

12-20-2009

Efficiency of Internal Capital Allocation and the Success of Acquisitions

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Efficiency of Internal Capital Allocation and the Success of Acquisitions

A Dissertation

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy
in
Financial Economics

by

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December, 2009

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Abstract

Does efficient internal investment generally translate into successful external investment activities? In this research we use the internal capital allocation efficiency as a proxy for the efficiency of internal investment, and study whether firms that are internally efficient also make efficient external investment decisions. Our sample consists of multi-segment acquirers that announce acquisitions between 1986 and 2003 (only completed deals are included). We estimate short-term and long-term abnormal performance, excess value and operating performance around mergers in order to measure the success of acquisitions (external investment decisions). Our results indicate that internal capital allocation efficiency is indeed a significant factor in the success of acquisition. Firms that are internally efficient also make efficient external investment decisions. Conversely, internally inefficient firms are also externally inefficient. Thus, our results indicate that internal efficiency can be used as a predictor of the success and efficiency of external investment decisions.

Key words: internal capital market, acquisition, excess value.

I. Introduction

Despite the controversial views on whether mergers contribute to or erode firm value, acquisition activities have never faded out of the market since their emergence. Decades of experience tells us that while some of the acquisitions may turn out to be great success, others result in disastrous loss. Can we successfully predict good acquisitions from bad ones? Since acquisitions can be viewed as major investment decisions, our view is that efficient internal investment generally translates into successful external investment activities (thus mergers, in our study). In this study we use the internal capital allocation (ICM) efficiency as a proxy for the efficiency of internal investment; therefore our sample consists of multi-segment acquirers who have announced acquisitions between years 1986 and 2003 (only completed deals are included). Our study aims at investigating whether firms that are efficient in their internal capital allocation are also efficient and therefore successful in their external investment decisions. Conversely, are internally inefficient firms also inefficient in their external investment activities? As a counter-argument to this “management efficiency” hypothesis, Roll’s (1986) hubris theory implies that a series of successful investment could lead to overconfidence. If overconfidence does play a key role in firms’ acquisition transactions, then firms with successful pre-acquisition investment activities may overpay their acquisition targets, which may result in more value loss for the acquirers.

One added feature of conglomerate firms as compared to focused firms is the existence of internal capital markets. There have been ample studies over the last two decades about whether

internal capital markets contribute to or erode firm value. The efficient internal capital markets hypothesis argues that since headquarters face credit constraints, the creation of internal capital markets add to firm value by facilitating headquarters in winner-picking (Stein, 1997). On the other hand, the inefficient internal capital markets hypothesis argues that rent-seeking behavior of divisional managers will result in inefficient cross-subsidization across divisions, which is detrimental to firm value (Scharfstein and Stein, 2000).

It is a consensus that investment decisions are probably the most important decisions facing a firm. Since managers are inclined to distort investment decisions towards their personal benefits when conflict of interest occurs between managers and shareholders, efficient firms, in order to maximize shareholder value, have to ensure both quality managers and effective monitoring forces or incentive schemes to induce and enforce the best investment decisions by managers. Efficient internal capital allocation, thus, reflects that despite the negative aspects of internal capital markets and conglomeration, these firms have found an efficient balance between sufficient monitoring and sufficient incentivizing of managers to induce efficient allocation decisions internally. In this research, we study whether such “efficient” firms also make efficient decisions with regard to their external investment. Thus our research complements extant studies on the impact of governance and managerial incentives on efficiency and success of acquisitions. We argue that internal allocation efficiency is a consequence of balance between efficient governance and sufficient incentivizing. So by using our metric of internal efficiency, we are able to simultaneously incorporate and control for effective governance and incentives in our analysis.

Using the efficiency of internal capital allocations (the measure for internal capital allocation is discussed in detail in section IV), we classify firms as first being active or inactive (firms that have made zero internal funds subsidy or transfer among different segments are classified as internal capital allocation inactive firms). The active firms are further classified as efficient or inefficient. Hereafter, we will refer to firms with efficient internal capital allocations as “ICM efficient firms”, firms with inefficient internal capital allocations as “ICM inefficient firms”, and firms with inactive internal capital allocations as “ICM inactive firms.”

We estimate short-term and long-term abnormal performance, excess value and operating performance in order to measure the success of external investment decisions. Specifically, we mainly aim at answering the following: 1) Event period abnormal returns - are firms with efficient internal capital allocation more likely to make successful acquisitions? 2) Is the market efficient enough to absorb all the effects of the acquisitions at or around the announcement, or is the effect spread over a longer period? 3) Do firms with efficient internal allocation have higher excess values than inefficient firms? How does the excess value change around the acquisitions? 4) And finally we investigate whether operating performance improves post-acquisition for firms with efficient internal capital allocation.

In our first hypothesis, we measure the efficiency or success of acquisition using abnormal return around the acquisition announcement. If efficient internal capital allocators also make efficient external investment decisions, we would expect the abnormal returns to be positive and/or higher for the group relative to the inefficient internal capital allocators. Our results show that the mean cumulative abnormal return (market model, equally weighted index) within event window (-3,

+3) is -0.54% (significant at the 1% level) for the ICMS (ICM based on net subsidy within a firm) inefficient firms; -0.57% (significant at the 5% level) for the ICMS inactive firms; and 2.26% (significant at 5%) for the ICMS efficient firms. This is consistent with our predictions. To further investigate whether method of payment and relatedness play an important role in the announcement period CARs, we conduct sub-group event studies within each ICM efficiency group. The results show that at least for our sample of multi-segment acquirers, the effects of the internal capital allocation efficiency on announcement period CAR dominate those of method of payment and relatedness. A further regression with the acquirer's standardized CAR for event window (-3, +3) as the dependent variable, and independent variables including a dummy for ICMS efficiency as well as ICMS inefficiency, a dummy for all cash financing, and a dummy for relatedness of the merger, as well as other control variables, reinforces the above findings.

The second main hypothesis is that ICM efficient (inefficient) firms are expected to earn non-significant post-acquisition long-run abnormal returns. This implies that the market is efficient and quick in adjusting stock prices to new information. Nevertheless, if significant results are obtained, it could be interpreted as market under- or over-react to the acquisition announcements, or not all the information is available at the time of making the announcements. Using a calendar-time portfolio approach, our results do not show significant mispricing in the three years following the completion of the acquisitions. This is indicative that the market is rather efficient in absorbing the effects of the acquisitions at or around their announcements. We also interpret this result as suggesting that the market correctly perceives the nature of the acquisition and fully incorporates the ability of the acquirer into their pricing.

As part of our third hypothesis, we measure the efficiency or success of acquisition using the change in excess value. If efficient internal allocators also make efficient external investment decisions, we would expect to see excess value increase from pre to post acquisition for these acquirers. Results from this part of analysis bring us some surprises. The evidence shows that pre-acquisition both efficient and inefficient firms have lower excess values compared to the inactive firms. However, three years after the merger announcement, the excess values of the inefficient and inactive group decrease, whereas that of the efficient group increases, although none of them is significant. Between-group comparison shows that ICM inactive firms are having significantly higher mean excess value compared to the ICM inefficient firms and ICM efficient firms at the fiscal year end before the acquisition announcement. However, three years after the acquisition, the difference in excess value between ICM inactive and ICM efficient firms becomes insignificant; whereas the excess value of the ICM inefficient firms are significantly lower compared to the ICM inactive firms (using both sales and asset multiples) and ICM efficient firms (using asset multiples). Therefore, the ICM efficient firms seem to be catching up with the inactive firms (in terms of excess values) three years after the merger announcement. To detect whether prior internal capital allocation efficiency is a main contributor to the change in excess values, we regress the acquirer's change in excess values on several dummy variables (including ICM efficiency as well as ICM inefficiency, all cash financing, and relatedness of the merger) as well as various control variables. Regression results show that the coefficient on the efficient internal capital allocation dummy is significantly greater than zero when excess value is based on sales multiples. These results tell us again that the internal capital efficient firms make value enhancing external investment decisions, which lead to an increase in their excess value post-acquisition.

Finally we investigate the acquirer's operating performance before and following acquisitions. We use two measures of operating performance: the ratio of earnings before interest, taxes and depreciation to total assets (EBITD/AT) and the ratio of sales to total assets (SALE/AT). We examine the operating performance of the acquirers in the pre-announcement year and in three years after the announcement year to make the results comparable to those from the excess value analysis. Results show that the ICM inactive firms have significantly higher EBITD/AT ratio than both the ICM inefficient and efficient firms in the pre-announcement year. However, these differences become insignificant three years after the announcement year; moreover, the ICM efficient firms have the higher operating performance compared to the inactive firms post-acquisition. Regressions with the change in operating performance from pre-announcement year to three years after indicate that the coefficient on the inefficient internal capital allocation dummy is significantly less than zero. Thus, while internal capital efficiency does not necessarily enhance operating performance, they do not erode it either. Inefficient firms on the other hand erode operating performance post-acquisition.

The next section discusses relevant previous studies. Section III describes the hypotheses. Data and the construction of variables are discussed in section IV. Section V presents the methodology and results. Finally, section VI concludes.

II. Literature Review

2.1 Mergers and Acquisitions: Theory and Evidence

Mergers can generally fit into one of the three categories: horizontal, vertical, and conglomerate.

A horizontal merger combines firms that operate in the same lines of businesses. A vertical merger combines firms that are involved in different stages of the production or marketing process, such as a merger with a supplier or a customer. And a conglomerate merger is a combination of unrelated firms, which is also called diversified companies.

Motives for firms' acquisition transactions broadly fall into two groups. Supporters of management utility maximization hypothesis argue that managers may overpay the acquisition targets in order to realize personal gains at the expense of shareholders. There are no expected economic gains for this type of acquisitions. Although it does not preclude target firms from obtaining positive abnormal returns, they come as a loss for the acquiring firms' shareholders.

On the other hand, supporters of the shareholder wealth maximization hypothesis view acquisitions as value enhancing for the acquiring firms. This implies a positive expected economic gain from the acquisition. Although the distribution of the economic gains between the acquirer and the target depends on the competitiveness of the acquisition market, the acquiring firm's shareholders are expected to earn a normal rate of return at least. Several motivations are consistent with the shareholder value maximization view. First, financial motivations hold that since either the acquirer or the target may possess excess cash, acquisitions provides an

opportunity to rearrange these excess cash more efficiently; or that acquisitions may reduce the expected bankruptcy costs of the new entity by reducing the probability of default and increase its debt capacity. Second, economic motivations are mainly stressing the gains accrued from economies of scale or economies of scope. Third, if the acquirer has information concerning the target firm that is not available to others in the market, it may take advantage of this asymmetric information by conducting acquisitions. And fourth, acquisitions could be undertaken out of the desire for corporate control. Due to differential efficiency in managerial abilities, acquisitions can create value by replacing an incompetent management in the target firm or by enacting a value maximizing strategy.

Event returns, based on market model adjusted for beta risk, broadly show the following patterns: targets earn positive 20-25% event returns in mergers, in contrast to positive 30-40% in tender offers; buyers earn positive 1-2% event returns in mergers, compared to negative 1-2% in tender offers¹.

Recent market-timing models posit that misvaluation drives mergers (Rhodes-Kropf and Viswanathan, 2004; Shleifer and Vishny, 2003). It implies that if the target is less overvalued than the acquirer, the acquiring firm's long-term shareholders can benefit from the stock-financed acquisitions even if no real synergy is realized. Savor and Lu (2009) and Rhodes-Kropf, Robinson, and Viswanathan (2005) find evidence supporting this hypothesis.

Roll's (1986) hubris theory links takeover activities with the winner's curse. It implies that firms with successful past experience are more likely to be influenced by hubris. Malmendier and Tate

¹ Weston, J. Fred, and Samuel C. Weaver, Mergers and Acquisitions, McGraw-Hill, 2001. P94.

(2008) find evidence that when CEOs become overconfident, they may overestimate their ability to generate returns and therefore engage in value-destroying acquisitions by overpaying the target. And this effect becomes stronger when overconfident CEOs have enough internally generated funds to finance the acquisition.

Morck, Shleifer, and Vishny (1990) investigate whether bad acquisitions are driven by managerial objectives, i.e. bidder firms with “bad managers” systematically overpay in acquisitions in pursuit of personal objectives other than maximizing shareholders’ value. They conclude “firms with bad managers (identified by poor firm performance relative to its industry) do much worse in making acquisitions than firms with good managers,” and the negative return to acquirers with bad managers shows a “manifestation of agency problems in the firm.” These findings are inconsistent with a particular version of the hubris hypothesis for acquisitions, which predicts that “managers of better performing firms are more arrogant and therefore overestimate the target’s value under their control by more.”

Agrawal and Jaffe (2000) review the literature on long-run stock returns following acquisitions, and conclude that the long-run performance is negative following acquisitions and is non-negative (and perhaps even positive) following tender offers (Agrawal, Jaffe and Mandelker, 1992; Loughran and Vijh, 1997; Rau and Vermaelen, 1998). The sample of Agrawal, Jaffe and Mandelker (1992) covers the period from 1955 to 1987; Loughran and Vijh’s (1997) sample ranges from 1970 to 1989; and Rau and Vermaelen (1998) investigate the sample period between 1980 and 1991.

Agrawal and Jaffe (2000) also review the literature on the four explanations for the post-merger underperformance, namely the speed of adjustment, the EPS myopia, the method of payment, and the performance extrapolation explanations. Agrawal, Jaffe and Mandelker (1992) argue that the negative post-acquisition abnormal return may be due to the slow adjustment of the market to the news of acquisitions. However, they do not find evidence to support the speed of adjustment explanation. Since acquiring a target with a lower price-earnings ratio than the acquirer's by paying with shares may result in an inflation of the acquirer's EPS, the EPS myopia hypothesis predicts that managers might be more willing to overpay for this type of acquisitions. The market might overvalue these acquirers initially which results in a negative post-acquisition performance for these firms. Rau and Vermaelen (1998) empirically test the EPS myopia hypothesis but fail to find supporting evidence.

Since firms may tend to issue shares when their stocks are overvalued, while use debt or retained earnings to finance when their stocks are undervalued (Myers and Majluf, 1984), the method of payment hypothesis expect equity prices to drop following stock acquisitions. While recent studies generally support this hypothesis, the method of payment explanation is still controversial to a certain degree. Many studies (Franks, Harris and Mayer, 1988; Gregory, 1997; Loughran and Vijh, 1997; Mitchell and Stafford, 2000) document stronger performance following acquisitions financed by cash rather than equity; nevertheless, Franks, Harris and Titman (1991) report insignificant results.

Rau and Vermaelen (1998) find strong evidence supporting the performance extrapolation hypothesis, which argues that managers of 'glamour' firms are more likely to be infected by

hubris (Roll, 1986). They conclude “the long-term underperformance of acquiring firms in mergers is not uniform across firms. It is predominantly caused by the poor post-acquisition performance of low book-to-market ‘glamour’ acquirers,” and “this conclusion is independent of the method of payment.”

2.2 *Conglomerate Mergers and “Diversification Discount”*

If looking at the motivations for firms’ diversification decision, we can largely classify them into three groups. First, the market-power hypothesis argues that firms diversify because they are seeking for the “conglomerate power”. Second, firms may diversify in order to exploit their excess capacity in their resources, such as their firm-specific knowledge or service or other productive factors. And third, the agency hypothesis says that in the absence of significant ownership stakes, managers may pursue value-reducing strategies to further their own interests at the expense of the firm’s owners. And conglomerate mergers seem to be a convenient way for them to realize these purposes.

There is mixed empirical evidence with regard to the conglomerate mergers. There seems to be little evidence supporting the market power hypothesis (Berry, 1974; Caves, 1981). Moreover, a diversification discount is widely documented in the literature. For example, Lang and Stulz (1994) find a negative relationship between firm diversification and Tobin’s q throughout 1980s. They further document that the Tobin’s q is lower for diversifies firms compared to specialized firms. Berger and Offek (1995) show evidence that during 1986-1991, diversified firms are traded at an average 13% to 15% discount compared to the sum of the imputed values of their segments. Taking the cyclical effect into consideration, Morck, Shleifer, and Vishny (1990)

provide evidence that mean return in related and unrelated acquisitions were not statistically or substantively different in the 1970s, but were so in the 1980s. Matsusaka (1993) find that market's responses to unrelated acquisitions were positive in the 1960s, neutral in the 1970s, and negative in the 1980s.

The agency cost view is at large consistent with the diversification discount. Some value-reducing agency problems include the following. 1) Value losses from overinvestment and cross-subsidization (Berger and Ofek, 1995; Rajan, Servaes, and Zingales, 2000; Scharfstein and Stein, 2000). (An extended review on internal capital market will be discussed in the next section.) 2) "Free cash flow" problem proposed by Jensen (1986). Jensen defines free cash flow as the cash flow in excess of that required to fund all positive net present values (NPV) projects. Since managers' control power as well as their compensation is linked to firm size, managers have incentives to grow their firms in excess of their value-maximizing level. Consistent with this view, Harford (1999) documents that cash-rich firms make value-decreasing acquisitions, and the acquisitions by these firms are more likely to be diversifying ones. Lang, Stulz, and Walking (1991) and Kaplan and Weisbach (1992) also provide consistent results. 3) Management entrenchment and empire building problems (Shleifer and Vishny, 1989; Denis, Denis, and Sarin, 1997; Amibud and Lev, 1981). Managers have an incentive to diversify into the lines of businesses in which they have a specialized skill or knowledge in order to entrench their management.

The resource view reflects an underlying heterogeneity of firms' resources. Firms with less valuable resources may diversify more than firms with more valuable resources. Some studies

related to the resource view include Montgomery and Wernerfelt (1992), Nelson and Winter (1982), and Teece (1982). Studies trying to relate the diversification activity with the macroeconomic situations find that antitrust restraints could have channeled growth by domestic firms in the direction of diversification (Baker, 1992; Shleifer and Vishny, 1991). There are also evidences that support the self-selection of diversified firms – as well as the self-selection of refocusing firms (Campa and Kedia, 2002).

2.3 Internal Capital Markets and Conglomerate Firm Value

The agency cost view is at large consistent with the diversification discount. One source of the agency costs is that divisional managers will involve in value-reducing rent-seeking activities, resulting in inefficient internal capital markets. A growing body of research addresses how overinvestment and inefficient cross-subsidization may result in the “diversification discount” for conglomerate firms (Berger and Ofek, 1995; Rajan, Servaes, and Zingales, 2000; Scharfstein and Stein, 2000). Scharfstein and Stein (2000) develop a two-tiered agency model to show how rent-seeking behavior of division managers may lead to inefficient cross-subsidies in internal capital markets. They argue that large socialist-type inefficiencies are more likely to occur when the divisions have a great deal of divergence in their strength, and when the CEO has low-powered incentives. Studies that provide evidences for the costs of internal capital markets include: Gertner, Powers, and Scharfstein (2001), Lamont (1997), Rajan, Servaes, and Zingales (2000), Scharfstein (1998), and Shin and Stulz (1998).

On the other hand, internal capital markets can also contribute to firm value. Supporters of the efficient internal capital markets argue that since the headquarters have better information about

the investment opportunities than external suppliers of capital, internal capital markets are more efficient than external capital markets. Stein (1997) constructs a model in which internal capital market creates value by headquarters doing “winner picking”. External capital market, being aware of the agency problem existing within a firm, will provide binding credit constraints to prevent overinvestment. Thus headquarters will tilt capital resource toward winners’ projects. If efficient cross-subsidization is implemented, the creation of an efficient internal capital market will enhance firm value. Hubbard and Palia (1999), Khanna and Tice (2001), and Maksimovic and Phillips (2002) find evidence that firms benefits from the existence of internal capital markets.

In this paper we study whether efficiency along one dimension of decision-making translates into efficiency along other dimensions of decision-making. Specifically, we study whether firms that make efficient internal investment decisions also make efficient external investment decisions. Since the early 1980s, we have seen a rise of equity-based compensation for U.S. CEOs (Hall and Liebman, 1998) and an increase in shareholdings by large institutional investors (Gompers and Metrick, 2001). Ample recent studies have addressed the relationship between corporate governance and firm performance. Issues being addressed include board size, board independence, board and ownership structure, CEO compensation and incentives, and CEO turnover, to name a few. The findings for these issues is mixed to a certain degree (Lehn and Zhao, 2006; Grinstein and Hribar, 2004; Bebchuk and Fried, 2003; Goyal and Park, 2002; Datta, Iskandar-Datta, and Raman, 2001; Brickley, Coles, and Jarrell, 1997; Rose and Shepard, 1997; Yermack, 1996; Jensen, 1993; Weisbach, 1988; and Demsetz and Lehn, 1985. We can only name a few since the reference on this topic is too long). The metric of internal efficiency used in

our analysis is able to simultaneously incorporate and control for effective governance and incentives, since the internal capital allocation efficiency is the consequence of balance between these effects. Therefore our research complements extant studies on the impact of governance and managerial incentives on efficiency and success of acquisitions.

III. Development of Hypotheses

3.1 What Should We Expect About The Announcement Period Performance For ICM Efficient (Inefficient) Firms?

Morck, Shleifer, and Vishny (1990) investigate whether bad acquisitions are driven by managerial objectives, i.e. bidder firms with “bad managers” systematically overpay in acquisitions in pursuit of personal objectives other than maximizing shareholders’ value. They employ two measures of past performance of the bidding firms to distinguish firms with good managers from those with bad managers: one is based on stock returns with dividends, and the other one is based on growth of income. The conclusion of their study is that firms with good managers (identified by good firm performance relative to its industry) experience higher announcement period performance in acquisitions than firms with bad managers, and the negative return to acquirers with bad managers shows a “manifestation of agency problems in the firm.”

This paper attempts to test the “management efficiency” hypothesis using a more refined measure, internal capital allocation efficiency, for pre-acquisition firm performance. To achieve efficient internal capital allocation, a firm has to find an efficient balance between sufficient monitoring and sufficient incentivizing of managers. Therefore our measure of internal investment efficiency is able to simultaneously incorporate and control for effective governance and sufficient incentives in our analysis. This measure is better able to tell how the firm is performing internally without having to compare it to other firms that may have different firm characteristics relative to the sample firm. Our sample consists of all conglomerate acquirers that make acquisition announcements between 1986 and 2003 (only completed deals are included). We assume that efficient firms will have efficient internal capital allocations, and firms that suffer from the most severe agency problems will involve in a lot of inefficient cross-subsidizations which results in inefficient internal capital allocations. Hence, we expect ICM efficient firms to make acquisitions that will increase firm value by exploring synergistic gains and/or taking advantage of an enlarged internal capital markets. On the other hand, since ICM inefficient firms suffer from the most severe agency problems, they are expected to derive private benefits from their acquisition transactions that are detrimental to firms’ value. Consequently, the market will react positively (negatively) to the announcement of acquisitions by ICM efficient (inefficient) firms. Therefore, our first hypothesis is: ICM efficient (inefficient) firms are expected to experience positive (negative) announcement period performance.

3.2 *What Should We Expect About The Long-Term Post-Acquisition Performance For ICM Efficient (Inefficient) Firms?*

Rau and Vermaelen (1998) find long-term underperformance of acquiring firms in mergers which is predominantly caused by the poor post-acquisition performance of low book-to-market ‘glamour’ acquirers. They regard it as strong evidence supporting the performance extrapolation hypothesis, which asserts that managers of ‘glamour’ firms are more likely to be infected by hubris (Roll, 1986). Rau and Vermaelen (1998) sort all acquirers in the sample into equal subsamples of ‘glamour’, ‘neutral’, and ‘value’ firms based on book-to-market ratio, with previous fiscal year book value taken from COMPUSTAT and the end of the announcement month market value taken from CRSP.

We argue that internal investment efficient firms make efficient acquisitions, thus efficient firms receive positive announcement period abnormal returns. Moreover, if internal efficiency fully predicts external acquisition success and the market is efficient in incorporating this information in the stock prices at the announcement of acquisitions, we shall expect the long-run abnormal returns to be insignificantly different from zero. Conversely, suppose the market is behaving rationally, and the managers are infected by hubris. Thus the hubris hypothesis predicts efficient bidders to have lower announcement period abnormal returns than the inefficient bidders since efficient bidders are more likely to suffer from hubris that they are inclined to overpay. Whereas if market is efficient in absorbing all the information with regards to the acquisition at or around the acquisition announcement, we shall still observe insignificant long-term abnormal returns for acquirers. However the market might have over- or under-reacted to the announcements or additional new information may be released to the market gradually so that significant long-run

abnormal returns maybe observed. In this case, we need to calculate the total value effect of both the announcement and the post-acquisition period to distinguish between the above two hypotheses. Since the hubris hypothesis implies a value loss from acquisitions, while the managerial efficiency hypothesis predicts a total value gain (loss) for ICM efficient (inefficient) firms. Therefore a complete test of the hubris hypothesis vs. the managerial efficiency hypothesis have to incorporate the results from both the short-run and the long-run studies, and this will also shed light on market efficiency. In summary, our second hypothesis is: ICM efficient firms are expected to earn non-significant post-acquisition long-run abnormal returns.

3.3 How Do The Pre-Announcement Excess Values Differ For ICM Efficient And Inefficient Firms? How Should Their Excess Values Change Following Acquisitions?

A diversification discount has been well documented in the literature, which leads to the conclusion of diversification being detrimental to firm value. (Refer to section two for a complete review on diversification's effect on firm value.) However, given the fact that numerous firms, especially a significant number of most prominent firms, do diversity and stay so, it is still an open question as to whether there is indeed a diversification discount, and whether the discount, if any, is indeed caused by diversification.

Two competing theories argue for and against the benefit of diversification respectively. Diversification adds to firm value since firms can realize synergistic gains from operating a diversified company. Alternatively, managers choose to diversify in order to reap personal gains from the transaction, such as to diversify their personal risk, or to entrench themselves. However, in a well-managed and monitored firm, agency problems will be minimized, and conglomerate

firms will have more room to realize the gains brought about by forming an internal capital market. Therefore, our third hypothesis is: ICM efficient (inefficient) firms are expected to have higher (lower) excess values prior to acquisitions, and see an increase (decrease) in their excess values following acquisitions.

There may be also possibility that the efficient firms do not have higher excess value prior to the acquisition if the pre-acquisition year internal capital allocation efficiency is not the only factor affecting this excess value; however, the excess value improves for the efficient firms following acquisitions. Even in this scenario, it is not opposing to our main argument that internally efficient firms also make efficient external investment decisions.

3.4 How Do The ICM Efficient and Inefficient Firms Differ in Their Pre-Announcement Operating Performances? How Should Their Operating Performances Change Following Acquisitions?

As a counterpart to the excess value analysis, we use the operating performance measures to conduct the same set of analyses to see how results will comply or differ. Therefore, our fourth hypothesis is: ICM efficient (inefficient) firms are expected to have higher (lower) operating performances prior to acquisitions, and the increase (decrease) in their operating performance following acquisitions are due to their internal capital allocation efficiency.

IV: Data and Construction of Variables

4.1 Data

Our sample consists of all conglomerate acquirers that announce and complete acquisition transactions between 1986 and 2003. Sample firms are obtained from the Securities Data Corporation (SDC) Domestic Mergers database, based on the following criteria: (1) transaction being classified either as an acquisition, a merger, or an acquisition of majority interest; (2) the announcement date of the acquisition lies between January 1, 1986 and December 31, 2003; (3) the transaction is completed; (4) both acquirers and targets are publicly owned. We require acquirers to have at least two business segments with total consolidated firm sales of no less than \$20 million, to be on both CRSP and COMPUSTAT, and not be in financial (SIC codes between 6000 and 6999) and/or regulated industry (SIC codes between 4900 and 4999) or have segments in the financial and/or regulated industry. Segment information is drawn from the COMPUSTAT Business Segment Information database. We exclude the transaction if the target is in the finance and/or regulated industry.

Berger and Ofek (1995) point out that the inconsistency in reporting by multi-segment firms not fully allocating accounting items to the reported segments may result in potential distortion in analysis results involving business segment data. Therefore, following the convention of Berger and Ofek (1995) and Billett and Mauer (2003), we require that the sum of segment sales be within 1% of consolidated firm totals. Our sample consists of 384 multi-segment acquirers

(having two or more segments), with 1179 segment-year observations, that announce acquisitions between year 1986 and 2003 (only completed deals are included). The average number of segments per firm is approximately 3.07.

4.2 Variables

4.2.1 Measure of internal capital allocation efficiency

We compute the value of a firm's internal capital allocation from the internal subsidies and transfers that it makes among different segments within the firm. If a segment spends more on capital expenditures than the after-tax cash flow it generates, it has to receive subsidies to cover the shortage in fund. Supposing the segment is performing better than its sibling segments within the same firm, this subsidy will be regarded as efficient. Whereas if a firm choose to subsidize a segment that is performing poorer compared to the other segments, then this constitutes an inefficient allocation of investment. The same logic holds true for the transfer scenario. If a segment is transferring funds away from a better performing segment, this is inefficient allocation of investment. Therefore based on the difference between a segment's capital expenditure and after-tax cash flow, we can find out whether this segment is receiving subsidy or eligible for potential transfer. Then using an efficiency measure to compare this segment's performance relative to its siblings within the same firm, we will be able to identify the value of this efficient (inefficient) subsidy or transfer. When this procedure is repeated for each segment within the firm, we can sum up these values to reach at an overall internal capital allocation efficiency measure for the firm.

Specifically, we define the subsidy and transfer variables in the same way as in Billett and Mauer (2003). First, the subsidy that segment i of sample firm j receives is defined as

$$\text{Subsidy}_i = \text{Max}(\text{CAPEX}_i - \text{ATCF}_i, 0)$$

and $\text{ATCF}_i = (\text{EBIT}_i - I_i)(1 - T_i) + D_i$

where: CAPEX_i = the segment's reported capital expenditures

ATCF_i = the segment's after-tax cash flow

EBIT_i = segment i 's reported earnings before interest and taxes

I_i = segment i 's imputed interest expense

T_i = segment i 's imputed tax rate

D_i = segment i 's reported depreciation expense.

The imputed interest expense, I_i , is calculated as multiplying segment i 's reported sales by the median single segment firm interest expense to sales ratio in segment i 's industry. The imputed tax rate is measured by the median single segment firm taxes paid to pre-tax income ratio in segment i 's industry. The segment's industry has to include a minimum of five single segment firms with available data on COMPUSTAT tapes, starting from the narrowest (four digit) SIC grouping. $\text{Subsidy}_i > 0$ means that if segment i were a stand-alone firm, it would have to obtain external financing or reduce existing assets to maintain the same capital expenditures.

If $\text{Subsidy}_i = 0$, then $\text{ATCF}_i \geq \text{CAPEX}_i$. We define the potential transfer of resources for segment i as follows:

$$\text{PTransfer}_i = \text{Max}(\text{ATCF}_i - w_i \text{DIV}_j - \text{CAPEX}_i, 0)$$

Where w_i represent the asset weight of the transferring segment i , which is computed as the ratio of the asset of segment i to the total asset of all the transfer segments within the same firm. DIV_j denotes the total cash dividend paid by firm j . Hence, we can compute segment i 's transfer as:

$$Transfer_i = \text{Min}[\frac{PTransfer_i}{\sum_{i=1}^n PTransfer_i} (\sum_{i=1}^n Subsidy_i), PTransfer_i]$$

This modification ensures that the total amount of transfers will not exceed the total amount of subsidies; however, it does imply that the total subsidies can be greater than the total transfers. This will be the case if the firm finances external capital and allocates to a segment.

Following Billett and Mauer (2003), we use the segment's sibling-adjusted return on assets ($ROA_i - \overline{ROA}$) as our measure of relative efficiency for segment subsidies and transfers. ROA_i is computed as the ratio of earnings before interest, taxes and depreciation to total assets for segment i , and \overline{ROA} equals to the corresponding asset-weighted average ROA of the firm's remaining segments.

(i) If $ROA_i > \overline{ROA}$ ($ROA_i < \overline{ROA}$), a subsidy is classified as efficient (inefficient). The subsidy will contribute $(ROA_i - \overline{ROA})(Subsidy_i) > 0$ (< 0) to a firm's internal capital allocation value.

(ii) If $ROA_i < \overline{ROA}$ ($ROA_i > \overline{ROA}$), a transfer is classified as efficient (inefficient). The transfer will contribute $(\overline{ROA} - ROA_i)(Transfer_i) > 0$ (< 0) to a firm's internal capital allocation value.

The following indicator variables are defined for each segment i :

$$\text{Positive}_i = 1, \text{ if } \text{ROA}_i > \overline{\text{ROA}}; \text{ and } \text{Positive}_i = 0, \text{ if } \text{ROA}_i \leq \overline{\text{ROA}}.$$

Therefore for an n -segment diversified firm, the internal capital allocation measure in a given sample year is computed in the following steps:

$$\begin{aligned} ES &= \sum_{i=1}^n \frac{(\text{ROA}_i - \overline{\text{ROA}})(\text{Subsidy}_i)(\text{Positive}_i)}{TA} \\ IS &= \sum_{i=1}^n \frac{(\text{ROA}_i - \overline{\text{ROA}})(\text{Subsidy}_i)(\text{Positive}_i - 1)}{TA} \\ ETS &= \sum_{i=1}^n \frac{(\overline{\text{ROA}} - \text{ROA}_i)(\text{Transfer}_i)(1 - \text{Positive}_i)}{TA} \\ ITS &= \sum_{i=1}^n \frac{(\overline{\text{ROA}} - \text{ROA}_i)(\text{Transfer}_i)(\text{Positive}_i)(-1)}{TA} \end{aligned}$$

where ES (IS) refers to efficient (inefficient) subsidy, ETS (ITS) refers to efficient (inefficient) transfer, and TA refers to the total asset of all the segments. Hence, for a given sample year, we compute the overall internal capital allocation (ICM) value of a diversified firm in two different ways:

- (1) The first measure is to use the net subsidy within a firm as a measure of internal capital allocation. Therefore

$$\text{ICMS} = \text{ES} - \text{IS}$$

If a firm's ICMS (internal capital allocation based on net subsidy) value is positive, it implies that this firm is making more efficient subsidies than inefficient ones, if any. Thus, we classify firms with positive (negative) ICMS values as ICMS efficient (inefficient) firms. While firms with zero ICMS values are classified as ICMS inactive firms.

- (2) The second measure is to use the net effect of all subsidies and transfers made within a firm as a measure of internal capital allocation. Therefore

$$\text{ICM} = \text{ES} - \text{IS} + \text{ETS} - \text{ITS}$$

If a firm's ICM (internal capital allocation based on sum of subsidy and transfer) value is positive, it implies that this firm is making more efficient subsidies and transfers than inefficient ones, if any. Thus, we classify firms with positive (negative) ICM values as ICM efficient (inefficient) firms; and firms with zero ICM values are classified as ICM inactive firms.

Our sample shows that there are 384 multi-segment acquirers that announce a merger or acquisition between years 1986 and 2003 and complete the deal eventually. The sample consists of 1179 segment-year observations which indicate that on average each acquirer has 3.07 segments. Using the net subsidy received within a firm as a measure of internal capital allocation, there are 25 (6.51%) firms having ICM measures greater than zero, and 136 (35.42%) firms having negative ICM measures. There are 223 (58.07%) firms having zero ICM measures, which translate to no subsidy made within the internal capital allocation.²

4.2.2 Measures of excess value

As in Berger and Ofek (1995), we calculate the excess value of diversified firms as the natural log of the ratio of a firm's actual value to its imputed value. Imputed value of each segment is calculated by multiplying the segment's assets (or sales) by the median ratio of total capital to the corresponding accounting items for single-segment firms in the same industry. By definition, the sum of the imputed values from all the segments gives us an indication of the firm value if all the segments are operated as single-segment firms. Total capital is measured as market value of common equity plus book value of debt. The segment's industry has to include a minimum of five single segment firms with sales no less than \$20 million and available data to compute the

² When the internal capital market measure is computed as the sum of subsidies and transfers within a firm (ICM), we obtain the same summary statistics for this part.

ratios, starting from the narrowest (four digit) SIC grouping. Also following Berger and Ofek (1995), for the asset multiple, we require the sum of the segment assets be within 25% of the firm's total asset. Only observations meeting this criterion are kept in analyses using asset multiples. To account for the deviations between the sum of segment assets and total firm asset, the imputed value is adjusted up or down by the same percentage in deviation. We also exclude extreme excess values from the analysis, which is defined as the natural log of the ratio of a firm's actual value to imputed value being above 1.386 or below -1.386.

4.2.3 Measures of Operating Performance

We use two measures to evaluate firm's operating performance. The first one is the ratio of earnings before interest, taxes and depreciation to total assets (EBITD/AT), which is also known as profitability. And the second one is the ratio of sales to total assets (SALE/AT).

4.2.4 Control Variables

We include various control variables in different regressions. Below is a list of all the control variables that are to be employed in the following analyses: size, book-to-market ratio, method of payment, the nature of the acquisition (diversified vs. non-diversified), leverage, liquidity, and profitability.

Size is measured as the natural logarithm of total assets. Book-to-market ratio is defined as the ratio of book value of equity to market value of equity. We obtain the book value of equity for the previous fiscal year from COMPUSTAT (annual data item number 60), and compute the market value of equity as the product of the share price multiplied by the number of shares

outstanding at the fiscal year end of the pre-announcement year. We distinguish between acquisitions that are financed by 100% cash, or by stock or a combination of both stock and cash. A diversifying acquisition is defined as one where target does not share same four-digit SIC code with the acquirer in their top three industries of operations; otherwise, it is regarded as a non-diversifying acquisition. Leverage is measured by dividing book value of debt by total assets. Liquidity is defined as the ratio of cash plus marketable securities to total assets. And profitability is calculated as the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Table 1a shows the descriptive statistics of firm-year observations of the multi-segment acquirers when internal capital allocation is based on net subsidy; and Table 1b shows the descriptive statistics when internal capital allocation is based on sum of subsidy and transfer. For each variable within each table, the descriptive statistics for ICM(S) inefficient firms, inactive firms, efficient firms, and the whole sample are shown. For the excess value measures and the operating performance measures, data in the three years after the announcement year (year (+3)) are drawn as well (for example, if the acquisition is announced in year 1986, three years after the announcement year refers to year 1989); and we also include the change in these values from year (-1) (the pre-announcement year) to year (+3) in these descriptive statistics tables. All the rest of the variables are based on the fiscal year end data in the pre-announcement year.

Table 1a:

**Descriptive Statistics of Firm-Year Observations of Multi-Segment Acquirers
(Internal Capital Allocation Based on Net Subsidy)**

Efficiency indicates whether it belongs to the ICMS efficient firms (Efficiency = 1), or ICMS inefficient firms (Efficiency = -1), or ICMS inactive firms (Efficiency = 0), or it includes all sample firms (Efficiency = All). Year (+3) refers to three years after the acquisition announcement year. Year (-1) refers to the pre-announcement year. If year information is not specified, it refers to the pre-announcement year fiscal year end data. Total Asset and Sales are in millions. Excess value (EV) is computed as the natural log of the ratio of a firm's actual value to its imputed value. Imputed value of each segment is calculated by multiplying the segment's assets (or sales) by the median ratio of total capital to the corresponding accounting items for single-segment firms in the same industry. Total capital is measured as market value of common equity plus book value of debt. Market value of common equity is the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/TA) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets. SALE/AT is the ratio of firm sales to total assets. DCash is the dummy variable for cash financing. DCash = 1 if the acquisition is 100 percent cash financed. DCash = 0 otherwise. Drelated is the dummy variable for relatedness of the acquirer and the target. DRelated = 1 if the acquirer and the target share a four-digit SIC industry in any of their top three industries of operations. DRelated = 0 otherwise.

Variable	Efficiency	Mean	Median	Std. Dev.	Min	Max	N
Value of Internal Capital Market (Based on Net Subsidy)	-1	-0.0113	-0.0015	0.0386	-0.3642	-0.00002	138
	0	0	0	0	0	0	223
	1	0.0385	0.0014	0.1506	0.00001	0.7565	25
	All	-0.0015	0	0.0457	-0.3642	0.7565	384
Total Asset	-1	4383.59	1061.55	9620.93	14.12	81548.87	136
	0	4589.34	2467.2	6286.21	19.03	40556	223
	1	4751.85	1437.42	6813.45	60.94	25322	25
	All	4527.05	1619.53	7645.48	14.12	81548.87	384
Sales	-1	3827.46	1033.68	6822.54	21.75	42473.25	136
	0	4986.52	2172.75	7328.39	23.48	47947.6	223
	1	4814.38	1711	6458.3	40.27	18684	25
	All	4564.81	1906.82	7102.86	21.75	47947.6	384
EV Based on Asset Multiples	-1	0.0466	0.0289	0.3495	-0.6783	1.1876	105
	0	0.1823	0.1988	0.3486	-0.6342	1.0383	168
	1	0.0259	-0.0141	0.3438	-0.6471	0.8491	20
	All	0.123	0.1115	0.3542	-0.6783	1.1876	293

(Table continued.)

EV Based on Sales Multiples	-1	0.0692	-0.0156	0.5036	-0.9043	1.3108	129
	0	0.1879	0.1543	0.4644	-1.649	1.934	217
	1	-0.1076	-0.2132	0.4904	-1.0138	0.9706	25
	All	0.1267	0.0922	0.4861	-1.649	1.934	371
EV Based on Asset Multiples in Year (+3)	-1	-0.0063	-0.059	0.3629	-0.606	1.3711	60
	0	0.1197	0.0828	0.4651	-0.8798	1.2865	104
	1	0.2297	0.3093	0.3671	-0.3892	1.0003	11
	All	0.0834	-0.0042	0.4305	-0.8798	1.3711	175
EV Based on Sales Multiples in Year (+3)	-1	0.0112	-0.0027	0.4265	-1.3381	1.3785	72
	0	0.1398	0.1697	0.5355	-1.2358	1.5147	125
	1	0.0422	0.232	0.6291	-1.3806	0.6534	15
	All	0.0892	0.078	0.5097	-1.3806	1.5147	212
Change in EV Based on Asset Multiples (=Value in Year(+3) - Value in Year(-1))	-1	-0.0424	-0.0785	0.3351	-0.9927	1.0266	55
	0	-0.0584	-0.0145	0.392	-1.2287	0.7337	84
	1	0.0264	0.1827	0.4	-0.5232	0.583	8
	All	-0.0478	-0.0373	0.37	-1.2287	1.0266	147
Change in EV Based on Sales Multiples (=Value in Year(+3) - Value in Year(-1))	-1	-0.0415	0.0294	0.4228	-1.5092	1.1435	67
	0	-0.0206	-0.0193	0.4701	-1.1944	1.1651	123
	1	0.2672	0.2937	0.7124	-1.1454	1.6672	15
	All	-0.0064	0.0155	0.4805	-1.5092	1.6672	205
Book-to-Market Ratio	-1	0.5322	0.482	0.3822	-0.5447	2.3582	130
	0	0.4001	0.3672	0.2603	-0.7201	1.7002	221
	1	0.4948	0.4739	0.2547	0.0203	1.0407	25
	All	0.452	0.4115	0.3132	-0.7201	2.3582	376
Leverage	-1	0.5607	0.5699	0.1893	0.1062	1.2652	136
	0	0.563	0.5521	0.1605	0.1357	1.6058	223
	1	0.5949	0.5953	0.1732	0.1893	0.9842	25
	All	0.5642	0.5672	0.1718	0.1062	1.6058	384
Liquidity	-1	0.1002	0.0594	0.1173	0.0009	0.6031	136
	0	0.0856	0.0487	0.0974	0	0.5911	223
	1	0.0805	0.0376	0.1013	0.0014	0.3769	25
	All	0.0904	0.0518	0.1051	0	0.6031	384

(Table Continued.)

Profitability	-1	0.1263	0.1362	0.0705	-0.159	0.2632	136
(EBITD/AT)	0	0.1737	0.1691	0.0641	0.0099	0.3517	223
	1	0.1483	0.1389	0.0708	0.0141	0.3328	25
	All	0.1553	0.1569	0.0703	-0.159	0.3517	384
SALE/AT	-1	1.1119	1.005	0.6552	0.1497	5.5946	136
	0	1.1671	1.0726	0.5613	0.1083	3.659	223
	1	1.1637	1.062	0.8826	0.2528	4.6954	25
	All	1.1474	1.0579	0.6192	0.1083	5.5946	384
EBITD/AT	-1	0.0247	0.1089	0.8244	-7.8496	0.2867	94
in Year (+3)	0	0.14	0.1396	0.066	-0.1528	0.2876	169
	1	0.1405	0.1411	0.0652	-0.037	0.2646	18
	All	0.1015	0.1341	0.4812	-7.8496	0.2876	281
SALE/AT	-1	0.9926	0.9317	0.6418	0	4.7809	95
in Year (+3)	0	1.0251	0.9678	0.4678	0.1068	3.5117	169
	1	1.1827	0.7813	0.9383	0.3008	3.8517	18
	All	1.0242	0.9537	0.5691	0	4.7809	282
Change in EBITD/AT	-1	-0.1116	-0.0204	0.8303	-8.0456	0.208	94
(= Value in Year(+3)	0	-0.0365	-0.0233	0.069	-0.396	0.0823	169
- Value in Year(-1))	1	-0.0044	-0.0221	0.0741	-0.1354	0.1201	18
	All	-0.0596	-0.0213	0.4833	-8.0456	0.208	281
Change in SALE/AT	-1	-0.1851	-0.1491	0.3811	-1.0384	1.1597	95
(= Value in Year(+3)	0	-0.173	-0.1444	0.3187	-1.5555	0.7526	169
- Value in Year(-1))	1	-0.0623	-0.1783	0.8998	-2.1835	2.6154	18
	All	-0.17	-0.147	0.3989	-2.1835	2.6154	282
Dcash	-1	0.4	0	0.493	0	1	136
	0	0.39	0	0.489	0	1	223
	1	0.16	0	0.374	0	1	25
	All	0.38	0	0.486	0	1	384
Drelated	-1	0.41	0	0.494	0	1	136
	0	0.39	0	0.488	0	1	223
	1	0.48	0	0.51	0	1	25
	All	0.4	0	0.491	0	1	384

Table 1b:

**Descriptive Statistics of Firm-Year Observations of Multi-Segment Acquirers
(Internal Capital Allocation Based on Sum of Subsidy and Transfer)**

Efficiency indicates whether it belongs to the ICM efficient firms (Efficiency = 1), or ICM inefficient firms (Efficiency = -1), or ICM inactive firms (Efficiency = 0), or it includes all sample firms (Efficiency = All). Year (+3) refers to three years after the acquisition announcement year. Year (-1) refers to the pre-announcement year. If year information is not specified, it refers to the pre-announcement year fiscal year end data. Total Asset and Sales are in millions. Excess value (EV) is computed as the natural log of the ratio of a firm's actual value to its imputed value. Imputed value of each segment is calculated by multiplying the segment's assets (or sales) by the median ratio of total capital to the corresponding accounting items for single-segment firms in the same industry. Total capital is measured as market value of common equity plus book value of debt. Market value of common equity is the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/TA) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets. SALE/AT is the ratio of firm sales to total assets. DCash is the dummy variable for cash financing. DCash = 1 if the acquisition is 100 percent cash financed. DCash = 0 otherwise. Drelated is the dummy variable for relatedness of the acquirer and the target. DRelated = 1 if the acquirer and the target share a four-digit SIC industry in any of their top three industries of operations. DRelated = 0 otherwise.

Variable	Efficiency	Mean	Median	Std. Dev.	Min	Max	N
Value of Internal Capital Market (Based on Sum of Subsidy & Transfer)	-1	-0.0172	-0.0023	0.0598	-0.5475	-0.000009	136
	0	0	0	0	0	0	223
	1	0.0386	0.0017	0.1506	0.00001	0.7565	25
	All	-0.0036	0	0.0536	-0.5475	0.7565	384
Total Asset	-1	4399.42	1066.5	9616.99	14.12	81548.87	136
	0	4589.34	2467.2	6286.21	19.03	40556	223
	1	4665.71	1405.3	6848.78	60.94	25322	25
	All	4527.05	1619.53	7645.48	14.12	81548.87	384
Sales	-1	3836.16	1082.31	6819.05	21.75	42473.25	136
	0	4986.52	2172.75	7328.39	23.48	47947.6	223
	1	4767.06	1200.49	6486.26	40.27	18684	25
	All	4564.81	1906.82	7102.86	21.75	47947.6	384
EV Based on Asset Multiples	-1	0.0375	0.0128	0.3384	-0.6783	1.1876	105
	0	0.1823	0.1988	0.3486	-0.6342	1.0383	168
	1	0.0741	0.004	0.3987	-0.6471	0.9339	20
	All	0.123	0.1115	0.3542	-0.6783	1.1876	293

(Table Continued.)

EV Based on Sales Multiples	-1	0.0609	-0.0189	0.5003	-0.9043	1.3108	129
	0	0.1879	0.1543	0.4644	-1.649	1.934	217
	1	-0.0646	-0.1771	0.5212	-1.0138	0.9706	25
	All	0.1267	0.0922	0.4861	-1.649	1.934	371
EV Based on Asset Multiples in Year (+3)	-1	-0.0063	-0.059	0.3629	-0.606	1.3711	60
	0	0.1197	0.0828	0.4651	-0.8798	1.2865	104
	1	0.2297	0.3093	0.3671	-0.3892	1.0004	11
	All	0.0834	-0.0042	0.4305	-0.8798	1.3711	175
EV Based on Sales Multiples in Year (+3)	-1	0.0112	-0.0027	0.4265	-1.3381	1.3785	72
	0	0.1398	0.1697	0.5355	-1.2358	1.5147	125
	1	0.0422	0.232	0.6291	-1.3806	0.6534	15
	All	0.0892	0.078	0.5097	-1.3806	1.5147	212
Change in EV Based on Asset Multiples (=Value in Year(+3) - Value in Year(-1))	-1	-0.0424	-0.0785	0.3351	-0.9927	1.0266	55
	0	-0.0584	-0.0145	0.392	-1.2287	0.7337	84
	1	0.0264	0.1827	0.4	-0.5232	0.583	8
	All	-0.0478	-0.0373	0.37	-1.2287	1.0266	147
Change in EV Based on Sales Multiples (=Value in Year(+3) - Value in Year(-1))	-1	-0.0415	0.0294	0.4228	-1.5092	1.1435	67
	0	-0.0206	-0.0193	0.4701	-1.1944	1.1651	123
	1	0.2672	0.2937	0.7124	-1.1454	1.6672	15
	All	-0.0064	0.0155	0.4805	-1.5092	1.6672	205
Book-to-Market Ratio	-1	0.5335	0.482	0.3818	-0.5447	2.3582	130
	0	0.4001	0.3672	0.2603	-0.7201	1.7002	221
	1	0.4879	0.4232	0.2575	0.0203	1.0407	25
	All	0.452	0.4115	0.3132	-0.7201	2.3582	376
Leverage	-1	0.563	0.5699	0.187	0.1062	1.2652	136
	0	0.563	0.5521	0.1605	0.1357	1.6058	223
	1	0.5822	0.5953	0.1887	0.1893	0.9842	25
	All	0.5642	0.5672	0.1718	0.1062	1.6058	384
Liquidity	-1	0.1	0.0593	0.1173	0.0009	0.6031	136
	0	0.0856	0.0487	0.0974	0	0.5911	223
	1	0.0817	0.0376	0.1012	0.0014	0.3769	25
	All	0.0904	0.0518	0.1051	0	0.6031	384

(Table Continued.)

Profitability	-1	0.1268	0.1382	0.0706	-0.159	0.2632	136
(EBITD/AT)	0	0.1737	0.1691	0.0641	0.0099	0.3517	223
	1	0.1457	0.1363	0.0711	0.0141	0.3328	25
	All	0.1553	0.1569	0.0703	-0.159	0.3517	384
SALE/AT	-1	1.1119	1.005	0.6553	0.1497	5.5946	136
	0	1.1671	1.0726	0.5613	0.1083	3.659	223
	1	1.164	1.062	0.8824	0.2528	4.6954	25
	All	1.1474	1.0579	0.6192	0.1083	5.5946	384
EBITD/AT	-1	0.026	0.109	0.8201	-7.8496	0.2867	95
in Year (+3)	0	0.14	0.1396	0.066	-0.1528	0.2876	169
	1	0.1404	0.1402	0.0672	-0.037	0.2646	17
	All	0.1015	0.1341	0.4812	-7.8496	0.2876	281
SALE/AT	-1	0.9857	0.9187	0.642	0	4.7809	96
in Year (+3)	0	1.0251	0.9678	0.4678	0.1068	3.5117	169
	1	1.2327	0.8252	0.9421	0.3008	3.8517	17
	All	1.0242	0.9537	0.5691	0	4.7809	282
Change in	-1	-0.1107	-0.0208	0.8259	-8.0456	0.208	95
EBITD/AT	0	-0.0365	-0.0233	0.069	-0.396	0.0823	169
(= Value in Year(+3)	1	-0.0029	-0.0213	0.0762	-0.1354	0.1201	17
- Value in Year(-1))	All	-0.0596	-0.0213	0.4833	-8.0456	0.208	281
Change in SALE/AT	-1	-0.1855	-0.1496	0.3791	-1.0384	1.1597	96
(= Value in Year(+3)	0	-0.173	-0.1444	0.3187	-1.5555	0.7526	169
- Value in Year(-1))	1	-0.053	-0.1685	0.9266	-2.1835	2.6154	17
	All	-0.17	-0.147	0.3989	-2.1835	2.6154	282
Dcash	-1	0.4	0	0.493	0	1	136
	0	0.39	0	0.489	0	1	223
	1	0.16	0	0.374	0	1	25
	All	0.38	0	0.486	0	1	384
Drelated	-1	0.41	0	0.494	0	1	136
	0	0.39	0	0.488	0	1	223
	1	0.48	0	0.51	0	1	25
	All	0.4	0	0.491	0	1	384

V. Methodology and Results

5.1 Announcement Period Performance of the Acquiring Firms

We apply the standard event study method with the market model to estimate the announcement period cumulative abnormal returns. The market model is:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$$

where R_{mt} denotes the return on a market portfolio for date t . α_j represents the mean return not explained by the market, and β_j measures the market risk for firm j over the period. Parameter estimations, denoted by $\hat{\alpha}_j$ and $\hat{\beta}_j$, are obtained by running a regression for the days in a clean period, which is chosen as a 255-day period ending 46 days prior to the first announcement date of acquisitions. Predicted returns for announcement period³ are computed using the estimated parameters:

$$\hat{R}_{jt} = \hat{\alpha}_j + \hat{\beta}_j R_{mt}$$

where R_{mt} represents the market return of the then current period. The abnormal return is computed as the difference of the actual return on the event date minus the predicted return:

$$r_{jt} = R_{jt} - \hat{R}_{jt}$$

The average residual for date t in event time is measured by the average of the abnormal returns across all the sample firms. Let N denotes the number of sample firms, then:

$$AR_t = \frac{\sum_j r_{jt}}{N}$$

³ Selected intervals are: (-30, -2), (-1, 0), (0, +1), (2, +30), (-3, +3), (-30, +30).

When we sum up the ARs for each day over the event period, we obtain the measure of the cumulative average residual (CAR). Taking the (-30, -2) interval as an example, the CAR is equal to:

$$CAR = \sum_{t=-30}^{-2} AR_t$$

We expect the CAR for the ICM efficient (inefficient) firms to be significantly greater (less) than zero.

Table 2a shows the results of event study on the sample firms when the internal capital allocation measure is based on net subsidy. Estimated by the market model, using the equally weighted index, we find that the mean cumulative abnormal return within event window (-3, +3) is -0.54% (significant at the 1% level) for the ICMS inefficient firms; -0.57% (significant at the 5% level) for the inactive firms; and 2.26% (significant at 5%) for the efficient firms. This is consistent with our predictions that the announcement period CAR for ICMS efficient (inefficient) firms is significantly greater (less) than zero. A second finding from Table 1a tells us that the ICMS inactive firms are receiving negative CAR throughout the various event windows that we select, both in the pre-announcement period and in the post-announcement period. However, firms with active internal capital allocations (including both ICMS inefficient and efficient firms) are receiving positive CARs in event window (0, +1). Although after that, for example in the event window (+2, +30) that we choose, the ICMS inefficient firms are observed to have a negative CAR of -0.88%, whereas the ICMS efficient firms are receiving a positive CAR of 2.43%. This interesting finding seems to reveal that the market is having certain expectations for firms with active internal capital allocations; however, the market cannot distinguish between the ICMS

efficient firms and inefficient firms when the merger announcement is made. While shortly after the announcement date, the market recognizes the difference, therefore, the ICMS inefficient firms are receiving a negative CAR in event window (+2, +30), compared to the positive CAR for the ICMS efficient firms.

Table 2a:

**Announcement Period Mean Cumulative Abnormal Return
(Internal Capital Allocation Based On Net Subsidy)**

Market Model, Equally Weighted Index

	ICMS Inefficient firms	ICMS Inactive firms	ICMS Efficient firms
No. of Obs.	127	212	24
Event Window:			
(-30, -2)	1.95%	-1.08% c	0.93%
(-1,0)	0.44%	-0.56% aa	-1.03% b
(0,+1)	0.22% b	-0.24% b	0.74%
(+2,+30)	-0.88%	-0.58%	2.43%
(-3,+3)	-0.54% a	-0.57% b	2.26% b
(-30,+30)	1.63%	-1.94% c	4.03%

Market Model, Value Weighted Index

	ICMS Inefficient firms	ICMS Inactive firms	ICMS Efficient firms
No. of Obs.	127	212	24
Event Window:			
(-30, -2)	2.26%	-0.39%	-0.09%
(-1,0)	0.29%	-0.52% aa	-1.19% a
(0,+1)	0.13% a	-0.29% b	0.47%
(+2,+30)	-1.07%	-1.35% c	1.04%
(-3,+3)	-0.59% a	-0.51% b	1.79% c
(-30,+30)	1.62%	-2.01% b	1.42%

The symbols aa, a, b, and c denote statistical significance at the 0.001, 0.01, 0.05, and 0.10 levels respectively, using a 1-tail test.

Table 2b shows the event study results when the internal capital allocation measure is based on sum of subsidy and transfer. Results in this part exhibit the same pattern as in Table 1a, therefore we will not elaborate on the discussions.

Table 2b:

**Announcement Period Mean Cumulative Abnormal Return
(Internal Capital Allocation Based On Sum of Subsidy and Transfer)**

Market Model, Equally Weighted Index

	ICM Inefficient firms	ICM Inactive firms	ICM Efficient firms
No. of Obs.	127	212	24
Event Window:			
(-30, -2)	2.30% c	-1.08% c	-0.91%
(-1,0)	0.37%	-0.56% aa	-0.64%
(0,+1)	0.15% a	-0.24% b	1.09% b
(+2,+30)	-0.77%	-0.58%	1.80%
(-3,+3)	-0.63% a	-0.57% b	2.69% b
(-30,+30)	2.04%	-1.94% c	1.85%

Market Model, Value Weighted Index

	ICM Inefficient firms	ICM Inactive firms	ICM Efficient firms
No. of Obs.	127	212	24
Event Window:			
(-30, -2)	2.49%	-0.39%	-1.29%
(-1,0)	0.20% c	-0.52% aa	-0.71%
(0,+1)	0.06% a	-0.29% b	0.88% c
(+2,+30)	-0.97%	-1.35% c	0.50%
(-3,+3)	-0.68% aa	-0.51% b	2.30% b
(-30,+30)	1.87%	-2.01% b	0.05%

The symbols aa, a, b, and c denote statistical significance at the 0.001, 0.01, 0.05, and 0.10 levels respectively, using a 1-tail test.

Since many studies document stronger performance following cash financed acquisitions than equity financed ones (Franks, Harris and Mayer, 1988; Gregory, 1997; Loughran and Vijh, 1997; Mitchell and Stafford, 2000), we investigate the importance of method of payments in the success of acquisitions by measuring the performance of the two groups—100 percent cash financed, and other (including equity financed, and cash and equity financed) —within each of the three firm categories, namely the ICMS efficient firms, the ICMS inactive firms, and the ICMS inefficient firms. The same approaches will be employed to investigate whether non-diversifying acquisitions are more likely to succeed in acquisitions than diversifying acquisitions.

Table 3 shows the results of these sub group analysis. In this table, we choose the announcement period CAR of event window (-3, +3) for comparison; and the ICM measure is based on net subsidy. Within each ICMS group, we can see a difference in CAR between all cash financed mergers versus other mergers; and between related mergers versus unrelated mergers. Related mergers are those where the acquirer and the target share the same 4-digit SIC code in their top three business segments of operation. However, what is noticeably is that the between-group differences for cash and relatedness effects is much bigger than the within group differences. For example: for the ICMS inefficient firms, the CAR for acquirers using less than 100 percent cash is -0.26%, while it is -1.00% for acquirers using 100 percent cash; however for the ICMS efficient firms, these two values are 2.40% and 1.52% respectively. The within group difference is 0.74% for the ICMS inefficient firms, and 0.88% for the ICMS efficient firms. However, the between group difference (we subtract CAR of inefficient firms from that of efficient firms) is 2.66% for acquirers using less than 100 percent cash financing, and 2.52% for acquirers using 100 percent cash. Examinations of the relatedness effects demonstrate similar pattern.

Table 3:

**Announcement Period Mean Cumulative Abnormal Return
(Internal Capital Allocation Based On Net Subsidy)**

RELATEDNESS is determined by whether the acquirer and the target share a four-digit SIC industry in any of their top three industries of operations.

Market Model, Equally Weighted Index

	ICMS Inefficient firms		ICMS Inactive firms		ICMS Efficient firms	
Event Window: (-3, +3)	-0.54%	a	-0.57%	b	2.26%	b
N	127		212		24	
CASH						
< 100 percent cash financed	-0.26%	b	-1.14%	a	2.40%	c
N	78		130		20	
100 percent cash financed	-1.00%	c	0.32%		1.52%	
N	49		82		4	
RELATEDNESS						
Unrelated merger	-0.11%		-0.38%	b	0.96	
N	75		128		13	
Related merger	-1.16%	a	-0.87%	c	3.79	b
N	52		84		11	

The symbols aa, a, b, and c denote statistical significance at the 0.001, 0.01, 0.05, and 0.10 levels respectively, using a 1-tail test.

Table 3 also tells us that for the ICMS inactive firms, the announcement period CAR of all cash financed acquisitions (0.32%) is greater than that of acquisitions financed by some or all stock (-

1.14%, significant at 1% level). This is consistent with the method of payment hypothesis which expects equity prices to drop following stock acquisitions. However, looking at the ICMS efficient firms, the evidence is totally reversed; with CAR of 1.52% for the all cash financed acquisitions and 2.40% (significant at 10% level) for the less than 100 percent cash financed acquisitions. And for the ICMS inefficient firms, the CARs are significantly negative for both all cash financed acquisitions (-1.00%, significant at 10% level) and otherwise financed acquisitions (-0.26%, significant at 5% level). As to the relatedness of the acquisitions, Table 3 shows that ICMS inefficient and inactive firms receive negative CARs no matter the acquisition is related or not; whereas, the CAR is positive for ICMS efficient firms for both related and unrelated acquisitions. Therefore we can infer that at least for our sample of multi-segment acquirers, the effects of the internal capital allocation efficiency on announcement period CAR dominate those of method of payment and relatedness.

A regression is run to further investigate the dominating effects of the internal capital allocation efficiency. The dependent variable is the acquirer's standardized CAR for event window (-3, +3), the independent variables include a dummy for ICM efficiency as well as ICM inefficiency, a dummy for all cash financing, and a dummy for relatedness of the merger. We also include size (defined as the natural log of firm's total asset), and book-to-market ratio (defined as the ratio of the firm's book value of equity over its market value of equity) at the end of the fiscal year prior to the announcement year as control variables. Table 4a shows the regression results when internal capital allocation is based on net subsidy only; and Table 4b presents the results when internal capital allocation is based on the sum of subsidy and transfer. Within each table, part (I) shows the regression results on all of the dummy variables as well as the control variables; (II)

shows the results when relatedness effect is ruled out; and (III) shows the results when method of payments effect is ruled out. We predict the coefficient on the efficient internal capital allocation dummy variable to be positive, and that on the inefficient internal capital allocation dummy to be negative. Results in Table 4a show that the signs of these coefficients are consistent with our predictions, although not significant. However, in Table 4b, the coefficient on the ICM efficiency component is significantly greater than zero for all three parts (I, II and III) of the regressions. While the coefficients on the cash and relatedness components are not significant. These results further reinforce the previous findings that the internal capital allocation efficiency is a significant contributor to the announcement period abnormal return.

Table 4a:

Regression of Acquirer's Announcement Period CAR on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy)

The dependent variable is the acquirer's standardized CAR in event window (-3, +3). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding.

Variable Name	Acquirer's Standardized CAR Event window (-3, +3)		
	I	II	III
Intercept	0.311 (0.778)	0.298 (0.747)	0.315 (0.789)
Dummy = 1 if Internal Capital Market Is Efficient (ICMS>0)	0.488 (1.582)	0.486 (1.579)	0.458 (1.498)
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.152 (-0.924)	-0.153 (-0.930)	-0.152 (-0.925)

(Table Continued.)

Dummy = 1 if Deal is 100% Cash Financed	0.13 (0.810)	0.14 (0.883)	
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	-0.0746 (-0.483)		-0.0913 (-0.597)
Firm Size (Log of Total Asset)	-0.0778 (-1.646)	-0.0797 c (-1.696)	-0.0729 (-1.557)
Book-to-Market Ratio	0.255 (1.010)	0.242 (0.964)	0.293 (1.184)
Number of Observations	358	358	358
R ²	0.026	0.025	0.024
Adjusted R ²	0.009	0.011	0.01

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 4b:

Regression of Acquirer's Announcement Period CAR on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Sum of Subsidy and Transfer)

The dependent variable is the acquirer's standardized CAR in event window (-3, +3). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding.

Variable Name	Acquirer's Standardized CAR Event window (-3, +3)		
	I	II	III
Intercept	0.305 (0.765)	0.291 (0.733)	0.31 (0.778)

(Table Continued.)

Dummy = 1 if Internal Capital Market Is Efficient (ICM>0)	0.613 b (1.996)	0.611 b (1.993)	0.582 c (1.910)
Dummy = 1 if Internal Capital Market Is Inefficient (ICM<0)	-0.177 (-1.078)	-0.178 (-1.084)	-0.177 (-1.079)
Dummy = 1 if Deal is 100% Cash Financed	0.137 (0.861)	0.148 (0.936)	
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	-0.0756 (-0.491)		-0.0932 (-0.611)
Firm Size (Log of Total Asset)	-0.0775 (-1.647)	-0.0795 c (-1.697)	-0.0724 (-1.552)
Book-to-Market Ratio	0.26 (1.032)	0.246 (0.986)	0.3 (1.215)
Number of Observations	358	358	358
R ²	0.032	0.031	0.03
Adjusted R ²	0.015	0.017	0.016

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

t statistics is reported in the parenthesis.

Due to the nature of the size of our efficient ICM firms, we further classify sample firms into two groups and run the regressions again. We classify firms that have negative ICM(S) values as ICM(S) inefficient firms; and the rest of the firms as ICM(S) efficient firms. Table 4c shows the regression results when ICM is based on net subsidy; and Table 4d reports the results when ICM is based on sum of subsidy and transfer. In these regressions, we include one dummy for ICM(S) inefficient firms. The results again show the predicted sign on this dummy variable, although not statistically significant.

Table 4c:**Regression of Acquirer's Announcement Period CAR on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy)**

The dependent variable is the acquirer's standardized CAR in event window (-3, +3). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding.

Variable Name	Acquirer's Standardized CAR Event window (-3, +3)		
	I	II	III
Intercept	0.365 (0.914)	0.352 (0.884)	0.366 (0.917)
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.206 (-1.274)	-0.206 (-1.279)	-0.203 (-1.260)
Dummy = 1 if Deal is 100% Cash Financed	0.09967 (0.626)	0.11 (0.696)	
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	-0.0721 (-0.466)		-0.0853 (-0.557)
Firm Size (Log of Total Asset)	-0.0789 c (-1.668)	-0.0808 c (-1.716)	-0.0751 (-1.601)
Book-to-Market Ratio	0.29 (1.152)	0.277 (1.109)	0.319 (1.287)
Number of Observations	358	358	358
R ²	0.019	0.018	0.018
Adjusted R ²	0.005	0.007	0.006

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 4d:

Regression of Acquirer's Announcement Period CAR on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Sum of Subsidy and Transfer)

The dependent variable is the acquirer's standardized CAR in event window (-3, +3). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding.

Variable Name	Acquirer's Standardized CAR Event window (-3, 3)		
	I	II	III
Intercept	0.38 (0.955)	0.367 (0.925)	0.381 (0.958)
Dummy = 1 if Internal Capital Market Is Inefficient (ICM<0)	-0.244 (-1.515)	-0.245 (-1.520)	-0.242 (-1.501)
Dummy = 1 if Deal is 100% Cash Financed	0.1 (0.631)	0.11 (0.701)	
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	-0.072 (-0.466)		-0.0852 (-0.557)
Firm Size (Log of Total Asset)	-0.0799 c (-1.690)	-0.0818 (-1.738)	-0.076 (-1.623)
Book-to-Market Ratio	0.3 (1.193)	0.288 (1.150)	0.329 (1.329)
Number of Observations	358	358	358
R ²	0.021	0.02	0.019
Adjusted R ²	0.007	0.009	0.008

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

5.2 *Measuring the Long-term Performance of the Acquirers*

Measurement for the long-term stock performance has long been in debate in the literature.

Following Ritter (1991), mean buy-and-hold abnormal return ($\overline{\text{BHAR}}$) has become a convention in measuring the long-run performance. However, Barber and Lyon (1997) and Barber, Lyon and Tsai (1999) point out that the buy-and-hold abnormal returns calculated from comparing to a reference portfolio produce biased results due to the new listings, rebalancing of benchmark portfolios, and the skewness of multiyear abnormal returns. Remedies to these problems include utilizing more carefully constructed benchmark portfolios and skewness-adjusted t-statistics with bootstrapping. The bootstrapping procedure assumes that the event-firm abnormal returns are independent. However, as Fama (1998) points out, methodologies that fail to account for the cross-sectional dependence arising from calendar-time clustering of events will produce biased results. The monthly calendar-time portfolio approach advocated by Fama (1998) corrects this problem since all the cross-correlations of event firm abnormal returns have already been accounted for in the variance of the portfolio. Mitchell and Stafford (2000) provide evidence that the mean buy-and-hold abnormal return methodology with inferences from a bootstrapping procedure which assumes cross-sectional independence produce test statistics that are “up to four times too large.” They conclude that the calendar-time portfolio approach has more power in detecting abnormal long-run performance than the buy-and-hold abnormal return approach. In this study, we conduct long-run abnormal return analysis based on the calendar-time portfolio approach.

Following Mitchell and Stafford (2000), an EW portfolio is constructed each month to include all the event firms that have the transaction completed within the previous three years. The

portfolios are rebalanced each month to exclude firms that are out of the prior three-year event range and to include all new event firms that have just completed their acquisition transactions.

The abnormal returns are then regressed on the Fama and French (1993) three factors:

$$R_{p,t} - R_{f,t} = \alpha_p + b_p(R_{m,t} - R_{f,t}) + s_pSMB_t + h_pHML_t + e_{p,t}$$

where α_p represent the combined effects of mispricing and model misspecification, if it exists, of the calendar-time event portfolio. This is referred to as the “joint-test problem” by Fama (1970) since any test of this kind will be a joint test of market efficiency and the underlying asset-pricing model. SMB denotes the difference between a “small” and a “large” stock portfolio, and HML denotes the difference between a “high” and a “low” BE/ME stock portfolio.

Table 5 reports the regression results of the calendar-time portfolios on the Fama and French three factors. Panel A shows the results when the internal capital allocation efficiency is based on net subsidy; and Panel B reports the results when the internal capital allocation efficiency is based on sum of subsidy and transfer. All of the α on these regressions are not significant, which is indicative that the market is rather efficient in absorbing the effects of the acquisitions at or around their announcements.

Table 5:**Portfolio Regressions of Acquirers based on Calendar-time and Fama and French Three-Factor Model**

The equation is: $R_{p,t} - R_{f,t} = a_p + b_p (R_{m,t} - R_{f,t}) + s_p SMB_t + h_p HML_t + e_{p,t}$

where R_p is the mean event portfolio return for month t , equally weighted. $R_m - R_f$, SMB, and HML are the Fama and French (1993) three factors. The research factor data are downloaded from French's website. ICMS: internal capital allocation is based on net subsidy. ICM: internal capital allocation is based on sum of subsidy and transfer.

	Coefficients				Adjusted R ²
	a	R _m -R _f	SMB	HML	
ICMS inefficient firms	-0.0021 (-.830)	1.129 a (17.571)	0.604 a (7.806)	0.381 a (3.976)	0.641 N=248
ICMS inactive firms	-0.00116 (-.579)	1.215 a (23.984)	0.26 a (4.236)	0.623 a (8.233)	0.711 N=251
ICMS efficient firms	-0.00111 (-.187)	1.241 a (8.374)	0.696 a (3.848)	0.337 (1.484)	0.328 N=215

Panel B:

	Coefficients				Adjusted R ²
	a	R _m -R _f	SMB	HML	
ICM inefficient firms	-0.00183 (-.734)	1.118 a (17.664)	0.592 a (7.764)	0.362 a (3.835)	0.644 N=248
ICM inactive firms	-0.00116 (-.579)	1.215 a (23.984)	0.26 a (4.236)	0.623 a (8.233)	0.711 N=251
ICM efficient firms	0.00028 (.057)	1.188 a (9.609)	0.589 a (3.897)	0.33 c (1.740)	0.375 N=219

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

5.3 *Measuring the Excess Value of the Acquirers*

It has been well documented that diversification causes conglomerate firms to be traded as a discount. Our argument is that diversification itself does not necessarily cause a discount, but diversification by the ICM inefficient firms will work against the interest of the shareholders. We empirically test this hypothesis by computing the pre-announcement year (using the year-end data prior to the year of the acquisition announcement) imputed excess value for the ICM efficient and inefficient conglomerate acquirers. If the imputed value does correctly price the value of a conglomerate firm versus single segment firms, then we will expect to find higher (lower) excess value for ICM efficient (inefficient) firms. However, if systematic mispricing arising from different firm characteristics of single segment firms and conglomerate firms does exist in the imputed value approach, we can still infer evidence by comparing the difference between the mean excess values of the efficient and inefficient firm groups. This is under the assumption that both the ICM efficient and inefficient firms are equally systematically mispriced. If this is true, then the difference between the mean excess values measure the net effect of the firm's management efficiency on firm value. We predict the mean excess value of the ICM efficient firms be higher than that of the inefficient firms.

Next we impute firm's excess value three years after the acquisition. Since we hypothesize that ICM efficient (inefficient) firms make value-enhancing (reducing) acquisitions, we expect the ICM efficient (inefficient) firms to have a positive (negative) change in their excess values. The change in excess value, ΔEV , is measured by the difference of the excess value at year 3 minus the pre-announcement year excess value of the firm.

Table 6a describes the mean excess value for net subsidy inefficient, inactive, and efficient firms. Results in Panel A of Table 6a show that in the pre-announcement year, the mean excess value for the net subsidy inactive firms is significantly (at 1% level) greater than zero, no matter the imputed value is based on sales multiples or asset multiples. While the mean excess values for the inefficient and efficient firms are not significantly different from zero at the 5% level. Table 7a provides information on the differences in group mean excess values between inefficient and efficient firms, between inefficient and inactive firms, and between inactive and efficient firms. From the results in Panel A of Table 7a, we can see that in the pre-announcement year, the group of net subsidy inactive firms has significant higher mean excess value when compared to both the group of inefficient firms and the group of efficient firms. However the mean excess values between the groups of inefficient and efficient firms are not significantly different from each other.

Panel B of Table 6a shows the mean excess value information for each group three years after the merger announcement year. We can see that the mean excess value for the net subsidy inactive firms is still significantly (1%) greater than zero based on both sales and asset multiples. Although the mean excess value for the inactive firm group has dropped from the pre-announcement year to three years after (Panel C shows the changes in mean excess values from year (-1) to year (+3)), the decrease is not statistically significant. While when using asset multiples, the mean excess value for the group of efficient firms three years after the announcement year (0.2297) becomes significantly greater than zero at the 10% level; and this value is even greater than that for the inactive firms (0.1197). If we look at the change in excess values for the efficient group, the excess values improve after the merger, although not

Table 6a:

**Mean Excess Value for ICMS Inefficient, Inactive, and Efficient Firms
(Internal Capital Allocation Based On Net Subsidy)**

	ICMS Inefficient Firms	ICMS Inactive Firms	ICMS Efficient Firms
Panel A: Pre-Announcement year			
Using sales multiples	0.0692	0.1879 a	-0.1076
P-value	(.121)	(.000)	(.284)
N	129	217	25
Using asset multiples	0.0466	0.1823 a	0.0259
P-value	(.174)	(.000)	(.740)
N	105	168	20
Panel B: 3 years after the announcement year			
Using sales multiples	0.0112	0.1398 a	0.0422
P-value	(.825)	(.004)	(.799)
N	72	125	15
Using asset multiples	-0.0063	0.1197 a	0.2297 c
P-value	(.893)	(.010)	(.065)
N	60	104	11
Panel C: Net Change (=year (+3) - year (-1))			
Using sales multiples	-0.0415	-0.0206	0.2672
P-value	(.424)	(.628)	(.168)
N	67	123	15
Using asset multiples	-0.0424	-0.0584	0.0264
P-value	(.352)	(.176)	(.857)
N	55	84	8

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

Table 6b:

**Mean Excess Value for ICM Inefficient, Inactive, and Efficient Firms
(Internal Capital Allocation Based On Sum of Subsidy and Transfer)**

	ICM Inefficient Firms	ICM Inactive Firms	ICM Efficient Firms
Panel A: Pre-Announcement year			
Using sales multiples	0.0609	0.1879 a	-0.0646
P-value	(.169)	(.000)	(.541)
N	129	217	25
Using asset multiples	0.0375	0.1823 a	0.0741
P-value	(.259)	(.000)	(.416)
N	105	168	20
Panel B: 3 years after the announcement year			
Using sales multiples	0.0112	0.1398 a	0.0422
P-value	(.825)	(.004)	(.799)
N	72	125	15
Using asset multiples	-0.0063	0.1197 a	0.2297 c
P-value	(.893)	(.010)	(.065)
N	60	104	11
Panel C: Net Change (=year (+3) - year (-1))			
Using sales multiples	-0.0415	-0.0206	0.2672
P-value	(.424)	(.628)	(.168)
N	67	123	15
Using asset multiples	-0.0424	-0.0584	0.0264
P-value	(.352)	(.176)	(.857)
N	55	84	8

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

statistically significant. For the group of inefficient firms, the mean excess values decrease after the merger, although not significantly so either.

Investigating Panel B of Table 7a, we will find that three years after the merger announcement, the efficient group has a significantly (at 10% level) higher mean excess value compared to the inefficient group when using asset multiples. When compared to the inactive firms, the inefficient group has significant lower (at 10% level) mean excess values too. However, three years after the merger announcement, the mean excess values between the inactive and the efficient groups become insignificant. Considering the fact that inactive firm group has a significantly higher mean excess value comparing to the efficient firm group in the pre-announcement year, this shows evidence that the efficient firms are catching up after the merger.

In summary, the results in Table 6a and Table 7a lead us to the following findings. First, both net subsidy efficient and inefficient firms have lower excess values compared to the inactive firms before the merger announcement. Second, three years after the merger announcement, the excess values of the inefficient and inactive group decrease, whereas that of the efficient group increases, although neither the decrease nor the increase is significant. Third, efficient firms seem to be catching up with the inactive firms (in terms of excess values) three years after the merger announcement. Not only so, if we look at the results based on asset multiples, the efficient firms are exceeding the inactive firms in terms of excess values (although it is not statistically significant). Whereas the inefficient firm group remains in the lower excess value position, and its mean excess value continues to decrease after the merger.

Table 7a:

**Difference in Mean Excess Value Between Groups
(Internal Capital Allocation Based On Net Subsidy)**

	(Inefficient - Efficient)	(Inefficient - Inactive)	(Inactive - Efficient)
Panel A: Pre-Announcement year			
Using sales multiples	0.1768	-0.1187 b	0.2955 a
P-value	(0.109)	(.027)	(.003)
Using asset multiples	0.0208	-0.1357 a	0.1564 c
P-value	(0.808)	(0.002)	(0.059)
Panel B: 3 years after the announcement year			
Using sales multiples	-0.031	-0.1286 c	0.0976
P-value	(.858)	(.066)	(.514)
Using asset multiples	-0.2361 c	-0.1261 c	-0.11
P-value	(.052)	(.056)	(.450)
Panel C: Net Change (=year (+3) - year (-1))			
Using sales multiples	-0.3087	-0.021	-0.288 b
P-value	(0.125)	(.762)	(.037)
Using asset multiples	-0.0688	0.016	-0.0848
P-value	(.598)	(.804)	(.561)

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

Table 7b:

**Difference in Mean Excess Value Between Groups
(Internal Capital Allocation Based On Sum of Subsidy and Transfer)**

	(Inefficient - Efficient)	(Inefficient - Inactive)	(Inactive - Efficient)
Panel A: Pre-Announcement year			
Using sales multiples	0.1255	-0.127 b	0.2525 b
P-value	(.256)	(.017)	(.012)
Using asset multiples	-0.0366	-0.1449 a	0.1082
P-value	(.667)	(.001)	(.198)
Panel B: 3 years after the announcement year			
Using sales multiples	-0.031	-0.1286 c	0.0976
P-value	(.858)	(.066)	(.514)
Using asset multiples	-0.2361 c	-0.1261 c	-0.11
P-value	(.052)	(.058)	(.450)
Panel C: Net Change (=year (+3) - year (-1))			
Using sales multiples	-0.3087	-0.021	-0.2878 b
P-value	(.125)	(.762)	(.037)
Using asset multiples	-0.0688	0.016	-0.0848
P-value	(.598)	(.804)	(.561)

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

Another noteworthy finding is that despite the well-documented “diversification discount”, our sample of ICMS inactive firms has significantly positive excess values before the acquisitions. This indicates that these firms are comparatively winners in the market. Therefore it seems reasonable that they are having inactive internal capital allocations - since they may have ample financing for their investments so that they do not have to rely on internal capital allocation subsidies and transfers. However, for the ICMS inefficient and efficient firms, their excess values are not significantly positive (there is even a negative value) before the acquisitions, therefore, the existence of internal capital allocation becomes more important for these firms. If firms can use this venue efficiently, they can reap benefits from their internal capital allocations. This is demonstrated by the evidence of our ICMS efficient firms – they receive both a positive announcement period CAR and an improvement in excess value following the acquisitions. However, if firms cannot use this venue efficiently, they will not be able to enjoy the benefits of their internal capital allocations.

Table 6b shows the mean excess values for ICM inefficient, inactive, and efficient firms when the internal capital allocation values are based on the net effect of subsidies and transfers within each firm. And Table 7b shows the corresponding differences in mean excess values between groups. The results in these two tables are largely consistent with our findings derived from Tables 6a and 7a.

To detect whether internal capital allocation efficiency is a main contributor to the change in excess values, we regress the acquirer’s change in excess values on several dummy variables (including ICM efficiency as well as ICM inefficiency, all cash financing, and relatedness of the

merger) as well as control variables. Three additional control variables are added: 1) Leverage – defined as the ratio of book value of debt to total assets; 2) Liquidity – defined as the ratio of cash and marketable securities to total assets; and 3) Profitability – defined as the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets. Table 8a shows the regression results when internal capital allocation is based on net subsidy and excess value is based on sales multiples; and Table 9a presents the results when internal capital allocation is based on net subsidy and excess value is based on asset multiples⁴. Within each table, part (I) shows the regression results on all of the dummy and control variables; (II) shows the results when relatedness effect is ruled out; and (III) shows the results when method of payments effect is ruled out. All of these regressions report the predicted signs for the coefficients on the internal capital allocation efficiency components. And when excess value is based on sales multiples, the coefficient on the efficient internal capital allocation component is significantly greater than zero at 10% level. While the coefficient of the method of payment and relatedness dummies are not statistically significant. These regressions again imply that the internal capital allocation efficiency effect is dominating the method of payment and the relatedness effects in improving the acquirers' excess value after acquisitions.

We further classify sample firms into two groups: firms having negative ICM(S) values as ICM(S) inefficient firms and the rest of the firms as ICM(S) efficient firms, and run the regressions again. Table 8b shows the regression results when ICM is based on net subsidy and excess value is based on sales multiples; and Table 9b reports the results when ICM is based on net subsidy and excess value is based on asset multiples. In these regressions, we include one

⁴ Since for this part of the analysis, the regression results based on ICMS (ICM based on net subsidy) or ICM (ICM based on the sum of subsidy and transfer) are the same for each set of the analysis, we choose to report only one of the results (based on ICMS).

dummy variable for ICMS inefficient firms. The results show that the coefficient on the inefficient ICMS dummy is negative, although not statistically significant.

Table 8a:

Regression of Acquirer's Change in Excess Value on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy; Excess Value Based on Sales Multiples)

The dependent variable is the acquirer's change in excess value (based on sales multiples) from the pre-announcement year to three years after the announcement year. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in Excess Value (= EV in year(+3) - EV in year (-1))					
	I		II		III	
Intercept	-0.955	a	-0.955	a	-0.96	a
	(-3.550)		(-3.559)		(-3.575)	
Dummy = 1 if Internal Capital Market Is Efficient (ICMS>0)	0.242	c	0.242	c	0.248	c
	(1.883)		(1.889)		(1.951)	
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.0448		-0.0448		-0.0447	
	(-0.610)		(-0.611)		(-0.609)	
Dummy = 1 if Deal is 100% Cash Financed	-0.0319		-0.0319			
	(-0.470)		(-0.472)			
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	0.00005				0.00215	
	(0.001)				(0.032)	
Firm Size (Log of Total Asset)	0.04003	c	0.04003	c	0.039	c
	(1.900)		(1.908)		(1.865)	

(Table Continued.)

Book-to-Market Ratio	0.518 (4.428)	a	0.518 (4.489)	a	0.51 (4.418)	a
Leverage	0.507 (2.423)	b	0.507 (2.431)	b	0.518 (2.492)	b
Liquidity	-0.0316 (-0.086)		-0.0316 (-0.086)		-0.0449 (-0.122)	
Profitability	0.883 (1.588)		0.883 (1.596)		0.861 (1.556)	
Number of Observations	205		205		205	
R ²	0.128		0.128		0.127	
Adjusted R ²	0.088		0.093		0.092	

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 8b:

**Regression of Acquirer's Change in Excess Value on Characteristics of the Match
and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy;
Excess Value Based on Sales Multiples)**

The dependent variable is the acquirer's change in excess value (based on sales multiples) from the pre-announcement year to three years after the announcement year. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in Excess Value (= EV in year(+3) - EV in year (-1))		
	I	II	III

(Table Continued.)

Intercept	-0.911 a (-3.376)	-0.911 a (-3.384)	-0.915 a (-3.399)
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.077 (-1.070)	-0.0771 (-1.074)	-0.0781 (-1.087)
Dummy = 1 if Deal is 100% Cash Financed	-0.046 (-0.678)	-0.0463 (-0.685)	
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	0.00376 (0.056)		0.00697 (0.104)
Firm Size (Log of Total Asset)	0.0401 c (1.892)	0.0402 c (1.902)	0.0386 c (1.833)
Book-to-Market Ratio	0.534 a (4.544)	0.535 a (4.617)	0.522 a (4.500)
Leverage	0.512 b (2.430)	0.512 b (2.438)	0.527 b (2.521)
Liquidity	-0.0694 (-0.188)	-0.0699 (-0.189)	-0.0904 (-0.245)
Profitability	0.765 (1.376)	0.767 (1.386)	0.728 (1.317)
Number of Observations	205	205	205
R ²	0.112	0.112	0.11
Adjusted R ²	0.076	0.081	0.079

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

t statistics is reported in the parenthesis.

Table 9a:

Regression of Acquirer's Change in Excess Value on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy; Excess Value Based on Asset Multiples)

The dependent variable is the acquirer's change in excess value (based on asset multiples) from the pre-announcement year to three years after the announcement year. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in Excess Value (= EV in year(+3) - EV in year (-1))					
	I		II		III	
Intercept	-0.679	b	-0.678	b	-0.679	b
	(-2.466)		(-2.471)		(-2.477)	
Dummy = 1 if Internal Capital Market Is Efficient (ICMS>0)	0.0737		0.07043		0.07426	
	(0.519)		(0.503)		(0.529)	
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.00372		-0.00348		-0.00376	
	(-0.055)		(-0.052)		(-0.056)	
Dummy = 1 if Deal is 100% Cash Financed	-0.00205		-0.00114			
	(-0.031)		(-0.017)			
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	-0.0105				-0.0104	
	(-0.164)				(-0.163)	
Firm Size (Log of Total Asset)	0.05167	b	0.05125	b	0.05156	b
	(2.536)		(2.545)		(2.576)	
Book-to-Market Ratio	0.304	b	0.3	b	0.303	b
	(2.290)		(2.306)		(2.357)	
Leverage	0.163		0.162		0.163	
	(0.673)		(0.671)		(0.678)	

(Table Continued.)

Liquidity	0.264 (0.428)	0.26 (0.424)	0.262 (0.428)
Profitability	0.1 (0.180)	0.09734 (0.176)	0.0986 (0.179)
Number of Observations	147	147	147
R ²	0.077	0.077	0.077
Adjusted R ²	0.016	0.023	0.023

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 9b:

Regression of Acquirer's Change in Excess Value on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy; Excess Value Based on Asset Multiples)

The dependent variable is the acquirer's change in excess value (based on asset multiples) from the pre-announcement year to three years after the announcement year. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in Excess Value (= EV in year(+3) - EV in year (-1))					
	I		II		III	
Intercept	-0.676	b	-0.675	b	-0.674	b
	(2.461)		(-2.468)		(-2.468)	
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.0109		-0.0106		-0.0112	
	(-0.165)		(-0.161)		(-0.170)	

(Table Continued.)

Dummy = 1 if Deal is 100% Cash Financed	-0.00637 (-0.098)	-0.00574 (-0.089)	
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	-0.00588 (-0.093)		-0.00524 (-0.083)
Firm Size (Log of Total Asset)	0.05061 b (2.503)	0.05039 b (2.518)	0.05025 b (2.537)
Book-to-Market Ratio	0.314 b (2.403)	0.312 b (2.446)	0.311 b (2.450)
Leverage	0.173 (0.718)	0.172 (0.718)	0.175 (0.730)
Liquidity	0.251 (0.408)	0.249 (0.407)	0.246 (0.404)
Profitability	0.105 (0.190)	0.104 (0.187)	0.09974 (0.181)
Number of Observations	147	147	147
R ²	0.075	0.075	0.075
Adjusted R ²	0.022	0.029	0.029

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

5.4 *Measuring the Operating Performance of the Acquirers*

We further investigate the operating performance of the acquirers before and after the acquisitions. Two measures of operating performance are included in this study: the first one is the ratio of earnings before interest, taxes and depreciation to total assets (EBITD/AT); and the second one is the ratio of sales to total assets (SALE/AT). To make the results comparable to the

excess value analysis, we examine the operating performance of the acquirers in the pre-announcement year and in three years after the announcement year (for example, if the merger is announced in 1992, we examine the acquirer's operating performance in fiscal year end of 1991, and 1995). Then we investigate the change in operating performance during these years; as well as the between-group differences. Finally we run a regression to find out the effect of internal capital allocation efficiency on the change of operating performance from pre-announcement year to three years after.

Table 10a reports the mean operating performance for ICMS (ICM based on net subsidy) inefficient, inactive, and efficient firms. In the pre-announcement year (year -1), both operating performance measures for all three ICMS groups are significantly greater than zero. Three years after the announcement year (year +3), all remain positively significant except for the EBITD/AT measure for the ICMS inefficient firms (which drops to insignificant). All of these measures demonstrate a decrease from [year -1] to [year +3], however, it is significantly decreasing for ICMS inefficient firms (using SALE/AT measure) and for ICMS inactive firms (both measures); whereas insignificant for the ICMS efficient firms using both measures.

Table 10b reports the mean operating performance for ICM (ICM based on sum of subsidy and transfer) inefficient, inactive, and efficient firms. These results demonstrate the same pattern as depicted in table 10a.

Table 10a:

Mean Operating Performance Measures for ICMS Inefficient, Inactive, and Efficient Firms (Internal Capital Allocation Based on Net Subsidy)

	ICMS Inefficient Firms	ICMS Inactive Firms	ICMS Efficient Firms
Panel A: Pre-Announcement year			
EBITD/AT	0.1263 a	0.1737 a	0.1483 a
P-value	(.000)	(.000)	(.000)
N	136	223	25
SALE/AT	1.1119 a	1.1671 a	1.1637 a
P-value	(.000)	(.000)	(.000)
N	136	223	25
Panel B: 3 years after the announcement year			
EBITD/AT	0.0247	0.14 a	0.1405 a
P-value	(.772)	(.000)	(.000)
N	94	169	18
SALE/AT	0.9926 a	1.0251 a	1.1827 a
P-value	(.000)	(.000)	(.000)
N	95	169	18
Panel C: Net Change (=year (+3) - year (-1))			
EBITD/AT	-0.1116	-0.0365 a	-0.0044
P-value	(.196)	(.000)	(.804)
N	94	169	18
SALE/AT	-0.1851 a	-0.173 a	-0.0623
P-value	(.000)	(.000)	(.773)
N	95	169	18

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

Table 10b:

Mean Operating Performance Measures for ICMS Inefficient, Inactive, and Efficient Firms (Internal Capital Allocation Based on Sum of Subsidy and Transfer)

	ICM Inefficient Firms	ICM Inactive Firms	ICM Efficient Firms
Panel A: Pre-Announcement year			
EBITD/AT	0.1268 a	0.1737 a	0.1457 a
P-value	(.000)	(.000)	(.000)
N	136	223	25
SALE/AT	1.1119 a	1.1671 a	1.164 a
P-value	(.000)	(.000)	(.000)
N	136	223	25
Panel B: 3 years after the announcement year			
EBITD/AT	0.026	0.14 a	0.1404 a
P-value	(.758)	(.000)	(.000)
N	95	169	17
SALE/AT	0.9857 a	1.0251 a	1.2327 a
P-value	(.000)	(.000)	(.000)
N	96	169	17
Panel C: Net Change (=year (+3) - year (-1))			
EBITD/AT	-0.1107	-0.0365 a	-0.0029
P-value	(.195)	(.000)	(.876)
N	95	169	17
SALE/AT	-0.1855 a	-0.173 a	-0.053
P-value	(.000)	(.000)	(.817)
N	96	169	17

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

Table 11a reports the difference in mean operating performance between groups. Panel A shows that in the pre-announcement year, the ICMS inactive firms have significantly higher EBITD/AT ratio than both the ICMS inefficient and efficient firms. However, three years after the announcement year, these differences become insignificant; moreover, the ICMS efficient firms are having higher operating performance compared to the inactive firms. Table 11b shows the corresponding results when internal capital allocation measure is based on sum of subsidy and transfer. Again, these results are largely consistent with each other no matter the internal capital allocation is based on net subsidy or on sum of subsidy and transfer.

Table 11a:

**Difference in Mean Operating Performance Measures Between Groups
(Internal Capital Allocation Based on Net Subsidy)**

	(Inefficient - Efficient)	(Inefficient - Inactive)	(Inactive - Efficient)
Panel A: Pre-Announcement year			
EBITD/AT	-0.0221	-0.0474 a	0.0254 c
P-value	(.153)	(.000)	(.064)
SALE/AT	-0.0518	-0.0552	0.0035
P-value	(.732)	(.397)	(.978)
Panel B: 3 years after the announcement year			
EBITD/AT	-0.1158	-0.1153	-0.0005
P-value	(.554)	(.179)	(.975)
SALE/AT	-0.1901	-0.0325	-0.1576
P-value	(.420)	(.637)	(.491)

(Table Continued.)

Panel C: Net Change (=year (+3) - year (-1))

EBITD/AT	-0.1072	-0.0751	-0.0321 c
P-value	(.587)	(.384)	(.064)
SALE/AT	-0.1228	-0.0121	-0.1107
P-value	(.576)	(.793)	(.611)

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

Table 11b:

**Difference in Mean Operating Performance Measures Between Groups
(Internal Capital Allocation Based on Sum of Subsidy and Transfer)**

	(Inefficient - Efficient)	(Inefficient - Inactive)	(Inactive - Efficient)
Panel A: Pre-Announcement year			
EBITD/AT	-0.0189	-0.0469 a	0.028 b
P-value	(.220)	(.000)	(.041)
SALE/AT	-0.0521	-0.0553	0.0032
P-value	(.731)	(.396)	(.980)
Panel B: 3 years after the announcement year			
EBITD/AT	-0.1145	-0.114	-0.0004
P-value	(.568)	(.179)	(.980)
SALE/AT	-0.247	-0.0394	-0.2076
P-value	(.312)	(.567)	(.382)

(Table Continued.)

Panel C: Net Change (=year (+3) - year (-1))				
EBITD/AT	-0.1078	-0.0742	-0.0336	c
P-value	(.593)	(.384)	(.060)	
SALE/AT	-0.1325	-0.0125	-0.12	
P-value	(.569)	(.786)	(.603)	

Note: Value in parenthesis is the P-value of a 2-tailed T test.

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

Table 12a-b and Table 13a-b report the results of regressing the change in operating performance on characteristics of the match and the acquiring firms. Table 12a shows the results when ICM is based on net subsidy and operating performance is based on EBITD/AT. Table 12b presents us the results when ICM is based on sum of subsidy and transfer and operating performance is based on EBITD/AT. Table 13a reports the results when ICM is based on net subsidy and operating performance is based on SALE/AT. And Table 13b shows the results when ICM is based on sum of subsidy and transfer and operating performance is based on SALE/AT. Summarizing all these results, we can see that when operating performance is based on SALES/AT, The coefficient on the inefficient internal capital allocation component is significantly less than zero (at 10 percent level) no matter ICM is based on net subsidy or sum of subsidy and transfer. And when operating performance is based on EBITD/AT, the coefficients on the internal capital allocation components exhibit the predicted signs as well, although not statistically significant. However, the effects of the method of payment and relatedness on the

change in operating performance are not significant. These results reinforce that internal capital allocation efficiency is a dominating factor in the success of acquisitions.

We further modify the classification of our sample firms into ICM(S) efficient firms (ICM(S) value greater or equal to zero) and ICM(S) inefficient firms (ICM(S) value less than zero) and repeat the above regression analysis. Table 12c shows the results when ICM is based on net subsidy and operating performance is based on EBITD/AT. Table 12d reports the results when ICM is based on sum of subsidy and transfer and operating performance is based on EBITD/AT. Table 13a presents the results when ICM is based on net subsidy and operating performance is based on SALE/AT. And Table 13b shows the results when ICM is based on sum of subsidy and transfer and operating performance is based on SALE/AT. In these regressions, we include one dummy for ICM(S) inefficient firms. All of these regressions show that the coefficients on the ICM(S) inefficiency dummy is significantly less than zero at 10 percent level or above.

Table 12a:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy; Operating Performance Based on EBITD/AT)

The dependent variable is the acquirer's change in EBITD/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

(Table Continued.)

Variable Name	Acquirer's Change in EBITD/AT		
	I	II	III
Intercept	0.286 (1.158)	0.283 (1.142)	0.281 (1.137)
Dummy = 1 if Internal Capital Market Is Efficient (ICMS>0)	0.04975 (0.407)	0.04439 (0.363)	0.03991 (0.329)
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.109 (-1.629)	-0.108 (-1.618)	-0.107 (-1.604)
Dummy = 1 if Deal is 100% Cash Financed	0.04668 (0.747)	0.05582 (0.898)	
Dummy = 1 if Acquirer and Target share a 4-Digit SIC Industry	-0.0756 (-1.245)		-0.0809 (-1.343)
Firm Size (Log of Total Asset)	0.0221 (1.145)	0.02 (1.039)	0.02424 (1.271)
Book-to-Market Ratio	-0.0931 (-0.818)	-0.114 (-1.008)	-0.0763 (-0.684)
Leverage	-0.4 b (-2.055)	-0.403 b (-2.067)	-0.411 b (-2.120)
Liquidity	0.07325 (0.216)	0.08695 (0.256)	0.09064 (0.268)
Profitability	-1.24 b (-2.433)	-1.267 b (-2.488)	-1.19 b (-2.358)
Number of Observations	276	276	276
R ²	0.053	0.048	0.051
Adjusted R ²	0.021	0.019	0.023

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 12b:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Sum of Subsidy and Transfer; Operating Performance Based on EBITD/AT)

The dependent variable is the acquirer's change in EBITD/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in EBITD/AT		
	I	II	III
Intercept	0.284 (1.151)	0.281 (1.136)	0.279 (1.131)
Dummy = 1 if Internal Capital Market Is Efficient (ICM>0)	0.04972 (0.397)	0.04647 (0.371)	0.04057 (0.326)
Dummy = 1 if Internal Capital Market Is Inefficient (ICM<0)	-0.107 (-1.605)	-0.107 (-1.602)	-0.105 (-1.584)
Dummy = 1 if Deal is 100% Cash Financed	0.04558 (0.730)	0.05473 (0.882)	
Dummy = 1 if Acquirer and Target share a 4-Digit SIC Industry	-0.0742 (-1.224)		-0.0795 (-1.322)
Firm Size (Log of Total Asset)	0.02232 (1.156)	0.02024 (1.052)	0.0244 (1.279)
Book-to-Market Ratio	-0.0931 (-0.818)	-0.113 (-1.006)	-0.0767 (-0.688)
Leverage	-0.401 b (-2.060)	-0.404 b (-2.072)	-0.412 b (-2.123)

(Table Continued.)

Liquidity	0.07321 (0.216)	0.08663 (0.255)	0.09022 (0.267)
Profitability	-1.236 b (-2.426)	-1.263 b (-2.480)	-1.188 b (-2.353)
Number of Observations	276	276	276
R ²	0.053	0.047	0.051
Adjusted R ²	0.021	0.019	0.022

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

t statistics is reported in the parenthesis.

Table 12c:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy; Operating Performance Based on EBITD/AT)

The dependent variable is the acquirer's change in EBITD/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in EBITD/AT		
	I	II	III
Intercept	0.291 (1.179)	0.287 (1.161)	0.285 (1.156)
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.115 c (-1.759)	-0.114 c (-1.739)	-0.112 c (-1.721)

(Table Continued.)

Dummy = 1 if Deal is 100% Cash Financed	0.04394 (0.708)	0.05327 (0.864)	
Dummy = 1 if Acquirer and Target share a 4-Digit SIC Industry	-0.0747 (-1.234)		-0.0799 (-1.331)
Firm Size (Log of Total Asset)	0.02195 (1.139)	0.01989 (1.035)	0.02402 (1.262)
Book-to-Market Ratio	-0.0883 (-0.781)	-0.109 (-0.976)	-0.0732 (-0.660)
Leverage	-0.396 b (-2.039)	-0.399 b (-2.053)	-0.407 b (-2.107)
Liquidity	0.06965 (0.206)	0.0836 (0.247)	0.08689 (0.257)
Profitability	-1.251 b (-2.463)	-1.277 b (-2.514)	-1.202 b (-2.391)
Number of Observations	276	276	276
R ²	0.053	0.047	0.051
Adjusted R ²	0.024	0.022	0.026

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 12d:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Sum of Subsidy and Transfer; Operating Performance Based on EBITD/AT)

The dependent variable is the acquirer's change in EBITD/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in EBITD/AT		
	I	II	III
Intercept	0.289 (1.172)	0.285 (1.156)	0.283 (1.150)
Dummy = 1 if Internal Capital Market Is Inefficient (ICM<0)	-0.113 c (-1.731)	-0.112 c (-1.722)	-0.11 c (-1.697)
Dummy = 1 if Deal is 100% Cash Financed	0.0431 (0.695)	0.05236 (0.850)	
Dummy = 1 if Acquirer and Target share a 4-Digit SIC Industry	-0.0737 (-1.218)		-0.0789 (-1.314)
Firm Size (Log of Total Asset)	0.02212 (1.148)	0.02007 (1.045)	0.02414 (1.269)
Book-to-Market Ratio	-0.0885 (-0.783)	-0.109 (-0.974)	-0.0736 (-0.664)
Leverage	-0.396 b (-2.043)	-0.399 b (-2.057)	-0.407 b (-2.109)
Liquidity	0.06988 (0.206)	0.08343 (0.246)	0.08671 (0.257)

(Table Continued.)

Profitability	-1.247 b (-2.455)	-1.274 b (-2.508)	-1.199 b (-2.385)
Number of Observations	276	276	276
R ²	0.052	0.047	0.051
Adjusted R ²	0.024	0.022	0.026

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

t statistics is reported in the parenthesis.

Table 13a:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy; Operating Performance Based on SALE/AT)

The dependent variable is the acquirer's change in SALE/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). SALE/AT is the ratio of firm sales to total assets. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in SALE/AT					
	I		II		III	
Intercept	0.411 b (2.193)		0.409 b (2.180)		0.413 b (2.206)	
Dummy = 1 if Internal Capital Market Is Efficient (ICMS>0)	0.06642 (0.716)		0.06292 (0.679)		0.06918 (0.752)	
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.0892 c (-1.758)		-0.0888 c (-1.750)		-0.0897 c (-1.772)	

(Table Continued.)

Dummy = 1 if Deal is 100% Cash Financed	-0.0131 (-0.276)	-0.00712 (-0.151)	
Dummy = 1 if Acquiror and Target share a 4-Digit SIC Industry	-0.0493 (-1.071)		-0.0478 (-1.047)
Firm Size (Log of Total Asset)	0.00779 (0.532)	0.00642 (0.440)	0.00719 (0.497)
Book-to-Market Ratio	-0.052 (-0.602)	-0.0654 (-0.765)	-0.0567 (-0.671)
Leverage	-0.377 b (-2.551)	-0.379 b (-2.562)	-0.374 b (-2.542)
Liquidity	0.329 (1.278)	0.338 (1.313)	0.324 (1.264)
Profitability	-2.325 a (-6.013)	-2.343 a (-6.064)	-2.339 a (-6.111)
Number of Observations	276	276	276
R ²	0.18	0.177	0.18
Adjusted R ²	0.153	0.152	0.156

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 13b:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Sum of Subsidy and Transfer; Operating Performance Based on SALE/AT)

The dependent variable is the acquirer's change in SALE/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). SALE/AT is the ratio of firm sales to total assets. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in SALE/AT					
	I		II		III	
Intercept	0.41	b	0.408	b	0.412	b
	(2.188)		(2.176)		(2.201)	
Dummy = 1 if Internal Capital Market Is Efficient (ICM>0)	0.07269		0.07059		0.07545	
	(0.765)		(0.743)		(0.799)	
Dummy = 1 if Internal Capital Market Is Inefficient (ICM<0)	-0.0885	c	-0.0884	c	-0.0889	c
	(-1.751)		(-1.749)		(-1.764)	
Dummy = 1 if Deal is 100% Cash Financed	-0.0138		-0.00782			
	(-0.290)		(-0.166)			
Dummy = 1 if Acquirer and Target share a 4-Digit SIC Industry	-0.0481				-0.0465	
	(-1.045)				(-1.019)	
Firm Size (Log of Total Asset)	0.008		0.00666		0.00738	
	(0.546)		(0.456)		(0.510)	
Book-to-Market Ratio	-0.0522		-0.0653		-0.0572	
	(-0.605)		(-0.764)		(-0.676)	
Leverage	-0.379	b	-0.38	b	-0.375	b
	(-2.563)		(-2.575)		(-2.552)	

(Table Continued.)

Liquidity	0.329 (1.277)	0.338 (1.311)	0.324 (1.262)
Profitability	-2.323 a (-6.009)	-2.341 a (-6.061)	-2.337 a (-6.107)
Number of Observations	276	276	276
R ²	0.181	0.177	0.18
Adjusted R ²	0.153	0.153	0.156

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.

t statistics is reported in the parenthesis.

Table 13c:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Net Subsidy; Operating Performance Based on SALE/AT)

The dependent variable is the acquirer's change in SALE/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). SALE/AT is the ratio of firm sales to total assets. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in SALE/AT					
	I		II		III	
Intercept	0.417	b	0.415	b	0.42	b
	(2.228)		(2.214)		(2.246)	
Dummy = 1 if Internal Capital Market Is Inefficient (ICMS<0)	-0.097	c	-0.0962	c	-0.0981	b
	(-1.958)		(-1.942)		(-1.987)	

(Table Continued.)

Dummy = 1 if Deal is 100% Cash Financed	-0.0167 (-0.355)	-0.0107 (-0.229)	
Dummy = 1 if Acquirer and Target share a 4-Digit SIC Industry	-0.0481 (-1.047)		-0.0462 (-1.013)
Firm Size (Log of Total Asset)	0.00759 (0.519)	0.00626 (0.429)	0.0068 (0.471)
Book-to-Market Ratio	-0.0456 (-0.531)	-0.059 (-0.695)	-0.0514 (-0.610)
Leverage	-0.371 b (-2.518)	-0.373 b (-2.531)	-0.367 b (-2.501)
Liquidity	0.324 (1.261)	0.333 (1.296)	0.318 (1.240)
Profitability	-2.34 a (-6.066)	-2.357 a (-6.114)	-2.359 a (-6.182)
Number of Observations	276	276	276
R ²	0.179	0.175	0.178
Adjusted R ²	0.154	0.154	0.157

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

Table 13d:

Regression of Acquirer's Change in Operating Performance on Characteristics of the Match and the Acquiring Firm (Internal Capital Allocation Based on Sum of Subsidy and Transfer; Operating Performance Based on SALE/AT)

The dependent variable is the acquirer's change in SALE/AT from the pre-announcement year to three years after the announcement year (change = value in year(+3) - value in year(-1)). SALE/AT is the ratio of firm sales to total assets. Firm size is the log of total assets. Book-to-market ratio is the ratio of book value of equity to market value of equity. Market value of equity is computed as the product of the share price multiplied by the number of shares outstanding. Leverage is the ratio of book value of debt to total assets. Liquidity is the ratio of cash plus marketable securities to total assets. Profitability (also as EBITD/AT) is the ratio of total consolidated firm earnings before interest, taxes, and depreciation to total assets.

Variable Name	Acquirer's Change in SALE/AT					
	I		II		III	
Intercept	0.417	b	0.415	b	0.419	b
	(2.226)		(2.214)		(2.244)	
Dummy = 1 if Internal Capital Market Is Inefficient (ICM<0)	-0.0966	c	-0.0963	c	-0.0976	b
	(-1.958)		(-1.952)		(-1.984)	
Dummy = 1 if Deal is 100% Cash Financed	-0.0174		-0.0114			
	(-0.369)		(-0.244)			
Dummy = 1 if Acquirer and Target share a 4-Digit SIC Industry	-0.0473				-0.0453	
	(-1.030)				(-0.993)	
Firm Size (Log of Total Asset)	0.00771		0.00639		0.0069	
	(0.527)		(0.439)		(0.478)	
Book-to-Market Ratio	-0.0455		-0.0586		-0.0515	
	(-0.529)		(-0.690)		(-0.611)	
Leverage	-0.372	b	-0.374	b	-0.367	b
	(-2.523)		(-2.536)		(-2.505)	
Liquidity	0.324		0.333		0.317	
	(1.259)		(1.294)		(1.238)	

(Table Continued.)

Profitability	-2.339 a (-6.065)	-2.356 a (-6.115)	-2.358 a (-6.181)
Number of Observations	276	276	276
R ²	0.179	0.176	0.178
Adjusted R ²	0.154	0.154	0.157

a: Significant at 1%; b: Significant at 5%; c: Significant at 10%.
t statistics is reported in the parenthesis.

VI. Conclusions

Using a sample of multi-segment acquirers, this study investigates the role of internal capital allocation efficiency in the success of acquisitions. By dividing the sample firms into three groups based on their internal capital allocation efficiency (namely the ICM inefficient firms, ICM inactive firms, and ICM efficient firms), we conduct event studies, long-term studies, excess value analyses, and operating performance analyses surrounding the acquisition activities. The event study of event window (-3, +3) shows that ICM efficient firms have significantly positive announcement period CAR, while the ICM inefficient firms and ICM inactive firms have significantly negative CARs. Sub-group and regression results further reinforce that the effects of internal capital allocation efficiency on announcement period CAR dominate those of method of payment and relatedness. Long-term studies do not find significant mispricing over the three years following the acquisition completion, which indicates that the market is rather efficient in absorbing the effects of acquisitions at or around the announcement date and our measure of efficiency fully captures success of acquisition. One interesting finding with the excess value analyses is that the ICM inactive firms are having significantly higher mean excess value compared to the ICM inefficient firms and ICM efficient firms at the fiscal year end before the acquisition announcement. However, three years after the acquisition, the difference in excess value between ICM inactive and ICM efficient firms becomes insignificant, which indicates that the ICM efficient firms are able to catch up in terms of excess value after the acquisitions. With the change in excess value from year (-1) to year (+3) as the dependent variable, regression results show that the coefficient on the efficient internal capital allocation

component is significantly positive when excess value is based on sales multiples. This confirms that the internal capital allocation efficiency effect is a leading factor in improving the acquirers' excess value following acquisitions. Lastly, operating performance analysis shows that the ICM inactive firms have significantly higher EBITD/AT ratio than both the ICM inefficient and efficient firms in the pre-announcement year. However, three years after the announcement year, these differences become insignificant; moreover, the ICM efficient firms have higher operating performance compared to the inactive firms. Regression with the change in operating performance from pre-announcement year to three years after indicates that the coefficient on the inefficient internal capital allocation component is significantly less than zero when operating performance is measured by SALE/AT. Overall, our results indicate that internal capital allocation efficiency is a significant factor in the success of acquisition; and that internal capital allocation efficiency does translate into efficient external investment decisions.

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