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Divestitures and Divisional Investment Policies

AMY DITTMAR and ANIL SHIVDASANI*

ABSTRACT

We study a sample of diversified firms that alter their organizational structure by divesting a business segment. These firms experience a reduction in the diversification discount after the divestiture. We show that the efficiency of segment investment increases substantially following the divestiture and that this improvement is associated with a decrease in the diversification discount. Our results support the corporate focus and financing hypotheses for corporate divestitures. We demonstrate that inefficient investment is partly responsible for the diversification discount and show that asset sales lead to an improvement in the efficiency of investment for remaining divisions.

IT IS WELL KNOWN THAT DIVERSIFIED FIRMS trade at a discount relative to stand-alone firms.[1] However, there is debate over the cause of the discount. A commonly held view is that inefficient investment policies of diversified firms are to blame for the diversification discount. For instance, Lamont (1997) suggests the inefficient investment hypothesis by showing that diversified oil companies cut back on investment in non-oil divisions when oil prices declined during the 1980s. Shin and Stulz (1998) find that divisional resources do not appear to be directed to segments with the most favorable investment opportunities. Scharfstein (1998) shows that misallocation of resources between divisions is most pronounced when management has a small ownership stake and suggests that agency costs underlie distortions in divisional allocation. Most of the existing literature uses cross-sectional comparisons of diversified firms to investigate the discount and the investment policy. This methodology has been the source of much of the debate about the diversification discount.

Our approach, in contrast, is to examine changes in the degree of diversification for firms and to test whether changes in diversification are associated with

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[1] Lang and Stulz (1994), Berger and Ofek (1995, 1996), Servaes (1996), Denis and Thothadri (1999), and Lamont and Polk (2002a), among others, document the discount of diversified firms relative to stand-alone firms. There has also been a systematic pattern of firms undoing diversification in recent years, as shown by Comment and Jarrell (1995). Scharfstein (1998) finds that the majority of diversified firms in the late 1970s became undiversified by the mid-1990s.

simultaneous changes in the diversification discount and investment policy. We then explore several hypotheses to explain the changes in the discount and investment policy. The primary advantage of this approach is that it does not rely on cross-sectional comparisons of the discount across firms and thus avoids the omitted variables problem that typically confounds inferences from this research.

A number of recent papers describe the potential problems with cross-sectional comparisons of the discount. For example, Maksimovic and Phillips (2001) argue that the choice to diversify is endogenous and that the discount reflects underlying firm characteristics that explain which firms diversify. Graham, Lemmon, and Wolf (2002) suggest that measurement error partially explains the diversification discount. They observe that the stand-alone firms that are used as the benchmark to compute the diversification discount differ systematically from divisions of conglomerate firms. Lamont and Polk (2002b) further note that diversified firms have higher expected returns, and that this higher return accounts for part of the diversification discount. Due to these criticisms, a consensus view on the interpretation of the discount and the importance of investment policy in explaining the discount does not exist. By investigating changes in the discount, we are able to avoid the problems that arise because of many of the differences between diversified and single segment firms. We are therefore able to focus on examining the characteristics that change when a firm becomes more focused and how these changes explain the change in the diversification discount. Thus, our testing environment allows us to more clearly link the diversification discount and inefficient investment.

Our sample consists of diversified firms that divest an entire business segment, primarily through asset sales. We show that such divestitures are associated with a significant reduction in the diversification discount. Consistent with the literature on asset sales, we find that divestitures have significantly positive announcement returns. The announcement returns are significantly correlated with the change in the diversification discount. The decline in the discount around the divestitures is accompanied by significant changes in the investment of the firms' remaining segments. Specifically, segments that underinvest relative to single segment firms display increased investment levels after the divestiture, while segments that overinvest experience declines in investment. Using a measure of the efficiency of segment investment similar to that used by Rajan, Servaes, and Zingales (2000), we also find the efficiency of segment investment increases following the divestiture and that this improvement in efficiency significantly explains the change in the discount. These results are noteworthy because they indicate a relation between the change in the discount and the investment policy, independent of the obfuscating factors suggested in other papers, and they allow us to further investigate why investment improves around a divestiture.

We evaluate three hypotheses to understand why efficiency of segment investment improves. The corporate focus hypothesis postulates that diversified firms trade at a discount because managers undertake value-decreasing investments, subsidize poor segments by draining resources away from valuable segments, and because of misaligned incentives between central and division managers (Berger and Ofek (1995) and Comment and Jarrell (1995)). The corporate focus hypothesis

therefore predicts that divestitures that increase focus lead to large improvements in investment policy. Authors have identified two specific mechanisms by which corporate focus affects investment policy. Scharfstein and Stein (2000) argue that when firms are comprised of several divisions, divisions with poor prospects will engage in rent-seeking behavior. This rent-seeking argument predicts that divestitures of divisions most likely to engage in rent seeking, such as those with low growth opportunities, should be associated with the greatest improvements in investment policy. Rajan et al. (2000) argue that divisions that contribute to diversity in investment opportunities are likely candidates for rent seeking. Their diversity argument predicts that divestitures that reduce the diversity of investment opportunities should be associated with the improvements in investment efficiency.

The second hypothesis is based on Lang, Poulson, and Stulz (1994), who argue that asset sales are often an expedient financing mechanism when access to external capital is limited. According to the financing hypothesis, asset sales relax external financial constraints and allow firms to undertake valuable investments that would otherwise be forgone. This hypothesis predicts that divestitures should be associated with increased investment for divisions that are unable to finance all their positive net present value projects. This hypothesis also predicts that divesting an overinvesting segment relaxes financial constraints for the firms' remaining segments, thereby improving the overall efficiency of investment policy.

A potential drawback of our approach is that major divestitures often do not occur in isolation. For many firms, the divestiture is part of a broader restructuring that is tied to changes in the firm's internal and external control environment. Therefore, we examine a third hypothesis, which we label the kick-in-the-pants hypothesis. Under this hypothesis, both the changes in the diversification discount and changes in investment policy are driven by broader changes in firms' corporate governance and external corporate control environment. Thus, this hypothesis predicts that the change in the discount and in investment policy is concentrated in firms that experience other changes, such as external takeover pressure or management replacement.

Our results support the corporate focus hypothesis, but we do not uncover support for the specific predictions of the rent-seeking or diversity arguments for why corporate focus may affect investment policy. Our results are also consistent with the financing hypothesis of asset sales and suggest that relaxed financial constraints in our sample lead to more efficient investment policy. We do not find support for the kick-in-the-pants effect as the primary explanation of our results.

Our paper is linked to other studies examining the source of gains from divestitures. John and Ofek (1995) argue that improvements in investment policy are an important source of gains from asset sales. Hite and Owers (1983) and Rosenfeld (1984) argue that redeployment of assets to higher valued users is an important source of gains from asset sales. However, neither study documents changes in investment policy and the effects on the diversification discount.

Our general conclusions are consistent with the recent studies of other corporate reorganizations. Gertner, Powers, and Scharfstein (2002) show that improved investment of spun-off divisions explains the gains from spin-offs. In

contrast to their work, we show how the divestiture of a division affects investment in the parent firm's remaining divisions. Burch and Nanda (2002) show that an increase in focus partly explains the increase in value from a spin-off. Our paper is also related to Lamont and Polk (2002a), who examine changes in the degree of diversity among investment opportunities for divisions over time. They find that industry shocks that change the degree of diversity of opportunities among segments lead to changes in firm value.

The paper is organized as follows. Section I describes the sample. Section II reports changes in the diversification discount. In Section III, we examine changes in investment. Section IV explores the link between changes in the diversification discount and changes in investment. Section V concludes.

I. Sample

We obtain data from the COMPUSTAT segment tapes. Since 1977, firms have been required to report data on business segments that account for more than 10% of consolidated profits, sales, or assets. We start by identifying all firms where the number of segments decreased between 1983 and 1994. The sample ends in 1994 because some of our tests follow investment for 3 years after the divestiture.[2] The initial sample consists of 4,111 firm-years where the number of segments reported by a firm declines. However, several declines are due to changes in the reporting of segment data. To identify actual organizational changes, we examine divestiture and spin-off activity by these firms using the Securities Data Corporation (SDC) database. We require that COMPUSTAT reports at least one less segment and that the firm simultaneously engages in a divestiture or spin-off. This results in a sample of 1,268 divestitures by 624 firms in 769 firm-years. In several instances, the divested assets belong to divisions other than those for which reporting ceases in COMPUSTAT. To ensure a sample where we can reliably identify a divestiture with a change in segment reporting, we examine the three-digit SIC codes of the dropped segment and of the divested assets. In addition, we search Lexis-Nexis in the year surrounding the announcement date to verify that the divestiture corresponds to the business segment that ceases reporting. We find 431 firm-years of organizational changes representing 388 different firms that reduce the number of segments and where we can verify that assets belonging to the dropped segment(s) were divested.[3]

[2] In June 1997, FAS 131 changed the way businesses define their segments. Firms continue to report operating segments but the substantial changes in the definition of segments makes it difficult to compare segments from pre- and post-1998.

[3] It is worth noting that although COMPUSTAT reports fewer segments following the divestiture, this does not imply that all the assets of that segment have been divested. Since firms are only required to report data on segments that comprise at least 10% of the firm's profits, sales, or assets, a partial divestiture might result in a smaller segment that accounts for less than 10% of the firm's operations. Such instances of unobserved segments lower the likelihood of detecting significant shifts in divisional investment policies. In this regard, the power of our tests is reduced, and the changes that we document could be viewed as conservative estimates of changes that might occur in instances of complete divestitures.

We remove 54 firm-years where the divestiture includes a major restructuring, defined as an event where the firm divests or changes the three-digit SIC code of more than 50% of its retained segments.[4] We remove 45 additional firm-years where firms are incorporated outside the United States and 22 firm-years where the primary SIC code represents the financial services industry (primary three-digit SIC code between 600 and 699). Finally, we drop 32 firm-years where a firm divests segments in multiple years over a 3-year period because some tests examine investment policy for 3 years before and after the divestiture.[5] The final sample consists of 278 organizational changes by 235 firms.

Although most of the events are divestitures, there are 15 spin-offs in the sample. Since spin-offs do not provide a cash inflow to the parent, the financing hypothesis is not applicable to spin-offs. In untabulated tests, we have conducted all the analyses restricting the sample to include only divestitures and obtained results similar to those estimated with the full sample. Throughout the paper, we report results using the full sample that includes spin-offs, and for convenience, refer to all events as divestitures.

In 134 cases, the divestiture results in the firm becoming a single-segment entity. Therefore, tests of how capital is allocated across divisions can only be conducted on the remaining 144 parent firms that continue as diversified. We refer to the 144 parents with multiple segments after the divestiture as diversified parents and the remaining firms with only one ongoing segment as the single-segment parents.

Panel A of Table I shows that divestitures are spread evenly during the sample period, but are slightly less frequent in 1983 and 1992. Panel B shows that segment data for the sample of 278 firms is available in 275 cases for 3 years prior to the divestiture. In the 3-year period after the divestiture, the sample size drops to 225 because of acquisitions and delistings. As expected, there is a substantial decline in the number of segments around year t. The sample consists of 913 segments in year $t-1$, which declines to 563 segments in year t. The decline in segments exceeds 278, the number of firms in the sample, because several firms divest more than one segment. As shown in Panel C, 224 firms divest one segment, 41 divest two segments, eight divest three segments, and five firms divest four segments.

We examine announcements of the divestitures using the *Wall Street Journal* and wire reports in Lexis-Nexis. Panel D of Table I shows that 186 firms announce a single divestiture and 92 firms announce multiple divestitures. The average number of individual divestitures per decline in a segment is 1.64. Thus, many firms implement multiple divestitures to exit a single business line.

We are able to obtain data on transaction values for divestitures made by 191 firms using the *Wall Street Journal*, Lexis-Nexis, and SDC. Panel E reports that the

[4] An example of this restructuring is NL Industries. In 1986, NL reported three segments at the three-digit level with SIC codes 735, 353, and 289. In 1987, the firm reported two segments with the SIC codes 289 and 281. Thus, only the segment with SIC code 289 remained after the divestitures. The firm divested the other two segments and added one segment with a new SIC code.

[5] The results are qualitatively unchanged if we do not remove these firms.

Table I
Sample Characteristics

This table is a description of the sample of 278 divestitures that reduce the number of reported business segments in COMPUSTAT from 1983 to 1994 by divesting or spinning off assets according to the SDC database. The diversified sample consists of firms that remain diversified after the divestiture. The single-segment sample consists of firms that report a single segment after the divestiture. Panel A reports the number of divesting firms across calendar time. Panel B reports the number of firms and segments by the year relative to the event. Panel C shows the number of segments dropped in each divestiture. Panel D describes the frequency of announcements of divestitures occurring in the *Wall Street Journal* and Lexis-Nexis. Panel E reports summary data on transaction values of divestitures, collected from SDC. Panel F presents the relatedness of divested assets to the assets of the divesting and acquiring firm. Panel G reports the frequency of external control events for divesting firms for the 14 months prior to the initial divestiture announcement, using data from the *Wall Street Journal* and Lexis-Nexis. Panel H shows the changes in the leverage ratio, total debt to market value at $t-1$, that occur around the divestiture.

Panel A: Observations by Calendar Year

	Number of Divesting Firms		
Year of Event	Full Sample	Diversified Parents	Single-Segment Parents
1983	8	6	2
1984	21	17	4
1985	24	12	12
1986	22	13	9
1987	27	15	12
1988	27	14	13
1989	20	7	13
1990	24	10	14
1991	27	16	7
1992	13	1	12
1993	34	20	14
1994	35	13	22
Total	278	144	134

Panel B: Observations Relative to Event Year

	Number of Divesting Firms			Number of Segments		
	Full Sample	Diversified Parents	Single-Segment Parents	Full Sample	Diversified Parents	Single-Segment Parents
$t-3$	275	143	132	914	571	343
$t-2$	277	144	133	916	581	335
$t-1$	278	144	134	913	590	323
t	278	144	134	563	429	134
$t+1$	253	137	116	525	402	123
$t+2$	238	129	109	490	375	115
$t+3$	225	121	104	473	353	120

Table I

Panel C: Change in the Number of Segments

	Number of Divesting Firms		
	Full Sample	Diversified Parents	Single Segment Parents
-4	5	0	5
-3	8	1	7
-2	41	15	26
-1	224	128	96

Panel D: Frequency of Divestiture Announcements

Number of Announced Divestitures per Decline in Business Segment	Number of Firms
1	186
2	48
3	27
4	3
5	8
6	4
7–10	2
Mean number of announced divestitures per decline in business segment	1.64

Panel E: Size and Value of Announced Divestitures

	Mean (Median)		Mean (Median)	
	Average for All Announced Divestitures per Firm	Number of Firms	Sum of All Announced Divestitures per Firm	Number of Firms
Average transaction value ($ million)	123.47 (40)	191	141.23 (34.5)	144
Average transaction value ÷ firm value $t-1$	0.22 (0.12)	181	0.31 (0.15)	136
Average transaction value ÷ CAPX $t-1$	5.79 (1.77)	187	7.3 (2.78)	141

Panel F: Industrial Relatedness of Divested Segment to Divesting and Acquiring Firms

Measure of Industry Relatedness	Number of Observations Where Acquirer and Divested Segment Are Related	Number of Observations Where Divesting Firm and Divested Segment Are Related	*Z*-Statistic for Equality of Proportions
Segment and firm share the same four-digit primary SIC code	101	33	6.40
Segment and firm share the same three-digit primary SIC code	126	52	6.24
Total number of observations with available data	428	428	

continued

Table I
(continued)

Panel G: Frequency of External Control Events before Divestiture Announcement

	Number of Firms	Percentage of Firms
Turnover of CEO and/or board chairman	56	20
Merger attempt	26	9.4
Block purchase of shares	10	3.6
Shareholder activism	4	1.4
Financial distress	9	3.2
Number of firms with at least one external control event	91	32.7
Number of firms without any external control event	187	67.3

Panel H: Leverage Ratios

	$t-1$	$t+1$	Difference $(t+1)-(t-1)$	*P*-value Diff $(t+1)-(t-1)=0$	Difference $(t+3)-(t-3)$	*P*-value Diff $(t+3)-(t-3)=0$
Debt/market value equity $t-1$	0.66 (0.34)	0.60 (0.35)	-0.13 (-0.03)	0.00 (0.00)	0.03 (0.03)	0.50 (0.04)
Number of observations	241	225	218		190	

divestitures in the sample are relatively large. The average transaction value for the 191 divestitures is \$123.5 million.[6] This size is comparable to the average transaction value of the sample of "significant divestitures" over 1984 to 1989 in Lang et al. (1994) of \$120.7 million. Because firms in our sample often undertake multiple divestitures when exiting an industry, we also calculate the sum of all the available transaction values for divestitures in that industry by a firm. We are able to collect transaction values of all announced divestitures for 144 firms. The proceeds average \$141.23 million, which represents 31% of the sum of the market value of equity and book value of debt in the year prior to the divestiture. The total proceeds from all divestitures averages 7.3 times the firm's investment in the prior year, indicating that the proceeds are large enough to have a substantial impact on the firm's investment policy.

Panel F shows that divested assets display a pattern of moving from firms with relatively unrelated assets to those with relatively related assets. At the three-digit level, 52 (12%) of the divested assets share a primary SIC code with the divesting firm. However, 126 (29.4%) of the acquirers share a primary SIC code with the divested assets. At the four-digit level, 101 (23.6%) acquirers have the same primary SIC code as the divested asset, compared to 33 (7.7%) of the divesting

[6] Since the divestitures in our sample are associated with a decline in the number of reported segments, they tend to be relatively large. Using data on transaction values from SDC, the mean (median) size of divestitures not in our sample is \$77.5 (\$24) million.

firms. A *Z*-test indicates that the proportion of acquirers related to the segments is significantly greater than the proportion of parents related to the segments at the 1% level.

Denis, Denis, and Sarin (1997) show that external control changes are typical prior to corporate restructuring events. Weisbach (1995) finds that divestiture activity is often preceded by top management turnover. Panel G shows a similar pattern in our sample, with 56 (20%) of the firms experiencing a top management change prior to divestitures. Merger and/or takeover attempts occur in 26 (9.4%) firms, and a large accumulation of shares in another 10 (3.6%) firms. Shareholder activists target 4 (1.4%) firms in the sample, and another 9 (3.2%) experience a bout of financial distress. Overall, 91 (32.7%) firms experience an external control event prior to the divestiture.

As seen in Panel E, the typical divestiture provides a large cash inflow. If firms use the cash to repay debt, then the divestiture should be associated with a decline in leverage. Panel H of Table I shows that the ratio of total debt to the market value of equity declines from 66% in year $t-1$ to 60% in year $t+1$. This decline in leverage is statistically significant at the 1% level. However, divestitures do not appear to be associated with a permanent shift in capital structure. There is no significant change in leverage from year $t-3$ to year $t+3$, implying that the reduction in leverage associated with divestiture is temporary.

According to the financing hypothesis, investment policy changes around the divestiture because the proceeds from the divestiture can be used to finance investment activities. Thus, we may expect to see changes in external financing after the divestiture. Figure 1 shows a dramatic shift in the external financing in the year of and immediately following the divestiture. In years $t-3$ to $t-1$, the firm raises more external capital than it distributes to investors in the form of debt repayments and share repurchases. However, in year t, the firm is a net

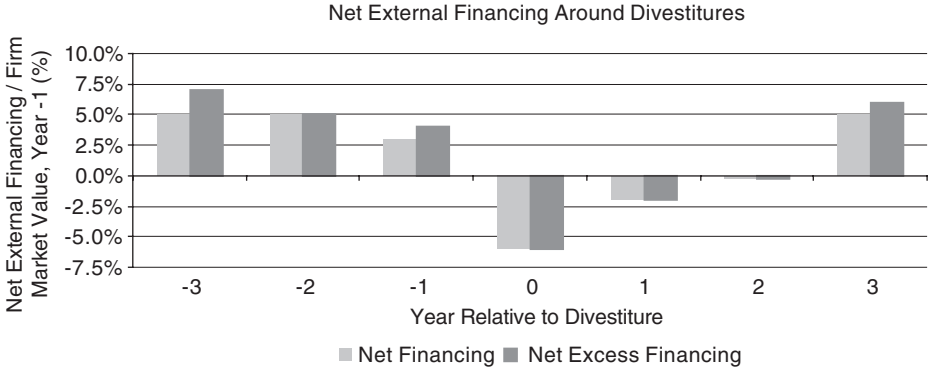

Figure 1. External financing around divestitures. Figure 1 illustrates the mean net financing as a percentage of market value at $t-1$. Net financing is defined as equity and debt issues less equity repurchases and debt repayments, and net excess financing is net financing less net financing of other multisegment firms.

distributor of capital, repurchasing on average 6% of the outstanding market value of its equity. This repurchase amount is substantially less than the divestiture proceeds that average 31% of equity value, indicating that the bulk of the proceeds are typically retained. Firms tend to return to being net issuers of external capital by $t + 3$ at close to predivestiture levels, suggesting that divestitures do not have a long-term impact on external financing activities.

We compare the characteristics of divested and retained segments in Table II. The median size of divested segments in year $t-1$ is \$62 million, while that of retained segments is \$189 million. Sixty-eight percent of the sample firms divest their smallest segment, consistent with Schlingemann, Stulz, and Walkling (2002). However, unlike their sample, 30% of firms in our sample also divest their largest segment.

We measure segments' investment opportunities using the imputed market-to-book ratio (*MB*), calculated as the median *MB* of stand-alone firms in the same three-digit SIC code as the segment of the diversified firm.[7] The median *MB* for divested segments in the year prior to the divestiture is 1.27, and that of retained divisions is also 1.27. About half of the firms (49.6%) divest a division with an imputed *MB* lower than the median *MB* of all of the firm's segments, while half divest a high *MB* segment. In 66.8% of the sample, a division with cash flow below the median of all segments of the firm is divested.[8]

We compute the change in the dispersion of investment opportunities using the sales-weighted standard deviation of *MB* divided by the average *MB* of all of the firm's segments. Rajan et al. (2000) use this variable to measure the diversity in investment opportunities among segments. We compute the difference between the weighted standard deviation in years $t-1$ and $t+1$ to measure the change in diversity. On average, sample firms exhibit an increase in diversity after the divestiture, but a decrease in diversity is observed in 26.4% of the sample.

The divestitures are associated with an increase in corporate focus. We follow John and Ofek (1995) and compute the sales-based Herfindahl index as the sum of the squared segment sales, relative to firm sales. Table II shows that the change in the sales-based Herfindahl index around the divestiture is significantly positive.

II. Changes in the Diversification Discount

We examine how the diversification discount changes around the divestiture. We use Berger and Ofek's (1995) methodology that estimates the difference between the market value of a diversified firm and the sum of the imputed

[7] We require that there are at least five stand-alone firms in the same three-digit SIC code; otherwise, we use the median *MB* for stand-alone firms in the same two-digit SIC code. We calculate *MB* at the beginning of the year in which the investment decisions have to be made.

[8] We find that 43.1% of firms in the sample divest their lowest *MB* division and 37.9% of sample firms divest their highest *MB* division. In 57.8% of cases, parents divest the division with the lowest cash flow, and in 30.6% of cases, the segment with the highest cash flow ratio is divested.

Table II

Characteristics of Divested and Retained Segments

This table shows summary statistics for divested and retained segments. The *MB* of a segment is the median *MB* of all single segment firms in the same three-digit SIC code as the segment. Segment cash flow is the segment operating income plus depreciation. A segment is defined as low *MB*, low cash flow, or small if its *MB*, cash-flow-to-sales ratio, or assets, respectively, is lower than the median of the firm's segments. Diversity is the standard deviation of segment sales-weighted *MB* divided by the average *MB* of all the firm's segments. A divestiture is classified as diversity decreasing if diversity declines between $t-1$ and $t+1$. The diversified parents subsample consists of firms that remain diversified after the divestiture. The single-segment parents subsample consists of firms with only one ongoing segment after the divestiture. The change in focus variables are tested to determine if they are different from zero using a *t*-test and Wilcoxon test.

	Full Sample Mean (Median)	Diversified Parents Mean (Median)	Single-Segment Parents Mean (Median)
Sales of divested segments at $t-1$ ($ million)	214.43 (62.03)	332.01 (119.50)	128.26 (43.151)
Sales of retained segments at t − 1 ($ million)	832.87 (188.64)	891.50 (235.77)	692.33 (144.06)
MB of divested segments at $t-1$	1.42 (1.27)	1.38 (1.22)	1.42 (1.26)
MB of retained segments at $t-1$	1.39 (1.27)	1.38 (1.28)	1.45 (1.33)
(Cash flow/sales) for divested segments at $t-1$	0.05 (0.08)	0.12 (0.11)	0.05 (0.07)
(Cash flow/sales) for retained segments at $t-1$	0.12 (0.12)	0.11 (0.10)	0.13 (0.12)
Change in variance of segment *MB* from $t-1$ to $t+1$	—	−0.12[c] (−0.07)	—
Change in diversity of segment *MB* from $t-1$ to $t+1$	—	0.05[c] (0.05)	—
Change in the Herfindahl index from $t-1$ to $t+1$	0.22[c] (0.17)	0.11[c] (0.11)	0.32[c] (0.32)
Percentage of firms divesting the lowest MB segment	43.1%	26.4%	58.2%
Percentage of firms divesting a low MB segment	49.6%	41.8%	56.6%
Percentage of firms divesting the highest MB segment	37.9%	27.3%	41%
Percentage of firms divesting the smallest segment	68.1%	51.8%	83%
Percentage of firms divesting the largest segment	30.2%	20.9%	39%
Percentage of firms divesting a small segment	75.4%	67.3%	83%
Percentage of firms divesting the highest cash flow segment	30.6%	20.9%	39%
Percentage of firms divesting the lowest cash flow segment	57.8%	43.6%	70%

Table II
continued

	Full Sample Mean (Median)	Diversified Parents Mean (Median)	Single-Segment Parents Mean (Median)
Percentage of firms divesting a low cash flow segment	66.8%	60.9%	72%
Percentage of firms that decrease diversity	—	26.4%	—

[c]indicates significantly different from zero at the 1% level.

value of all the firm's segments, based on the valuation of stand-alone firms. Specifically, we compute the diversification discount[9] using a sales multiplier as follows:

$$\begin{aligned} &\text{Diversification Discount} = 1 - \log\left(\frac{V}{I(V)}\right), \\ &\text{where } I(V) = \sum_{i=1}^{n} Sales_i \times \left[M_i(V/Sales)_{MS}\right], \end{aligned} \tag{1}$$

where V is the sum of market value of equity and book value of assets less the book value of equity and deferred taxes at year $t-1$, $I(V)$ is the imputed firm value at year $t-1$, $Sales_i$ is segment i's sales at time 0, $M_i(V/Sales)_{MS}$ is the sales multiplier (calculated as the median of the single-segment firms in the same three-digit SIC code industry) at year $t-1$, and n is the number of segments per firm at year t.

Berger and Ofek (1995) find that the discount averages 0.10. Table III shows that in year $t-1$, diversified parents have a mean discount of 0.33, which is significantly different from zero at the 1% level. The mean discount decreases after the divestiture to 0.17. Inspection of medians indicates a similar decrease in the discount. The change in the discount is statistically significant at the 10% level using a t-test and at the 4% level using a Wilcoxon test. Firms that remain diversified continue trading at a discount relative to stand-alone firms.

Berger and Ofek (1995) show that the change in the discount is largest when a firm goes from operating as a single-segment firm to operating as a dual-segment firm. Thus, we might expect that moving in the opposite direction—from multiple segments to one segment—should have a large impact on the discount. Table III shows that for firms that become single segment, mean discount in year $t-1$ is 0.23. After the divestiture, the discount drops to 0.14. Inspection of medians reveals a much larger decrease in the discount. The median discount falls from

[9] The diversification discount calculation is similar to the Berger and Ofek (1995) excess value measure, with the exception that our formulation treats the discount as a positive number. We avoid the term "excess value" because we have not established that the discount arises because diversification actually destroys value.

Table III

Change in Diversification Discount

This table shows the change in diversification discount using the Berger and Ofek (1995) discount measure with a sales multiplier. The Berger and Ofek discount measure is $1 - \log(V_t/I(V_t))$, where $I(V_t) = \sum_{i=1}^{n} Sales_{i,t} \times \left[M_{i,t}(V_t/Sales_t)_{MS}\right]$, where V is the market value of the firm (market value of equity plus book value of assets minus book value of equity minus deferred taxes), $I(V)$ is the imputed V, $Sales_i$ is segment i's sales, $M_i(V/Sales)_{MS}$ is the sales multiplier calculated as the median of single-segment firms in the same three-digit SIC code, and n is the number of segments. Diversified parents are firms that remain diversified after the divestiture. Single-segment parents are firms with one ongoing segment after the divestiture. The p-values from t-test and signed-rank test of difference from zero are reported in parentheses.

Panel A: Level of Discount

	All Firms			Diversified Parents			Single-Segment Parents		
	Year $t-1$	Year $t+1$	Change	Year $t-1$	Year $t+1$	Change	Year $t-1$	Year $t+1$	Change
Mean discount	0.28	0.16	− 0.08	0.33	0.17	− 0.09	0.23	0.14	− 0.07
	(0.00)	(0.00)	(0.06)	(0.00)	(0.02)	(0.10)	(0.00)	(0.02)	(0.16)
Median discount	0.34	0.13	− 0.09	0.35	0.24	− 0.09	0.32	0.06	− 0.09
	(0.00)	(0.01)	(0.01)	(0.00)	(0.02)	(0.04)	(0.00)	(0.02)	(0.06)
Number of observations	212	210	179	106	113	98	106	97	81

Panel B: Change in Value from $t-1$ to $t+1$

	All Firms	Diversified Parents	Single Segment Parents
Mean change in firm value $\left[\frac{V_{t+1}}{V_{t-1}}\right]^{-1}$	0.12	0.14	0.17
Median change in firm value $\left[\frac{V_{t+1}}{V_{t-1}}\right]^{-1}$	0.01	0.09	− 0.10
Mean change in value divided by imputed value in $t-1$ $\left[\frac{V_{t+1}-V_{t-1}}{I(V_{t-1})}\right]$	0.16	0.17	0.15
Median change in value divided by imputed value in $t-1$ $\left[\frac{V_{t+1}-V_{t-1}}{I(V_{t-1})}\right]$	0.01	0.05	− 0.06
Number of observations	204	100	104

0.32 in year $t-1$ to 0.06 in year $t+1$ and a Wilcoxon test indicates that the change is statistically significant. Nonetheless, these firms continue to trade at a discount relative to other stand-alone firms, even though they become single-segment firms after the divestiture.

One explanation for the decline in the diversification discount is that firms are simply divesting highly discounted segments, which causes a mechanical decrease in the discount. According to this explanation, a reduction in imputed value rather than an increase in market value might be largely responsible for the decrease in the discount. To address this issue, Panel B of Table III reports the percentage change in firm value from year $t-1$ to year $t+1$. On average, firm value rises for the full sample, as well as for the subsamples of diversified parents and the single-segment parents. In addition, we calculate the change in firm value as a percentage of imputed value in year $t-1$. This ratio is not mechanically dependent on the imputed value of the divested segment. Panel B shows that, on average, this ratio rises significantly around the divestiture. Therefore, the possibility that firms are selling deeply discounted segments cannot fully explain the change in the discount for the sample.

To gauge the discount of the divested segment more directly, we measure the market value of the divested segment in year $t+1$ using the transaction value, presented in Panel E of Table I, and compare this to the imputed value. We are able to collect data on the transaction value of all the divestitures associated with a segment decline for 98 firms in our sample.[10] For these firms, the average ratio of the transaction market value to the imputed value of the segment in year $t+1$ is 1.05[11] and is not significantly different from one. Therefore, the change in the discount does not arise mechanically because firms primarily sell segments that are highly discounted.

We also compute cumulative abnormal returns (CARs) for divestiture announcements. As noted earlier, several firms remove a segment by initiating a divestiture program or engaging in multiple asset sales. In these cases, we use the first announcement of divestiture activity as the announcement date, but also track announcement dates of subsequent asset sales. Excluding events that are contaminated by concurrent news or where announcements are unavailable, we are able to compute CARs for 188 divestiture announcements.

Table IV reports CARs for 2, 3, 5, and 11-day windows surrounding the first announcement of divestitures. We look at CARs over several windows because relevant news and details about the specific assets to be divested are sometimes disclosed after the initial announcement. We find significantly positive CARs, and the CARs are similar for diversified and single-segment parents. The 3-day CAR averages 3.4% for the full sample, 3.4% for diversified parents, and 3.5% for

[10] Though suggestive, we advocate caution in interpreting the data on transaction values. We find systematic differences between firms for which we are able to collect transaction values for all divestitures and those where this data is unavailable. Firms where data on all divestiture transaction values are missing tend to be significantly larger and engage in multiple asset sales. This raises the likelihood that we are unable to obtain data on at least one of the asset sales.

[11] This ratio averages 1.05 for the diversified parents and 1.06 for the single segment parents.

Table IV
Cumulative Abnormal Returns

This table shows cumulative abnormal returns (CARs) for announcements of divestitures in the year of and the year preceding a decline in the number of reported business segments in COMPUSTAT. Market model parameters are computed over days -220 to -20 relative to the announcement date. Data on announcements is collected from the *Wall Street Journal* and wire reports in Lexis-Nexis. Announcements occurring concurrently with earnings releases or other material corporate information are excluded. The diversified parents subsample consists of firms that remain diversified after the divestiture. The single segment parents subsample consists of firms with only one ongoing segment after the divestiture. The *p*-values for test of significance using a *Z* statistic are in parentheses.

	Full Sample	Diversified Parents	Single-Segment Parents
CAR (day -1 to day 0)	0.022	0.030	0.026
	(0.00)	(0.00)	(0.00)
CAR (day -1 to day $+1$)	0.034	0.034	0.035
	(0.00)	(0.00)	(0.00)
CAR (day -2 to day $+2$)	0.032	0.027	0.037
	(0.00)	(0.00)	(0.00)
CAR (day -5 to day $+5$)	0.029	0.028	0.031
	(0.00)	(0.01)	(0.02)
Sum of CAR (day -1 to day $+1$) for all divestitures announced by a firm	0.042	0.041	0.043
	(0.00)	(0.00)	(0.00)
Correlation of CAR with change in diversification discount from year $t-1$ to $t+1$			
CAR (day -1 to day 0)	-0.25	-0.27	-0.24
	(0.00)	(0.01)	(0.05)
CAR (day -1 to day $+1$)	-0.16	-0.18	-0.14
	(0.04)	(0.09)	(0.24)
CAR (day -2 to day $+2$)	-0.15	-0.18	-0.10
	(0.06)	(0.09)	(0.38)
CAR (day -5 to day $+5$)	-0.15	-0.17	-0.24
	(0.06)	(0.12)	(0.05)
Number of observations	188	91	97

the single-segment parents. The CAR ranges from 2.2% to 3.4% for the full sample, depending on the event window. All CARs are statistically significant at the 1% level. We find no significant difference in the CAR across diversified and single-segment parents.[12]

[12] The average CARs in our sample are larger than that documented in prior studies. Alexander, Benson, and Kampmeyer (1984), Hite, Owers, and Rogers (1987), and Jain (1985) document CARs between 0.5% and 1.66% for asset sale announcements. The 2-day CAR in our sample is about twice the CAR of 1.4% documented in Lang et al. (1994). The higher CARs for our sample are not surprising, because the sample consists of relatively large divestitures that are associated with a decline in an entire business segment.

Since many firms divest a segment using multiple asset sales, we also calculate the CAR for each announcement and cumulate the CARs for each firm. The average cumulative CAR for all asset sales is 4.2% for the entire sample. The average cumulative CAR is virtually identical for diversified and single-segment parents. The cumulative CAR is also significant at the 1% level for the entire sample as well as for the two subsamples.

In sum, we find a significant decrease in the diversification discount as well as a significantly positive announcement return associated with divestitures. Table IV shows that these effects are related. The correlation between the two-day CAR and the change in the discount is -0.25 for the entire sample, and is statistically significant. The 2-day CAR and the change in the discount are also negatively correlated for both the diversified and single-segment subsamples. The negative correlation between the change in the discount and CAR persists for other announcement windows, but declines steadily with the length of the CAR window.

III. Changes in Investment Policy

In this section, we conduct tests related to segment investment. We define segment investment as the ratio of segment investment to sales in a given year. We first document the changes in segment investment around the divestiture. We examine whether these changes in segment investment are associated with an improvement in the efficiency of capital allocation. We then test predictions of the corporate focusing, financing, and kick-in-the-pants hypotheses to understand the source of the change in investment policy.

A. Changes in Segment Investment

Table V shows segment investment around the divestiture for the firms' retained segments. We focus on retained segments to avoid results that are driven by the investment of the divested division. For example, if a firm were to divest a capital-intensive division, we would observe a decline in total segment investment even when there are no other changes in the firm's investment policy.

Panel A shows that segment investment does not change meaningfully around the divestiture. We also compute the relative segment investment ratio (*RSI*) as the difference between the segment's investment ratio and the median investment ratio of stand-alone firms in the same three-digit SIC code. In year $t-1$, *RSI* averages 0.3%, indicating that investment by segments of divesting firms is virtually identical to investment by stand-alone firms. After the divestiture, *RSI* is 1.3% and is significantly different from zero. Thus, relative to stand-alone firms, investment increases; however, this increase is not significantly different from zero.

For diversified parents, there is no evidence of a change in segment investment on either an absolute level or relative to other stand-alone firms basis. The mean segment investment ratio for single-segment parents rises from 9.3% in year $t-1$ to 9.7% in year $t+1$, but the change is not significant. For these firms, mean *RSI* prior to the divestiture is 1.1% and is not significantly different from zero.

Table V

Segment Investment Around Divestitures

This table shows mean (median) segment investment ratio, segment capital expenditures to sales, relative segment investment ratio (*RSI*), and segment investment ratio minus the median of the segment investment ratio for all single-segment firms operating in the same three-digit SIC code. Underinvesting segments are those that invest less than single-segment firms in year $t-1$. Only retained segments are included in the analysis. The diversified parents subsample consists of firms that remain diversified after the divestiture. The single-segment parents subsample consists of firms with only one ongoing segment after the divestiture. The *p*-values columns report *p*-values from *t*-tests (Wilcoxon rank-sum tests) comparing the difference between investment at $t-1$ and $t+1$. *T*-tests and Wilcoxon rank-sum also test if the relative segment investment is significantly different from zero.

	Panel A: All Segments								
	All Firms ($N=445$)			Diversified Parents ($N=314$)			Single-Segment Parents ($N=131$)		
	Year $t-1$	Year $t+1$	*p*-value	Year $t-1$	Year $t+1$	*p*-value	Year $t-1$	Year $t+1$	*p*-value
Segment investment ratio	0.074	0.080	0.47	0.066	0.074	0.39	0.093	0.097	0.82
	(0.039)	(0.038)	(0.91)	(0.039)	(0.035)	(0.76)	(0.040)	(0.044)	(0.82)
Relative segment investment ratio	0.003	0.013[c]	0.24	0.00	0.005	0.59	0.011	0.037[b]	0.03
	(0.00)	(0.00)	(0.60)	(−0.001)	(0.00)	(0.68)	(0.003)	(0.002)	(0.40)
Percentage change in segment investment from $t-1$ to $t+1$	0.51		0.00	0.42		0.00	0.78		0.00
	(0.07)		(0.00)	(0.05)		(0.01)	(0.10)		(0.04)
	Panel B: Underinvesting Segments								
	All Firms ($N=197$)			Diversified Parents ($N=144$)			Single Segment Parents ($N=53$)		
Segment investment ratio	0.04	0.06	0.04	0.03	0.05	0.04	0.04	0.08	0.18
	(0.02)	(0.03)	(0.05)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.22)
Relative segment investment ratio	−0.04[c]	−0.01	0.01	−0.04[c]	−0.02	0.13	−0.05[c]	0.03	0.06
	(−0.02)[c]	(−0.01)[c]	(0.00)	(−0.02)[c]	(−0.01)[c]	(0.02)	(−0.02)[c]	(0.00)	(0.11)
Percentage change in segment investment from $t-1$ to $t+1$	0.75		0.00	0.59		0.00	1.29		0.03
	(0.24)		(0.00)	(0.24)		(0.00)	(0.24)		(0.04)

continued

Table V
(continued)

	Panel C: Overinvesting Segments								
	All Firms ($N = 248$)			Diversified Parents ($N = 170$)			Single Segment Parents ($N = 78$)		
Segment investment ratio	0.10	0.09	0.24	0.09	0.08	0.03	0.13	0.10	0.20
	(0.06)	(0.04)	(0.00)	(0.05)	(0.04)	(0.00)	(0.08)	(0.04)	(0.45)
Relative segment investment ratio	0.05[c]	0.02[c]	0.02	0.04[c]	0.02[b]	0.02	0.06[c]	0.04[b]	0.17
	(0.02)[c]	(0.01)[c]	(0.00)	(0.02)[c]	(0.01)[c]	(0.00)	(0.03)[c]	(0.01)	(0.07)
Percentage change in segment investment from $t-1$ to $t+1$	0.32		0.03	0.29		0.13	0.41		0.07
	(− 0.03)		(0.46)	(− 0.07)		(0.69)	(0.04)		(0.42)

[b]and [c] indicate significantly different from zero at the 5% and 1% level, respectively.

After the divestiture, mean *RSI* rises to 3.7% and is significantly greater than zero. The change in average *RSI* for single-segment parents is significant at the 5% level.[13]

The financing hypothesis predicts that divestitures allow constrained segments to increase investment. We attempt to identify constrained segments by comparing their investment levels to that of stand-alone firms. We classify segments as underinvesting if *RSI* is negative, that is, they invest less than stand-alone firms. Segments are classified as overinvesting if *RSI* is positive. Panel B of Table V shows that for diversified parents, investment in underinvesting segments rises from 3% in year $t-1$ to 5% in year $t+1$. This increase is significant at the 5% level. For these segments, *RSI* averages -4% in year $t-1$ and rises to -2% in year $t+1$ and the change is significant using a Wilcoxon test. Thus, for diversified parents, investment in underinvesting segments increases after divestiture. However, it is worth noting that even after the divestiture, relative segment investment remains negative, suggesting that underinvesting segments continue to underinvest relative to their stand-alone counterparts. Underinvesting segments of single-segment parents also display a large increase in investment. Investment rises from 4% in year $t-1$ to 8% in year $t+1$, while *RSI* rises from -5% to 3%. A *t*-test for the change in *RSI* displays a *p*-value of 6%, while the *p*-value from a Wilcoxon test is 11%.

In contrast to underinvesting segments, Panel C shows that investment declines for overinvesting segments after the divestiture. For diversified parents, investment in overinvesting segments declines from 9% in year $t-1$ to 8% in year $t+1$, and the change is statistically significant at the 5% level. For these segments, *RSI* also declines significantly after divestiture. A similar pattern is observed for the single-segment parents. For their overinvesting segments, investment declines from 13% to 10%, while *RSI* declines from 6% to 4%.

We also calculate the percentage change in segment investment from year $t-1$ to year $t+1$. The advantage of this approach is that we can gauge whether changes in investment levels are responsible for the changes in the investment-to-sales ratio described above. However, the drawback of this approach is that it does not account for the change in the size of the continuing segments. If investment is fairly low in year $t-1$, as is the case for some segments in our sample, a relatively modest increase in investment can lead to a large percentage increase. To avoid this issue in interpreting the results, we concentrate our discussion on median percentage changes. Panel A of Table V shows that the median percentage change in investment for segments is 7%. The median change is also significantly positive for both the diversified and single-segment subsamples. However, the increase in investment is concentrated primarily in underinvesting seg-

[13] We examine whether single-segment and diversified parents differ in the proportion of highly profitable ongoing segments. Defining a highly profitable segment as one that has a cash-flow-to-sales ratio that is in the top quartile of all stand-alone firms in that year, we find comparable proportions of high-performing segments in diversified and single-segment subsamples in year $t-1$ and year $t+1$. In year $t-1$, 29% of segments of diversified parents and 26% of segments of single-segment parents are classified as high performers. Using *MB* to define a high performing segment portrays a similar picture.

ments. Panel B shows the median change in investment is 24% for underinvesting segments of both single-segment and diversified parents, and is significant at the 1% level using a Wilcoxon test. However, as shown in Panel C, the median percentage change in investment for overinvesting segments is small and statistically insignificant.

The change in investment policy can be observed in Figure 2, which displays the percentage of the firms' total capital expenditures invested in over- and underinvesting segments. In years $t-3$ to $t-1$, the average investment in underinvesting segments is 29%, and it rises to 37% in years $t+1$ to $t+3$. The rise in investment for underinvesting segments that is apparent after year t is also associated with a decline in investment for the firms' overinvesting segments. For diversified parents, the divestiture appears to be associated with a meaningful shift in investment policy.

As an illustration of these changes, consider the case of Disney, which divested its community development segment in 1987 for $400 million. Disney concurrently increased investment in its consumer products division from $0.3 million in 1986 to $6.6 million in 1988, representing an increase of 2,100%. Disney also increased investment in its filmed entertainment and theme parks and resorts

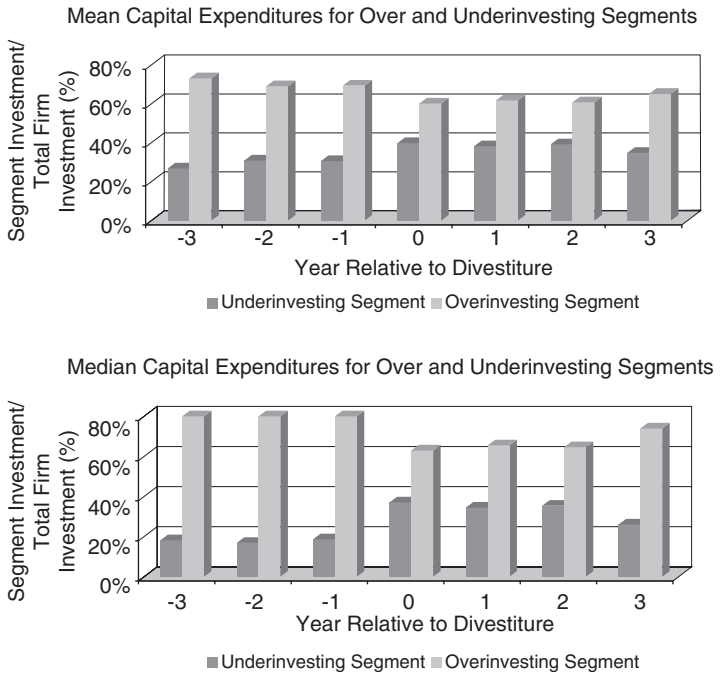

Figure 2. Firm investment allocation. The figures illustrate the mean and median, respectively, of the percentage of firm capital expenditures allocated to under- and overinvesting segments. This percentage is calculated as the sum of all over (under) investing segments' capital expenditures for a year divided by the firm capital expenditures. Underinvesting segments are those that invest less than single-segment firms in year $t-1$.

segments. Over this period, total investment by Disney rose from $380 million to $821 million, an increase of $441 million. Disney's case is unique in that it represents the largest percentage increase in segment investment in our sample, but it also provides an example where the proceeds from a divestiture can provide financing for segment investment. If divestitures allow retained segments to fund some positive NPV projects, such increases in investment should represent an improvement in investment policy. Alternatively, it is possible that divestitures might simply provide a cash windfall to the retained segments beyond the level needed to fund valuable projects. Therefore, to understand the effects of these changes in investment policy, we conduct an analysis of the change in the diversification discount in Section IV.

B. Efficiency of Investment Policy

To evaluate the efficiency of investment policy, we perform two tests. First, we estimate fixed effects regressions of the ratio of segment capital expenditures to segment sales, using data from 3 years prior to and 3 years after the divestiture. As with the previous analysis, the models include only retained segments and we restrict the analysis to the subsample of diversified parents.[14] Second, we compute a firm-level measure of the efficiency of segment investment and examine changes in efficiency around the divestiture.

Model 1 of Table VI shows that before the divestiture, resources do not appear to be allocated to segments with the best investment opportunities. An *F*-test indicates that the sum of coefficients on segment *MB* and the interaction between *MB* and the postdivestiture indicator is positive and significant at the 9% level. This suggests that segment investment becomes sensitive to segment *MB* after the divestiture, indicating an improvement in the efficiency of divisional investment allocation. Segment investment also becomes more sensitive to the segment's cash flow after the divestiture.

Model 2 includes an indicator that equals one for underinvesting segments and an interaction between this indicator and the postdivestiture indicator. According to the financing hypothesis, investment in these segments should rise after the divestiture. The estimates in Table VI are consistent with the financing hypothesis—the interaction between underinvesting segments and the postdivestiture indicator is significantly positive.

Model 3 shows that before the divestiture, the cash flow of other segments is negative and significant. After the divestiture, however, the sensitivity of investment to other segment cash flow increases. An *F*-test shows that the sum of the coefficients of other segment cash flow and the interaction between this variable and the postdivestiture indicator is significantly positive.

Overall, these results show that segment investment in our sample firms prior to the divestiture is not typical of the broad sample of firms studied by Shin and Stulz (1998), who find that segment investment is positively related to *MB* and to

[14] This analysis should be viewed as providing suggestive rather than conclusive results given the issues discussed in Chevalier (2000) and Whited (2001). The second test is more robust and will therefore be the focus of later analyses.

Table VI

Multivariate Analysis of Segment Investment for Diversified Parents

This table shows the results from fixed effect regressions of segment capital expenditures to sales on segment characteristics for diversified parents for the three years prior to and subsequent to divestiture. "After" is an indicator variable that equals one if the observation occurs after the divestiture and is zero otherwise. Segment *MB* is the median of the single segment *MB* in the same three-digit SIC code if five firms are in same SIC code, otherwise median in the two-digit SIC is used. Cash flow is the operating income plus depreciation. A firm-year is dropped if any segment's absolute cash flow to sales ratio is greater than two or if any segment's capital expenditures to sales ratio is less than zero or greater than one. Only retained segments are included in the analysis. The *p*-values are in parentheses and the *F*-statistic and corresponding *p*-value testing if the coefficient plus its interaction with the "After" indicator is significantly different from zero is presented at the bottom of each column.

Dependent Variable: Segment capital expenditures/segment sales	(1)	(2)	(3)
Segment MB	0.00	0.00	0.00
	(0.95)	(0.60)	(0.68)
Segment *MB* × After indicator	0.01	0.01	0.01
	(0.12)	(0.18)	(0.21)
Segment cash flow to sales	0.18	0.17	0.18
	(0.00)	(0.00)	(0.00)
Segment cash flow to sales × After indicator	0.09	0.10	− 0.08
	(0.00)	(0.00)	(0.06)
Other segment's cash flow to sales			0.14
			(0.00)
Other segment's cash flow to sales × After indicator			0.06
			(0.01)
Underinvesting segment		− 0.04	− 0.04
		(0.00)	(0.00)
Underinvesting segment × After indicator		0.02	0.02
		(0.01)	(0.07)
After indicator	− 0.03	− 0.04	− 0.06
	(0.02)	(0.00)	(0.00)
Intercept	0.05	0.06	0.06
	(0.00)	(0.00)	(0.00)
R squared (within)	0.16	0.17	0.17
Number of segment-years	1758	1758	1735
Number of firms	136	136	133
F-Stat: (H_0: *MB* + *After* * *MB* = 0)	2.83	3.73	3.19
	(0.09)	(0.05)	(0.07)
F-Stat: (H_0: *Cash flow*/*Sales* + *After* * *Cash flow*/*Sales* = 0)	244.28	242.83	172.85
	(0.00)	(0.00)	(0.00)
F-Stat: (H_0: *Other cash flow*/*Sales* + *After* * *Other cash flow*/*Sales* = 0)			5.79
			(0.02)

the cash flow of other segments. This is not surprising, since our sample does not consist of randomly selected firms, but rather those that have chosen to alter their divisional structure. If inefficient investment motivates firms to divest, then one may not expect investment to be related to *MB*. After the divestiture, divisional investment follows the pattern in Shin and Stulz more closely. We find that

segment investment is positively related to *MB* and to cash flow of other segments. In addition, underinvesting segments have a greater increase in investment than other segments after the divestiture.

Our second set of tests to determine the efficiency of investment policy uses the sales-weighted sensitivity of segment investment to segment *MB* for each firm. This variable, termed the weighted investment ratio (*WIR*), provides a summary measure of the efficiency of investment allocation across all of a firm's segments. We follow Rajan et al. (2000)[15] and first compute the difference between the relative segment investment ratio and a weighted average of the relative segment investment ratio for each segment in the firm as follows:

$$\frac{I_j}{Sales_j} - \frac{I_j^{SS}}{Sales_j^{SS}} - \sum_{j=1}^{n} w_j \left(\frac{I_j}{Sales_j} - \frac{I_j^{SS}}{Sales_j^{SS}} \right), \tag{2}$$

where I_j is capital expenditure for segment j, $Sales_j$ is the sales of segment j, and $I_j^{SS}/Sales_j^{SS}$ is the sales-weighted average capital expenditure to assets ratio for stand-alone firms in the corresponding industry, and w_j is segment j sales divided by firm sales. This variable measures the relative transfer of funds between segments and is positive if a segment is a net receiver of funds and is negative for segments that are net suppliers of funds.

We weight this ratio by the difference between the segment's imputed *MB* and the average imputed *MB* of all segments in the firm. We then compute *WIR* by summing the sales-weighted ratios across all of the firm's segments:

$$\frac{\sum_{j=1}^{n} Sales_j (MB_j - \overline{MB}) \left(\frac{I_j}{Sales_j} - \frac{I_j^{SS}}{Sales_j^{SS}} - \sum_{j=1}^{n} w_j \left(\frac{I_j}{Sales_j} - \frac{I_j^{SS}}{Sales_j^{SS}} \right) \right)}{Sales} \tag{3}$$

where $\overline{MB}$ is the sales-weighted average of segment *MB*s for the firm and MB_j is the median *MB* ratio of single segment firms that operate exclusively in segment j.

The variable *WIR* is higher for firms when high *MB* segments invest more than average, and low *MB* segments invest less than the average segment in the firm. Rajan et al. (2000) show that *WIR* is negatively related to the diversification discount and argue that an increase in *WIR* represents an improvement in the efficiency of investment policy.

Table VII shows that for diversified parents, *WIR* in year $t-1$ averages -0.26, and is significantly different from zero. Thus, investment policy appears to be suboptimal prior to the divestiture. After the divestiture, *WIR* increases to -0.10 and is no longer significantly different from zero. The average change in *WIR* is 0.15 and statistically significantly different from zero. Although the medians are smaller in magnitude, they portray a qualitatively similar picture. Overall, for diversified parents, we find an improvement in the efficiency of investment policy.

[15] Our calculation of the weighted investment ratio follows that of Rajan et al. (2000), who term this metric the Relative Value Added from Investment Allocation.

Table VII

Efficiency of Investment Policy

This table shows the mean and median *weighted investment ratio* (*WIR*) for single-segment and diversified parents for years $t-1$ and $t+1$, and the change between these 2 years. Only the $t-1$ period is reported for single-segment parents since these firms have only one segment after the divestiture. The variable *WIR* is defined as:

$$\frac{\sum_{j=1}^{n} Sales_j(MB_j - \overline{MB})\left(\frac{I_j}{Sales_j} - \frac{I_j^{SS}}{Sales_j^{SS}} - \sum_{j=1}^{n} w_j\left(\frac{I_j}{Sales_j} - \frac{I_j^{SS}}{Sales_j^{SS}}\right)\right)}{Sales}$$

where I_j is capital expenditure for segment j, and $I_j^{SS}/Sales_j^{SS}$ is the median capital expenditure to sales ratio for single segment firms in the corresponding industry, $\overline{MB}$ is the sales-weighted average of segment MB's for the firm, and MB_j is the median MB ratio of single segment firms that operate exclusively in segment *j*'s industry. For all industry variables, the median of single segment firms in the same three-digit SIC code is used as long as there are five firms in the industry; otherwise the median for those in the same two-digit SIC code is used. The diversified parents subsample consists of firms that remain diversified after the divestiture. The single-segment parents subsample consists of firms with only one ongoing segment after the divestiture. The *p*-values from a *t*-test and signed rank test for difference from zero are reported in parentheses.

	Diversified Parents			Single-Segment Parents		
	Year $t-1$	Year $t+1$	Change from $t-1$ to $t+1$	Year $t-1$	Year $t+1$	Change from $t-1$ to $t+1$
Mean weighted investment ratio	−0.26	−0.10	0.15	−0.08	—	—
	(0.00)	(0.14)	(0.05)	(0.05)		
Median weighted investment ratio	−0.01	0.00	0.04	−0.00	—	—
	(0.04)	(0.69)	(0.00)	(0.07)		
Number of observations	108	116	102	122	—	—

Table VII also shows *WIR* for the single-segment parents. The average *WIR* in year $t - 1$ for these firms is -0.08 and is significantly different from zero. Like the diversified sample, single-segment parents also exhibit distorted investment allocation before divestiture. However, since these firms have only one ongoing segment, it is not possible to compute *WIR* after divestiture.

In summary, investment policy changes around a divestiture. Firms increase investment in underinvesting segments and decrease it in overinvesting segments. Investment efficiency, as measured by *WIR*, also improves, indicating that firms tend to allocate more investment to segments with better investment opportunities. Thus, divestitures are associated with an improvement in the efficiency of investment policy.

C. Multivariate Analysis

To understand why investment becomes more efficient after the divestiture, we test the predictions of the corporate focus, financing, and the kick-in-the-pants hypotheses by analyzing the relation between the change in investment and divestiture characteristics. According to the corporate focus hypothesis, companies with more diversified operations tend to invest less efficiently. Thus, divestitures that result in a substantial reduction in diversification should lead to an improvement in investment efficiency. Following John and Ofek (1995), we measure corporate focus using the Herfindahl index based on segment sales. Model 1 of Table VIII shows that, consistent with the corporate focus hypothesis, the change in the Herfindahl index is positively related to the change in *WIR*. A 10% increase in the Herfindahl index, which is the average increase for this sample, results in a 0.15 increase in *WIR*

In models 2 and 3, we test the specific predictions of the rent-seeking and diversity arguments to understand why corporate focus is associated with efficient investment. According to Scharfstein and Stein (2000), divisions with poor future prospects face the lowest opportunity cost to engage in rent-seeking behavior. Therefore, divestitures of low *MB* divisions should improve the investment efficiency of the remaining divisions. However, model 2 shows that divestitures of low *MB* divisions do not appear to be associated with an improvement in *WIR*.

Rajan et al. (2000) argue that diversity of investment opportunities across divisions creates incentives for rent seeking. In model 3, we test whether divestitures that lower the diversity of *MB* across divisions lead to more efficient investment. We find no association between the change in *WIR* and an indicator that equals one if diversity decreases following the divestiture. Thus, while increased corporate focus leads to more efficient divisional investment, our results suggest that changes in rent-seeking behavior are not the primary cause of this improvement.

If certain segments are constrained in their investment levels, divestitures potentially improve investment policy by relaxing such constraints. According to the financing hypothesis, divestiture of an overinvesting segment allows resources to be allocated more efficiently among the remaining segments. Model 4 of Table VIII provides some support for this view and shows that divesting an overinvesting segment is associated with a 0.32 improvement in *WIR*. However,

Table VIII

Multivariate Analysis of the Change in Investment

This shows the results from regressions using the change in investment as the dependent variable. The change in investment is the change in the weighted relative investment (WIR), defined in Table VII, for the diversified parent sample and is the change in relative segment investment (RSI), defined as the segment's capital-expenditures-to-sales ratio minus the median of the corresponding ratio for all single-segment firms operating in the same three-digit SIC code, for the single segment parent sample, which is presented in Table V. If fewer than five firms have the same three-digit SIC code, then a two-digit SIC code is used. A firm-year is dropped if any segment's absolute cash-flow-to-sales ratio is greater than two or if any segment's capital expenditures to sales ratio is less than zero or greater than one. Only retained segments are included in the analysis. The diversified parents subsample consists of firms that remain diversified after the divestiture. The single-segment parents subsample consists of firms with only one ongoing segment after the divestiture. Underinvesting segments are those that invest less than single-segment firms in year $t - 1$. The *MB* of a segment is the median *MB* of all single segment firms in the same three-digit SIC code as the segment. A segment is defined as low *MB* or small if its *MB* or assets, respectively, is lower than the median of the firm's segments. Diversity is the standard deviation of segment sales-weighted *MB* divided by the average *MB* of all the firm's segments. A divestiture is classified as diversity decreasing if diversity declines between $t - 1$ and $t + 1$. Columns 7 and 14 exclude firms that had any control events. The *p*-values in parentheses and tests of significance use White (1980) standard errors.

	Diversified Parent Sample: Dependent Variable: Change in Weighted Investment Ratio							Single Segment Parent Sample: Dependent Variable: Change in Relative Segment Investment				
	(1)	(2)	(3)	(4)	(5)	(6)	(7) No External Control Events	(8)	(9)	(10)	(11)	(12) No External Control Events
Divest low MB segment indicator		−0.18				−0.15	−0.13	0.08			0.17	0.01
		(0.27)				(0.33)	(0.46)	(0.09)			(0.07)	(0.79)
Change in Herfindahl index	1.54				1.52	2.25	2.99		0.27		0.1923	0.28
	(0.06)				(0.06)	(0.05)	(0.03)		(0.02)		(0.062)	(0.03)
Divest overinvesting segment indicator				0.32	0.32	0.28	0.26			0.14	0.14	0.15
				(0.08)	(0.09)	(0.13)	(0.22)			(0.08)	(0.09)	(0.09)
Diversity decreases indicator			0.06			0.15	0.33					
			(0.78)			(0.49)	(0.13)					
Intercept	−0.03	0.22	0.14	0.09	−0.08	−0.14	−0.20	0.00	−0.04	0.01	−0.09	0.08
	(0.77)	(0.03)	(0.11)	(0.29)	(0.44)	(0.32)	(0.28)	(0.95)	(0.10)	(0.55)	(0.03)	(0.10)
R-squared	0.06	0.01	0.00	0.04	0.06	0.08	0.13	0.03	0.04	0.07	0.08	0.16
Number of firms	102	102	100	102	102	100	74	95	95	95	95	66

the importance of the overinvesting segment indicator decreases when other variables are added to the regression in models 5 and 6.

According to the kick-in-the-pants hypothesis, the positive association between change in *WIR* and divestiture characteristics is caused by an omitted common factor. As shown in Table I, several firms experience changes such as management turnover, takeover threats or pressure, and shareholder activism. It is possible that these control events leads to simultaneous changes in corporate focus and investment efficiency. To address this issue, we exclude firms that experienced external control events in model 7. The results are qualitatively similar in this specification and show that focus-increasing divestitures lead to a significant improvement in *WIR*. Therefore, the kick-in-the-pants hypothesis does not appear to explain the role of corporate focus in the improvement in investment efficiency.

For single segment parents, the lack of multiple divisions after divestiture precludes computation of *WIR*. Therefore, an alternative metric to measure changes in investment of the ongoing segment is needed. For these firms, we measure changes in investment policy using the change in the relative segment investment ratio (*RSI*) for the retained segment from year $t-1$ to $t+1$. This measure, reported in Table V, is akin to an industry-adjusted change in investment, where only nondivesting stand-alone firms comprise the industry benchmark.

Models 8 to 12 examine changes in *RSI*. Similar to the results for diversified parents, the change in *RSI* is positively related to the change in corporate focus using the sales-based Herfindahl index for single-segment parents. In addition, divestitures of low *MB* segments and overinvesting segments are associated with an increase in *RSI*. However, in model 12, where divestitures preceded by external control events are excluded, the low *MB* divestiture indicator is no longer significant, but the change in corporate focus and the divestiture of overinvesting segments retain statistical significance at the 3% and 9% levels, respectively. If an increase in *RSI* represents an improvement in investment efficiency, these results are consistent with the predictions of the corporate focus and financing hypotheses.

IV. Divisional Investment and Changes in the Diversification Discount

The findings show that divestitures are associated with a reduction in the diversification discount and with an improvement in investment policy. We now examine if the changes in discount are related to changes in investment policy around divestitures.

A. Analysis of Parents that Remain Diversified

If suboptimal investment is responsible for the diversification discount, improvements in *WIR* should be associated with decreases in the diversification discount. Since *WIR* is only computed for diversified parents, we focus on these firms

Table IX

Multivariate Analysis of the Change in Diversification Discount

Regressions using the change in diversification discount as the dependent variable. If fewer than five firms have the same three-digit SIC code, then a two-digit SIC code is used. A firm-year is dropped if any segment's absolute cash-flow-to-sales ratio is greater than two or if any segment's capital-expenditures-to-sales ratio is less than zero or greater than one. Only retained segments are included in the analysis. The diversified parents subsample consists of firms that remain diversified after the divestiture. The single-segment parents subsample consists of firms with only one ongoing segment after the divestiture. Change in investment is the change in the weighted relative investment (*WIR*), which is defined in Table VII, for the diversified parent sample and is the change in relative segment investment ratio (*RSI*), defined as the segment's capital-expenditures-to-sales ratio minus the median of the corresponding ratio for all single segment firms operating in the same three-digit SIC code, for the single segment parent sample, which is presented in Table V. Underinvesting segments are those that invest less than single-segment firms in year $t-1$. The *MB* of a segment is the median *MB* of all single segment firms in the same three-digit SIC code as the segment. A segment is defined as low *MB* or small if its *MB* or assets, respectively, is lower than the median of the firm's segments. Diversity is the standard deviation of segment sales-weighted *MB* divided by the average *MB* of all the firm's segments. The *p*-values in parentheses and tests of significance use White (1980) standard errors.

	Diversified Parent Sample: Dependent Variable: Change in Diversification Discount				Single-Segment Parent Sample: Dependent Variable: Change in Diversification Discount					
	(1)	(2)	(3) No External Control Events	(4) No External Control Events	(5)	(6)	(7)	(8)	(9) No External Control Events	(10) No External Control Events
Change in investment	−0.19	−0.17	−0.21	−0.20	−0.45	−0.43	−0.41	−0.38	−1.15	−1.10
	(0.02)	(0.05)	(0.04)	(0.09)	(0.06)	(0.09)	(0.09)	(0.15)	(0.00)	(0.01)
Change in RSI × underinvesting segment indicator							−3.34	−3.48	−2.62	−2.55
							(0.01)	(0.06)	(0.03)	(0.06)
Divest low *MB* segment indicator		0.27		0.19		0.03		0.02		−0.11
		(0.04)		(0.30)		(0.87)		(0.87)		(0.54)
Change in Herfindahl index		−0.09		−0.49		−0.74		−0.76		−0.42
		(0.92)		(0.63)		(0.05)		(0.04)		(0.35)
Divest overinvesting segment indicator		0.03		0.10		0.18		0.18		0.18
		(0.86)		(0.58)		(0.32)		(0.31)		(0.36)
Diversity decreases indicator		0.09		0.10						
		(0.61)		(0.55)						
Intercept	−0.05	−0.19	0.00	−0.07	−0.07	−0.10	−0.04	0.13	0.04	0.18
	(0.44)	(0.16)	(0.98)	(0.65)	(0.35)	(0.58)	(0.60)	(0.45)	(0.74)	(0.44)
F-test: Chg in RSI × underinvesting segment indicator + chg in RSI = 0							0.01	0.04	0.01	0.01
R-squared	0.06	0.10	0.07	0.10	0.02	0.09	0.04	0.11	0.14	0.14
Number of firms	98	96	73	72	74	74	74	74	50	50

in models 1–4 of Table IX. For single-segment parents, we study the link between the change in the discount and *RSI* in models 5–10.

We estimate regressions using the change in discount from year $t-1$ to $t+1$ as the dependent variable and the change in *WIR* for diversified parents as an explanatory variable. Model 1 shows that that the change in *WIR* is significantly related to the change in the discount around the divestiture. The point estimate suggests that a 10% increase in *WIR* decreases the discount by almost 2%, implying an economically meaningful link between changes in the discount and investment policy. Model 2 includes variables describing the divestiture since the characteristics of the divested segment might have an independent effect on the discount. Model 2 shows that divesting a low *MB* segment reduces the discount, while divesting an overinvesting segment and the change in corporate focus do not have a significant effect on the discount. Model 2 also includes an indicator for divestitures that decrease diversity, but this variable is not statistically significant. The change in *WIR* remains statistically significant.

If a kick-in-the-pants effect dominates, we expect that firms that experience external control events would drive the relation between the change in the discount and *WIR*. However, models 3 and 4 illustrate that changes in *WIR* are related to changes in the discount even for the subsample of firms without any corporate control events. The coefficient on the change in *WIR* is positive, of comparable magnitude, and significant at the 10% level for this subsample. This suggests that a kick-in-the-pants hypothesis is not the primary explanation for the effect of investment policy on the discount.

A potential concern is that both the change in the discount and *WIR* are constructed using segments' imputed market values. This creates the potential for a mechanically induced relationship between changes in the discount and changes in *WIR*. To examine this possibility, we orthogonalize the change in *WIR* with respect to the change in imputed value. Specifically, we estimate a regression using the change in *WIR* as the dependent variable and the change in the imputed value to sales ratio (the denominator in the discount calculation) as the independent variable. The residual from this regression, which is stripped of the imputed value effect, is then used as an independent variable to explain the change in the discount. We find that the orthogonalized change in *WIR* has a similar association with the discount as does the unorthogonalized *WIR*. Because the orthogonalized change in *WIR* controls for imputed value, this suggests that a mechanical relation between the imputed value and *WIR* does not drive the relation between the change in the discount and *WIR*.[16]

[16] As an alternative test, we examine both scatter plots of the discount and *WIR* and regressions estimating the relation between the change in the discount and the change in *WIR* excluding the year of the divestiture. In either the periods between $t-3$ and $t-1$ or $t+1$ and $t+3$, we do not detect any relation between the discount and *WIR*, implying that the results we document around the divesture are not driven by a mechanical link between the two variables. This finding also provides evidence against the sample firms undergoing a lengthy performance improvement process, because the link between change in discount and the change in *WIR* occurs around the year of the divestiture.

As an additional check, we estimate the Table IX regressions using simulated discounts. We generate the simulated discount as the logarithm of the ratio of simulated market value to actual imputed value. Simulated market value is calculated as the imputed value plus noise.[17] Therefore, the calculation of simulated discount does not involve actual market value but rather depends only on imputed value. We then examine the relation between the simulated change in the discount and the change in *WIR*. If the empirical relation between the actual discount and *WIR* is due to the imputed value link, we should also observe a similar relation between the simulated discount and *WIR*. We find that there is no systematic relation between the change in the simulated discount and the change in *WIR*. This indicates that the empirical relation between the discount and *WIR* is not due to a mechanical link caused by the use of imputed value in constructing the discount.

B. Analysis of Parents that Become Single-Segment Firms

For single-segment parents, the lack of multiple divisions precludes the computation of the change in *WIR*. For these firms, we measure changes in investment policy using the change in relative segment investment (*RSI*) of the retained segment from year $t - 1$ to $t + 1$. The drawback of using *RSI* is that a clear theoretical prediction about how changes in this variable should affect the change in the discount is lacking. If funds were diverted from retained segments to fund investment in other segments, retained segments could be constrained from pursuing the value-maximizing level of investment. If the divestiture allows the ongoing segment to increase investment, the increase in *RSI* should be negatively related to the change in the discount.

We estimate regressions using the change in the discount from year $t-1$ to $t+1$ for single segment parents as the dependent variable and the corresponding change in *RSI* as an explanatory variable. Model 5 of Table IX shows that an increase in *RSI* is associated with a decline in the diversification discount. The coefficient on *RSI* is significant at the 6% level and suggests that a 10% increase in *RSI* is associated with a 4.5% decrease in the discount.

Model 6 estimates the relation between the change in the discount and the change in *RSI*, controlling for the nature of the divestiture. Consistent with arguments by Schipper and Smith (1983) and John and Ofek (1995), we find that an increase in corporate focus leads to a reduction in the discount.

According to the financing hypothesis, increased investment should only be beneficial for segments that were initially constrained. To test this, model 7 includes an interaction term between the change in *RSI* and an indicator that equals one if the retained segment is underinvesting relative to stand-alone firms. Supporting the financing hypothesis, we find that the negative association between changes in *RSI* and the discount is strongest for firms with underinvesting segments. The distinction between underinvesting and overinvesting

[17] We assume noise follows a inverse cumulative noncentral chi-squared distribution. We generate 1,000 runs in the simulations.

segments is economically meaningful. The coefficient on *RSI* is about 10 times the magnitude as that for overinvesting segments.

Model 8 includes characteristics of the divested segment. Again, the change in corporate focus is significantly related to the change in the discount, but none of the other characteristics appear related to the change in the discount. The interaction between the change in *RSI* and the indicator for underinvesting segments remains negative and significant.

In models 9 and 10, we drop firms that experience external control events prior to the divestiture. Despite the smaller sample size, we obtain similar coefficient estimates with this specification and find a meaningful difference in the effect of increased investment for overinvesting and underinvesting segments. However, the change in corporate focus no longer has an independent effect on the change in the discount.

Overall, the results indicate that the changes in investment policy are an important determinant of changes in the discount around divestitures. This supports the view that inefficient investment policies are partly responsible for the diversification discount.

V. Conclusions

We study a sample of firms that divest an entire business segment. Such divestitures are associated with a significant decrease in the diversification discount. The decrease in the discount occurs for firms that remain diversified as well as those that operate as single-segment firms after the divestiture. However, all firms, including those that have only one ongoing segment, continue to trade at a discount relative to other stand-alone firms. Announcements of divestitures elicit significantly positive abnormal returns, and these returns are correlated with the change in the diversification discount.

We document significant changes in the investment policy of the firm's remaining segments around the divestiture. Relative to stand-alone firms, investment increases for those segments that were underinvesting prior to the divestiture. We also find that segment investment is not sensitive to segment growth opportunities prior to divestiture, but that this sensitivity becomes positive and statistically significant after the divestiture. This suggests that divisional investment policy becomes more efficient after the divestiture. Supporting this conclusion, we document a significant increase in the weighted investment ratio for parents that remain diversified, indicating an improved allocation of capital across divisions for these firms. This improvement in investment is attributable to the increase in corporate focus that occurs with the divestiture. However, the results do not provide evidence that the improvement is due to a reduction in rent seeking. Additionally, there is some evidence that the improved investment is related to the financing provided by the divestiture.

We use the changes in investment to explain the changes in the diversification discount. We find that the change in weighted investment ratio is strongly related to changes in the diversification discount. We also observe that increasing invest-

ment relative to stand-alone firms, particularly for underinvesting segments, decreases the diversification discount.

The results make four primary contributions. First, they illustrate that changes in organizational structure have a significant impact on the investment policies of retained segments. Second, they indicate that changes in divisional investment are associated with changes in the diversification discount. This finding is particularly relevant in light of the substantial debate surrounding the source of the diversification discount. The results suggest that inefficient divisional investment policies are at least partly responsible for the discount. Third, the findings support the view that corporate focus leads to more efficient investment policies. Finally, the paper contributes to the literature on asset sales by showing that improvement in the management of the firm's retained operations is an important source of gains from asset sales. The evidence identifies investment policy as a specific mechanism by which firms improve the management of their remaining assets after asset sales.

Our evidence comes from a sample of firms that chose to undertake a large reorganization of their divisional structure by divesting an entire business segment. Therefore, by design, our sample is much more likely to contain firms in which the divisional structure is inefficient prior to the divestiture. Several pieces of evidence in the paper point to the nonrandom nature of the sample. First, the average diversification discount for sample firms is substantially greater than that reported in broader samples, such as Berger and Ofek (1995). Second, the determinants of segment investment in our sample firms prior to the divestiture also does not appear similar to the pattern reported by Shin and Stulz (1998), who show that segment growth opportunities are an important determinant of investment. Therefore, caution should be exercised in generalizing our results to broader samples. Our empirical design biases us in favor of uncovering inefficiencies associated with diversification and works against documenting possible advantages of diversification.

REFERENCES

Alexander, Gordon, George Benson, and Joan Kampmeyer, 1984, Investigating the valuation effects of announcements of voluntary corporate selloffs, *Journal of Finance* 39, 503–517.

Berger, Phillip, and Eli Ofek, 1995, Diversification's effect on firm value, *Journal of Financial Economics* 37, 39–65.

Berger, Phillip, and Eli Ofek, 1996, Bustup takeovers of value-destroying diversified firms, *Journal of Finance* 51, 1175–1200.

Burch, Tim, and Vikram Nanda, 2003, Divisional diversity and the conglomerate discount: The evidence from spinoffs, *Journal of Financial Economics*, forthcoming.

Chevalier, Judy, 2000, Why do firms undertake diversifying mergers? An examination of the investment policies of merging firms, Working paper, Yale.

Comment, Robert, and Greg Jarrell, 1995, Corporate focus and stock returns, *Journal of Financial Economics* 37, 67–87.

Denis, David, Diane Denis, and Atula Sarin, 1997, Agency problems, equity ownership, and corporate diversification, *Journal of Finance* 52, 135–160.

Denis, David, and Bhothadri Thothadri, 1999, Internal capital markets, growth opportunities, and the valuation effects of corporate diversification, Working paper, Purdue University.

Gertner, Robert, Eric Powers, and David Scharfstein, 2002, Learning about internal capital markets from corporate spin-offs, *Journal of Finance* 57, 2479–2506.

Graham, John, Michael Lemmon, and Jack Wolf, 2002, Does corporate diversification destroy value? *Journal of Finance* 57, 695–720.

Hite, Gailen, and James Owers, 1983, Security reactions around corporate spin-off announcements, *Journal of Financial Economics* 12, 409–436.

Hite, Gailen, James Owers, and Ronald Rogers, 1987, The market for interfirm asset sales: Partial sell-offs and total liquidations, *Journal of Financial Economics* 18, 229–252.

Jain, Prem, 1985, The effect of voluntary sell-off announcements on shareholder wealth, *Journal of Finance* 40, 209–224.

John, Kose, and Eli Ofek, 1995, Asset sales and increase in focus, *Journal of Financial Economics* 37, 105–126.

Lamont, Owen, 1997, Cash flow and investment: Evidence from internal capital markets, *Journal of Finance* 52, 83–109.

Lamont, Owen, and Christopher Polk, 2002a, Does diversification destroy value? Evidence from industry shocks, *Journal of Financial Economics* 63, 51–77.

Lamont, Owen, and Christopher Polk, 2002b, The diversification discount: Cash flows versus returns, *Journal of Finance* 56, 1693–1721.

Lang, Larry, Annette Poulsen, and René Stulz, 1994, Asset sales, firm performance, and the agency costs of managerial discretion, *Journal of Financial Economics* 37, 3–37.

Lang, Larry, and René Stulz, 1994, Tobin's *q*, corporate diversification, and firm performance, *Journal of Political Economy* 102, 1248–1280.

Maksimovic, Vojislav, and Gordon Phillips, 2001, Do conglomerate firms allocate resources efficiently? Working paper, University of Maryland.

Rajan, Raghuram, Henri Servaes, and Luigi Zingales, 2000, The cost of diversity: The diversification discount and inefficient investment, *Journal of Finance* 55, 35–80.

Rosenfeld, James, 1984, Additional evidence on the relation between divestiture announcements and shareholder wealth, *Journal of Finance* 39, 1437–1448.

Scharfstein, David, 1998, The dark side of internal capital markets: Evidence from diversified conglomerates, NBER working paper #6352.

Scharfstein, David, and Jeremy Stein, 2000, The dark side of internal capital markets: Divisional rent seeking and inefficient investment, *Journal of Finance* 55, 2537–2564.

Schipper, Kathrine, and Abbie Smith, 1983, Effects of recontracting on shareholder wealth: The case of voluntary spin-offs, *Journal of Financial Economics* 12, 437–467.

Schlingemann, Frederik, René Stulz, and Ralph Walkling, 2002, Corporate focusing and internal capital markets, *Journal of Financial Economics* 41, 153–192.

Servaes, Henri, 1996, The value of diversification during the conglomerate merger wave, *Journal of Finance* 51, 1201–1225.

Shin, Hyun-Han, and René Stulz, 1998, Are internal capital markets efficient? *The Quarterly Journal of Economics* 113, 531–552.

Weisbach, Michael, 1995, The CEO and the firm's investment decisions, *Journal of Financial Economics* 37, 159–188.

White, Halbert, 1980, A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica* 48, 817–838.

Whited, Toni, 2001, Is it inefficient investment that causes the diversification discount, *Journal of Finance* 56, 1667–1692.