states, unrelated assets and the other three categories; b: Comparison between Sell same state, unrelated assets and Sell other countries/states, unrelated assets; c: Comparison between Sell same state, related assets and Sell other countries/states, unrelated assets. @: comparison between Sell other countries/states assets and sell same state assets.

This table presents the summary statistics of efficiency for divesting firms. In panel A, we divide the divesting firms into groups according to their geographical diversification and business diversification. “Sell other countries/states assets” means that a firm sells assets that are located in a state different from its headquarters; “Sell same states assets” means that a firm divests assets that are located in the same state as its headquarters; “Sell related assets” indicates that the divested assets and the seller belong to the same insurance sector; “Sell unrelated assets” indicates that the divested assets and the seller belong to different insurance sectors, as identified by the SNL DataSource. In panel B, we divide divesting firms into groups according to whether they earn a positive abnormal return around the 3-day window (-1, +1), or whether their Q value is greater than 1 at the end of one year before takeover. In panel C, available from the authors, we tabulate the efficiency and cumulative abnormal returns versus the returns to scale of firms, where CRS=constant returns to scale, DRS=decreasing returns to scale, IRS=increasing returns to scale. The efficiency of a firm is the efficiency score at the end of one year prior to the divestiture announcement, where TE=technical efficiency; SE=scale efficiency; CE=cost efficiency; RE=revenue efficiency. The CAR in this table is the cumulative abnormal return for the 3-day event window (-1, +1).
### Table 13
Acquirers’ abnormal returns and efficiency—WLS regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Efficiency variable</th>
<th>TE</th>
<th>Lag1 TE</th>
<th>SE</th>
<th>Lag1 SE</th>
<th>CE</th>
<th>Lag1 CE</th>
<th>Lag2 CE</th>
<th>RE</th>
<th>Lag1 RE</th>
<th>Lag2 RE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>0.0030</td>
<td>-0.0138</td>
<td>0.2087***</td>
<td>-0.0089</td>
<td>-0.0369</td>
<td>-0.0017</td>
<td>-0.0306</td>
<td>0.0405</td>
<td>-0.0469</td>
<td>-0.0374**</td>
</tr>
<tr>
<td>Geography-diversifying and business-focusing acquisition</td>
<td>(0.0363)</td>
<td>(0.0241)</td>
<td>(0.0406)</td>
<td>(0.0308)</td>
<td>(0.0314)</td>
<td>(0.0272)</td>
<td>(0.0237)</td>
<td>(0.0380)</td>
<td>(0.0303)</td>
<td>(0.0179)</td>
<td></td>
</tr>
<tr>
<td>Geography- and business-diversifying acquisition</td>
<td>-0.0439**</td>
<td>-0.0477***</td>
<td>-0.0439**</td>
<td>-0.0477***</td>
<td>-0.0365*</td>
<td>-0.0541***</td>
<td>-0.0137</td>
<td>-0.0481**</td>
<td>-0.0294*</td>
<td>-0.0160**</td>
<td></td>
</tr>
<tr>
<td>Geography- and business-diversifying acquisition</td>
<td>(0.0201)</td>
<td>(0.0103)</td>
<td>(0.0128)</td>
<td>(0.0123)</td>
<td>(0.0207)</td>
<td>(0.0104)</td>
<td>(0.0126)</td>
<td>(0.0197)</td>
<td>(0.0152)</td>
<td>(0.0072)</td>
<td></td>
</tr>
<tr>
<td>Geography- and business-diversifying acquisition</td>
<td>-0.0289</td>
<td>-0.0295**</td>
<td>-0.0370**</td>
<td>-0.0295*</td>
<td>-0.0267</td>
<td>-0.0345**</td>
<td>0.0042</td>
<td>-0.0373*</td>
<td>-0.0099</td>
<td>0.0031</td>
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</tr>
<tr>
<td>Geography- and business-diversifying acquisition</td>
<td>(0.0213)</td>
<td>(0.0135)</td>
<td>(0.0143)</td>
<td>(0.0153)</td>
<td>(0.0218)</td>
<td>(0.0132)</td>
<td>(0.0140)</td>
<td>(0.0209)</td>
<td>(0.0173)</td>
<td>(0.0085)</td>
<td></td>
</tr>
<tr>
<td>Geography- and business-diversifying acquisition</td>
<td>-0.0142</td>
<td>-0.0066</td>
<td>0.0004</td>
<td>-0.0058</td>
<td>-0.0112</td>
<td>-0.0150</td>
<td>0.0227</td>
<td>-0.0219</td>
<td>0.0115</td>
<td>0.0240</td>
<td></td>
</tr>
<tr>
<td>Relative size of target to acquirer (log)</td>
<td>0.0089***</td>
<td>0.0143***</td>
<td>0.0071***</td>
<td>0.0156***</td>
<td>0.0078**</td>
<td>0.0140***</td>
<td>0.0111***</td>
<td>0.0083***</td>
<td>0.0131***</td>
<td>0.0123***</td>
<td></td>
</tr>
<tr>
<td>Cash payment dummy</td>
<td>(0.0027)</td>
<td>(0.0028)</td>
<td>(0.0024)</td>
<td>(0.0028)</td>
<td>(0.0030)</td>
<td>(0.0029)</td>
<td>(0.0026)</td>
<td>(0.0028)</td>
<td>(0.0027)</td>
<td>(0.0022)</td>
<td></td>
</tr>
<tr>
<td>Whether acquirer has ownership in target before takeover</td>
<td>(0.0018)</td>
<td>0.0064</td>
<td>0.0034</td>
<td>0.0053</td>
<td>0.0023</td>
<td>0.0056</td>
<td>-0.0019</td>
<td>0.0020</td>
<td>0.0077</td>
<td>-0.0025</td>
<td></td>
</tr>
<tr>
<td>Acquirer buys more than once</td>
<td>0.0260</td>
<td>(0.0055)</td>
<td>(0.0061)</td>
<td>(0.0061)</td>
<td>(0.0065)</td>
<td>(0.0057)</td>
<td>(0.0061)</td>
<td>(0.0063)</td>
<td>(0.0055)</td>
<td>(0.0052)</td>
<td></td>
</tr>
<tr>
<td>within a year</td>
<td>0.0087</td>
<td>-0.0172</td>
<td>-0.0037</td>
<td>-0.0138</td>
<td>0.0016</td>
<td>-0.0175</td>
<td>-0.0036</td>
<td>-0.0118</td>
<td>-0.0067</td>
<td>-0.0088</td>
<td></td>
</tr>
<tr>
<td>Size of acquirer (log equity)</td>
<td>(0.0153)</td>
<td>(0.0182)</td>
<td>(0.0142)</td>
<td>(0.0183)</td>
<td>(0.0090)</td>
<td>(0.0177)</td>
<td>(0.0157)</td>
<td>(0.0124)</td>
<td>(0.0171)</td>
<td>(0.0135)</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>0.0027</td>
<td>(0.0019)</td>
<td>(0.0025)</td>
<td>(0.0021)</td>
<td>(0.0020)</td>
<td>(0.0021)</td>
<td>(0.0021)</td>
<td>(0.0028)</td>
<td>(0.0022)</td>
<td>(0.0016)</td>
<td></td>
</tr>
<tr>
<td>Insiders (0-5%)</td>
<td>0.0707***</td>
<td>0.0305</td>
<td>-0.1290***</td>
<td>0.0096</td>
<td>0.1372***</td>
<td>0.0372***</td>
<td>0.0364***</td>
<td>0.0381</td>
<td>0.0851***</td>
<td>0.0374***</td>
<td></td>
</tr>
<tr>
<td>Insiders (5-25%)</td>
<td>(0.0252)</td>
<td>(0.0193)</td>
<td>(0.0300)</td>
<td>(0.0303)</td>
<td>(0.0257)</td>
<td>(0.0181)</td>
<td>(0.0170)</td>
<td>(0.0241)</td>
<td>(0.0211)</td>
<td>(0.0172)</td>
<td></td>
</tr>
<tr>
<td>Insiders (25-50%)</td>
<td>0.0006</td>
<td>(0.0033)</td>
<td>(0.0030)</td>
<td>(0.0035)</td>
<td>(0.0029)</td>
<td>(0.0026)</td>
<td>(0.0029)</td>
<td>(0.0028)</td>
<td>(0.0036)</td>
<td>(0.0026)</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.0011*</td>
<td>-0.0004</td>
<td>-0.0003</td>
<td>0.0001</td>
<td>-0.0017***</td>
<td>0.0005</td>
<td>0.0002</td>
<td>-0.0008</td>
<td>0.0004</td>
<td>0.0002</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>0.4782</td>
<td>0.5084</td>
<td>0.6067</td>
<td>0.6982</td>
<td>0.5804</td>
<td>0.5333</td>
<td>0.3082</td>
<td>0.3271</td>
<td>0.4196</td>
<td>0.5984</td>
<td></td>
</tr>
</tbody>
</table>
| **Note:** ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level; Standard errors of coefficients of regressions appear in parentheses. This table presents the weighted-least-square (WLS) regression analysis to test the relationships of a firm’s efficiency and its abnormal returns at an acquisition announcement. The dependent variable is the cumulative abnormal returns of acquirers over the event window (-1, +1). The independent variables include a set of dummy variables that indicate whether an acquisition is (1) Geography diversifying and business-focusing; (2) Geography- and business-diversifying; (3) Geography-focusing and business-diversifying, with the omitted category being geography- and business-focusing acquisitions. Other independent variables include the payment method (=1 if cash payment; and 0 for others), the size of an acquirer, relative size of a target to its acquirer, the relationship of an acquirer and its target before takeover (=1 if an acquirer has ownership in its target before takeover, and 0 otherwise), and whether an acquirer is a “frequent buyer” in the market. Three variables for insider ownership are defined following Morck, Shleifer and Vishny (1988) and Hubbard and Palia (1995) to control for the effect of managerial incentives on the abnormal returns at the announcement of a transaction. For each regression, only one efficiency variable enters the model, where TE=technical efficiency; SE=scale efficiency; CE=cost efficiency; RE=revenue efficiency. Lag1 means efficiency score at the end of one year prior to the acquisition announcement; Lag2 means efficiency score at the end of two years prior to the acquisition announcement. The weight used is the reciprocal of the absolute value of OLS residuals.**
Table 14
Divesting firms’ abnormal returns and efficiency—WLS regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>TE</th>
<th>Lag1 TE</th>
<th>SE</th>
<th>Lag1 SE</th>
<th>CE</th>
<th>Lag1 CE</th>
<th>Lag2 CE</th>
<th>RE</th>
<th>Lag1 RE</th>
<th>Lag2 RE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.0357</td>
<td>0.0840</td>
<td>0.0279</td>
<td>-0.0610</td>
<td>0.0425</td>
<td>0.0463</td>
<td>0.0390</td>
<td>0.0165</td>
<td>0.08813*</td>
<td>0.09684*</td>
</tr>
<tr>
<td></td>
<td>(0.0898)</td>
<td>(0.0512)</td>
<td>(0.1082)</td>
<td>(0.0657)</td>
<td>(0.0815)</td>
<td>(0.0467)</td>
<td>(0.0474)</td>
<td>(0.0595)</td>
<td>(0.0504)</td>
<td>(0.0482)</td>
</tr>
<tr>
<td>Divest unrelated assets</td>
<td>-0.0013</td>
<td>-0.0084</td>
<td>-0.0026</td>
<td>-0.0189*</td>
<td>-0.0038</td>
<td>-0.0083</td>
<td>-0.0067</td>
<td>-0.0131</td>
<td>0.0065</td>
<td>0.0017</td>
</tr>
<tr>
<td></td>
<td>(0.0122)</td>
<td>(0.0099)</td>
<td>(0.0134)</td>
<td>(0.0106)</td>
<td>(0.0138)</td>
<td>(0.0096)</td>
<td>(0.0100)</td>
<td>(0.0133)</td>
<td>(0.0103)</td>
<td>(0.0072)</td>
</tr>
<tr>
<td>Relative size of</td>
<td>0.01095**</td>
<td>0.01604***</td>
<td>0.0162**</td>
<td>0.01617***</td>
<td>0.0128**</td>
<td>0.01564***</td>
<td>0.01206***</td>
<td>0.01635***</td>
<td>0.01494***</td>
<td>0.0132***</td>
</tr>
<tr>
<td>divested assets to</td>
<td>(0.0044)</td>
<td>(0.0037)</td>
<td>(0.0065)</td>
<td>(0.0039)</td>
<td>(0.0052)</td>
<td>(0.0036)</td>
<td>(0.0031)</td>
<td>(0.0041)</td>
<td>(0.0036)</td>
<td>(0.0030)</td>
</tr>
<tr>
<td>divesting firm (log)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divesting firm sells</td>
<td>-0.0072</td>
<td>0.0078</td>
<td>-0.0207*</td>
<td>-0.0008</td>
<td>0.0026</td>
<td>0.0109</td>
<td>-0.0074</td>
<td>-0.0192</td>
<td>0.0135</td>
<td>0.0100</td>
</tr>
<tr>
<td>more than once within</td>
<td>(0.0136)</td>
<td>(0.0120)</td>
<td>(0.0109)</td>
<td>(0.0084)</td>
<td>(0.0155)</td>
<td>(0.0121)</td>
<td>(0.0093)</td>
<td>(0.0125)</td>
<td>(0.0113)</td>
<td>(0.0108)</td>
</tr>
<tr>
<td>a year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of divesting firm</td>
<td>-0.0019</td>
<td>-0.0056</td>
<td>-0.0006</td>
<td>-0.0012</td>
<td>-0.0011</td>
<td>-0.0029</td>
<td>-0.0072*</td>
<td>0.0007</td>
<td>-0.0086*</td>
<td>-0.0055</td>
</tr>
<tr>
<td>(log equity)</td>
<td>(0.0074)</td>
<td>(0.0044)</td>
<td>(0.0080)</td>
<td>(0.0042)</td>
<td>(0.0067)</td>
<td>(0.0048)</td>
<td>(0.0040)</td>
<td>(0.0058)</td>
<td>(0.0044)</td>
<td>(0.0041)</td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.0539</td>
<td>-0.0612**</td>
<td>-0.0482</td>
<td>0.08341**</td>
<td>-0.1010*</td>
<td>-0.0585</td>
<td>0.0448</td>
<td>-0.0939**</td>
<td>-0.0670**</td>
<td>0.1246***</td>
</tr>
<tr>
<td></td>
<td>(0.0485)</td>
<td>(0.0289)</td>
<td>(0.0759)</td>
<td>(0.0401)</td>
<td>(0.0545)</td>
<td>(0.0390)</td>
<td>(0.0268)</td>
<td>(0.0406)</td>
<td>(0.0255)</td>
<td>(0.0234)</td>
</tr>
<tr>
<td>Insidera (0-5%)</td>
<td>0.0097</td>
<td>-0.0010</td>
<td>0.0066</td>
<td>0.0058</td>
<td>0.0078</td>
<td>0.0019</td>
<td>0.0007</td>
<td>0.0091</td>
<td>-0.0016</td>
<td>-0.0062</td>
</tr>
<tr>
<td></td>
<td>(0.0089)</td>
<td>(0.0059)</td>
<td>(0.0089)</td>
<td>(0.0064)</td>
<td>(0.0091)</td>
<td>(0.0057)</td>
<td>(0.0065)</td>
<td>(0.0070)</td>
<td>(0.0062)</td>
<td>(0.0058)</td>
</tr>
<tr>
<td>Insiderb (5-25%)</td>
<td>-0.0015</td>
<td>-0.0004</td>
<td>-0.0010</td>
<td>-0.0022</td>
<td>-0.0017</td>
<td>-0.0007</td>
<td>0.0000</td>
<td>-0.0020*</td>
<td>0.0001</td>
<td>0.0007</td>
</tr>
<tr>
<td></td>
<td>(0.0012)</td>
<td>(0.0012)</td>
<td>(0.0015)</td>
<td>(0.0013)</td>
<td>(0.0012)</td>
<td>(0.0011)</td>
<td>(0.0011)</td>
<td>(0.0011)</td>
<td>(0.0011)</td>
<td>(0.0009)</td>
</tr>
<tr>
<td>Insiderc (&gt;25%)</td>
<td>-0.0001</td>
<td>-0.0004</td>
<td>-0.0002</td>
<td>0.0005</td>
<td>0.0002</td>
<td>-0.0003</td>
<td>-0.0005</td>
<td>0.0000</td>
<td>-0.0007*</td>
<td>-0.0006</td>
</tr>
<tr>
<td></td>
<td>(0.0004)</td>
<td>(0.0005)</td>
<td>(0.0007)</td>
<td>(0.0006)</td>
<td>(0.0006)</td>
<td>(0.0004)</td>
<td>(0.0004)</td>
<td>(0.0005)</td>
<td>(0.0004)</td>
<td>(0.0004)</td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.3294</td>
<td>0.4638</td>
<td>0.2958</td>
<td>0.5126</td>
<td>0.4538</td>
<td>0.4240</td>
<td>0.5206</td>
<td>0.5679</td>
<td>0.4686</td>
<td>0.7692</td>
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<tr>
<td>Observations</td>
<td>36</td>
<td>47</td>
<td>36</td>
<td>47</td>
<td>44</td>
<td>47</td>
<td>44</td>
<td>36</td>
<td>47</td>
<td>44</td>
</tr>
</tbody>
</table>

Note: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level; Standard errors of coefficients of regressions appear in parentheses.

This table presents the weighted-least-square (WLS) regression analysis to test the relationships of a firm’s efficiency and its abnormal returns at a divestiture announcement. The dependent variable is the cumulative abnormal returns of divesting firms over the event window (-1, +1). The independent variables include a dummy variable indicating whether the divested assets are related to the core businesses of divesting firms (1 if unrelated and 0 otherwise), the relative size of the divested assets to the divesting firm and whether the divesting firm sells more than once within a year. Three variables for insider ownership are defined following Morck, Shleifer and Vishny (1988) and Hubbard and Palia (1995) to control for the effect of managerial incentives on the abnormal returns at the announcement of a transaction. For each regression, only one efficiency variable enters the model, where TE=technical efficiency; SE=scale efficiency; CE=cost efficiency; RE=revenue efficiency. Lag1 means efficiency score at the end of one year prior to the announcement date; Lag2 means efficiency score at the end of two years prior to the announcement date. The weight used is the reciprocal of the absolute value of OLS residuals.
References


Myers, Stewart C., and Nicholas S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.


