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Investment decisions and internal capital markets: Evidence from acquisitions ☆

John A. Doukas [a,*], Ozgur B. Kan [b]

[a] Department of Finance, Graduate School of Business, Old Dominion University, Constant Hall, Suite 2080, Norfolk, VA 23529-0222, United States
[b] Moody's Analytics, 7 World Trade Center, 250 Greenwich Street, New York, NY 10007, United States

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Abstract

In this paper, we examine the workings of internal capital markets in diversified firms that engage in related and unrelated corporate acquisitions. Our evidence indicates that bidders invest outside their core business (diversify) when the cash flows of their core business fall behind those of their non-core lines of business. However, bidders invest inside their core business (i.e., undertake non-diversifying investments) when their core business experiences superior cash flows. We also find that bidders whose core business are in industries with low growth prospects engage in diversifying acquisitions while bidders whose core business are in high growth industries undertake non-diversifying acquisitions. The pre-acquisition evidence, then, suggests that firms tend to diversify when the cash flows and the growth opportunities of their core business are considerably lower than those of their non-core business. Subsequent to acquisitions we find that diversifying bidders continue to allocate financial resources from less profitable business segments (i.e., core business) to more profitable business segments (i.e., non-core business). Given the low profitability of diversifying bidders' core business, this capital resource allocation suggests that diversification increases do not result in capital allocation inefficiencies. The evidence for non-diversifying bidders, however, supports the existence of "corporate socialism" in the sense that there is transfer of funds from the profitable (core) to the less profitable (non-core) business segments in multi-segment bidders. We find that the capital expenditures of bidders' non-core business segments rely on both core and non-core cash flows.

JEL classification: G34; G14; G32; D82

Keywords: Internal capital markets; Mergers and acquisitions; Diversification; Cash flow; Capital expenditures

1. Introduction

Several studies document that diversified firms trade at a discount relative to matched portfolios of stand-alone firms.[1] Econometric issues raised in several recent papers aside,[2] the negative association between diversity and corporate value, documented by Shin and Stulz (1998), Scharfstein (1998) and Rajan et al. (2000), is the crux of the ongoing debate on whether the so-called diversification discount is the consequence of inefficient investment policies of diversified firms.

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* Corresponding author.
E-mail addresses: jdoukas@odu.edu (J.A. Doukas), ozgur.kan@moodys.com (O.B. Kan).

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[1] See Lang and Stulz (1994), Berger and Ofek (1995, 1996), among others.

[2] See Whited (2001), Campa and Kedia (2002), Mansi and Reeb (2002), Villalonga (2004) and Doukas and Kan (2004) among others.

For example, Lamont (1997) provides evidence in support of inefficiencies in the internal resource allocation process of diversified firms by showing that the cash flow of the core business can influence the investment of another division.[3] Shin and Stulz (1998) report that the investment of a business segment of a diversified firm depends significantly on the cash flow of its other business segments and that a segment's investment depends less on its own cash flow than if it were a stand-alone firm. Scharfstein (1998) finds that inefficient allocation of resources between divisions is manifested when management has a low ownership stake and argues that agency costs cause distortions in divisional allocation. Scharfstein and Stein (2000) suggest that internal capital market inefficiencies stem from the presence of divisions with low growth opportunities and show how rent-seeking behavior on the part of division managers can undermine the workings of internal capital markets. Similarly, Rajan et al. (2000) model the internal power struggles between divisions for scarce corporate resources and find that greater diversity in investment opportunities among business segments leads to distorted investment decisions that harm shareholder value.

While most of the existing literature uses cross-sectional comparisons of diversified firms to examine the link between the discount and the investment policy of the firm, this methodology has been the subject of the recent debate about the diversification discount. In contrast with the previous diversification literature, our approach in this paper is to study changes in corporate diversification through acquisitions and whether such diversification changes are related with changes in the diversification discount and the investment decision of the firm. More importantly, we examine how capital resources are allocated among business segments around diversifying acquisitions in order to determine whether corporate diversity leads to inefficiencies in the allocation of internal capital recourses. Therefore, diversifying acquisitions provide a unique framework to examine whether corporate diversification exacerbates the inefficient allocation of capital resources.

Despite the fact that several papers have sought to determine the efficiency of internal capital markets following corporate spin-offs and divestitures by diversified firms (Ahn and Denis, 2004; Dittmar and Shivdasani, 2003; Gertner et al., 2002; Schlingemann et al., 2001), this paper seeks to shed light on the workings of internal capital markets from the acquisitions perspective because the forces driving diversification decreases (divestitures) are naturally different from those that drive diversification increases. Although the study of divestitures permits to examine how internal capital markets function when a firm divests to achieve greater corporate focus, divestitures may not be motivated by the need to enhance corporate focus. For example, Lang et al. (1989) argue that divestitures are often used as a financing mechanism when access to external capital markets is limited. Fluck and Lynch (1999) claim that a firm may decide to divest a business unit whenever the financing synergy ends and it has a chance to be financed as a stand-alone firm.[4] Moreover, divestitures are unlikely to occur in isolation since they may be part of a restructuring program linked to changes in the firm's internal and external control environment. Finally, the use of divestiture and/or spin-off data to study the resource allocation process of internal capital markets in diversified firms leads towards a biased sample of firms where the investment inefficiencies are more severe and, therefore, limits the researcher's ability to draw broad inferences about the population of diversified firms.

Diversifying acquisitions, however, permit to examine whether the internal resource allocation process is inefficient by analyzing firms' investment policy before and after the acquisition. Specifically, studying internal capital markets from the acquisitions perspective allows us to examine directly whether capital is allocated efficiently between the core and non-core business segments in a diversified firm. After a balanced reading of the corporate diversification literature it remains unclear (i) why firms choose to become more diversified through acquisitions and (ii) how the change in bidders' diversification impacts the allocation of financial resources among its business divisions. Specifically, we test the internal capital markets hypothesis, the external growth hypothesis and the free cash flow/agency cost hypothesis. According to the internal capital markets hypothesis, corporate diversification is expected to result in efficiency gains arising from the development of internal capital markets in diversified firms over external capital markets. According to the external growth hypothesis, firms with poor performance and lower internal growth opportunities seek to diversify into unrelated lines of businesses. The free cash flow/agency cost hypothesis predicts that managers pursue industrial diversification to build complex corporate empires at the expense of shareholders' wealth.

In this paper, we examine these issues in diversified firms when they engage in related and unrelated acquisitions. Our sample covers 742 firm-year acquisitions over the 1991–1997 period. Our evidence indicates that the core business cash flows of diversifying (non-diversifying) firms are inferior (superior) to those of non-diversifying (diversifying) firms. These results suggest that core business profitability problems are driving diversifying acquisitions. We also show that bidders whose core business are in industries with low growth prospects engage in diversifying acquisitions while bidders whose core business are in high growth industries undertake non-diversifying acquisitions. Finally, and perhaps more importantly, our findings

[3] Lamont (1997) found that investment in non-oil (non-core business) segments of diversified oil firms declined when the cash flows of oil (core business) segments decreased dramatically as a result of the large drop in oil prices in 1986.

[4] Kaplan and Weisbach (1992) argue that a firm may sell a business that it has improved or a business that it once had synergies but no longer does. In line with this view, John and Ofek (1995) find that the typical divested division is performing as well as the industry at the time of divestiture.

indicate that subsequent to diversifying acquisitions there is allocation of capital from the core to the non-core business segments of the bidder. Specifically, our evidence demonstrates that bidders' core business capital expenditures are driven by the cash flows of core business while the capital expenditures of bidders' non-core business are driven by both core and non-core business cash flows. Taken together our findings suggest that diversifying bidders tend to allocate financial resources from less profitable business segments (i.e., core business) to more profitable business segments (i.e., non-core business). Given the low profitability of core business, the shift of capital resources from the core to the non-core business of the diversifying bidder suggests that diversification increases do not result in inefficient capital allocation. For non-diversifying bidders, however, the evidence shows elements of "corporate socialism" in the sense that there is transfer of funds from the profitable (core) to the less profitable (non-core) business segments in multi-segment bidders.

The remainder of the paper proceeds as follows. Section 2 describes the sources of data and the sample selection procedure. Section 3 compares the pre-acquisition market-to-book value (MBV) and imputed market-to-book value of bidders that engage in related and unrelated acquisitions. Section 4 reports the pre-acquisition core and non-core business segment performance of bidders. Section 5 examines the determinants of the type of acquisition conducted by diversified firms. Section 6 compares the post-acquisition market-to-book value and imputed market-to-book value of bidders involved in related and unrelated acquisitions. Section 7 reports the post-acquisition core and non-core business segment performance of bidders. Section 8 examines the capital expenditures of core and non-core business segments of bidders engaged in related and unrelated acquisitions in a multi-variate framework and Section 9 concludes the paper.

2. Data selection, sources and industrial classification

2.1. Sources of data and sample selection

Our sample consists of domestic acquisitions conducted by US bidders between January 1, 1991 and December 31, 1997 as reported in the domestic acquisitions roster of Securities Data Corporation's Mergers & Acquisitions (M&A) Journal. The rosters of the M&A Journal include all acquisitions of $5 million value or higher and report the name, the Standard Industrial Classification (SIC) code, the business definition of bidder and target or businesses. They also report the value of acquisitions, the method of payment, whether the target is divested or not, the completion day of the acquisition, and the advisors to both parties. Acquisitions associated with target firms in non-manufacturing industries are excluded from the sample. Bidders involved in both domestic and cross-border acquisitions in the same calendar year are also excluded from the sample and our initial sample covers 10,128 domestic acquisitions over the 1991–1997 period.

2.2. Industrial classification of bidders

In this paper, we use the Compustat Industry Segment File to determine the industrial diversification of bidders. SEC regulation S-K and FASB-SFAS No. 14 require firms to report segment information for fiscal years ending after December 15, 1977 for segments that represent 10% or more of consolidated sales. Our data set covers firms that engage in M&As primarily before SFAS 131. Starting in 1998, SFAS 131 requires the primary breakdown used by management in defining conglomerate business segments so that the management should report segment information according to how the firm internally organizes business activity for resource allocation and performance assessment.[5] The Compustat Industry Segment File reports net sales, operating profit (earnings before interest and taxes, EBIT), depreciation, assets, and capital expenditures on a segment level for all active Compustat firms. Compustat assigns a primary and a secondary SIC code to each business segment of the firm, as well as a main SIC code to the firm at 4-digit level.[6]

The recent diversification literature determines a firm's industrial diversity by using the 2-digit SIC code,[7] the 3-digit SIC code,[8] or the 4-digit SIC code.[9] In addition, Scharfstein (1998) pools related business segments into "divisions" which are unrelated to each other, but the business segments in each division are highly related.

Servaes (1996), however, points out that a straightforward examination of the 4-digit SIC codes of the segments of the firm, does not necessarily reveal the degree of diversification of the firm. He argues that the use of the 4-digit code would be too wide to identify the industrial structure of the firm. Similarly, Kahle and Walkling (1996) show how a 4-digit SIC code assigned to a firm might be misleading with regard to the most reasonable 2- or 3-digit

[5] The sample period ends with the structural change that took place for segment reporting purposes in US GAAP with the enactment of SFAS 131 in 1998. SFAS 131 gives more leeway to managers for reporting purposes. A "segment" is not strictly defined under US GAAP while a "reportable segment", as defined in SFAS 131, is a component of an enterprise that has at least 10% of (i) revenues, (ii) operating profit or loss or (iii) combined identifiable assets of the enterprise as a whole. Enterprises also have to report some measure of profitability and identifiable assets. One caveat of SFAS 131 is that different accounting methods are allowed to be used to report segment data, provided that there is a reconciliation to US GAAP included in the reporting.

[6] It should be noted that the main SIC code of the firm reported by Compustat is not always representative of the firm's main cash generating line of business (core business). Kahle and Walkling (1996) point out that SIC codes change over time, even though researchers using the latest Compustat have access only to latest SIC code, which could be different from the SIC codes appropriate for previous years.

[7] Servaes (1996), Berger and Ofek (1995, 1996), Hubbard and Palia (1998) and Lins and Servaes (1999, 2002).

[8] Shin and Stulz (1998), Scharfstein (1998) and Gertner et al. (2002).

[9] Morck et al. (1991) and Comment and Jarrell (1995).

classifications. Consistent with Servaes (1996), Berger and Ofek (1995, 1996), Hubbard and Palia (1998) and Lins and Servaes (1999, 2002), our measure of relatedness for distinct business segments is based on sharing the same 2-digit SIC code. The rationale for using 2-digit SIC code is that industries with the same 2-digit SIC codes are closely related and require comparable management skills.

We aggregate the sales, operating income, assets, capital expenditures and depreciation of bidders' each reported segment into distinct business segments, "divisions", based on their 2-digit SIC code. Therefore, we determine the sales, operating income, assets, capital expenditures and depreciation of each distinct segment defined at 2-digit SIC code. We, then, define the "core business" of the bidder by the 2-digit SIC code of the business segment that has the highest share of aggregated sales of the firm using information in the year before the acquisition. All the remaining business segments of the bidder are counted as "non-core business" segments. We also use bidder's segment information at the announcement year to identify its core and non-core business in order to classify the nature of acquisition. This procedure yields similar results. Throughout the study, we report results based on the classification prior to the year of the acquisition (year − 1).

Consistent with most of the previous diversification studies, we define acquisitions as "unrelated" (i.e., diversifying) when the 2-digit SIC code of the target does not match with the 2-digit SIC code of the bidder's core business. Acquisitions are defined as "related" (i.e., non-diversifying) when the 2-digit SIC code of the target is identical with that of the bidder's core business.

2.3. Sample characteristics and summary statistics

In our initial sample of 10,128 acquisitions, only 5440 transactions represent acquisitions of full target firms while the remaining 4688 transactions represent asset, plant or partial acquisitions. Out of the 10,128 acquisitions we are unable to find any information about bidders in Compustat for 4881 acquisitions. This brings the sample size down to 5247 acquisitions. Then, we eliminate 393 acquisitions by bidders that have core businesses in non-manufacturing industries. We also drop another 845 acquisitions of bidders that acquire several targets operating both within (related) and outside (unrelated) their core line of business ending up with 4009 acquisitions. 803 of 4009 targets are full target firms while remaining 3206 are plant, asset or partial acquisitions. In addition, 829 acquisitions are identified as multiple acquisitions of bidders to be consolidated as one firm-year acquisition. We focus exclusively on the acquisitions of multi-segment (industrially diversified) bidders. Out of 3180 firm-year acquisitions, we exclude 2438 acquisitions conducted by single-segment (focused) bidders. Therefore, our final sample includes 742 firm-year observations undertaken by multi-segment bidders spanning 42 2-digit SIC code industries.[10]

Panel A of Table 1 reports the number and frequency of 742 firm-year acquisitions. The number of acquisitions has an increasing trend over the years and the majority consists of unrelated of acquisitions in nature throughout the sample period. About 60% of acquisitions represent investments outside the core business of multi-segment bidders, while 40% of acquisitions correspond to investment activity within the core business of bidders. The summary statistics and sample characteristics are reported in Panel B of Table 1. The sales, market value and total assets statistics of bidders suggest that they are medium to large sized firms. The average [median] debt to total capital ratio is 45.24% [43.17%] suggesting that bidders are considerably levered. The average [median] insider and institutional ownership figures indicate that insiders of bidding firms have considerably lower ownership stakes compared to institutional owners. The summary statistics also show that the average [median] number of lines of business (number of business segments) is 2.93 [3.00] in this sample. The average [median] number of acquisitions in a single year is 1.28 [1.00]. The average [median] size of firm-year acquisitions is $384 million [$58.30 million]. Related acquisitions are considerably larger than unrelated acquisitions. The average [median] size of related acquisitions is $528 million [$74 million] while that of unrelated acquisitions is $271 million [$50 million].

3. Pre-acquisition market-to-book value and imputed market-to-book value of bidders

In this section, we examine the bidders' pre-acquisition market-to-book and imputed market-to-book values. MBV is computed as debt in current liabilities plus total long term debt plus liquidating value of preferred stock plus market value of outstanding shares divided by total assets.[11] Bidders' imputed MBV is estimated as the weighted sum of median MBV of size-matched stand-alone firms operating in the same 2-digit SIC code industries with the distinct business segments of the bidder.

Bidders' pre-acquisition MBVs and imputed MBVs are reported in Table 2. Several key patterns emerge from these results. First, diversified bidders have significantly lower mean and median MBVs than their imputed MBVs indicating that bidders' performance prior to the

[10] The industry distribution of bidders and acquisitions, not reported, is available upon request from authors.

[11] Debt in current liabilities is Compustat data code A34 – mnemonic DLC. Total long term debt is Compustat data code A9 – mnemonic DLTT. Liquidating value of preferred stock is Compustat data code A10 – mnemonic PSTKL. Market value of outstanding shares is Compustat data code A24 (calendar year end stock price – mnemonic PRCC) times Compustat data code A25 (number of shares outstanding – mnemonic CSHO). Total assets is Compustat data code A6 – mnemonic AT.

Table 1
Sample selection and summary statistics

	1991	1992	1993	1994	1995	1996	1997	1991–1997
Panel A: Frequency of acquisitions by year								
Number of firm-year acquisitions	89	97	79	110	129	114	124	742
Number and frequency of related acquisitions	37 41.57%	35 36.08%	28 35.44%	46 41.82%	49 37.98%	47 41.23%	55 44.35%	297 40.03%
Number and frequency of unrelated acquisitions	52 58.43%	62 63.92%	51 64.56%	64 58.18%	80 62.02%	67 58.77%	69 55.65%	445 59.97%

	All acquisitions	Related acquisitions	Unrelated acquisitions
Panel B: Summary statistics and sample characteristics			
Total sales (million$)	2942.66 [747.73]	2851.46 [735.34]	3004.52 [762.85]
Market value (million$)	2636.86 [599.61]	3083.11 [625.61]	2345.25 [526.38]
Total assets (million$)	3129.89 [755.47]	3139.86 [742.67]	3123.16 [768.29]
Debt/total capital (%)	45.24 [43.17]	43.09 [40.50]	46.68 [46.22]
Insider ownership (%)	13.41 [4.66]	14.18 [6.02]	12.9 [4.36]
Institutional ownership (%)	43.6 [47.86]	45.59 [49.92]	42.24 [46.77]
Number of business segments	2.93 [3.00]	2.71 [3.00]	3.07 [3.00]
Number of acquisitions/year	1.28 [1.00]	1.32 [1.00]	1.25 [1.00]
Size of acquisition(s) (million $)	384.16 [58.30]	528.23 [73.90]	271.3 [50.20]

The table reports the frequency of 742 firm-year acquisition announcements reported in the M&A Journal and confirmed by the Wall Street Journal over the 1991–1997 period.
The sample excludes single-segment (focused) bidders and bidder firms that make overseas acquisitions in the same calendar year. Acquisitions less than $5 million and in non-manufacturing industries are excluded as well. The sample also does not cover bidder firms that make both "related" and "unrelated" acquisitions in the same calendar year. An acquisition is defined as "unrelated" when the 2-digit SIC code of the bidder's core business does not match with that of the target firm, and as "related" when the 2-digit SIC code of the bidder's core business is identical with that of the target. Total sales is defined as the gross sales of the bidder firm net of sales discounts in million $. Market value is defined as the number of shares multiplied by the average stock price of the bidder firm in million $. Total assets is defined as current assets plus net property, plant, and equipment plus other non-current assets of the bidder firm in million $. Debt/total capital is percentage of total debt divided by invested capital. Insider ownership and institutional ownership are the average number of shares held by insiders and institutions divided by the average number of shares outstanding for the bidder firm, respectively. Number of business segments is the number of distinct lines of business the bidder firm operates at the 2-digit SIC code level. Number of acquisitions is the total number of acquisitions completed by the bidder firm in the year of the acquisition. All values refer to the year prior to the acquisition.

acquisition is considerably below that of a similar portfolio of stand-alone firms. These results are consistent with the diversification discount literature. The same difference pattern is observed for bidders that acquire related and unrelated targets. The mean [median] difference for both related and unrelated acquisitions is negative and mostly statistically significant at conventional levels. Another interesting result is that bidders buying related targets have significantly higher MBVs than those that buy unrelated targets implying that related acquisitions are the choice of firms with better performance. Finally, the positive and statistically significant mean [median] difference between the imputed industry MBVs of bidders involved in related and unrelated acquisitions suggests that unrelated acquisitions are more likely to occur when bidders operate in industries with low growth opportunities. Hence, our results suggest that firms conducting diversifying acquisitions have low MBVs and operate in industries with low future potential in comparison to firms carrying out non-diversifying acquisitions.

4. Pre-acquisition internal capital markets: Core and non-core segment performance

4.1. Pre- and post-acquisition structure of bidder's core and non-core business segments

We analyze the structure of internal capital markets in multi-segment bidders before and after they engage in diversifying and non-diversifying acquisitions. The pre- and post-acquisition sales and assets of the core and non-core business of bidders show that the core sales and assets are in excess of the non-core sales and assets whether bidders conduct related or unrelated acquisitions, confirming that core business is the cash generating entity in multi-segment bidders. Furthermore, bidders' core and non-core sales and assets indicate that there is no dramatic difference in the sales and assets of core and non-core segments between bidders that conduct related and unrelated acquisitions. For the sake of brevity these figures are not reported but available upon request.

Table 2
Pre-acquisition univariate analysis of bidders' market-to-book and imputed market-to-book values

	Bidders' MBV				Bidders' imputed MBV				Difference MBV − imputed MBV			Difference of
	All acquisitions	Related acquisitions	Unrelated acquisitions	Difference related − unrelated	All acquisitions	Related acquisitions	Unrelated acquisitions	Difference related − unrelated	All acquisitions	Related acquisitions	Unrelated acquisitions	Difference related − unrelated
Year ($t=-2$)	1.075	1.1102	1.0522	0.0580	1.1398	1.231	1.0791	0.1519***	−0.0648**	−0.1208***	−0.0269	−0.0939
	[0.8945]	[0.9700]	[0.8760]	[0.0940]**	[1.0195]	[1.1289]	[0.9651]	[0.1638]***	[−0.1250]***	[−0.1589]***	[−0.0891]***	[−0.0698]
Year ($t=-1$)	1.0921	1.1542	1.0523	0.1019*	1.2024	1.3052	1.1343	0.1709***	−0.1103***	−0.1510***	−0.0820**	−0.0690
	[0.9120]	[1.0250]	[0.8735]	[0.1515]***	[1.0558]	[1.1155]	[1.0242]	[0.0913]***	[−0.1438]***	[−0.0905]***	[−0.1507]***	[0.0602]
Year ($t=0$)	1.1105	1.169	1.0724	0.0966*	1.2738	1.3558	1.2194	0.1364**	−0.1633***	−0.1868***	−0.1470***	−0.0398
	[0.9390]	[1.0390]	[0.8860]	[0.1530]***	[1.1069]	[1.2008]	[1.0414]	[0.1594]***	[−0.1679]***	[−0.1618]***	[−0.1554]***	[−0.0064]

The table reports the pre-acquisition mean [median] MBV and imputed MBV of bidders at firm level over the 1991–1997 period. Year $t=0$ is the year of the acquisition. MBV is computed as debt in current liabilities plus total long term debt plus liquidating value of preferred stock plus market value of outstanding shares divided by total assets of the bidder firm. Imputed MBV is the theoretical imputed value of MBV for the bidder if it were decomposed into its business segments based on sales multiples of business segments at the 2-digit SIC level. We define acquisitions as "unrelated" when the 2-digit SIC code of the bidder's core business does not match with that of the target firm, and "related" otherwise. One-way ANOVA [non-parametric Wilcoxon rank-sum test] is used to test for the difference of means [medians]. ***, ** and * denote statistical significance for difference of groups at 1%, 5% and 10% levels, respectively.

4.2. Bidders' pre-acquisition core and non-core business segments: Cash flows, segment imputed MBVs and capital expenditures

Panel A of Table 3 records cash flows for core and non-core business segments of bidding firms over the pre-acquisition period. We define segment cash flows as the operating income plus depreciation for core and non-core business segments of bidders scaled by segment sales from the previous year. The pre-acquisition cash flows for multi-segment bidders that conduct unrelated acquisitions show that they are able to generate significantly more cash flows from their non-core competencies. This pattern carries on at the announcement year with a mean [median] difference of −0.046 [−0.027] that is statistically significant at the 1% level. That seems to suggest that multi-segment bidders generating higher cash flows from their non-core business tend to acquire targets that would augment their non-core business.

The results also suggest that multi-segment bidders that diversify experience lower cash flows from their core business than similar bidders that do not diversify. The mean [median] difference is 0.064 [0.031], and statistically significant at the 1% level. That is, the core segments of multi-segment bidders that engage in related acquisitions, on average, generate 6.4 dollars more per 100 dollars of sales than the core segments of similar bidders that diversify. This difference is economically significant as well.

Panel B of Table 3 presents and compares the pre-acquisition imputed MBVs for the core and non-core business segments of bidders. The imputed MBV is estimated as the weighted sum of median MBV of size-matched stand-alone firms operating in the same 2-digit SIC code industries with the core and non-core business segments of the bidder. The mean [median] core imputed MBV difference between diversified firms that conduct related acquisitions relative to similar firms that diversify is 0.1858 [0.2285] and 0.2429 [0.2015], respectively, in years −2 and −1, and statistically significant at the 1% level. On the other hand, the mean [median] non-core imputed MBV difference is mostly not statistically significant. These results suggest that diversifying investments are inversely related with the industry growth opportunities of bidders' core business, as captured by the segment imputed MBVs. Diversified firms whose core business operate in higher growth industries, with higher imputed MBVs, are more likely to invest inside their core, while diversified firms whose core business operates in poor growth industries, with lower imputed MBVs, are more likely to invest outside their core business. These findings are in support of the view that diversifying acquisitions is an expedient mechanism of buying external growth opportunities as conjectured by Lang and Stulz (1994) and Hyland and Diltz (2002).

In the pre-acquisition period, the core businesses of multi-segment bidders that engage in unrelated acquisitions have significantly lower imputed MBVs than their non-core business segment. The mean [median] difference is −0.0975

Table 3
Pre-acquisition univariate analysis of bidders' core and non-core business cash flows, imputed MBV and capital expenditures

	Related acquisitions			Unrelated acquisitions				
	Related core RelC	Related non-core RelNC	Difference RelC − RelNC	Unrelated core UNRelC	Unrelated non-core UNRelNC	Difference UNRelC − UNRelNC	Core difference RelC − UNRelC	Non-core difference RelNC − UNRelNC
Panel A: Pre-acquisition cash flows for core and non-core business segment of the bidder								
Cash flow$_{(t=-1)}$	0.206	0.219	−0.013	0.164	0.210	-0.046^{**}	0.042^{**}	0.009
Sales$_{(t=-2)}$	[0.167]	[0.170]	[−0.003]	[0.140]	[0.156]	$[-0.016^{*}]$	$[0.027^{***}]$	[0.014]
Cash flow$_{(t=0)}$	0.222	0.200	0.022	0.158	0.204	-0.046^{***}	0.064^{***}	−0.004
Sales$_{(t=-1)}$	[0.169]	[0.157]	$[0.012^{*}]$	[0.138]	[0.165]	$[-0.027^{***}]$	$[0.031^{***}]$	[−0.008]
Panel B: Pre-aquisition imputed MBV for core and non-core business segment of the bidder								
Imputed MBV$_{(t=-2)}$	1.2468	1.2262	0.0206	1.0610	1.1585	-0.0975^{*}	0.1858^{***}	0.0677
	[1.0960]	[1.0373]	[0.0587]	[0.8675]	[0.9722]	$[-0.1047]^{**}$	$[0.2285]^{***}$	$[0.0651]^{**}$
Imputed MBV$_{(t=-1)}$	1.3410	1.2606	0.0804	1.0981	1.2601	-0.1620^{*}	0.2429^{***}	0.0005
	[1.1230]	[1.1047]	[0.0183]	[0.9215]	[1.0082]	$[-0.0867]^{**}$	$[0.2015]^{***}$	[0.0965]
Imputed MBV$_{(t=0)}$	1.3687	1.3724	−0.0037	1.1548	1.3272	-0.1724^{*}	0.2139^{***}	0.0452
	[1.1740]	[1.1113]	[0.0627]	[0.9565]	[1.0507]	$[-0.0942]^{**}$	$[0.2175]^{***}$	[0.0606]
Panel C: Pre-acquisition capital expenditures for core and non-core business segment of the bidder								
Cap Exp$_{(t=-1)}$	0.149	0.123	0.026	0.078	0.175	-0.097^{**}	0.071^{***}	−0.052
Sales$_{(t=-2)}$	[0.051]	[0.047]	[0.004]	[0.041]	[0.049]	$[-0.008^{***}]$	$[0.010^{**}]$	[−0.002]
Cap Exp$_{(t=0)}$	0.225	0.124	0.101^{**}	0.086	0.133	-0.047^{**}	0.139^{***}	−0.009
Sales$_{(t=-1)}$	[0.055]	[0.047]	$[0.008^{**}]$	[0.043]	[0.052]	$[-0.009^{***}]$	$[0.012^{***}]$	[−0.005]

The table reports the pre-acquisition mean [median] core and non-core business cash flows, imputed market-to-book value and capital expenditures of bidders at segment level over the 1991–1997 period. Year $t = 0$ is the year of the acquisition. We define acquisitions as "unrelated" when the 2-digit SIC code of the bidder's core business does not match with that of the target firm, and "related" otherwise. Cash flow is defined as segment operating income plus depreciation scaled by previous year's segment sales. Imputed MBV is the theoretical imputed value of MBV for the bidder's business segments if it were decomposed into its business segments based on sales multiples at the 2-digit SIC level. Capital expenditures are defined as segment capital expenditures scaled by previous year's segment sales. One-way ANOVA [non-parametric Wilcoxon rank-sum test] is used to test for the difference of means [medians]. ***, ** and * denote statistical significance for difference of groups at 1%, 5% and 10% levels, respectively.

[−0.1047] and −0.1620 [−0.0867], in years −2 and −1, respectively, and statistically significant at conventional levels. For the same period, the core business of multi-segment bidders that engage in related acquisitions usually attain higher imputed MBVs than their non-core segments, but the difference is not statistically significant at any conventional level. Hence, the core business of multi-segment bidders that diversify incur a lower imputed MBV relative to that of their non-core business in years −2 and −1, while similar firms with plans to invest in their core business experience similar imputed MBVs relative to their non-core business over the same period.

Panel C of Table 3 reports core and non-core segment capital expenditures of bidders scaled by the lagged segment sales in the pre-acquisition period. Multi-segment bidders tend to invest more in their core lines of business when their core cash flows and imputed MBVs are higher. The mean [median] difference between the core capital expenditures of multi-segment bidders that conduct related and unrelated acquisitions is 0.139 [0.012], and statistically significant at the 1% level. These results do not appear to support cross-subsidization between the core and non-core divisions of multi-segment bidders. However, the evidence indicates that segment capital expenditures increase with their own cash flows and growth opportunities. Even though the allocation of capital in diversified bidders do not seem inefficient at this point, it is rather difficult to assess the efficiency of internal capital markets from univariate results.

Overall, our evidence shows that when the core businesses of multi-segment bidders achieve higher cash flows and have higher imputed MBVs, these firms tend to invest in their core business. Firms invest outside their core business when the cash flows and the growth opportunities of their core business are considerably lower than those of their non-core business.

5. The decision to diversify: Logistic regression analysis

Based on our sample characteristics, reported earlier, the majority of diversified firms invest in unrelated businesses through acquisitions while only 40% invests in its core business. In this section, we use logistic regression analysis to determine why firms diversify. This is expected to shed more light on the relative importance of the internal capital markets efficiency hypothesis in addition to external growth and cash flow/agency cost hypotheses that have been brought about as explanations of the corporate diversification motive. The internal capital markets hypothesis argues that corporate diversification stems from the efficiency gains of internal capital markets in diversified firms. The external growth hypothesis asserts that bidders' poor performance and their low internal growth opportunities force them to undertake diversifying investments while the free cash flow/agency cost hypothesis states that diversifying investment activities are driven by managers' objectives at the expense of shareholders wealth.

Our findings, so far, indicate that bidders that engage in core related acquisitions exhibit significantly higher mean and median MBVs and imputed MBVs than bidders that undertake core-unrelated acquisitions. This evidence suggests that bidders with relatively higher market valuations seem to concentrate on related acquisitions that would augment their core business. Similarly, our evidence reveals that when bidders realize higher cash flows and have higher imputed MBVs (operating in higher growth industries) in their core business segments, they tend to invest in their core business. Multi-segment firms, however, appear to invest outside their core business when the cash flows and the growth opportunities of the core business are considerably lower.

In the multivariate logistic regressions the dependent variable is an indicator variable that takes the value of one when a bidder undertakes a diversifying (unrelated) acquisition and, zero otherwise. Our main focus is to examine the relation between the internal capital markets of the bidder and the decision to diversify. Therefore, we include segment cash flows, namely pre-acquisition core and non-core cash flow (core CF and non-core CF) variables, to assess the role of internal capital markets. If internal capital markets allocate resources efficiently, we expect a negative relation between core cash flows and the decision to diversify. That is, firms that experience higher core cash flows should have no incentive to diversify while firms with relatively higher non-core cash flows are expected to undertake diversifying acquisitions. We also include the imputed MBVs of core and non-core business segments to capture the impact of growth opportunities of these segments. Bidders' firm-level MBVs and imputed MBVs are also included to capture the growth opportunities of the firm and the overall industry growth opportunities of bidder's segments.

The following variables are also included in these regressions. DEBT is used to capture the monitoring effects of external capital markets on managers (Jensen, 1986, 2003; Stulz, 1990, among others). If debt monitors managerial misconduct, bidders with high leverage are less likely to acquire unrelated targets. The DEBT variable is total debt as percentage of invested capital. We use the insider and the institutional ownership variables to examine whether ownership characteristics influence the diversification decision of the firm. The INSIDER and INSTITUTE variables measure the percentage of the outstanding shares held by insiders and institutions, respectively. According to the risk reduction motive for diversification (Amihud and Lev, 1981), insiders with higher equity ownership are expected to diversify in order to reduce their idiosyncratic risk. Similarly, if managers diversify because they derive private benefits (Jensen, 1986, 2003; Stulz, 1990) from managing a more diversified firm they will engage in diversifying acquisitions. Institutional ownership is expected to have an adverse effect on firms' diversification motive. We also

Table 4
The decision to diversify

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.638	0.670	0.696	0.697	0.708	0.744	0.750	0.776
	(11.107)***	(12.037)***	(11.525)***	(8.546)***	(8.803)***	(8.635)***	(9.081)***	(8.862)***
Core CF	−0.304			−0.312			−0.294	−0.279
	(−2.517)**			(−2.589)***			(−2.447)**	(−2.313)**
Non-core CF	0.004			−0.001			−0.005	0.009
	−0.052			(−0.016)			(−0.076)	(0.133)
Core imputed MBV		−0.105			−0.096		−0.094	
		(4.341)***			(−3.897)***		(−3. 802)***	
Non-core imputed		0.003			0.002		−0.005	
MBV		−0.301			(0.208)		(−0.076)	
Imputed MBV			−0.106			−0.097		−0.092
			(−3.407)***			(−3.044)***		(−2.891)***
MBV			−0.024			−0.020		−0.016
			(−0.891)			(−0.738)		(−0.585)
DEBT				0.001	0.001	0.001	0.001	0.001
				(2.090)**	(1.598)	(1.446)	(1.783)*	(1.639)
INSIDER				−0.002	−0.002	−0.002	−0.002	−0.002
				(−1.850)*	(−1.957)*	(−2.077)**	(−1.836)*	(−1.963)**
INSTITUTE				−0.002	−0.001	−0.002	−0.001	−0.002
				(−2.350)**	(−1.659)*	(−1.846)*	(−1.623)	(−1.838)*
Likelihood ratio test statistic	1.156	2.714***	2.169**	1.853	2.625***	2.274**	2.708**	2.347***
(df)	(8)	(8)	(8)	(11)	(11)	(11)	(13)	(13)

The dependent variable in the logistic regression is the diversification dummy taking on value of one if the bidder makes an unrelated acquisition. The sample includes 742 multi-segment (industrially diversified) firm-year acquisitions. Two hundred and ninety seven of the multi-segment firms in our sample make related acquisitions and 445 multi-segment firms make unrelated acquisitions. Core (core CF) and non-core cash flows (non-core CF) are the cash flows of the core and non-core business segments of the bidders scaled by segment sales from one year before, respectively. The segment cash flows are computed as operating income plus depreciation. MBV is computed as debt in current liabilities plus total long term debt plus liquidating value of preferred stock plus market value of outstanding shares divided by total assets of the bidder firm. Core imputed MBV and non-core imputed MBV are the theoretical imputed values of MBV for the bidder's core and non-core business segments if it were decomposed into its business segments based on sales multiples at the 2-digit SIC level. Imputed MBV is the theoretical imputed value of MBV for the bidder at firm level if it were decomposed into its business segments based on sales multiples of business segments at the 2-digit SIC level. DEBT is the percentage of total debt divided by invested capital. INSIDER and INSTITUTE are the percentage of shares held by insiders and institutions, respectively. All values are from one year before the acquisition. *t*-Values are stated in parentheses. All regressions contain calendar year dummies. ***, **, and * denote statistical significance at 1%, 5% and 10% levels, respectively.

account for the change in the market for corporate control with calendar year dummies.[12]

Table 4 reports the coefficient estimates of logistic regressions. The negative and statistically significant coefficient of the core cash flow variable, core CF, in the first regression is −0.304 and statistically significant at the 1% level suggesting that the cash flow generating ability of the core business discourages unrelated investments. This finding suggests that multi-segment bidders with high core cash flows are not likely to invest in unrelated lines of businesses. The evidence also shows that non-core cash flows do not have a direct influence on the diversification decision of the multi-segment bidders, as shown by the insignificant coefficient of the non-core CF variable (0.004 with a *t*-value of 0.052). Hence, these results suggest that bidders tend to acquire targets outside their core business when core-cash flows are poor. This result supports the view that profitability problems in the core business of the bidder play an important role in the decision to diversify.

The negative and statistically significant coefficient of the core imputed MBV in the second regression suggests that multi-segment bidders whose core business operates in high valuation industries are more likely to acquire core related targets. The coefficient of the non-core imputed MBV variable is not statistically significant. This finding indicates that the market's perceived industry growth opportunities of the non-core business segments bear no significant effect on the diversification decision of the bidders. Therefore, these results confirm our previous findings that bidders tend to acquire targets outside their core business when the industry of their core business has low growth prospects as suggested by their valuations.

Bidders' industry growth opportunities, proxied by imputed MBV, has a negative and statistically significant coefficient (−0.106 with a *t*-value of −3.407) in regression three suggesting that bidders operating in high growth industries are less likely to diversify. The coefficient of MBV in this regression is not statistically significant at conventional levels indicating that bidders' industrial

[12] In these regressions, the inclusion of R&D and advertising expenditures as additional explanatory variables fail to yield any statistically significant results.

diversification decision does not seem to be influenced by the growth opportunities of the firm. Our evidence also suggests that diversifying acquisitions are not driven by overvaluation. This result is consistent with the evidence of Lamont and Polk (2001, 2002) and consistent with the view that the decision to diversify is driven by the growth prospects of bidders' industry.

We re-estimate the same set of regressions with the inclusion of debt, insider and institutional ownership variables. The coefficient of the DEBT variable is positive and statistically significant at the 5% level only in the fourth regression. This is in contrast with the view that debt serves as a monitoring mechanism of managerial misconduct and further implies that increases in debt by multi-segment firms are likely to fund unrelated acquisitions. We also find that the coefficient of insider and institutional ownership variables to be negative and statistically significant at conventional levels in all three regressions, suggesting that higher insider and institutional ownership in multi-segment firms discourage diversifying acquisitions. The negative impact of insider ownership on firm's diversification decision does not seem to support the risk reduction and private benefits motives for diversification. This finding is inconsistent with the evidence of Aggarwal and Samwick (2003). Our results appear to be consistent with Denis et al. (1997) who find evidence of less diversification in firms with higher equity ownership.

In the seventh regression we enter the core and non-core cash flow variables into the model with the core and non-core imputed MBV measures. Our findings, in line with our previous results, indicate that multi-segment firms with high core cash flows and whose core businesses have higher valuations continue to invest in their core business by acquiring targets operating in the same industry with their core business. Regression eight yields similar results.

In sum, we confirm our previous result that the overall growth opportunities of bidder's business segments have an adverse effect on the diversification decision of the firm. Furthermore, bidders tend to diversify into peripheral lines of businesses when their core business attains lower cash flows and operates in low growth industries. Therefore, our results suggest that internal capital markets in diversified bidders do not seem to work inefficiently in the sense that they do not divert capital resources in peripheral lines of businesses at the expense of the core business, especially when the latter has a strong performance. In addition, our findings indicate that bidders diversify when they are faced with low industry growth opportunities. Our evidence also suggests that unrelated acquisitions increase marginally with firm leverage while they are more pronounced in firms with lower insider and institutional ownership.

6. Post-acquisition MBV and imputed MBV of bidders

We now examine the bidders' post-acquisition MBV and imputed MBV once the acquisition takes place and report our findings in Table 5. We notice that diversified bidders

Table 5
Post-acquisition univariate analysis of bidders' market-to-book and imputed market-to-book values

	Bidders' MBV				Bidders' imputed MBV				Difference MBV – imputed MBV			Difference of
	All acquisitions	Related acquisitions	Unrelated acquisitions	Difference related – unrelated	All acquisitions	Related acquisitions	Unrelated acquisitions	Difference related – unrelated	All acquisitions	Related acquisitions	Unrelated acquisitions	Difference related – unrelated
Year ($t = 0$)	1.1105	1.1690	1.0724	0.0966*	1.2738	1.3558	1.2194	0.1364**	−0.1633***	−0.1868***	−0.1470***	−0.0398
	[0.9390]	[1.0390]	[0.8860]	[0.1530]***	[1.1069]	[1.2008]	[1.0414]	[0.1594]***	[−0.1679]***	[−0.1618]***	[−0.1554]***	[−0.0064]
Year ($t = 1$)	1.1206	1.2049	1.0662	0.1387**	1.3006	1.3718	1.2534	0.1184**	−0.1800***	−0.1669***	−0.1872***	0.0203
	[0.9690]	[1.0700]	[0.9180]	[0.1520]***	[1.1041]	[1.1838]	[1.0705]	[0.1133]***	[−0.1351]***	[−0.1138]***	[−0.1525]***	[0.0387]
Year ($t = 2$)	1.1022	1.1961	1.0440	0.1521***	1.3064	1.4158	1.2367	0.1791***	−0.2042***	−0.2197***	−0.1927***	−0.0270
	[0.9340]	[1.1050]	[0.8795]	[0.2255]***	[1.1197]	[1.2364]	[1.0597]	[0.1767]***	[−0.1857]***	[−0.1314]***	[−0.1802]***	[0.0488]

The table reports the post-acquisition mean [median] MBV and imputed MBV of bidders at firm level over the 1991–1997 period. Year $t = 0$ is the year of the acquisition. MBV is computed as debt in current liabilities plus total long term debt plus liquidating value of preferred stock plus market value of outstanding shares divided by total assets of the bidder firm. Imputed MBV is the theoretical imputed value of MBV for the bidder if it were decomposed into its business segments based on sales multiples of business segments at the 2-digit SIC level. We define acquisitions as "unrelated" when the 2-digit SIC code of the bidder's core business does not match with that of the target firm, and "related" otherwise. One-way ANOVA [non-parametric Wilcoxon rank-sum test] is used to test for the difference of means [medians]. ***, ** and * denote statistical significance for difference of groups at 1%, 5% and 10% levels, respectively.

continue to experience significantly lower mean and median MBVs than their imputed MBVs after the acquisitions. This indicates that bidders fail to reverse their discount relative to a similar portfolio of stand-alone firms by engaging in either related or unrelated acquisitions. The mean [median] difference is −0.1800 [−0.1351] and −0.2042 [−0.1857] in years 1 and 2, respectively, and statistically significant at the 1% level. A similar pattern, with the same level of statistical significance, also persists for bidders that engage in related and unrelated acquisitions. These results are reported in the last two columns.

We also note that bidders that engage in related acquisitions have significantly higher MBVs than bidders that engage in unrelated acquisitions, as they did in the pre-acquisition period. This suggests that bidders acquiring related targets continue to experience better performance. The positive and statistically significant mean [median] difference between the imputed MBVs of bidders involved in related and unrelated acquisitions persists into the post-acquisition period suggesting that diversifying bidders fail to change their overall industrial structure by engaging in unrelated acquisitions as they still operate in their core businesses that have lower growth opportunities. Therefore, our post-acquisition period results indicate that firms that undertake diversifying acquisitions resume their low MBVs and continue to operate in industries with low growth opportunities relative to firms that focus.

7. Bidders' post-acquisition core and non-core business segments: Cash flows, segment MBVs and capital expenditures

In this section, we examine the post-acquisition segment performance of multi-segment bidders involved in diversifying and non-diversifying acquisitions in order to gain additional insights about the effects of their investment decisions. The pattern in the sales and assets of the core and non-core business segments of bidders does not change considerably between the pre- and the post-acquisition period.[13]

As shown in Panel A of Table 6, the pattern in cash flows for the core and non-core business segments of bidders persists in the post-acquisition period. The post-acquisition cash flows for multi-segment bidders conducting related acquisitions indicate that they continue to generate significantly higher cash flows from their core competencies. In both post-acquisition years, the core cash flows of non-diversifying bidders substantially exceed those of diversifying bidders while the non-core cash flows of diversifying bidders are not significantly different from the non-core cash flows of non-diversifying bidders in the post-acquisition years. Hence, in the post-acquisition period diversifying multi-segment bidders continue to have inferior core cash flows relative to those engaging in related acquisitions, while their non-core cash flows are not significantly different from bidders conducting related acquisitions.

Panel B of Table 6 reports imputed MBVs for the core and non-core business segments of bidders in the post-acquisition period. The mean [median] core imputed MBV difference between diversified firms that acquire related and unrelated acquisitions is 0.1692 [0.1735] and 0.2614 [0.1980], respectively, in years 1 and 2, and statistically significant at the 1% level. Similarly, the mean [median] non-core imputed MBV difference is positive and typically statistically significant. These findings reveal that both core and non-core business segments of multi-segment firms that diversify through unrelated acquisitions operate in industries with lower growth opportunities, as indicated by the segment imputed MBVs. Diversified firms whose core business lies in higher growth industries, as evidenced by higher imputed MBVs, continue to operate in high growth industries in the post-acquisition period while their non-core business segments operate in industries that have relatively better growth opportunities than the non-core business segments of bidders that diversify.

Bidder's core and non-core capital expenditures for the post-acquisition period, presented in Panel C of Table 6, show that multi-segment bidders that conduct related (unrelated) acquisitions invest more (less) in their core than in their non-core lines of business. This seems to be dictated by the differences in the cash flows and industry growth opportunities of the core business as reported earlier. The difference between the core capital expenditures of multi-segment bidders that invest more in their core relative to those that invest more in their non-core business is mostly statistically significant at conventional levels. The mean [median] difference is 0.046 [0.009] and 0.070 [0.013] in years +1 and +2, respectively, and is mostly significant at conventional levels. This evidence suggests that the core capital expenditures of multi-segment bidders rise with the cash flow increases of the core business while diversifying bidders continue to invest significantly more in their non-core than core business in the post-acquisition period.

8. Core and non-core capital expenditures of bidders: A cross-sectional analysis

In this section, we examine the relation between capital expenditures and cash flows in an attempt to shed more light on how capital resources are allocated between core and non-core businesses. If internal capital markets in diversified firms work efficiently, they should finance projects in business segments with the highest growth opportunities. Therefore, given that the core (non-core) business segments of multi-segment firms that conduct related (unrelated) acquisitions generate significantly more cash flows than their non-core (core) counterparts, and to the extent that cash flows of a business segment is recognized as a proxy for its own investment opportunities (Fazzari

[13] These figures are not reported but available upon request.

Table 6
Post-acquisition univariate analysis of bidders' core and non-core business performance

	Related acquisitions			Unrelated acquisitions				
	Related core RelC	Related non-core RelNC	Difference RelC − RelNC	Unrelated core UNRelC	Unrelated non-core UNRelNC	Difference UNRelC − UNRelNC	Core difference RelC − UNRelC	Non-core difference RelNC − UNRelNC
Panel A: Post-acquisition cash flows for core and non-core business segment of the bidder								
Cash flow$_{(t=+1)}$	0.217	0.201	0.016	0.155	0.205	−0.050***	0.062***	−0.004
Sales$_{(t=0)}$	[0.171]	[0.164]	[0.007]	[0.142]	[0.160]	[−0.018**]	[0.029***]	[0.004]
Cash flow$_{(t=+2)}$	0.205	0.182	0.023	0.164	0.202	−0.038**	0.041***	−0.02
Sales$_{(t=+1)}$	[0.170]	[0.160]	[0.010*]	[0.149]	[0.159]	[−0.010**]	[0.021***]	[0.001]
Panel B: Post-acquisition imputed MBV for core and non-core business segment of the bidder								
Imputed MBV$_{(t=0)}$	1.3687	1.3724	−0.0037	1.1548	1.3272	−0.1724*	0.2139***	0.0452
	[1.1740]	[1.1113]	[0.0627]	[0.9565]	[1.0507]	[−0.0942]**	[0.2175]***	[0.0606]
Imputed MBV$_{(t=+1)}$	1.3844	1.3832	0.0012	1.2152	1.3444	−0.1292*	0.1692***	0.0388
	[1.1965]	[1.1625]	[0.0340]	[1.0230]	[1.0489]	[−0.0259]	[0.1735]***	[0.1136]*
Imputed MBV$_{(t=+2)}$	1.4619	1.3764	0.0855	1.2005	1.2415	−0.0410	0.2614***	0.1349*
	[1.2210]	[1.2065]	[0.0145]	[1.0230]	[1.0414]	[−0.0184]	[0.1980]***	[0.1651]***
Panel C: Post-acquisition capital expenditures for core and non-core business segment of the bidder								
Cap Exp$_{(t=+1)}$	0.143	0.104	0.039	0.097	0.121	−0.024	0.046	−0.017
Sales$_{(t=0)}$	[0.053]	[0.049]	[0.004]	[0.044]	[0.052]	[−0.008***]	[0.009***]	[−0.003]
Cap Exp$_{(t=+2)}$	0.149	0.121	0.028	0.079	0.129	−0.050***	0.070**	−0.008
Sales$_{(t=+1)}$	[0.056]	[0.052]	[0.004]	[0.043]	[0.051]	[−0.008***]	[0.013***]	[0.001]

The table reports the post-acquisition mean [median] core and non-core business cash flows, imputed MBV and capital expenditures of bidders at segment level over the 1991–1997 period. Year $t = 0$ is the year of the acquisition. We define acquisitions as "unrelated" when the 2-digit SIC code of the bidder's core business does not match with that of the target firm, and "related" otherwise. Cash flow is defined as segment operating income plus depreciation scaled by previous year's segment sales. Imputed MBV is the theoretical imputed value of MBV for the bidder's business segments if it were decomposed into its business segments based on sales multiples at the 2-digit SIC level. Capital expenditures are defined as segment capital expenditures scaled by previous year's segment sales. One-way ANOVA [non-parametric Wilcoxon rank-sum test] is used to test for the difference of means [medians]. ***, ** and * denote statistical significance for difference of groups at 1%, 5% and 10% levels, respectively.

Table 7
Core and non-core capital expenditures of bidders

Independent variables	All acquisitions			Related acquisitions			Unrelated acquisitions		
	CORE CAPEXP			CORE CAPEXP			CORE CAPEXP		
	($t=0$)	($t=1$)	($t=2$)	($t=0$)	($t=1$)	($t=2$)	($t=0$)	($t=1$)	($t=2$)
Panel A: Core capital expenditures of multi-segment bidders									
Constant	0.03	0.061	0.001	0.053	0.059	0.025	0.029	0.01	0.017
	(0.417)	(1.405)	(0.051)	(0.304)	(1.214)	(0.678)	(2.910)***	(0.590)	(1.936)*
Core $CF_{(t-1)}$	0.931	0.372	0.776	0.989	0.391	0.802	0.133	0.441	0.294
	(6.329)***	(4.278)***	(8.655)***	(4.157)***	(3.244)***	(5.587)***	(4.365)***	(6.509)***	(14.267)***
Non-core $CF_{(t-1)}$	−0.071	−0.093	−0.110	−0.052	−0.164	−0.136	0.004	0.001	−0.004
	(−0.855)	(−0.854)	(−1.267)	(−0.509)	(−1.138)	(−1.012)	(0.153)	(0.01)	(−0.452)
Core imputed $MBV_{(t-1)}$	−0.019	−0.008	−0.013	−0.044	−0.004	−0.024	0.001	−0.011	−0.006
	(−0.676)	(−0.065)	(−0.840)	(−0.886)	(−0.215)	(−0.554)	(0.215)	(−0.632)	(−1.592)
Non-core imputed $MBV_{(t-1)}$	−0.001	−0.002	−0.002	−0.002	0.002	−0.002	−0.001	−0.003	−0.002
	(−0.023)	(−0.252)	(−0.296)	(−0.114)	(0.453)	(−0.043)	(−0.626)	(−0.699)	(−1.356)
Unrelated acquisition dummy	−0.002	−0.048	0.032						
	(−0.071)	(−1.556)	(−0.832						
Core $CF_{(t-1)}$	−0.752	0.053	−0.486						
	(−3.736)***	(0.591)	(−4.071)***						
Non-core $CF_{(t-1)}$	0.086	0.069	0.101						
	(0.885)	(0.448)	(1.01)						
R^2	0.068	0.061	0.125	0.058	0.046	0.108	0.042	0.090	0.325
Adj-R^2	0.059	0.052	0.116	0.045	0.033	0.096	0.034	0.082	0.319
Panel B: Non-core capital expenditures of multi-segment bidders									
Constant	0.013	0.022	0.021	0.014	0.022	0.019	0.023	0.021	0.026
	(1.216)	(2.689)***	(2.487)**	(0.887)	(2.054)**	(2.060)**	(2.618)***	(3.214)***	(3.566)**
Core $CF_{(t-1)}$	0.100	0.051	0.051	0.111	0.045	0.052	0.042	0.090	0.039
	(2.755)***	(2.753)***	(2.918)***	(2.065)**	(2.360)**	(2.895)***	(1.662)*	(4.486)***	(2.332)**
Non-core $CF_{(t-1)}$	0.079	0.034	0.042	0.084	0.033	0.041	0.066	0.052	0.063
	(3.637)***	(1.964)**	(2.319)**	(2.742)***	(1.907)*	(2.227)**	(4.729)***	(4.030)***	(5.625)***
Core imputed $MBV_{(t-1)}$	−0.003	−0.004	−0.001	−0.003	−0.002	0.000	−0.003	−0.006	−0.002
	(−0.203)	(−1.198)	(−0.662)	(−0.213)	(−0.109)	(−0.118)	(−0.276)	(−1.488)	(−0.975)
Non-core imputed $MBV_{(t-1)}$	−0.001	0.000	−0.001	−0.004	−0.002	−0.001	−0.001	0.001	−0.001
	(−0.594)	(−0.150)	(−0.909)	(−0.230)	(−0.565)	(−0.476)	(−0.794)	(0.300)	(−0.712)
Unrelated acquisition dummy	0.006	−0.001	0.004						
	(0.441)	(−0.172)	(0.652)						
Core $CF_{(t-1)}$	−0.046	0.035	−0.011						
	(−0.904)	(1.390)	(−0.583)						
Non-core $CF_{(t-1)}$	−0.010	0.016	0.020						
	(−0.386)	(0.483)	(0.781)						
R^2	0.056	0.068	0.077	0.057	0.038	0.054	0.062	0.087	0.093
Adj-R^2	0.047	0.059	0.069	0.044	0.025	0.041	0.053	0.078	0.085

The dependent variable in the regressions are the core and non-core capital expenditures of multi-segment bidders included in our sample. The sample consists of 742 US firm-acquisitions over the 1991–1997 period. Two hundred and ninety seven of the multi-segment firms in our sample make related acquisitions and 445 multi-segment firms make unrelated acquisitions. The core (CORE CAPEXP)and non-core capital expenditures (NON-CORE CAPEXP) are defined as the capital expenditures of the core and non-core segments scaled by previous year's segment sales, respectively. Core (core CF) and non-core cash flows (non-core CF) are defined as the segment operating income plus depreciation of the core and non-core business segments, respectively, normalized by the segment sales from the previous year. MBV is computed as debt in current liabilities plus total long term debt plus liquidating value of preferred stock plus market value of outstanding shares divided by total assets of the bidder firm. Core imputed MBV and non-core imputed MBV are the theoretical imputed values of MBV for the bidder's core and non-core business segments if it were decomposed into its business segments based on sales multiples at the 2-digit SIC level. We define acquisitions as "unrelated" when the 2-digit SIC code of the bidder's core business does not match with that of the target firm, as "related" otherwise. Year 0 is the year of acquisitions. *t*-Values of coefficients obtained by heteroskedastic consistent standard errors are reported in parentheses. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

et al., 1988), it is expected that the core (non-core) capital expenditures of multi-segment firms engaging in related (unrelated) acquisitions should primarily be determined by its own cash flows. If the cash flows of the non-core business in diversifying multi-segment bidders proxy for their own investment opportunities, it is expected that the core and non-core cash flows should support investments in the non-core business since they have higher growth opportunities. This would be indicative of a more efficient allocation of funds between core and non-core business segments in such firms.

Following Shin and Stulz (1998) and Alti (2003), we use cross-sectional regressions to examine whether systematic capital misallocation takes place between core and non-core divisions in bidders controlling for industry growth opportunities. Specifically, we investigate whether diversified bidders practice inefficient capital budgeting in the sense that they underinvest (overinvest) in the divisions that generate a relatively high (low) percent of cash flows to sales. If segment cash flows to sales measure growth prospects, investing in segments with relatively low (high) cash flows to sales is equivalent of overinvesting in lines of business with relatively low (high) growth opportunities. We also include the imputed MBVs of bidders' core and non-core business segments as a measure of the segments' marginal growth opportunities.

We regress the core capital expenditures of the bidder in year 0, the year of the acquisition, scaled by the segment sales in year −1, against the following variables in year −1: the core-cash flow, core CF, and the non-core-cash flow, non-core CF, the imputed MBV of the core business, core imputed MBV, and the imputed MBV of the non-core business, non-core imputed MBV. Similar regressions are estimated for the core capital expenditures in years +1 and +2 after the acquisition. The same set of regressions is also estimated using the non-core capital expenditures as the dependent variable.

Table 7 reports the regression results. The first three regressions in Panel A show that there is a positive and significant relation between core-cash flows and the core capital expenditures of the multi-segment bidders, implying that core-cash flows are used to finance investments in the core business of the bidder. However, the non-core cash flow variable has a negative and insignificant impact on the capital expenditures of the core business of the bidder, indicating that there is no transfer of capital resources from non-core segments to the core segment of multi-segment bidders. We also note that the coefficient estimates of the core imputed MBV and non-core imputed MBV variables are not statistically significant in any regression. In the same regressions, the interactive term of the unrelated acquisition dummy with the core cash flows has a negative and statistically significant coefficient for years 0 and 2. This indicates that the cash flows of the core business have a far less impact on the capital expenditures of the core business in diversifying multi-segment bidders due to the likelihood that the core cash-flows might be used for financing the capital expenditures of non-core business segments in such diversifying bidders. We obtain similar results for the individual regressions of bidders that engage in related and unrelated acquisitions.

The non-core capital expenditures of multi-segment bidders, as shown in the first three regressions of Panel B, appear to be sensitive to both core and non-core cash flows, implying that core cash flows are also used to fund the capital expenditures of non-core business in both diversifying and non-diversifying multi-segment bidders. In the same set of regressions, the statistically insignificant coefficient estimates of the imputed MBVs for the core and non-core business segments indicate that bidders' segment capital expenditures are not influenced by their imputed MBV measures.

The systematic transfer of funds from the core to the non-core business in multi-segment bidders that conduct related acquisitions offers some evidence in support of inefficient capital allocation. However, similar transfer of funds from the core to the non-core business in diversifying multi-segment bidders does not necessarily conform to the notion that internal capital markets allocate funds inefficiently.

Overall, these findings provide evidence of some degree of "corporate socialism" in multi-segment bidders in the sense that there is a systematic transfer of funds from core to non-core business segments irrespective of the type of acquisition conducted. Thus, our results provide partial support in favor of inefficient allocation of capital (i.e., from business segments with better growth opportunities to business segments with low growth opportunities) only in multi-segment bidders that invest in core related targets, but not in multi-segment bidders that invest in core-unrelated targets. Our evidence is also consistent with the findings of Shin and Stulz (1998) who show that the capital expenditures of the largest business segments depend only on their own cash flows while the capital expenditures of the smallest segments depend on the cash flows of the largest segment as well as their own.

9. Conclusion

In this paper, we examine the resource allocation process of internal capital markets in diversified firms from the acquisitions perspective. We find that diversified bidders generating higher cash flows from their non-core than core business engage in diversifying acquisitions, while diversified bidders generating higher cash flows from their core than non-core business undertake non-diversifying acquisitions. These results suggest that profitability problems in the core business of bidders play an important role in the decision to diversify. We also show that bidders whose core business are in industries with low growth prospects engage in diversifying acquisitions while bidders whose core business are in high growth industries undertake non-diversifying acquisitions. The pre-acquisition evidence, then, suggests that firms tend to diversify when the

cash flows and the growth opportunities of their core business are considerably lower than those of their non-core business. More importantly, we find that subsequent to diversifying acquisitions there is allocation of capital from the core to the non-core business segments of the bidder. Specifically, our findings suggest that diversifying bidders tend to allocate financial resources from less profitable business segments (i.e., core business) to more profitable business segments (i.e., non-core business). Given the low profitability of core business, the shift of capital resources from the core to the non-core business of the diversifying bidder suggests that diversification increases do not result in inefficient capital allocation. For non-diversifying bidders, however, the evidence shows elements of "corporate socialism" in the sense that there is transfer of funds from the profitable (core) to the less profitable (non-core) business segments in multi-segment bidders. Our findings also indicate that the industry growth opportunities of bidder's core and non-core business segments play no significant role on segment capital expenditures.

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