On Diversification Discount – the Effect of Leverage

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Abstract

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Abstract

This paper identifies a key cause for the documented diversification discount, namely diversified firms being traded at a discount relative to focused firms. We attribute such empirical findings to different distributions of diversified firms vis-à-vis focused firms over leverage in the data sample. We replicate Lang and Stulz's (1994) and Berger and Ofek's (1995) main results using a sample from 1985 to 2003 inclusive, and find a significant diversification discount using three different value measures (i.e., Tobin's q, Lang and Stulz's industry-adjusted Tobin's q, and Berger and Ofek's excess value measure). However, diversification discount disappears in almost all sample years once the data sample is first balanced across diversified and focused firms for each of leverage deciles. Our conclusion remains largely intact when various firm characteristics are controlled for in a multiple-regression setting, which in turn suggests that simply including leverage as an explanatory variable fails to properly account for the impact of leverage. Furthermore, we examine the impact caused by endogeneity of the diversification decision. We find no evidence for diversification discount when the leverage-balanced sample is used. However, our results indicate that refocusing premium may still be present after the sample is leverage-balanced.

I. Introduction

Diversification discount is a controversial issue in finance. Early studies such as Lang and Stulz (1994) and Berger and Ofek (1995) find that diversified firms trade at a discount relative to single-segment firms and conclude that diversification destroys value. A number of recent studies have challenged this conclusion. In particular, they argue that the documented diversification discount is not caused by diversification itself. Firms choose to diversify, so diversified firms are systematically different from focused firms. Campa and Kedia (2002) find that diversification discount disappears when the endogeneity of the diversification decision is controlled for. However, there still exists a refocusing premium after controlling for endogeneity. Mansi and Reeb (2002) argue that the documented discount stems from risk-reducing effects of corporate diversification and wealth is transferred from shareholders to bondholders. They find that shareholder losses in diversification are positively correlated to firm leverage and the total firm value based on the market values of both debt and equity is insignificantly related to diversification. Villalonga (2004) argues that diversification discount is only an artifact of the segment data. With a new Census database, she finds a significant diversification premium for a sample of diversified firms that trade at a discount according to Compustat's segment data. Hence, whether diversification destroys value remains an open question.

A common feature underlying these studies is the unbalanced sample size between focused and diversified firms for a given level of leverage. Diversified firms are predicted to have a higher leverage than focused firms because the imperfectly correlated cash flows of different segments can give diversified firms greater debt capacity (see Lewellen, 1971). This prediction has been empirically confirmed in many studies such as Berger and Ofek (1995), Campa and Kedia (2002), and Mansi and Reeb (2002). In our sample, diversified firms also report a higher leverage than do focused firms in all 19 sample years. However, the sample sizes of diversified firms and focused firms are very unbalanced across leverage in each year. Specifically, the sample size of diversified firms is far smaller than that of focused firms in the lower leverage group, while the sample size of diversified firms is more comparable to that of focused firms in the higher leverage group. This imbalance in sample size will be immaterial if firm valuation is not related to firm leverage. However, firm valuation is related to firm leverage. Tobin's q is frequently used to proxy for growth opportunities (see for example Lang, Ofek and Stulz, 1996; Harvey, Lins,and Roper, 2004), and firm leverage is predicted to be negatively related to its growth opportunities (see Myers 1977; Jensen 1986). As a consequence, firm leverage is expected to vary inversely with Tobin's q. In the context of diversification discount, Mansi and Reeb (2002), for example, find that the excess value is negatively related to firm leverage. Therefore, it is reasonable to question whether the documented diversification discount is indeed or at least partly due to the unbalanced sample size between focused firms and diversified firms at a given leverage level. In this paper, we show that properly controlling for leverage, diversification discount largely disappears.

We first replicate Lang and Stulz's (1994) and Berger and Ofek's (1995) main results using three different value measures, i.e., Tobin's *q*, the industry-adjusted Tobin's *q* as described in Lang and Stulz (1994), and the excess value measure of Berger and Ofek (1995). Then, we divide the sample equally into deciles ascending in leverage for each year and test the equality of the means for each of three value measures (i.e. *q*, the industry-adjusted *q*, and the excess value) between diversified firms and focused firms. In addition, we balance the sample by randomly pick firms from the larger subgroup (could be either focused or diversified firms) in each year-leverage group so that the sample sizes of focused and diversified firms in each year-leverage group are equal. We then repeat the tests using the balanced sample.

Our analysis confirms that diversification discount is highly significant in each year when the sample is not broken down to leverage deciles, except in 1994 and 1995 when using the industry-adjusted *q*. With the leverage deciles, the mean Tobin's *q* (industry-adjusted *q*, excess value) of diversified firms are significantly different from that of focused firms at the 10% significance level in only 23 (26, 23) out of 190 (160, 160) year-leverage groups, or equivalently 1.2 (1.6, 1.4) out of 10 leverage groups per year which is approximately the rate of occurrence expected under the 10% test when there is no diversification discount. With the balanced sample, we find that diversification discount disappears in almost all sample years at the 10% significance level. In short, diversification discount is found to be leverage-induced; that is, focused firms tend to have lower leverage and higher growth opportunities, which in turn gives rise to the appearance of diversification discount.

We also investigate whether diversification discount can still be attributed to the unbalanced sample size when various firm characteristics including leverage are controlled for. We find a significant diversification discount in the original (unbalanced) sample using all three value measures. However, once the sample is leverage-balanced for each year, diversification discount is no longer significant using Tobin's *q* and the industry-adjusted Tobin's *q*, and is reduced by 30% using the excess value measure. Hence, the unbalanced sample size does explain away diversification discount even when various firm characteristics including leverage are controlled for. This result suggests that simply including leverage as an explanatory variable in a multiple regression setting does not properly account for the impact of leverage because firm valuation and leverage follow a nonlinear relationship.

We investigate further the diversification discount in terms of the excess value by factoring in endogeneity of the diversification decision in a way similar to that of Campa and Kedia (2002). We continue to find a significant diversification discount in both the diversifying firms and refocusing firms using the original (unbalanced) sample. However, there is no evidence of diversification discount for the diversifying firms after the sample is leverage-balanced. Refocusing premium may still be present even with the leverage-balanced sample.[1] Therefore, the documented diversification discount in the original sample can be in large part attributed to the different distributions of focused firms and

[1] The fixed-effect analysis reveals no refocusing premium, but the instrumental variable approach and Heckman's correction continue to indicate the presence of refocusing premium.

diversified firms over leverage even after factoring in endogeneity of the diversification decision.

The rest of this paper is organized as follows. Section 2 describes data and how we calculate three value measures, i.e., Tobin's *q*, Lang and Stulz's industry-adjusted Tobin's *q*, and Berger and Ofek's excess value measure. Section 3 documents the presence of diversification discount in our sample using three different value measures. We then examine the unbalanced nature of the sample in the leverage dimension and attribute the finding of diversification discount to the use of the unbalanced sample. Section 4 describes how the leverage-balanced sample is constructed. The results based on the balanced sample suggest that there is no diversification discount in almost all sample years. Various firm characteristics including leverage are controlled for in Section 5 and endogeneity of the diversification decision is controlled for in Section 6. The results are consistent with the univariate analysis. The concluding remarks are provided in Section 7.

II. Data

To evaluate the value effects of corporate diversification, we start with Tobin's *q*, and then the industry-adjusted Tobin's *q* described in Lang and Stulz (1994), and finally the excess value measure proposed by Berger and Ofek (1995). Our sample period is from 1985 to 2003, a total of 19 years. Segment data such as sales and assets of each segment are retrieved from Compustat annual segment files.

A. Lang and Stulz's (1994) Tobin's *q*

Following Lang and Stulz (1994), we use Tobin's *q* to evaluate the value effects of corporate diversification. Tobin's *q* is defined as the market value of a firm divided by its replacement cost. The market value of a firm is calculated as the sum of the market value of common stock and the book value of total debt and preferred stock, all of which are retrieved from the Compustat annual files. Leverage is defined as the sum of the book value of total debt and preferred stock divided by its market value.

Following Lang and Stulz (1994), the replacement cost of a firm is calculated as the sum of the estimated replacement cost of plant, equipment, and inventories and the book value of assets other than plant, equipment, and inventories. The procedure to calculate the replacement cost of plant and equipment is proposed by Lindenberg and Ross (1981) and modified by Smirlock, Gilligan, and Marshall (1984). As our sample period is from 1985 to 2003, we assume that the replacement value of plant and equipment equals its book value in 1977 or in the first year when a firm is included on Compustat. According to Lindenberg and Ross (1981), this is an effort to avoid any errors introduced by setting a base year. The formula to calculate the replacement value of plant and equipment is as follows:

$$\hat{RNP}_t = \hat{RNP}_{t-1}\frac{1+\phi_t}{(1+\delta_t)(1+\theta_t)} + I_t, \qquad t \geq 1$$

where $\hat{RNP}_t$ is the estimated replacement cost of net plant in year t, 0 is the base year 1977, ϕ_t is the implicit GNP price deflator, δ_t is the depreciation rate, and θ_t is the rate of cost-reducing technical progress. As in Smirlock, Gilligan, and Marshall (1984), δ_t is assumed to be 5% per year and θ_t is assumed to be zero. New additions or sales I_t are calculated as the change in gross plant at book value. The procedure to calculate the replacement cost of inventory follows Lindenberg and Ross (1981) as well. It allows for different adjustment for different accounting methods. For firms reporting several accounting methods, the major one is used to calculate the replacement cost of inventory. For all other assets, the replacement cost is assumed to be equal to their book value.

As in Lang and Stulz (1994), firms with less than $100 million of assets on average are excluded. In addition, if q could not be computed due to missing values in some particular year, this firm-year observation is excluded from the sample. Our sample contains 5263 firms, of which 2868 are diversified firms and 3955 are focused firms, and 40976 firm-year observations, of which 17258 are diversified firms and 23718 are focused firms.

B. Lang and Stulz's (1994) industry-adjusted Tobin's *q*

Lang and Stulz (1994) argue that if diversified firms or their large segments are systematically operated in low-q industries, comparing average Tobin's q of diversified firms and focused firms will certainly lead to the conclusion that diversification destroys value. To see how robust the diversification discount is, they calculate industry-adjusted q and find that the diversification discount is still significant, although decreases, after adjusting for industry effects. We also compute this measure and use it in our analyses.

Following Lang and Stulz (1994), the industry-adjusted q is calculated as follows.

$$qindadj = \sum_{i=1}^{n} \left(\frac{at_i}{\sum_{i=1}^{n} at_i} \right) Ind_i(q)$$

where at_i is the book asset of the segment i, $Ind_i(q)$ is the average of the q of all one-segment firms in the segment i's three-digit SIC code, and n is the number of segments of the diversified firm. The diversification discount is then defined as the difference between the industry-adjusted q and its q. For focused firms, the diversification discount actually measures how well a focused firm operates relative to the industry average level. Hence, it will average out to zero for focused firms.

Our sample period for this industry-adjusted method is from 1985 to 2000. Years from 2001 to 2003 are excluded from this study because SIC codes for business segments are largely missing in Compustat. For example, only 146 out of 995 focused firms have

the SIC codes for business segments in 2003.[2] Moreover, we require that the industry-adjusted *q* for a diversified firm can be computed. In other words, if the book asset or the industry average *q* for any segment of a diversified firm is missing so that the industry-adjusted *q* cannot be computed, this firm-year observation is excluded from the sample. These procedures lead to a sample of 4421 firms, of which 1702 are diversified firms and 3612 are focused firms, and 27908 firm-year observations, of which 7613 are diversified firms and 20295 are focused firms.

C. Berger and Ofek's (1995) excess value measure

Berger and Ofek (1995) develop a way to measure the gain or loss in value from diversification, which becomes very popular in the diversification literature. Basically, they compare the value of a diversified firm with its imputed value should all of its segments operate as stand-alone firms. The imputed value of each segment is calculated by multiplying the median ratio of firm value to some accounting item in the segment's industry by the segment's level of the accounting item. In this paper, we use sales to calculate the imputed firm value, because the sum of segment sales are usually very close to firm's total sales, whereas unallocated assets often result in large deviation of the sum of segment assets from firm's total asset.

The formula to compute the imputed value is as follows.

$$I(V) = \sum_{i=1}^{n} sales_i * IndMed_i\left(\frac{V}{sales}\right)$$

where $sales_i$ is the sales of the segment *i*, *V* is firm value calculated as the sum of the market value of common stock and the book value of total debt and preferred stock, $IndMed_i\left(\frac{V}{sales}\right)$ is the median ratio of firm value to sales of all one-segment firms in the segment *i*'s industry, and *n* is the number of segments of the diversified firm. The excess value is then defined as the natural logarithm of the ratio of a firm's actual value to its imputed value. Positive excess value indicates a value gain from diversification, while negative excess value indicates a value loss from diversification.

For comparison, we compute Berger and Ofek's excess value for firms in the Lang and Stulz sample. As in Berger and Ofek (1995), firm-year observations are excluded if any segment of a firm is in the financial sector (SIC 6000-6999), if firm sales is less than $20 million or missing, if firm value is missing, if the sum of segment sales is deviated from total sales by more than one percent, and if a firm did not report four-digit SIC codes for all its segments. Industry grouping is based on the narrowest SIC code that contains at least five single-segment firms. Extreme excess values that are greater than 1.386 or less than -1.386 are excluded as well. Moreover, like industry-adjusted *q*, we also require that the imputed value for a diversified firm can be computed. In other words,

[2] When the SIC codes for business segments (ssicb1) are missing after 2000, one may use the SIC codes for non-business segments (ssic1). However, the number of diversified firms for each year is still less than 200 if one wants to be able to compute the industry-adjusted *q* for diversified firms. Moreover, the switch from ssicb1 to ssic1 may also lead to inconsistency.

if the book sales or the industry median ratio of firm value to sales for any segment of a diversified firm is missing so that the imputed firm value cannot be computed, this firm-year observation is excluded from the sample. These steps lead to a sample of 3789 firms, of which 1488 are diversified firms and 3052 are focused firms, and 23409 firm-year observations, of which 6502 are diversified firms and 16907 are focused firms.

III. Unbalanced sample: diversified and focused firms distribute differently over leverage

In the original unbalanced sample, we document the existence of diversification discount using all three value measures, i.e., q, the industry-adjusted q, and the excess value. In particular, the diversification discount is highly significant in each year except in 1994 and 1995 when using the industry-adjusted q. The summary statistics of the sample is reported in Table 1. The t-statistics and p-values for testing equality of means for each of the three value measures (i.e., q, the industry-adjusted q, and the excess value) between focused firms and diversified firms in each year are reported in Table 2.

Tables 1 and 2 about here

Table 1 shows that the sample size increases from 1557 firms in 1985 to 2031 firms in 2003. There are more focused firms in 1990s but less in 2000s. On average, diversified firms have three to four segments and have higher leverage and lower firm risk than do focused firms. Tobin's q of focused firms is significantly higher than that of diversified firms at the 1% significance level for all 19 years, confirming Lang and Stulz's (1994) results. After industry effects are adjusted, the sample size of diversified firms is usually 1/3 to 1/2 of that of focused firms in all 16 years. The diversification discount calculated from the industry-adjusted q is significant in 14 out of 16 years at the 1% significance level (except for 2000 at the 5% significance level), consistent with Lang and Stulz's (1994) result that diversification discount cannot be explained by the industry effects. We do not find discount for diversified firms in 1994, though this finding is statistically insignificant and economically small.

Table 1 panel C reports the mean excess value using the sales multiple. By construction, the median excess values of single-segment firms are zero, but the mean excess values are not. In fact, a zero mean is not required to assess whether diversification destroys value because we are only interested in the difference between the mean excess value of focused firms and that of diversified firms. For the entire sample from 1985 to 2000, the median (mean) excess value of diversified firms is -0.12 (-0.101), while the median (mean) excess value of focused firms are 0 (0.002), indicating the existence of diversification discount. For the years 1986 to 1991 in our sample, the median (mean) excess value of diversified firms is 10.1% (9.8%) lower than that of focused firms, close to Berger and Ofek's 10.6% (9.8%). Moreover, the breakdown into years shows that diversification destroys value in all 16 years and this value loss from diversification is significant at the 1% level except for 1989 at 2%, 1991 at 5%, and 2000 at 10%.

Firm valuation is correlated with firm leverage. For instance, Tobin's *q* is a popular measure of firm valuation in corporate finance. It is also frequently used to proxy for growth opportunities (see for example Lang, Ofek and Stulz, 1996; Harvey, Lins,and Roper, 2004). Firm leverage is predicted to be negatively related to its growth opportunities (see Myers 1977; Jensen 1986). As a consequence, firm leverage is expected to vary inversely with Tobin's *q*. Mansi and Reeb (2002), for example, find that the excess value is negatively related to firm leverage. If diversified firms distribute very differently from focused firms over leverage, the relation between diversification and firm valuation such as *q* will be contaminated by the relation between leverage and firm valuation, because popular analyses such as regressions focus on the mean value.

Lewellen (1971) argue that the imperfectly correlated cash flows of different segments can give diversified firms greater debt capacity and thus diversified firms are more likely to have a higher leverage than do focused firms. In other words, diversified firms are quite likely to have a different distribution from focused firms over leverage. Hence, the value effects of diversification will be influenced by the value effects of firm leverage. Let's still use *q* as an example. If there are more diversified firms at a higher leverage level than focused firms, the mean *q* of diversified firms over leverage will be lower than that of focused firm, due to the fact that more weight is put on lower-*q* leverage subgroups for diversified firms than for focused firms. Obviously, this negative relation between diversification and *q* results from the unbalanced sample size of diversified firms and focused firms across leverage, and has nothing to do with diversification.

In order to see whether the unbalanced sample size between diversified firms and focused firms over leverage is indeed one source for the documented diversification discount, we divide the sample equally into deciles ascending in leverage for each year and see first if diversified firms distribute differently from focused firms over leverage and second if the mean value measures (i.e., *q*, the industry-adjusted *q*, and the excess value) of diversified firms are significantly different from those of focused firms in each year-leverage group at the conventional significance levels.

Table 3 about here

Table 3 reports the summary statistics of our sample at the leverage level. Clearly, diversified firms have a different distribution from focused firms over leverage. Specifically, the sample size of focused firms in the lowest leverage group is significantly greater than that of diversified firms, while the sample size of focused firms in the highest leverage group is more comparable to that of diversified firms. For the sample of calculating Tobin's *q*, the sample size of focused firms in the lowest leverage group ranges from 2.2 times greater in 2000 to 16.8 times greater in 1995 than that of diversified firms, whereas the sample size of focused firms in the highest leverage group ranges from 0.6 times that of diversified firms in 2000 and 2002 to 1.7 times in 1996 and 1997. For the sample of calculating the industry-adjusted Tobin's *q*, the sample size of focused firms in the lowest leverage group ranges from 5.4 times greater in 1988 to 34.2 times greater in 1994 than that of diversified firms, whereas the sample size of focused firms in the highest leverage group ranges from 1.3 times greater in 1985 to 3.5 times

greater in 1988 than that of diversified firms. For the sample of calculating the excess value, the sample size of focused firms in the lowest leverage group ranges from 3.8 times greater in 1999 to 21.7 times greater in 1996 than that of diversified firms, whereas the sample size of focused firms in the highest leverage group ranges from 1.5 times greater in 1985 to 4.5 times greater in 2000 than that of diversified firms.

Moreover, in each year, the lowest leverage group has the highest Tobin's *q*, the lowest diversification discount (actually the highest diversification premium) calculated from the industry-adjusted *q*, and the highest excess value. As the leverage goes up, in general, Tobin's *q* decreases, the diversification discount calculated from the industry-adjusted *q* increases, and the excess value decreases. In addition, firm risk decreases as the leverage goes up and is lower for diversified firms than for focused firms in general.

Table 4 about here

Table 4 reports the *t*-statistics and *p*-values for testing equality of the three mean value measures between focused firms and diversified firms in each year-leverage group. The mean of Tobin's *q* of diversified firms are significantly different from that of focused firms at the 10% (5% and 1%) significance level in only 23 (15 and 4) out of 190 year-leverage groups, equivalently 1.2 out of 10 leverage groups per year which is approximately the rate of occurrence expected under the 10% test when there is no diversification discount. The mean *q* decreases from focused firms to diversified firms in 100 year-leverage groups and increases in 90 year-leverage groups. The mean of the diversification discount calculated from the industry-adjusted *q* of diversified firms are significantly different from that of focused firms at the 10% (5% and 1%) significance level in only 26 (17 and 3) out of 160 year-leverage groups, equivalently 1.6 out of 10 leverage groups per year. The mean diversification discount increases from focused firms to diversified firms in 88 year-leverage groups and decreases in 72 year-leverage groups. The mean excess value of diversified firms are significantly different from that of focused firms at the 10% (5% and 1%) significance level in only 23 (11 and 2) out of 160 year-leverage groups, equivalently 1.4 out of 10 leverage groups per year. The mean excess value decreases from focused firms to diversified firms in 97 year-leverage groups and increases in 63 year-leverage groups.

Although the difference in the mean *q*, in the mean diversification discount, and in the mean excess value of diversified firms and focused firms is insignificant in most year-leverage groups, the overall (weighted) mean *q*, mean diversification discount, and mean excess value of the diversified firms are significantly lower, higher, and lower than those of focused firms respectively in all sample years. We argue that the documented diversification discount is in large part due to the unbalanced sample size between focused firms and diversified firms over leverage, specifically, due to the facts that 1) high leverage is associated with low firm valuation in terms of Tobin's *q*, the industry-adjusted Tobin's *q*, and the excess value; and 2) there are more focused firms in the lower leverage groups than diversified firms. To examine whether our argument is sound, we form a balanced sample by randomly picking firms from the larger subgroup (could be either focused firms or diversified firms) in each year-leverage group so that the sample

sizes of focused and diversified firms in each year-leverage group are equal and then repeat the tests using the balanced sample.

IV. No diversification discount in the leverage-balanced sample

We balance the sample by randomly picking firms from the larger subgroup (could be either focused firms or diversified firms) in each year-leverage group so that the sample sizes of focused and diversified firms are equal. Balancing is repeated for each of the three value measures to yield three balanced samples.

The balanced sample corresponding to Tobin's *q* contains 5047 firms, of which 2770 are diversified firms and 3628 are focused firms, and 30606 firm-year observations, of which half of the sample size (i.e., 15303) are diversified firms. Compared to the original sample, 8415 firm-year observations for focused firms and 1955 firm-year observations for diversified firms are excluded. The balanced sample corresponding to the industry-adjusted Tobin's *q* contains 3683 firms, of which 1702 are diversified firms and 2649 are focused firms, and 15226 firm-year observations, of which half of the sample size (i.e., 7613) are diversified firms. Compared to the original sample, 12682 firm-year observations for focused firms are excluded, but no observations for diversified firms are excluded. The balanced sample corresponding to the excess value measure contains 3133 firms, of which 1450 are diversified firms and 2235 are focused firms, and 12710 firm-year observations, of which half of the sample size (i.e., 6355) are diversified firms. Compared to the original sample, 10552 firm-year observations for focused firms and 147 firm-year observations for diversified firms are excluded.

Table 5 about here

Table 5 reports the summary statistics of three balanced samples at the leverage level. An immediate observation is that diversified firms are now distributed in the same way as are focused firms over leverage. All other observations from the unbalanced original samples remain the same in the balanced samples. In each year, the lowest leverage group has the highest Tobin's *q*, the lowest diversification discount (actually the highest diversification premium) calculated from the industry-adjusted *q*, and the highest excess value. As the leverage goes up, in general, Tobin's *q* decreases, the diversification discount calculated from the industry-adjusted *q* increases, and the excess value decreases. In addition, firm risk decreases as the leverage goes up and is lower for diversified firms than for focused firms in general.

The *t*-statistics and *p*-values for testing equality of the three mean value measures between focused firms and diversified firms in each year-leverage group in the balanced sample are reported in Table 4. The mean Tobin's *q* of diversified firms are significantly different from that of focused firms at the 10% (5% and 1%) significance level in only 27 (17 and 2) out of 190 year-leverage groups, equivalently 1.4 out of 10 leverage groups per year. The mean *q* decreases from focused firms to diversified firms in 97 year-leverage groups and increases in 93 year-leverage groups. The mean diversification discount calculated from the industry-adjusted *q* of diversified firms are significantly different from that of focused firms at the 10% (5% and 1%) significance level in only 22

(12 and 3) out of 160 year-leverage groups, equivalently 1.4 out of 10 leverage groups per year. The mean diversification discount increases from focused firms to diversified firms in 85 year-leverage groups and decreases in 75 year-leverage groups. The mean excess value of diversified firms are significantly different from that of focused firms at the 10% (5% and 1%) significance level in only 17 (7 and 1) out of 160 year-leverage groups, equivalently 1.1 out of 10 leverage groups per year. The mean excess value decreases from focused firms to diversified firms in 101 year-leverage groups and increases in 59 year-leverage groups. These results are in agreement with those from the original samples. Hence, the balanced sample maintains the statistical properties of the original sample at the leverage level for all three value measures.

In the balanced sample, diversified firms are distributed in the same way as are focused firms over leverage. Hence, the effects of leverage on firm valuation are isolated from the effects of diversification on firm valuation. This is because the same weight is put on a given leverage group for both diversified firms and focused firms in calculating the overall mean. If the unbalanced sample size is really one source of diversification discount, then we expect to see a lower or even no diversification discount in each year after balancing the sample sizes of diversified firms and focused firms across leverage. To this end, we pool the ten leverage subgroups together and test if the mean value measures of diversified firms are significantly different from those of focused firms in the balanced sample for each year.

Table 6 about here

Table 6 reports the summary statistics of the balanced sample in each year. Several interesting findings directly emerge from Table 6. First, in the balanced sample, the leverage of diversified firms is at the same level as that of focused firms. The mean leverage of diversified firms is insignificantly different from that of focused firms at the 10% significance level for all the sample years in all three balanced samples. Second, diversified firms still bear significantly lower firm risk than do focused firms for all the sample years in all three balanced samples except for 1999 and 2000 in the balanced sample of the excess value where diversified firms are slightly but insignificantly riskier than are focused firms.

The *t*-statistics and *p*-values for testing equality of the three mean value measures (i.e., *q*, the industry-adjusted *q*, and the excess value) between focused firms and diversified firms in each year in the balanced samples are reported in Table 2. Panel A shows that Tobin's *q* of focused firms is no longer significantly different from that of diversified firms at the 10% significance level for all 19 years, supporting our conjecture. The mean *q* decreases from focused firms to diversified firms in 10 years and increases in 9 years.

Panel B reports the levels of diversification discount calculated from the industry-adjusted *q*, and the *t*-test results. Note that the diversification discount of focused firms no longer averages out to zero in the balanced sample. This is because many focused firms in the lower leverage groups are excluded in the balanced sample. Thus, more weight is put on lower-*q* leverage subgroups in the balanced sample than in the original sample

when calculating the overall mean *q*. Hence, the *t*-test becomes to test whether diversified firms perform worse than do focused firms in the balanced sample.

The *t*-test shows that the mean diversification discount of diversified firms is significantly different from that of focused firms in 3 out of 16 years, namely, 1985, 1990, and 1995 at the 10% significance level. In the remaining 13 years, compared to the average industry performance in terms of industry mean *q*, diversified firms do not perform worse than do focused firms. On average, both diversified firms and focused firms perform worse than the industry average level. However, if we disregard statistical significance, diversified firms perform better than do focused firms in 9 years but worse in the other 7 years. Hence, compared to the original sample, diversification discount can indeed be explained by the unbalanced sample size between focused firms and diversified firms at the leverage level even after the industry effects are controlled for.

The levels of the excess value and the test statistics in each year are reported in Panel C. Overall, the mean excess value of diversified firms is still significantly different from that of focused firms in the balanced sample. However, the magnitude of the difference in the mean excess value, i.e. the diversification discount, drops from 10.3% to only 2.8%, showing that around 73% of the diversification discount in the original sample can be explained by the unbalanced sample size between focused firms and diversified firms at the leverage level.

The *t*-test by year shows that the mean excess value of diversified firms is significantly different from that of focused firms in 3 out of 16 years, namely, 1985, 1986, and 1999 at the 10% significance level. In the remaining 13 years, compared to the median industry performance, diversified firms do not perform significantly worse than do focused firms. On average, both diversified firms and focused firms perform worse than the industry median level. Furthermore, disregarding statistical significance, diversified firms perform better than do focused firms in four years i.e. 1991, 1994, 1996 and 1997. Therefore, compared to the original sample, the documented diversification discount can be partly explained by the unbalanced sample size between focused firms and diversified firms at the leverage level.

V. Regression analysis: controlling for important firm characteristics

In this paper, we argue that an important source of the documented diversification discount is the different distributions of focused firms and diversified firms over firm leverage in the data sample. As shown in Section IV, the diversification discount in terms of Tobin's *q*, the industry-adjusted Tobin's *q*, and the excess value disappears in almost all sample years once the sample sizes of focused firms and diversified firms are matched at the leverage level. A couple of other studies such as Mansi and Reeb (2002), Campa and Kedia (2002), and Guo (2004) have also controlled for leverage when investigating the causes of diversification discount. They regress the value measure on a dummy variable that takes the value of one if a firm is diversified and on various control variables including leverage. However, the findings of these studies are mixed.

Mansi and Reeb (2002) find that excess value is negatively related to leverage and diversification discount can be fully explained away by simply including leverage in the multiple regression. However, Campa and Kedia (2002) find that excess value is positively related to leverage and diversification discount still exists even when leverage is controlled for. Guo (2004) finds that excess value is negatively related to leverage and diversification discount still exists even when leverage is controlled for. Guo attributes Mansi and Reeb's finding of no diversification discount after controlling for leverage to the fact that they report a diversification discount of 4.5%, which is much lower than 14.4% in Berger and Ofek (1995).

In this section, we investigate whether diversification discount can be fully explained away by simply including leverage in the linear regression. In other words, we investigate whether the standard practice of including leverage as an explanatory variable is a proper way to control for leverage. As before, we start with Tobin's *q*, and then the industry-adjusted *q*, and finally the excess value measure using the sales multiple.

Following Lang and Stulz (1994), we regress Tobin's *q* on a dummy variable that equals one if a firm is diversified and on the three firm characteristics – size, R&D, and ability to access financial markets. These three firm characteristics are proxied by the natural logarithm of the firm's total assets, its ratio of R&D to total assets, and a dummy variable that takes the value of one if it pays dividends. Next, we include leverage in the regression and see how the inclusion of leverage affects diversification discount, i.e., the coefficient on the diversification dummy variable. We also perform the same analysis using the diversification discount measured by the difference between the industry-adjusted *q* and its own *q*.

For the excess value measure, we first follow Berger and Ofek (1995) to regress the excess value on the diversification dummy variable and the three firm characteristics – size, profitability, and investment. These three firm characteristics are proxied by the natural logarithm of the firm's natural total assets, its ratio of EBIT to sales, and its ratio of capital expenditures to sales. Next, we follow Campa and Kedia (2002) to include firm leverage and the lagged values of the three firm characteristics in the regression. The squared logarithmic total asset value is also included to control for the possible nonlinear effect of firm size on firm value.

The estimates and the *t*-statistics are presented in Table 7. For the case of Tobin's *q*, without leverage (i.e., Lang and Stulz's model), diversified firms trade at an average discount of 0.34. When leverage is included in the regression, the diversification discount drops considerably from 0.34 to 0.09, but it is still statistically significant at the 1% significance level. For the case of the diversification discount calculated from the industry-adjusted *q*, without leverage (i.e., Lang and Stulz's model), diversified firms have an additional discount of 0.28. When leverage is included in the regression, this additional discount of diversified firms drops considerably from 0.28 to 0.11, but it is still statistically significant at the 1% significance level. For the case of the excess value, without leverage (i.e., Berger and Ofek's model), diversified firms trade at an average discount of 0.127, comparable to Berger and Ofek's 0.144. When leverage is included in

the regression (i.e., Campa and Kedia's model), the diversification discount drops from 0.127 to 0.08, comparable to Campa and Kedia's 0.11. The diversification discount is still statistically significant at the 1% significance level. All these results confirm Campa and Kedia's (2002) and Guo's (2004) findings that leverage cannot explain away diversification discount. In addition, firm leverage is negatively related to Tobin's *q* and the excess value, and positively related to the diversification discount calculated from the industry-adjusted *q*. Note that a larger diversification discount means a lower excess value. Hence, these results are consistent with Mansi and Reeb's (2002) and Guo's (2004) results.

Next, we perform the regression that includes firm leverage in the balanced sample. The estimates and the *t*-statistics are also presented in Table 7. We find that the diversification discount disappears when Tobin's *q* and the industry-adjusted Tobin's *q* are used as the value measure. In the case of the excess value, the diversification discount drops from 0.08 to 0.06, showing that around 30% of the diversification discount in the original sample can be explained away by the unbalanced sample size between focused firms and diversified firms at the leverage level. These results are consistent with the previous univariate analysis. Hence, diversification discount can at least partly be explained by the different distributions of focused firms and diversified firms over leverage even when various firm characteristics including leverage are controlled for. In addition, leverage is still negatively related to Tobin's *q* and the excess value, and positively related to the diversification discount calculated from the industry-adjusted *q*.

In the previous univariate analysis, we argue that even if diversification does not destroy value, the very fact that there are more diversified firms at the higher leverage level, which is associated with lower firm valuation, than focused firms will lead to diversified firms having a lower mean value than focused firms, giving rise to the appearance of diversification discount. Therefore, if diversified firms distribute very differently from focused firms over leverage, the relation between diversification and firm valuation will be confounded by the relation between leverage and firm valuation. In the multiple regression framework, the coefficient on the diversification dummy variable will be biased to reflect the negative relation between leverage and firm valuation.

In the balanced sample, diversified firms are distributed in the same way as are focused firms over leverage. As a result, the effects of leverage on firm valuation are separated from the effects of diversification on firm valuation. Hence, we should observe a lower or even no diversification discount in the balanced sample. Obviously, this argument is supported both in our univariate and multivariate analyses.

Our findings also suggest that simply including leverage as an explanatory variable in the multiple regression cannot properly reflect the effect of leverage unless the sample is first balanced. This is due to the fact that there is a clear nonlinear relation between leverage and firm valuation. To understand the nature of this nonlinearity, we replace the leverage variable with nine leverage dummy variables and perform the regression using the unbalanced sample. The nine leverage dummy variables are defined

as follows: dlev1 takes the value of one if a firm falls in the lowest leverage decile of that year, dlev2 takes the value of one if a firm falls in the second lowest leverage decile of that year, and so on. The estimates and the *t*-statistics are presented in Table 7. The coefficients on the nine leverage dummy variables indicate clearly that 1) leverage is negatively related to *q* (or the excess value) and positively related to the diversification discount calculated from the industry-adjusted *q*; and 2) their relationship is nonlinear.

Obviously, including a leverage variable in the multiple regression cannot control for the nonlinear effect as revealed in our findings. An improper control will result in biased coefficients in the multiple regression analysis. With the balanced sample, however, the value effects of leverage are isolated from the value effects of diversification. The misspecification bias becomes far less material. As a result, we observe a lower or even no diversification discount using the balanced sample.

VI. Controlling for Endogeneity of the Diversification Decision

In the preceding section diversification discount is shown to disappear in the leverage-balanced sample when firm valuation is measured by Tobin's *q* and the industry-adjusted Tobin's *q*. Although diversification discount continues to exist when firm valuation is measured by the excess value, it is much lower in magnitude. Campa and Kedia (2002) find that the diversification discount measured in terms of the excess value drops and sometimes turns into a premium after controlling for endogeneity of the diversification decision. It is thus natural to investigate how our conclusion on diversification discount in terms of the excess value is influenced by endogeneity. To put it differently, we would like to see whether balancing sample will continue to be important once endogeneity of the diversification decision is accounted for.

Following Campa and Kedia (2002), we use three different techniques to control for endogeneity. The first technique is to use a two-way fixed-effect approach. Fixed firm effects control for unobservable firm characteristics and fixed year effects control for time effects. The fixed-effect model helps alleviate the endogeneity problem caused by the omitted variable(s).

The second technique is to use Heckman's (1979) two-step procedure. Variables used in the probit model that affect firms' decisions to diversify include industry-specific, time-specific, and firm-specific variables. Industry-specific variables are the fraction of all firms in the industry that are conglomerates, and the fraction of industry sales accounted for by conglomerates. Time-specific variables are the number of merger/acquisition announcements in a given year, the annual value of announced merger/acquisition in billions of U.S. dollars, the real growth rate of gross domestic product and its lagged value, and the number of months in the calendar year that the economy was in a recession and its lagged value. Firm-specific variables include the natural logarithm of the firm's total assets, its ratio of EBIT to sales, its ratio of capital expenditures to sales, and their one-lag and two-lag values; a major exchange dummy that takes the value of 1 when the firm is listed on NYSE, Nasdaq, or AMEX, and 0 otherwise; a S&P dummy that takes the value of 1 if the firm belongs to the S&P

industrial index or the S&P transportation index, and 0 otherwise; a foreign firm dummy that takes the value of 1 when the firm is incorporated abroad and 0 otherwise; a dummy that takes the value of 1 if last year's number of segments was 1 and 0 otherwise; a dummy that takes the value of 1 if last year's number of segments was 2 and 0 otherwise[3]; and the firm's historical average values of the natural logarithm of the total assets, the ratio of EBIT to sales, and the ratio of capital expenditures to sales.

The third technique is an instrumental variable method. The instrument for the diversification status is the estimated probability of diversification from the probit model. In the first stage, diversification decision (i.e. the diversification dummy) is regressed on the estimated probability of diversification from the probit model and all the exogenous variables in the excess value equation. In the second stage, the fitted value from the first stage is used as an instrument for the diversification dummy in the excess value equation.

As in Campa and Kedia (2002), we separately examine diversifying and refocusing firms. The sample of diversifying firms includes all focused firms and all diversifying firms, the latter consisting of firms that diversify once from single to multiple segments, firms that diversify once from multiple to multiple segments, and firms that diversify multiple times. The sample of refocusing firms includes all focused firms and all refocusing firms, the latter consisting of firms that refocus once from multiple to single segments, firms that refocus once from multiple to multiple segments, and firms that refocus multiple times. Firms are classified using all available Compustat segment data. The distribution of firms by diversification profiles is reported in Table 8.

Table 8 about here

Table 8 shows that out of 3789 firms (23409 firm-year observations) in our sample, 1552 firms were always in single segments and accounted for 8105 firm-year observations. The remaining 2237 firms reported operating in multiple segments at some point and accounted for 15304 firm-year observations. These ever diversified firms are classified into four groups, i.e. diversifying only, refocusing only, doing both, and keeping the same number of segments. The largest group is firms that experience both increasing and decreasing number of segments, consisting of 1161 firms and 8797 firm-year observations. 803 firms (4964 firm-year observations) report only diversifying and 211 firms (1338 firm-year observations) report only refocusing. 62 firms (205 firm-year observations) did not change the number of segments.

A. Diversifying Firms

[3] These two dummy variables are not part of Campa and Kedia's (2002) specification. Implicitly, Campa and Kedia assume that the chance for a firm to become single-segment (or multi-segment) next year has nothing to do with its current segment status. Obviously, it is less likely for a three-segment firm than for a two-segment one to become single-segment in one year. Thus, it is important to include such dummy variables in the probit model. Using two dummy variables suggests that we have in effect grouped firms with three or more segments into the same category. Our analysis suggests that these dummy variables affect the conclusion of Heckman's correction. Introducing an additional dummy to separate three-segment firms from those with four segments or more is, however, found to have no material effect on the conclusion. We thank Craig Doidge for bringing this issue to our attention.

We first estimate the diversification discount using the Berger and Ofek model (Model 1), and then using the Campa and Kedia model (Model 2). Next, we control for endogeneity of the diversification decision and run a two-way fixed-effects model, an instrumental variable model, and Heckman's two-step model. The results of the estimation are presented in panel A of Table 9.

Table 9 about here

Table 9 shows that diversifying firms have an average discount of 0.127 in the absence of leverage. When leverage is included in the regression (the Campa and Kedia model), the diversification discount drops from 0.127 to 0.094. Both results are close to the discounts reported earlier in Table 7 for the entire sample. Next, we include two-way fixed effects, i.e., firm effects and year effects in the model, and find that diversifying firms are traded at an average discount of 0.125. With the instrumental variable model, the diversification discount becomes 0.065. With Heckman's two-step procedure, the diversification discount is 0.068. Leverage is negatively and significantly related to the excess value for all models.

To check for the effect of leverage-balancing on diversification discount, we perform Campa and Kedia's regression, the two-way fixed effects model, the instrumental variable model, and Heckman's two-step model using the balanced sample. The results of the estimation are reported in panel A of Table 9 as well.

Table 9 shows that diversification discount decreases for all four models and becomes insignificant for all three endogeneity-controlled models when the leverage-balanced sample is used. Leverage is still negatively and significantly related to the excess value in all models. In terms of the Campa and Kedia model, the diversification discount drops from 0.09 to 0.04 due to leverage-balancing, and becomes less significant with a *p*-value of 0.063. Using the two-way fixed-effects model, the diversification discount drops from 0.125 to 0.015, and is insignificant. By the instrumental variable method, the diversification discount drops from 0.065 to 0.043, and is insignificant. Using Heckman's two-step model, the diversification discount drops from 0.068 to 0.044, and also becomes insignificant. These results suggest that the majority of diversification discount in the original sample can be attributed to the unbalanced sample size between focused firms and diversified firms at the leverage level even when endogeneity of the diversification decision is controlled for.

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B. Refocusing Firms

We perform the same analysis on the refocusing firms as previously on the diversifying firms. First, we estimate the diversification discount using the Berger and Ofek model (Model 1), and then using the Campa and Kedia model (Model 2). Next, we control for endogeneity of the diversification decision and run a two-way fixed-effects model, an instrumental variable model, and finally Heckman's two-step model. The results of the estimation are presented in panel B of Table 9.

Table 9 shows that the estimated diversification discount is 0.185 in the absence of leverage for refocusing firms. When leverage is included in the regression (the Campa and Kedia model), the diversification discount drops from 0.185 to 0.138. Both results are higher than the discounts reported in Table 7 for the entire sample. Next, we include two-way fixed effects, i.e., firm effects and year effects in the model and find that the diversification discount increases to 0.25. With the instrumental variable model, the diversification discount is 0.146. With Heckman's two-step procedure, the diversification discount is 0.143. Leverage is negatively and significantly related to the excess value for all models.

To see whether the unbalanced sample size between diversified firms and focused firms over leverage is an important source of diversification discount after controlling for endogeneity, we perform Campa and Kedia's regression, the two-way fixed-effects model, the instrumental variable model, and Heckman's two-step model using the balanced sample. The results of the estimation are reported in panel B of Table 9 as well.

Table 9 shows that the diversification discount (or the refocusing premium) always decreases for all four models, moving from the original sample to the leverage-balanced sample. In fact, it even turns into a diversification premium (or a refocusing discount) when the two-way fixed-effects model is used. For the Campa and Kedia model, the diversification discount drops from 0.14 to 0.12. With the two-way fixed-effects model, the diversification discount drops from 0.25 to -0.07 (actually a premium of 0.07, though insignificant). Using the instrumental variable model, the diversification discount drops from 0.146 to 0.127. Using Heckman's two-step model, the diversification discount drops from 0.1433 to 0.1419. Moreover, the estimated discount becomes less significant for all four models using the balanced sample as opposed to the original unbalanced sample. Leverage is still negatively and significantly related to the excess value for all models. Although these results may suggest the continual presence of refocusing premium, the general direction is consistent with the findings based on diversifying firms, which suggest that the documented diversification discount in the original sample can be partly attributed to the different distributions of focused firms and diversified firms over leverage.

VII. Conclusion

The literature offers mixed results on the value effects of diversification. Early studies such as Lang and Stulz (1994) and Berger and Ofek (1995) find that diversification destroys value. However, a number of recent studies argue that the documented diversification discount may not be caused by diversification itself. Other factors such as the failure to control for endogeneity of the diversification decision and the bias in the firm value measure may lead to diversification discount.

This paper contributes to the literature by identifying one plausible source of diversification discount, i.e., the different distributions of focused firms and diversified firms over leverage. Firm valuation in terms of Tobin's q, the industry-adjusted Tobin's q, and the excess value varies inversely with firm leverage. If the distribution of diversified

firms over leverage is very different from that of focused firms, the relation between diversification and firm valuation will be confounded by the relation between leverage and firm valuation. To separate the value effects of leverage from the value effects of diversification, we use a sample-balancing device to ensure that the distribution of focused firms over leverage is the same as the distribution of diversified firms. Thus, the same weight is placed on diversified firms and focused firms in each leverage category.

With the original unbalanced sample, we find a significant diversification discount using all three value measures, i.e., q, the industry-adjusted q, and the excess value in each year (except in 1994 and 1995 when using the industry-adjusted q). However, once the sample sizes of focused firms and diversified firms are matched at the leverage level, diversification discount disappears in almost all sample years. The same conclusion prevails with a multiple regression analysis reflecting firm characteristics including leverage. When the excess value is used as the value measure, the magnitude of diversification discount is reduced by around 30%. Our results also suggest that simply including leverage as an explanatory variable in the multiple regression fails to reflect the impact of leverage. We investigate diversification discount in terms of the excess value further and find that the balanced sample size still makes a material difference when endogeneity of the diversification decision is accounted for. There is no evidence of diversification discount for diversifying firms, but refocusing premium seems to exist for refocusing firms albeit supporting evidence is much weakened by leverage-balancing. We conclude that the different distributions of focused firms and diversified firms over leverage are one important source for the documented diversification discount.

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Table 1. Descriptive Statistics of the Unbalanced Sample

This table reports the summary statistics of the unbalanced sample from 1985 to 2003, a total of 19 years. Panel A reports the mean values of major variables for the sample of Tobin's *q*. Tobin's *q* is defined as the market value of a firm divided by its replacement cost. The market value of a firm is calculated as the sum of the market value of common stock and the book value of total debt and preferred stock. The replacement cost of a firm is calculated as the sum of the estimated replacement cost of plant, equipment, and inventories and the book value of assets other than plant, equipment, and inventories. Leverage is defined as the sum of the book value of total debt and preferred stock divided by its market value. sigVimpBS is the Black-Scholes implied asset volatility. As in Lang and Stulz (1994), firms with less than $100 million of assets on average or firms for which *q* could not be computed are excluded. The sample contains 40976 firm-year observations, of which 17258 are diversified firms and 23718 are focused firms. Panel B reports the mean values of major variables for the sample of the industry-adjusted Tobin's *q*. Following Lang and Stulz (1994), the diversification discount is defined as the difference between the industry-adjusted *q* and its Tobin's *q*. The industry-adjusted *q* is the asset-weighted average of the industry average *q* of its segments. The industry is defined according to the segment's three-digit SIC code. Firms for which the industry-adjusted *q* could not be computed are excluded. The sample includes 27908 firm-year observations, of which 7613 are diversified firms and 20295 are focused firms. Panel C reports the mean values of major variables for the sample of the excess value using the sales multiple. Following Berger and Ofek (1995), the excess value is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value. Firm value is calculated as the sum of the market value of common stock and the book value of total debt and preferred stock. The imputed firm value is the sum of the imputed value of its segments, which is calculated by multiplying the median ratio of firm value to sales in the segment's industry by the segment's sales. Each industry grouping is based on the narrowest SIC code that contains at least five single-segment firms. Firm-year observations are excluded if any segment of a firm is in the financial sector (SIC 6000-6999), if firm sales is less than $20 million or missing, if firm value is missing, if the sum of segment sales is deviated from total sales by more than one percent, if a firm did not report four-digit SIC codes for all its segments, and if the imputed firm value could not be computed. Extreme excess values that are greater than 1.386 or less than -1.386 are excluded as well. These steps lead to a sample of 23409 firm-year observations, of which 6502 are diversified firms and 16907 are focused firms.

Panel A: LS94 - Tobin's q

year	total	single segment					multi-segment				
		n	q	noseg	lev	sigVimpBS	n	q	noseg	lev	sigVimpBS
1985	1557	767	1.4432	1	0.4081	0.2264	790	1.1253	3.2734	0.5108	0.1473
1986	1605	839	1.4627	1	0.4057	0.2527	766	1.1681	3.2298	0.5081	0.1747
1987	1700	967	1.3956	1	0.4407	0.3012	733	1.1523	3.1432	0.5178	0.2302
1988	1738	1024	1.3855	1	0.4459	0.2488	714	1.1763	3.1359	0.5147	0.1773
1989	1726	1032	1.4248	1	0.4411	0.2263	694	1.2236	3.1268	0.5136	0.1566
1990	1740	1060	1.3267	1	0.4724	0.2594	680	1.1056	3.1235	0.5597	0.1578
1991	1805	1108	1.5585	1	0.4234	0.2986	697	1.2214	3.0818	0.5241	0.1773

1992	1925	1218	1.6357	1	0.3982	0.3057	707	1.2473	3.0636	0.5140	0.1765
1993	2140	1400	1.7253	1	0.3750	0.3201	740	1.3267	3.0676	0.4895	0.1894
1994	2334	1586	1.5133	1	0.3904	0.2893	748	1.2506	3.0628	0.5169	0.1663
1995	2498	1743	1.8854	1	0.3873	0.2914	755	1.2993	3.0636	0.5043	0.1674
1996	2641	1865	1.8445	1	0.3811	0.3187	776	1.3536	3.0825	0.4914	0.1915
1997	2809	1978	1.9859	1	0.3710	0.3265	831	1.5134	3.1649	0.4628	0.2156
1998	2847	1455	2.0177	1	0.4103	0.3701	1392	1.5543	3.2989	0.4875	0.2731
1999	2518	1173	2.7437	1	0.4043	0.3972	1345	1.7032	3.6238	0.4844	0.2986
2000	2469	1133	2.1204	1	0.4228	0.4901	1336	1.5275	3.7350	0.5097	0.3444
2001	2508	1225	1.7930	1	0.3929	0.4871	1283	1.4517	3.8324	0.4931	0.3168
2002	2385	1150	1.4358	1	0.4237	0.3995	1235	1.2578	3.9053	0.5221	0.2757
2003	2031	995	1.9041	1	0.3312	0.3679	1036	1.4570	3.9537	0.4349	0.2471

Panel B: LS94 – diversification discount using industry-adjusted q

year	total	single segment					multi-segment				
		n	divdisc	noseg	lev	sigVimpBS	n	divdisc	noseg	lev	sigVimpBS
1985	1231	767	0.0000	1	0.4081	0.2264	464	0.2450	2.9612	0.4976	0.1489
1986	1276	839	0.0000	1	0.4057	0.2527	437	0.2452	2.8764	0.4923	0.1831
1987	1404	967	0.0000	1	0.4407	0.3012	437	0.1719	2.8124	0.5020	0.2365
1988	1477	1024	0.0000	1	0.4459	0.2488	453	0.1343	2.8124	0.4956	0.1845
1989	1474	1032	0.0000	1	0.4411	0.2263	442	0.1292	2.8507	0.4953	0.1644
1990	1533	1060	0.0000	1	0.4724	0.2594	473	0.1771	2.8879	0.5425	0.1636
1991	1577	1108	0.0000	1	0.4234	0.2986	469	0.2162	2.8678	0.4972	0.1877
1992	1702	1218	0.0000	1	0.3982	0.3057	484	0.2183	2.9112	0.4958	0.1806
1993	1925	1399	0.0000	1	0.3745	0.3203	526	0.2335	2.8688	0.4687	0.1984
1994	2116	1584	0.0000	1	0.3899	0.2892	532	-0.0152	2.8797	0.4881	0.1777
1995	2275	1743	0.0000	1	0.3873	0.2914	532	0.2361	2.8684	0.4951	0.1732
1996	2419	1865	0.0000	1	0.3811	0.3187	554	0.2640	2.8412	0.4748	0.2010
1997	2557	1977	0.0000	1	0.3707	0.3266	580	0.2765	2.8810	0.4492	0.2230
1998	2173	1443	-0.0088	1	0.4102	0.3698	730	0.2418	2.9000	0.4829	0.2719
1999	1436	1155	-0.0134	1	0.4023	0.3986	281	0.6335	2.7580	0.4878	0.3030
2000	1333	1114	-0.0129	1	0.4211	0.4894	219	0.3443	2.8174	0.5193	0.3524

Panel C: BO95 – excess value measure using sales multiple

year	total	single segment					multi-segment				
		n	excvalS	noseg	lev	sigVimpBS	n	excvalS	noseg	lev	sigVimpBS
1985	1088	660	-0.0069	1	0.3995	0.2229	428	-0.2049	3.0000	0.4698	0.1551
1986	1151	717	0.0021	1	0.3996	0.2437	434	-0.1658	2.9286	0.4743	0.1805
1987	1266	828	0.0001	1	0.4276	0.2991	438	-0.1028	2.8539	0.4868	0.2364
1988	1283	874	0.0113	1	0.4252	0.2495	409	-0.0607	2.8240	0.4777	0.1867
1989	1259	876	0.0384	1	0.4192	0.2207	383	-0.0289	2.8225	0.4702	0.1714
1990	1273	907	0.0380	1	0.4523	0.2560	366	-0.0588	2.7787	0.5161	0.1693
1991	1316	933	0.0198	1	0.4085	0.2894	383	-0.0426	2.8381	0.4746	0.1881
1992	1410	1022	-0.0006	1	0.3850	0.2956	388	-0.0914	2.7655	0.4587	0.1859
1993	1569	1158	-0.0012	1	0.3616	0.3018	411	-0.1125	2.7397	0.4405	0.1979
1994	1785	1349	0.0137	1	0.3745	0.2801	436	-0.0886	2.7500	0.4612	0.1789
1995	1916	1470	-0.0056	1	0.3679	0.2845	446	-0.0952	2.7803	0.4491	0.1796
1996	2046	1596	0.0143	1	0.3574	0.3188	450	-0.0688	2.7667	0.4316	0.1991
1997	2188	1726	-0.0028	1	0.3409	0.3236	462	-0.0732	2.7922	0.3937	0.2259
1998	1697	1115	-0.0174	1	0.3750	0.3640	582	-0.1165	2.9141	0.4204	0.2975
1999	1115	849	-0.0418	1	0.3730	0.3916	266	-0.2052	2.6729	0.3943	0.3637
2000	1047	827	-0.0297	1	0.3903	0.4837	220	-0.1183	2.7455	0.3986	0.4886

Table 2. *T*-tests for the Mean Value Measures in the Unbalanced and Balanced Samples

This table reports the *t*-statistics and *p*-values for testing the equality of three mean value measures (i.e. *q*, the industry-adjusted *q*, and the excess value) between focused firms and diversified firms in each year in the unbalanced and leverage-balanced samples. The balanced sample is formed by randomly picking firms from the larger subgroup (could be either focused firms or diversified firms) in each year-leverage group so that the sample sizes of focused firms and diversified firms in each year-leverage group are equal. In this way, three balanced samples are formed for three value measures respectively. The balanced sample of Tobin's *q* contains 30606 firm-year observations, of which half of the sample size i.e. 15303 are diversified firms. Compared to the original sample, 8415 firm-year observations for focused firms and 1955 firm-year observations for diversified firms are excluded. The balanced sample of the industry-adjusted Tobin's *q* contains 15226 firm-year observations, of which half of the sample size i.e. 7613 are diversified firms. Compared to the original sample, 12682 firm-year observations for focused firms and no observations for diversified firms are excluded. The balanced sample of the excess value contains 12710 firm-year observations, of which half of the sample size i.e. 6355 are diversified firms. Compared to the original sample, 10552 firm-year observations for focused firms and 147 firm-year observations for diversified firms are excluded.

Panel A: LS94 - Tobin's q

	Original sample						Balanced sample					
year	single segment		multi-segment		t	pv	single segment		multi-segment		t	pv
	n	q	n	q			n	q	n	q		
1985	767	1.4432	790	1.1253	5.54	<.0001	600	1.1396	600	1.1744	-0.57	0.5689
1986	839	1.4627	766	1.1681	3.11	0.0019	649	1.1636	649	1.2045	-0.36	0.7169
1987	967	1.3956	733	1.1523	6.44	<.0001	707	1.1666	707	1.1582	0.27	0.7851
1988	1024	1.3855	714	1.1763	5.81	<.0001	714	1.1908	714	1.1763	0.41	0.6801
1989	1032	1.4248	694	1.2236	5.05	<.0001	681	1.2287	681	1.2236	0.14	0.8898
1990	1060	1.3267	680	1.1056	5.64	<.0001	668	1.0874	668	1.1073	-0.52	0.6065
1991	1108	1.5585	697	1.2214	6.62	<.0001	696	1.1764	696	1.2219	-1.16	0.2448
1992	1218	1.6357	707	1.2473	8.11	<.0001	707	1.2357	707	1.2473	-0.26	0.7945
1993	1400	1.7253	740	1.3267	8.57	<.0001	740	1.3000	740	1.3267	-0.64	0.5199
1994	1586	1.5133	748	1.2506	2.67	0.0077	748	1.2325	748	1.2506	-0.39	0.7001
1995	1743	1.8854	755	1.2993	2.64	0.0084	755	1.3220	755	1.2993	0.59	0.5547
1996	1865	1.8445	776	1.3536	10.14	<.0001	776	1.4067	776	1.3536	1.17	0.2425
1997	1978	1.9859	831	1.5134	5.75	<.0001	831	1.6603	831	1.5134	0.96	0.3371
1998	1455	2.0177	1392	1.5543	6.1	<.0001	1215	1.6459	1215	1.6147	0.4	0.6891
1999	1173	2.7437	1345	1.7032	6.85	<.0001	1040	2.0123	1040	1.8708	1.17	0.2441
2000	1133	2.1204	1336	1.5275	5.76	<.0001	1004	1.7562	1004	1.6821	0.82	0.4104
2001	1225	1.7930	1283	1.4517	4.94	<.0001	1005	1.4735	1005	1.5555	-1.1	0.271
2002	1150	1.4358	1235	1.2578	4.19	<.0001	960	1.3046	960	1.3337	-0.64	0.5237
2003	995	1.9041	1036	1.4570	6.14	<.0001	807	1.6617	807	1.5941	1.2	0.2314

Panel B: LS94 – diversification discount using industry-adjusted q

	Original sample				Balanced sample			
year	single segment	multi-segment	t	pv	single segment	multi-segment	t	pv

	n	divdisc	n	divdisc			n	divdisc	n	divdisc		
1985	767	0.0000	464	0.2450	-5.86	<.0001	464	0.1357	464	0.2450	-2.7	0.0071
1986	839	0.0000	437	0.2452	-2.76	0.0059	437	0.1815	437	0.2452	-0.43	0.6694
1987	967	0.0000	437	0.1719	-4.21	<.0001	437	0.1089	437	0.1719	-1.52	0.128
1988	1024	0.0000	453	0.1343	-3.61	0.0003	453	0.1056	453	0.1343	-0.7	0.482
1989	1032	0.0000	442	0.1292	-3.1	0.002	442	0.1452	442	0.1292	0.38	0.704
1990	1060	0.0000	473	0.1771	-4.72	<.0001	473	0.0777	473	0.1771	-2.18	0.0296
1991	1108	0.0000	469	0.2162	-4.65	<.0001	469	0.2236	469	0.2162	0.16	0.8729
1992	1218	0.0000	484	0.2183	-4.57	<.0001	484	0.2231	484	0.2183	0.09	0.925
1993	1399	0.0000	526	0.2335	-4.93	<.0001	526	0.2125	526	0.2335	-0.41	0.6821
1994	1584	0.0000	532	-0.0152	0.15	0.8821	532	0.3830	532	-0.0152	1.61	0.1076
1995	1743	0.0000	532	0.2361	-1.09	0.2739	532	0.4568	532	0.2361	1.67	0.0945
1996	1865	0.0000	554	0.2640	-5.42	<.0001	554	0.2764	554	0.2640	0.26	0.7971
1997	1977	0.0000	580	0.2765	-3.37	0.0008	580	0.3175	580	0.2765	0.66	0.5082
1998	1443	-0.0088	730	0.2418	-3.3	0.001	730	0.2433	730	0.2418	0.02	0.9874
1999	1155	-0.0134	281	0.6335	-4.23	<.0001	281	0.4794	281	0.6335	-0.8	0.4214
2000	1114	-0.0129	219	0.3443	-2.2	0.0286	219	0.3562	219	0.3443	0.07	0.9425

Panel C: BO95 – excess value measure using sales multiple

	Original sample						Balanced sample					
year	single segment		multi-segment		t	pv	single segment		multi-segment		t	pv
	n	excvalS	n	excvalS			n	excvalS	n	excvalS		
1985	660	-0.0069	428	-0.2049	6.89	<.0001	420	-0.0949	420	-0.2141	3.83	0.0001
1986	717	0.0021	434	-0.1658	6.12	<.0001	423	-0.0810	423	-0.1706	2.95	0.0033
1987	828	0.0001	438	-0.1028	3.77	0.0002	422	-0.0736	422	-0.1072	1.07	0.2860
1988	874	0.0113	409	-0.0607	2.69	0.0073	398	-0.0493	398	-0.0643	0.49	0.6251
1989	876	0.0384	383	-0.0289	2.42	0.0157	377	-0.0007	377	-0.0307	0.93	0.3512
1990	907	0.0380	366	-0.0588	3.44	0.0006	362	-0.0271	362	-0.0542	0.82	0.4105
1991	933	0.0198	383	-0.0426	2.13	0.0333	379	-0.0726	379	-0.0424	-0.91	0.3621
1992	1022	-0.0006	388	-0.0914	3.34	0.0009	385	-0.0830	385	-0.0897	0.2	0.8419
1993	1158	-0.0012	411	-0.1125	4.36	<.0001	402	-0.0661	402	-0.1183	1.63	0.1026
1994	1349	0.0137	436	-0.0886	4.16	<.0001	429	-0.0914	429	-0.0864	-0.16	0.8727
1995	1470	-0.0056	446	-0.0952	3.59	0.0003	432	-0.0958	432	-0.0992	0.11	0.9136
1996	1596	0.0143	450	-0.0688	3.34	0.0009	441	-0.0866	441	-0.0646	-0.72	0.4726
1997	1726	-0.0028	462	-0.0732	2.88	0.0041	448	-0.0757	448	-0.0711	-0.15	0.8835
1998	1115	-0.0174	582	-0.1165	3.7	0.0002	565	-0.0937	565	-0.1174	0.78	0.4384
1999	849	-0.0418	266	-0.2052	4.02	<.0001	259	-0.0890	259	-0.1925	2.07	0.0394
2000	827	-0.0297	220	-0.1183	1.75	0.0818	213	-0.0667	213	-0.1132	0.75	0.4523

Table 3. Descriptive Statistics of the Unbalanced Sample at the Leverage Level

This table reports the summary statistics of the unbalanced sample at the leverage level for years 1985, 1993, and 2000. The sample is separated equally into deciles ascending in leverage for each year. The mean values of Tobin's *q*, the diversification discount calculated from the industry-adjusted *q*, the excess value using the sales multiple, the number of segments, firm leverage, and firm risk are reported for both focused firms and diversified firms.

Panel A: LS94 - Tobin's q

year	levid	single segment					multi-segment				
		n	q	noseg	lev	sigVimpBS	n	q	noseg	lev	sigVimpBS
1985	Total	767	1.4432	1	0.4081	0.2264	790	1.1253	3.2734	0.5108	0.1473
	1	134	2.8285	1	0.0885	0.3549	21	2.5584	2.8571	0.1007	0.2716
	2	97	1.7667	1	0.1893	0.3237	59	1.8461	3.3220	0.1881	0.2212
	3	86	1.3553	1	0.2743	0.2658	70	1.3948	3.0143	0.2732	0.2029
	4	69	1.3503	1	0.3505	0.2462	86	1.2054	3.1395	0.3521	0.1872
	5	60	1.1563	1	0.4320	0.2192	96	1.1129	3.1875	0.4313	0.1684
	6	67	1.0486	1	0.5040	0.1697	89	0.9971	3.1236	0.5047	0.1444
	7	67	0.9956	1	0.5699	0.1540	88	0.9321	3.2614	0.5716	0.1341
	8	60	0.9314	1	0.6283	0.1229	96	0.8858	3.3958	0.6264	0.1096
	9	61	0.9257	1	0.7032	0.1119	95	0.8940	3.4211	0.7045	0.1067
	10	66	0.4268	1	0.8566	0.0882	90	0.8610	3.6333	0.8583	0.0652
1993	Total	1400	1.7253	1	0.3750	0.3201	740	1.3267	3.0676	0.4895	0.1894
	1	200	3.5404	1	0.0544	0.5207	14	3.7777	2.4286	0.0726	0.3641
	2	161	2.3340	1	0.1356	0.4187	53	2.1292	2.6604	0.1416	0.3996
	3	161	1.8404	1	0.2095	0.3766	53	1.7532	2.8113	0.2100	0.2579
	4	148	1.5651	1	0.2834	0.3627	66	1.6703	2.6515	0.2794	0.2854
	5	126	1.3864	1	0.3530	0.3200	88	1.4067	2.9659	0.3562	0.2199
	6	126	1.1958	1	0.4309	0.2733	88	1.2409	3.1364	0.4310	0.1930
	7	128	0.9879	1	0.5093	0.2335	86	1.0997	3.1395	0.5075	0.1465
	8	107	1.0100	1	0.5873	0.2124	107	0.9954	3.1215	0.5876	0.1363
	9	128	1.0162	1	0.6972	0.1835	86	1.0460	3.0000	0.6966	0.1296
	10	115	0.9879	1	0.8740	0.0992	99	0.8974	3.7576	0.8933	0.0679
2000	Total	1133	2.1204	1	0.4228	0.4901	1336	1.5275	3.7350	0.5097	0.3444
	1	168	6.1644	1	0.0380	0.9703	78	5.0624	3.2179	0.0432	0.8691
	2	143	2.8011	1	0.1116	0.7628	104	2.7356	3.2404	0.1123	0.7106
	3	120	1.9860	1	0.2007	0.6372	127	2.0296	3.5984	0.2013	0.5426
	4	118	1.4192	1	0.2956	0.5116	129	1.5177	3.8217	0.3044	0.4461
	5	90	1.1989	1	0.4111	0.4125	157	1.2553	3.8408	0.4112	0.3563
	6	99	1.0948	1	0.5092	0.3650	148	1.1107	3.7230	0.5096	0.3021
	7	89	0.9363	1	0.6101	0.2993	158	0.9858	3.8987	0.6113	0.2295
	8	98	0.9056	1	0.7189	0.2445	149	0.9294	3.6913	0.7182	0.1927
	9	112	0.7859	1	0.8435	0.1508	135	0.8438	3.8519	0.8390	0.1413
	10	96	0.8760	1	0.9481	0.0588	151	0.9152	4.0530	0.9554	0.0481

Panel B: LS94 – diversification discount using industry-adjusted q

year	levid	single segment					multi-segment				
		n	divdisc	noseg	lev	sigVimpBS	n	divdisc	noseg	lev	sigVimpBS
1985	Total	767	0.0000	1	0.4081	0.2264	464	0.2450	2.9612	0.4976	0.1489
	1	134	-0.7067	1	0.0885	0.3549	16	-1.0058	2.8125	0.0973	0.2748

	2	97	0.0032	1	0.1893	0.3237	36	-0.0702	3.1944	0.1887	0.2243
	3	86	0.1173	1	0.2743	0.2658	47	0.3176	2.9362	0.2727	0.2040
	4	69	0.1313	1	0.3505	0.2462	47	0.4535	2.8085	0.3552	0.1839
	5	60	0.2360	1	0.4320	0.2192	58	0.3475	3.0000	0.4298	0.1639
	6	67	0.1859	1	0.5040	0.1697	59	0.3440	2.7119	0.5028	0.1491
	7	67	0.1701	1	0.5699	0.1540	47	0.3208	2.8936	0.5700	0.1275
	8	60	0.1604	1	0.6283	0.1229	54	0.2341	3.0556	0.6305	0.0963
	9	61	0.1623	1	0.7032	0.1119	51	0.3103	3.1961	0.7002	0.1017
	10	66	0.2681	1	0.8566	0.0882	49	0.2464	2.9796	0.8547	0.0751
1993	Total	1399	0.0000	1	0.3745	0.3203	526	0.2335	2.8688	0.4687	0.1984
	1	200	-1.2509	1	0.0544	0.5207	11	-1.4483	2.4545	0.0772	0.3695
	2	161	-0.3139	1	0.1356	0.4187	41	-0.2934	2.5610	0.1411	0.4192
	3	161	-0.0150	1	0.2095	0.3766	38	0.0444	2.6579	0.2109	0.2618
	4	148	0.1970	1	0.2834	0.3627	51	0.0741	2.4510	0.2783	0.2818
	5	126	0.2857	1	0.3530	0.3200	63	0.2622	2.8254	0.3552	0.2255
	6	126	0.3689	1	0.4309	0.2733	68	0.3514	3.1029	0.4301	0.1975
	7	128	0.4286	1	0.5093	0.2335	61	0.3992	3.0656	0.5076	0.1431
	8	107	0.4671	1	0.5873	0.2124	81	0.4009	2.9259	0.5910	0.1283
	9	128	0.3313	1	0.6972	0.1835	61	0.2980	2.6230	0.6986	0.1302
	10	114	0.3881	1	0.8731	0.0999	51	0.5868	3.4902	0.8747	0.0803
2000	Total	1114	-0.0129	1	0.4211	0.4894	219	0.3443	2.8174	0.5193	0.3524
	1	167	-2.7161	1	0.0379	0.9672	12	-2.3306	2.7500	0.0341	0.8986
	2	141	0.0909	1	0.1114	0.7633	19	0.1156	2.5789	0.1155	0.7449
	3	118	0.4317	1	0.2008	0.6405	19	0.9113	2.4211	0.1999	0.5264
	4	115	0.5272	1	0.2956	0.4994	19	0.4595	2.9474	0.3008	0.5246
	5	89	0.5314	1	0.4116	0.4080	26	0.3426	3.1154	0.4196	0.3362
	6	98	0.6441	1	0.5091	0.3625	25	0.6556	2.6800	0.5036	0.3256
	7	88	0.5661	1	0.6105	0.3007	24	0.5221	3.0000	0.6160	0.2244
	8	97	0.5727	1	0.7195	0.2441	28	0.8500	2.7143	0.7214	0.2191
	9	107	0.6167	1	0.8432	0.1446	17	0.9459	2.8235	0.8389	0.1551
	10	94	0.3516	1	0.9481	0.0589	30	-0.0863	2.9667	0.9620	0.0415

Panel C: BO95 – excess value measure using sales multiple

year	levid	single segment					multi-segment				
		n	excvalS	noseg	lev	sigVimpBS	n	excvalS	noseg	lev	sigVimpBS
1985	Total	660	-0.0069	1	0.3995	0.2229	428	-0.2049	3.0000	0.4698	0.1551
	1	99	0.3573	1	0.0856	0.3431	9	0.4703	3.0000	0.0899	0.2646
	2	76	0.1156	1	0.1687	0.3396	33	-0.0222	3.1818	0.1749	0.2311
	3	71	-0.0310	1	0.2421	0.2874	38	-0.0220	3.0789	0.2483	0.2005
	4	61	-0.0372	1	0.3111	0.2435	48	-0.1612	2.8125	0.3188	0.2108
	5	56	-0.0880	1	0.3868	0.2200	53	-0.2888	3.0377	0.3903	0.1628
	6	54	-0.2469	1	0.4650	0.1893	54	-0.3995	3.0000	0.4594	0.1596
	7	60	-0.2213	1	0.5309	0.1539	49	-0.3264	2.9796	0.5262	0.1413
	8	62	-0.1143	1	0.5976	0.1272	47	-0.2866	3.2128	0.5958	0.1181
	9	56	-0.0346	1	0.6658	0.1042	53	-0.2106	2.8302	0.6632	0.0943
	10	65	-0.0566	1	0.8189	0.1014	44	-0.1163	2.9545	0.8031	0.0891
1993	Total	1158	-0.0012	1	0.3616	0.3018	411	-0.1125	2.7397	0.4405	0.1979
	1	146	0.4947	1	0.0631	0.4667	10	0.4685	2.3000	0.0766	0.3913
	2	129	0.2154	1	0.1349	0.3803	28	0.2692	2.5714	0.1386	0.3974
	3	127	0.0638	1	0.2013	0.3658	30	0.0549	2.5667	0.1952	0.2775
	4	113	-0.0219	1	0.2609	0.3445	44	-0.1042	2.6591	0.2662	0.2645
	5	114	-0.0789	1	0.3239	0.3235	43	-0.0426	2.7442	0.3242	0.2183
	6	112	-0.0936	1	0.3947	0.2805	45	-0.1626	2.8889	0.3930	0.1996
	7	99	-0.1904	1	0.4695	0.2292	58	-0.2334	3.0000	0.4734	0.1601

	8	107	-0.1913	1	0.5475	0.1897	50	-0.1386	2.6600	0.5477	0.1480
	9	102	-0.2254	1	0.6365	0.1757	55	-0.3335	2.8727	0.6319	0.1114
	10	109	-0.2316	1	0.7886	0.1618	48	-0.1572	2.5833	0.7837	0.1074
2000	Total	827	-0.0297	1	0.3903	0.4837	220	-0.1183	2.7455	0.3986	0.4886
	1	85	0.5235	1	0.0330	1.0037	19	0.7071	2.6842	0.0340	0.9704
	2	84	0.1796	1	0.0799	0.8114	21	0.2862	2.4286	0.0768	0.8110
	3	84	0.0508	1	0.1354	0.7562	21	-0.2433	2.6667	0.1356	0.7263
	4	86	-0.0433	1	0.2054	0.5230	18	-0.1847	2.4444	0.2115	0.5804
	5	81	-0.1314	1	0.2895	0.4947	24	-0.2243	2.7083	0.2995	0.5581
	6	80	-0.0574	1	0.3931	0.3525	25	-0.5100	2.9600	0.3974	0.4655
	7	77	-0.2983	1	0.5012	0.3333	27	-0.1361	3.1481	0.4966	0.3385
	8	80	-0.2028	1	0.6152	0.2490	25	-0.2727	2.7600	0.6177	0.2463
	9	84	-0.1732	1	0.7551	0.1902	21	-0.2751	2.8095	0.7408	0.1820
	10	86	-0.1823	1	0.9083	0.0957	19	-0.1381	2.6316	0.9078	0.1142

Table 4. *T*-tests for the Mean Value Measures in the Unbalanced and Balanced Samples at the Leverage Level

This table reports the *t*-statistics and *p*-values for testing the equality of three mean value measures (i.e. *q*, the industry-adjusted *q*, and the excess value) between focused firms and diversified firms in each year-leverage group for years 1985, 1993, and 2000 in the unbalanced and leverage-balanced samples. The sample is separated equally into deciles ascending in leverage for each year. The balanced sample is formed by randomly picking firms from the larger subgroup (could be either focused firms or diversified firms) in each year-leverage group so that the sample sizes of focused firms and diversified firms in each year-leverage group are equal.

Panel A: LS94 - Tobin's q

		Original sample						Balanced sample					
year	levid	single segment		multi-segment		t	pv	single segment		multi-segment		t	pv
		n	q	n	q			n	q	n	q		
1985	Total	767	1.4432	790	1.1253	5.54	<0.0001	600	1.1396	600	1.1744	-0.57	0.5689
	1	134	2.8285	21	2.5584	0.67	0.5076	21	2.3673	21	2.5584	-0.45	0.6592
	2	97	1.7667	59	1.8461	-0.75	0.4528	59	1.7164	59	1.8461	-1.15	0.2528
	3	86	1.3553	70	1.3948	-0.61	0.5396	70	1.3246	70	1.3948	-1.08	0.2842
	4	69	1.3503	86	1.2054	2.58	0.0112	69	1.3503	69	1.2067	2.45	0.0159
	5	60	1.1563	96	1.1129	0.93	0.3556	60	1.1563	60	1.1212	0.69	0.4915
	6	67	1.0486	89	0.9971	1.01	0.3139	67	1.0486	67	1.0225	0.43	0.6684
	7	67	0.9956	88	0.9321	1.67	0.0988	67	0.9956	67	0.9240	1.81	0.0731
	8	60	0.9314	96	0.8858	1.74	0.0835	60	0.9314	60	0.8675	2.26	0.0258
	9	61	0.9257	95	0.8940	0.82	0.4120	61	0.9257	61	0.9145	0.23	0.8179
	10	66	0.4268	90	0.8610	-0.92	0.3602	66	0.4268	66	0.8423	-0.88	0.3813
1993	Total	1400	1.7253	740	1.3267	8.57	<0.0001	740	1.3000	740	1.3267	-0.64	0.5199
	1	200	3.5404	14	3.7777	-0.43	0.6728	14	3.2177	14	3.7777	-0.82	0.422
	2	161	2.3340	53	2.1292	1.48	0.1422	53	2.2990	53	2.1292	1.06	0.2897
	3	161	1.8404	53	1.7532	0.86	0.3897	53	1.7601	53	1.7532	0.06	0.9497
	4	148	1.5651	66	1.6703	-1.5	0.1368	66	1.4973	66	1.6703	-2.14	0.0343
	5	126	1.3864	88	1.4067	-0.27	0.7868	88	1.4063	88	1.4067	0	0.9964
	6	126	1.1958	88	1.2409	-0.87	0.3873	88	1.2191	88	1.2409	-0.39	0.6939
	7	128	0.9879	86	1.0997	-0.97	0.3317	86	0.9410	86	1.0997	-0.95	0.3428
	8	107	1.0100	107	0.9954	0.51	0.6107	107	1.0100	107	0.9954	0.51	0.6107
	9	128	1.0162	86	1.0460	-0.36	0.7210	86	1.0175	86	1.0460	-0.34	0.7375
	10	115	0.9879	99	0.8974	1.33	0.1838	99	0.9644	99	0.8974	0.96	0.3374
2000	Total	1133	2.1204	1336	1.5275	5.76	<.0001	1004	1.7562	1004	1.6821	0.82	0.4104
	1	168	6.1644	78	5.0624	1.77	0.078	78	6.2902	78	5.0624	1.67	0.0981
	2	143	2.8011	104	2.7356	0.32	0.747	104	2.9453	104	2.7356	0.9	0.3676
	3	120	1.9860	127	2.0296	-0.35	0.7256	120	1.9860	120	2.0007	-0.12	0.9063
	4	118	1.4192	129	1.5177	-1.49	0.1387	118	1.4192	118	1.5212	-1.5	0.134
	5	90	1.1989	157	1.2553	-0.99	0.326	90	1.1989	90	1.2545	-0.84	0.3996
	6	99	1.0948	148	1.1107	-0.28	0.7789	99	1.0948	99	1.1124	-0.29	0.7733
	7	89	0.9363	158	0.9858	-0.6	0.5467	89	0.9363	89	0.9973	-0.73	0.4669
	8	98	0.9056	149	0.9294	-0.56	0.5731	98	0.9056	98	0.9153	-0.25	0.8046
	9	112	0.7859	135	0.8438	-1.28	0.2039	112	0.7859	112	0.8414	-1.21	0.2298

	10	96	0.8760	151	0.9152	-0.27	0.7848	96	0.8760	96	0.9803	-0.48	0.6314

Panel B: LS94 – diversification discount using industry-adjusted q

		Original sample						Balanced sample					
year	levid	single segment		multi-segment		t	pv	single segment		multi-segment		t	pv
		n	divdisc	n	divdisc			n	divdisc	n	divdisc		
1985	Total	767	0.0000	464	0.2450	-5.86	<.0001	464	0.1357	464	0.2450	-2.7	0.0071
	1	134	-0.7067	16	-1.0058	0.68	0.5035	16	-0.6406	16	-1.0058	0.72	0.4762
	2	97	0.0032	36	-0.0702	0.3	0.762	36	-0.0467	36	-0.0702	0.09	0.9271
	3	86	0.1173	47	0.3176	-1.86	0.0674	47	0.1058	47	0.3176	-1.71	0.0913
	4	69	0.1313	47	0.4535	-3.9	0.0002	47	0.0972	47	0.4535	-3.99	0.0001
	5	60	0.2360	58	0.3475	-1.17	0.2437	58	0.2318	58	0.3475	-1.2	0.2336
	6	67	0.1859	59	0.3440	-1.88	0.0628	59	0.1821	59	0.3440	-1.94	0.0555
	7	67	0.1701	47	0.3208	-1.8	0.0766	47	0.2167	47	0.3208	-1.15	0.2523
	8	60	0.1604	54	0.2341	-1.03	0.3056	54	0.1844	54	0.2341	-0.66	0.5095
	9	61	0.1623	51	0.3103	-2.28	0.0251	51	0.1674	51	0.3103	-2.18	0.0322
	10	66	0.2681	49	0.2464	0.3	0.7624	49	0.2551	49	0.2464	0.12	0.9075
1993	Total	1399	0.0000	526	0.2335	-4.93	<.0001	526	0.2125	526	0.2335	-0.41	0.6821
	1	200	-1.2509	11	-1.4483	0.32	0.7521	11	-2.2953	11	-1.4483	-0.81	0.4281
	2	161	-0.3139	41	-0.2934	-0.15	0.8788	41	-0.4547	41	-0.2934	-0.98	0.3317
	3	161	-0.0150	38	0.0444	-0.42	0.6775	38	-0.0016	38	0.0444	-0.25	0.8038
	4	148	0.1970	51	0.0741	1.08	0.2848	51	0.1338	51	0.0741	0.43	0.6662
	5	126	0.2857	63	0.2622	0.23	0.8149	63	0.3948	63	0.2622	1.18	0.2413
	6	126	0.3689	68	0.3514	0.18	0.8584	68	0.3047	68	0.3514	-0.43	0.6671
	7	128	0.4286	61	0.3992	0.23	0.8207	61	0.3122	61	0.3992	-0.93	0.3561
	8	107	0.4671	81	0.4009	0.7	0.4862	81	0.4917	81	0.4009	0.86	0.3925
	9	128	0.3313	61	0.2980	0.28	0.7794	61	0.3702	61	0.2980	0.57	0.5697
	10	114	0.3881	51	0.5868	-1.87	0.0649	51	0.4288	51	0.5868	-1.28	0.2033
2000	Total	1114	-0.0129	219	0.3443	-2.2	0.0286	219	0.3562	219	0.3443	0.07	0.9425
	1	167	-2.7161	12	-2.3306	-0.35	0.7282	12	-1.8758	12	-2.3306	0.37	0.7141
	2	141	0.0909	19	0.1156	-0.06	0.9562	19	0.1632	19	0.1156	0.08	0.9362
	3	118	0.4317	19	0.9113	-1.18	0.2517	19	0.7342	19	0.9113	-0.34	0.7372
	4	115	0.5272	19	0.4595	0.24	0.8093	19	0.2800	19	0.4595	-0.58	0.5653
	5	89	0.5314	26	0.3426	0.91	0.366	26	0.2215	26	0.3426	-0.48	0.6314
	6	98	0.6441	25	0.6556	-0.04	0.9662	25	0.7668	25	0.6556	0.31	0.7617
	7	88	0.5661	24	0.5221	0.26	0.7962	24	0.4916	24	0.5221	-0.13	0.897
	8	97	0.5727	28	0.8500	-1.37	0.1768	28	0.7461	28	0.8500	-0.38	0.7028
	9	107	0.6167	17	0.9459	-1.36	0.189	17	0.8093	17	0.9459	-0.33	0.7413
	10	94	0.3516	30	-0.0863	0.62	0.537	30	0.2260	30	-0.0863	0.45	0.6595

Panel C: BO95 – excess value measure using sales multiple

		Original sample						Balanced sample					
year	levid	single segment		multi-segment		t	pv	single segment		multi-segment		t	pv
		n	excvalS	n	excvalS			n	excvalS	n	excvalS		
1985	Total	660	-0.0069	428	-0.2049	6.89	<.0001	420	-0.0949	420	-0.2141	3.83	0.0001
	1	99	0.3573	9	0.4703	-0.69	0.507	9	0.1142	9	0.4703	-1.37	0.1904
	2	76	0.1156	33	-0.0222	1.48	0.1436	33	0.0854	33	-0.0222	0.95	0.3464
	3	71	-0.0310	38	-0.0220	-0.1	0.9234	37	-0.0796	37	-0.0434	-0.38	0.7079
	4	61	-0.0372	48	-0.1612	1.51	0.1339	47	-0.0384	47	-0.1775	1.53	0.1307
	5	56	-0.0880	53	-0.2888	2.23	0.0276	52	-0.0950	52	-0.2931	2.12	0.0367
	6	54	-0.2469	54	-0.3995	1.72	0.0877	53	-0.2351	53	-0.4018	1.87	0.065
	7	60	-0.2213	49	-0.3264	1.28	0.2021	47	-0.2271	47	-0.3494	1.4	0.1645

	8	62	-0.1143	47	-0.2866	2.01	0.0466	45	-0.1741	45	-0.3167	1.56	0.123
	9	56	-0.0346	53	-0.2106	2.37	0.0197	53	-0.0281	53	-0.2106	2.42	0.0173
	10	65	-0.0566	44	-0.1163	0.74	0.459	44	-0.0359	44	-0.1163	0.96	0.3402
1993	Total	1158	-0.0012	411	-0.1125	4.36	<.0001	402	-0.0661	402	-0.1183	1.63	0.1026
	1	146	0.4947	10	0.4685	0.15	0.8854	10	0.5571	10	0.4685	0.43	0.673
	2	129	0.2154	28	0.2692	-0.6	0.5549	27	0.1778	27	0.2338	-0.41	0.6842
	3	127	0.0638	30	0.0549	0.1	0.9202	30	0.1428	30	0.0549	0.84	0.4064
	4	113	-0.0219	44	-0.1042	1.01	0.3167	44	-0.0057	44	-0.1042	0.93	0.3541
	5	114	-0.0789	43	-0.0426	-0.49	0.6289	41	-0.0863	41	-0.0637	-0.24	0.8098
	6	112	-0.0936	45	-0.1626	1.01	0.3148	44	-0.0469	44	-0.1581	1.21	0.2311
	7	99	-0.1904	58	-0.2334	0.61	0.54	57	-0.1679	57	-0.2463	1	0.3184
	8	107	-0.1913	50	-0.1386	-0.84	0.4018	48	-0.0971	48	-0.1345	0.45	0.653
	9	102	-0.2254	55	-0.3335	1.78	0.0777	54	-0.1966	54	-0.3332	1.88	0.063
	10	109	-0.2316	48	-0.1572	-1.13	0.2592	47	-0.2243	47	-0.1609	-0.76	0.4476
2000	Total	827	-0.0297	220	-0.1183	1.75	0.0818	213	-0.0667	213	-0.1132	0.75	0.4523
	1	85	0.5235	19	0.7071	-1.38	0.1773	19	0.5963	19	0.7071	-0.75	0.4555
	2	84	0.1796	21	0.2862	-0.65	0.5196	21	0.0244	21	0.2862	-1.3	0.2022
	3	84	0.0508	21	-0.2433	1.84	0.0753	20	-0.0446	20	-0.2663	0.97	0.3379
	4	86	-0.0433	18	-0.1847	0.88	0.3878	17	-0.0876	17	-0.1505	0.27	0.7919
	5	81	-0.1314	24	-0.2243	0.66	0.5156	23	-0.0216	23	-0.2333	1.22	0.2303
	6	80	-0.0574	25	-0.5100	3.39	0.0017	23	-0.0780	23	-0.4562	2.29	0.027
	7	77	-0.2983	27	-0.1361	-1.23	0.2249	27	-0.3506	27	-0.1361	-1.47	0.1482
	8	80	-0.2028	25	-0.2727	0.49	0.6257	24	-0.2636	24	-0.3303	0.42	0.6796
	9	84	-0.1732	21	-0.2751	0.76	0.4559	20	-0.1119	20	-0.2796	1.14	0.2618
	10	86	-0.1823	19	-0.1381	-0.27	0.7881	19	-0.1761	19	-0.1381	-0.19	0.8492

Table 5. Descriptive Statistics of the Balanced Sample at the Leverage Level

This table reports the summary statistics of the balanced sample at the leverage level for years 1985, 1993, and 2000. The balanced sample is formed by randomly picking firms from the larger subgroup (could be either focused firms or diversified firms) in each year-leverage group so that the sample sizes of focused firms and diversified firms in each year-leverage group are equal. The mean values of Tobin's *q*, the diversification discount calculated from the industry-adjusted *q*, the excess value using the sales multiple, the number of segments, firm leverage, and firm risk are reported for both focused firms and diversified firms.

Panel A: LS94 - Tobin's q

year	levid	single segment					multi-segment				
		n	q	noseg	lev	sigVimpBS	n	q	noseg	lev	sigVimpBS
1985	Total	600	1.1396	1	0.4865	0.1944	600	1.1744	3.2433	0.4856	0.1533
	1	21	2.3673	1	0.1008	0.3392	21	2.5584	2.8571	0.1007	0.2716
	2	59	1.7164	1	0.1905	0.3242	59	1.8461	3.3220	0.1881	0.2212
	3	70	1.3246	1	0.2763	0.2648	70	1.3948	3.0143	0.2732	0.2029
	4	69	1.3503	1	0.3505	0.2462	69	1.2067	3.0870	0.3524	0.1907
	5	60	1.1563	1	0.4320	0.2192	60	1.1212	3.2000	0.4304	0.1671
	6	67	1.0486	1	0.5040	0.1697	67	1.0225	3.1343	0.5038	0.1451
	7	67	0.9956	1	0.5699	0.1540	67	0.9240	3.2239	0.5712	0.1317
	8	60	0.9314	1	0.6283	0.1229	60	0.8675	3.4500	0.6260	0.1083
	9	61	0.9257	1	0.7032	0.1119	61	0.9145	3.3279	0.7031	0.1093
	10	66	0.4268	1	0.8566	0.0882	66	0.8423	3.6061	0.8545	0.0628
1993	Total	740	1.3000	1	0.4849	0.2609	740	1.3267	3.0676	0.4895	0.1894
	1	14	3.2177	1	0.0494	0.5511	14	3.7777	2.4286	0.0726	0.3641
	2	53	2.2990	1	0.1335	0.3973	53	2.1292	2.6604	0.1416	0.3996
	3	53	1.7601	1	0.2065	0.3604	53	1.7532	2.8113	0.2100	0.2579
	4	66	1.4973	1	0.2818	0.3556	66	1.6703	2.6515	0.2794	0.2854
	5	88	1.4063	1	0.3523	0.3187	88	1.4067	2.9659	0.3562	0.2199
	6	88	1.2191	1	0.4308	0.2673	88	1.2409	3.1364	0.4310	0.1930
	7	86	0.9410	1	0.5075	0.2435	86	1.0997	3.1395	0.5075	0.1465
	8	107	1.0100	1	0.5873	0.2124	107	0.9954	3.1215	0.5876	0.1363
	9	86	1.0175	1	0.6945	0.1903	86	1.0460	3.0000	0.6966	0.1296
	10	99	0.9644	1	0.8730	0.1021	99	0.8974	3.7576	0.8933	0.0679
2000	Total	1004	1.7562	1	0.4691	0.4400	1004	1.6821	3.6952	0.4711	0.3799
	1	78	6.2902	1	0.0369	1.0038	78	5.0624	3.2179	0.0432	0.8691
	2	104	2.9453	1	0.1108	0.7720	104	2.7356	3.2404	0.1123	0.7106
	3	120	1.9860	1	0.2007	0.6372	120	2.0007	3.5750	0.2014	0.5461
	4	118	1.4192	1	0.2956	0.5116	118	1.5212	3.8136	0.3037	0.4439
	5	90	1.1989	1	0.4111	0.4125	90	1.2545	3.8778	0.4120	0.3483
	6	99	1.0948	1	0.5092	0.3650	99	1.1124	3.6364	0.5088	0.3034
	7	89	0.9363	1	0.6101	0.2993	89	0.9973	3.9663	0.6129	0.2302
	8	98	0.9056	1	0.7189	0.2445	98	0.9153	3.6224	0.7170	0.1948
	9	112	0.7859	1	0.8435	0.1508	112	0.8414	3.8393	0.8391	0.1459
	10	96	0.8760	1	0.9481	0.0588	96	0.9803	4.1250	0.9547	0.0472

Panel B: LS94 – diversification discount using industry-adjusted q

year	levid	single segment					multi-segment				
		n	divdisc	noseg	lev	sigVimpBS	n	divdisc	noseg	lev	sigVimpBS
1985	Total	464	0.1357	1	0.4984	0.1920	464	0.2450	2.9612	0.4976	0.1489
	1	16	-0.6406	1	0.0870	0.3469	16	-1.0058	2.8125	0.0973	0.2748
	2	36	-0.0467	1	0.1906	0.3566	36	-0.0702	3.1944	0.1887	0.2243
	3	47	0.1058	1	0.2752	0.2681	47	0.3176	2.9362	0.2727	0.2040
	4	47	0.0972	1	0.3528	0.2375	47	0.4535	2.8085	0.3552	0.1839
	5	58	0.2318	1	0.4318	0.2195	58	0.3475	3.0000	0.4298	0.1639
	6	59	0.1821	1	0.5036	0.1721	59	0.3440	2.7119	0.5028	0.1491
	7	47	0.2167	1	0.5733	0.1552	47	0.3208	2.8936	0.5700	0.1275
	8	54	0.1844	1	0.6293	0.1236	54	0.2341	3.0556	0.6305	0.0963
	9	51	0.1674	1	0.7030	0.1138	51	0.3103	3.1961	0.7002	0.1017
	10	49	0.2551	1	0.8562	0.0871	49	0.2464	2.9796	0.8547	0.0751
1993	Total	526	0.2125	1	0.4698	0.2543	526	0.2335	2.8688	0.4687	0.1984
	1	11	-2.2953	1	0.0421	0.5292	11	-1.4483	2.4545	0.0772	0.3695
	2	41	-0.4547	1	0.1410	0.3807	41	-0.2934	2.5610	0.1411	0.4192
	3	38	-0.0016	1	0.2138	0.3553	38	0.0444	2.6579	0.2109	0.2618
	4	51	0.1338	1	0.2858	0.3329	51	0.0741	2.4510	0.2783	0.2818
	5	63	0.3948	1	0.3553	0.3168	63	0.2622	2.8254	0.3552	0.2255
	6	68	0.3047	1	0.4330	0.2645	68	0.3514	3.1029	0.4301	0.1975
	7	61	0.3122	1	0.5120	0.2216	61	0.3992	3.0656	0.5076	0.1431
	8	81	0.4917	1	0.5880	0.1917	81	0.4009	2.9259	0.5910	0.1283
	9	61	0.3702	1	0.6995	0.1734	61	0.2980	2.6230	0.6986	0.1302
	10	51	0.4288	1	0.8787	0.0840	51	0.5868	3.4902	0.8747	0.0803
2000	Total	219	0.3562	1	0.5147	0.3932	219	0.3443	2.8174	0.5193	0.3524
	1	12	-1.8758	1	0.0324	0.9559	12	-2.3306	2.7500	0.0341	0.8986
	2	19	0.1632	1	0.1074	0.6962	19	0.1156	2.5789	0.1155	0.7449
	3	19	0.7342	1	0.2170	0.6306	19	0.9113	2.4211	0.1999	0.5264
	4	19	0.2800	1	0.2843	0.4986	19	0.4595	2.9474	0.3008	0.5246
	5	26	0.2215	1	0.4050	0.4292	26	0.3426	3.1154	0.4196	0.3362
	6	25	0.7668	1	0.5085	0.3791	25	0.6556	2.6800	0.5036	0.3256
	7	24	0.4916	1	0.6062	0.3300	24	0.5221	3.0000	0.6160	0.2244
	8	28	0.7461	1	0.7117	0.2619	28	0.8500	2.7143	0.7214	0.2191
	9	17	0.8093	1	0.8548	0.1261	17	0.9459	2.8235	0.8389	0.1551
	10	30	0.2260	1	0.9505	0.0640	30	-0.0863	2.9667	0.9620	0.0415

Panel C: BO95 – excess value measure using sales multiple

year	levid	single segment					multi-segment				
		n	excvalS	noseg	lev	sigVimpBS	n	excvalS	noseg	lev	sigVimpBS
1985	Total	420	-0.0949	1	0.4717	0.1923	420	-0.2141	3.0048	0.4699	0.1549
	1	9	0.1142	1	0.0883	0.3599	9	0.4703	3.0000	0.0899	0.2646
	2	33	0.0854	1	0.1654	0.3451	33	-0.0222	3.1818	0.1749	0.2311
	3	37	-0.0796	1	0.2426	0.2651	37	-0.0434	3.0811	0.2481	0.2013
	4	47	-0.0384	1	0.3108	0.2535	47	-0.1775	2.8298	0.3190	0.2105
	5	52	-0.0950	1	0.3866	0.2221	52	-0.2931	3.0385	0.3900	0.1623
	6	53	-0.2351	1	0.4647	0.1905	53	-0.4018	3.0000	0.4598	0.1597
	7	47	-0.2271	1	0.5319	0.1560	47	-0.3494	3.0000	0.5250	0.1408
	8	45	-0.1741	1	0.5983	0.1266	45	-0.3167	3.2222	0.5957	0.1167
	9	53	-0.0281	1	0.6657	0.1026	53	-0.2106	2.8302	0.6632	0.0943
	10	44	-0.0359	1	0.8263	0.0974	44	-0.1163	2.9545	0.8031	0.0891
1993	Total	402	-0.0661	1	0.4382	0.2625	402	-0.1183	2.7363	0.4401	0.1988

	1	10	0.5571	1	0.0669	0.4254	10	0.4685	2.3000	0.0766	0.3913
	2	27	0.1778	1	0.1352	0.3765	27	0.2338	2.5185	0.1397	0.4074
	3	30	0.1428	1	0.1979	0.3569	30	0.0549	2.5667	0.1952	0.2775
	4	44	-0.0057	1	0.2597	0.3794	44	-0.1042	2.6591	0.2662	0.2645
	5	41	-0.0863	1	0.3232	0.3103	41	-0.0637	2.7805	0.3236	0.2198
	6	44	-0.0469	1	0.3890	0.2702	44	-0.1581	2.9091	0.3928	0.2004
	7	57	-0.1679	1	0.4683	0.2287	57	-0.2463	3.0000	0.4737	0.1615
	8	48	-0.0971	1	0.5477	0.1810	48	-0.1345	2.6042	0.5475	0.1480
	9	54	-0.1966	1	0.6354	0.1753	54	-0.3332	2.8889	0.6321	0.1119
	10	47	-0.2243	1	0.7830	0.1683	47	-0.1609	2.5745	0.7840	0.1034
2000	Total	213	-0.0667	1	0.3943	0.4796	213	-0.1132	2.7465	0.3986	0.4859
	1	19	0.5963	1	0.0315	1.0441	19	0.7071	2.6842	0.0340	0.9704
	2	21	0.0244	1	0.0769	0.7840	21	0.2862	2.4286	0.0768	0.8110
	3	20	-0.0446	1	0.1317	0.7787	20	-0.2663	2.7000	0.1357	0.7065
	4	17	-0.0876	1	0.2042	0.4641	17	-0.1505	2.4706	0.2113	0.5734
	5	23	-0.0216	1	0.2864	0.5681	23	-0.2333	2.6957	0.3012	0.5503
	6	23	-0.0780	1	0.3884	0.3051	23	-0.4562	2.9565	0.3983	0.4535
	7	27	-0.3506	1	0.4989	0.3477	27	-0.1361	3.1481	0.4966	0.3385
	8	24	-0.2636	1	0.6105	0.2972	24	-0.3303	2.7917	0.6160	0.2522
	9	20	-0.1119	1	0.7456	0.1702	20	-0.2796	2.7500	0.7407	0.1851
	10	19	-0.1761	1	0.9009	0.1248	19	-0.1381	2.6316	0.9078	0.1142

Table 6. Descriptive Statistics of the Balanced Sample

This table reports the summary statistics of the balanced sample from 1985 to 2003, a total of 19 years. The balanced sample is formed by randomly picking firms from the larger subgroup (could be either focused firms or diversified firms) in each year-leverage group so that the sample sizes of focused firms and diversified firms in each year-leverage group are equal. The mean values of Tobin's *q*, the diversification discount calculated from the industry-adjusted *q*, the excess value using the sales multiple, the number of segments, firm leverage, and firm risk are reported for both focused firms and diversified firms.

Panel A: LS94 - Tobin's q

year	total	single segment					multi-segment				
		n	q	noseg	lev	sigVimpBS	n	q	noseg	lev	sigVimpBS
1985	1200	600	1.1396	1	0.4865	0.1944	600	1.1744	3.2433	0.4856	0.1533
1986	1298	649	1.1636	1	0.4822	0.2254	649	1.2045	3.2188	0.4843	0.1811
1987	1414	707	1.1666	1	0.5175	0.2595	707	1.1582	3.1457	0.5175	0.2307
1988	1428	714	1.1908	1	0.5114	0.2232	714	1.1763	3.1359	0.5147	0.1773
1989	1362	681	1.2287	1	0.5135	0.2018	681	1.2236	3.1263	0.5144	0.1571
1990	1336	668	1.0874	1	0.5556	0.2219	668	1.1073	3.1272	0.5612	0.1571
1991	1392	696	1.1764	1	0.5226	0.2561	696	1.2219	3.0819	0.5241	0.1773
1992	1414	707	1.2357	1	0.5109	0.2538	707	1.2473	3.0636	0.5140	0.1765
1993	1480	740	1.3000	1	0.4849	0.2609	740	1.3267	3.0676	0.4895	0.1894
1994	1496	748	1.2325	1	0.5122	0.2311	748	1.2506	3.0628	0.5169	0.1663
1995	1510	755	1.3220	1	0.5001	0.2328	755	1.2993	3.0636	0.5043	0.1674
1996	1552	776	1.4067	1	0.4860	0.2542	776	1.3536	3.0825	0.4914	0.1915
1997	1662	831	1.6603	1	0.4590	0.2735	831	1.5134	3.1649	0.4628	0.2156
1998	2430	1215	1.6459	1	0.4728	0.3265	1215	1.6147	3.2741	0.4751	0.2835
1999	2080	1040	2.0123	1	0.4497	0.3570	1040	1.8708	3.5788	0.4494	0.3262
2000	2008	1004	1.7562	1	0.4691	0.4400	1004	1.6821	3.6952	0.4711	0.3799
2001	2010	1005	1.4735	1	0.4615	0.4245	1005	1.5555	3.7841	0.4603	0.3438
2002	1920	960	1.3046	1	0.4807	0.3705	960	1.3337	3.8229	0.4834	0.2984
2003	1614	807	1.6617	1	0.3852	0.3445	807	1.5941	3.8612	0.3901	0.2692

Panel B: LS94 – diversification discount using industry-adjusted q

year	total	single segment					multi-segment				
		n	divdisc	noseg	lev	sigVimpBS	n	divdisc	noseg	lev	sigVimpBS
1985	928	464	0.1357	1	0.4984	0.1920	464	0.2450	2.9612	0.4976	0.1489
1986	874	437	0.1815	1	0.4915	0.2284	437	0.2452	2.8764	0.4923	0.1831
1987	874	437	0.1089	1	0.5026	0.2750	437	0.1719	2.8124	0.5020	0.2365
1988	906	453	0.1056	1	0.4942	0.2197	453	0.1343	2.8124	0.4956	0.1845
1989	884	442	0.1452	1	0.4971	0.2023	442	0.1292	2.8507	0.4953	0.1644
1990	946	473	0.0777	1	0.5384	0.2281	473	0.1771	2.8879	0.5425	0.1636
1991	938	469	0.2236	1	0.4987	0.2682	469	0.2162	2.8678	0.4972	0.1877
1992	968	484	0.2231	1	0.4937	0.2518	484	0.2183	2.9112	0.4958	0.1806
1993	1052	526	0.2125	1	0.4698	0.2543	526	0.2335	2.8688	0.4687	0.1984
1994	1064	532	0.3830	1	0.4879	0.2411	532	-0.0152	2.8797	0.4881	0.1777
1995	1064	532	0.4568	1	0.4934	0.2337	532	0.2361	2.8684	0.4951	0.1732
1996	1108	554	0.2764	1	0.4702	0.2521	554	0.2640	2.8412	0.4748	0.2010

1997	1160	580	0.3175	1	0.4467	0.2680	580	0.2765	2.8810	0.4492	0.2230
1998	1460	730	0.2433	1	0.4819	0.3194	730	0.2418	2.9000	0.4829	0.2719
1999	562	281	0.4794	1	0.4823	0.3338	281	0.6335	2.7580	0.4878	0.3030
2000	438	219	0.3562	1	0.5147	0.3932	219	0.3443	2.8174	0.5193	0.3524

Panel C: BO95 – excess value measure using sales multiple

year	total	single segment					multi-segment				
		n	excvalS	noseg	lev	sigVimpBS	n	excvalS	noseg	lev	sigVimpBS
1985	840	420	-0.0949	1	0.4717	0.1923	420	-0.2141	3.0048	0.4699	0.1549
1986	846	423	-0.0810	1	0.4709	0.2182	423	-0.1706	2.9385	0.4732	0.1808
1987	844	422	-0.0736	1	0.4874	0.2633	422	-0.1072	2.8626	0.4875	0.2371
1988	796	398	-0.0493	1	0.4768	0.2217	398	-0.0643	2.8266	0.4768	0.1854
1989	754	377	-0.0007	1	0.4692	0.2030	377	-0.0307	2.8249	0.4692	0.1707
1990	724	362	-0.0271	1	0.5167	0.2309	362	-0.0542	2.7873	0.5154	0.1677
1991	758	379	-0.0726	1	0.4712	0.2674	379	-0.0424	2.8391	0.4742	0.1883
1992	770	385	-0.0830	1	0.4602	0.2622	385	-0.0897	2.7636	0.4578	0.1866
1993	804	402	-0.0661	1	0.4382	0.2625	402	-0.1183	2.7363	0.4401	0.1988
1994	858	429	-0.0914	1	0.4570	0.2434	429	-0.0864	2.7552	0.4604	0.1777
1995	864	432	-0.0958	1	0.4488	0.2398	432	-0.0992	2.7894	0.4477	0.1786
1996	882	441	-0.0866	1	0.4291	0.2604	441	-0.0646	2.7642	0.4299	0.1995
1997	896	448	-0.0757	1	0.3960	0.2927	448	-0.0711	2.7969	0.3957	0.2232
1998	1130	565	-0.0937	1	0.4195	0.3214	565	-0.1174	2.9044	0.4204	0.2963
1999	518	259	-0.0890	1	0.3928	0.3568	259	-0.1925	2.6873	0.3950	0.3641
2000	426	213	-0.0667	1	0.3943	0.4796	213	-0.1132	2.7465	0.3986	0.4859

Table 7. Regression Results

This table reports the estimates and the *t*-statistics of regressing three value measures on various control variables. Following Lang and Stulz (1994), Tobin's *q* is defined as the market value of a firm divided by its replacement cost. The market value of a firm is calculated as the sum of the market value of common stock and the book value of total debt and preferred stock. The replacement cost of a firm is calculated as the sum of the estimated replacement cost of plant, equipment, and inventories and the book value of assets other than plant, equipment, and inventories. The diversification discount is defined as the difference between the industry-adjusted *q* and its Tobin's *q*. The industry-adjusted *q* is the asset-weighted average of the industry average *q* of its segments. The industry is defined according to the segment's three-digit SIC code. Following Berger and Ofek (1995), the excess value is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value. Firm value is calculated as the sum of the market value of common stock and the book value of total debt and preferred stock. The imputed firm value is the sum of the imputed value of its segments, which is calculated by multiplying the median ratio of firm value to sales in the segment's industry by the segment's sales. Each industry grouping is based on the narrowest SIC code that contains at least five single-segment firms. The variable multiseg is a dummy variable that equals one if a firm is diversified. The variable logasset is the natural log of a firm's total assets. The variable ddiv is a dummy variable that takes value one if the firm pays dividends. The variable rdasset is the ratio of R&D to total assets. The variable ebitsales is the ratio of EBIT to sales. The variable capxsales is the ratio of capital expenditures to sales. The variables logasset1, capxsales1, and ebitsales1 are one-lag values. The variables logasset2, capxsales2, and ebitsales2 are two-lag values. The variable ass2 is the squared log of total assets. The variable lev is defined as the sum of the book value of total debt and preferred stock divided by its market value. The nine leverage dummy variables are defined as follows: dlev1 takes value one if a firm falls in the lowest leverage decile of that year, dlev2 takes value one if a firm falls in the second lowest leverage decile of that year, and so on.

Panel A: LS94 - Tobin's q

	Unbalanced Sample						Balanced Sample	
	Model 1		Model 2		Model 3		Model 2	
Variable	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue
Intercept	1.7592	30.10	2.4044	44.28	0.1410	2.01	2.1495	40.15
multiseg	-0.3410	-11.54	-0.0937	-3.44	-0.0039	-0.15	0.0270	1.07
logasset	0.0161	1.67	0.1176	13.14	0.1140	13.48	0.1052	12.45
ddiv	-0.3836	-12.76	-0.4389	-15.99	-0.3067	-11.82	-0.3993	-15.10
rdasset	4.5815	28.77	2.2903	15.30	1.7249	12.22	1.6815	10.79
lev			-3.1897	-64.48			-2.6873	-56.43
dlev1					3.4025	64.64		
dlev2					1.4355	27.49		
dlev3					0.9432	18.04		
dlev4					0.6682	12.69		
dlev5					0.4929	9.25		
dlev6					0.3534	6.47		
dlev7					0.2822	4.96		

dlev8					0.1903	3.25		
dlev9					0.1414	2.45		
Adjusted R2	0.0735		0.2276		0.3219		0.2196	

Panel B: LS94 – diversification discount using industry-adjusted q

	Unbalanced Sample						Balanced Sample	
	Model 1		Model 2		Model 3		Model 2	
Variable	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue
Intercept	-0.0786	-1.08	-0.6098	-8.47	0.9266	10.04	-0.3840	-6.01
multiseg	0.2828	7.06	0.1075	2.76	0.0361	0.97	0.0319	1.08
logasset	0.0119	0.96	-0.0497	-4.11	-0.0709	-6.13	-0.0273	-2.70
ddiv	0.0964	2.62	0.1825	5.14	0.0544	1.60	0.0753	2.39
rdasset	-0.9200	-4.87	0.7643	4.05	1.2535	6.96	2.9676	12.01
lev			2.2222	33.27			1.5507	24.58
dlev1					-2.4222	-34.19		
dlev2					-0.6455	-9.15		
dlev3					-0.3047	-4.28		
dlev4					-0.1888	-2.62		
dlev5					-0.1344	-1.84		
dlev6					-0.0584	-0.78		
dlev7					-0.0086	-0.11		
dlev8					0.0348	0.43		
dlev9					-0.0011	-0.01		
Adjusted R2	0.0094		0.0816		0.1702		0.0808	

Panel C: BO95 – excess value measure using sales multiple

	Unbalanced Sample						Balanced Sample	
	Model 1		Model 2		Model 3		Model 2	
Variable	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue
Intercept	-0.3058	-21.08	-0.3442	-6.72	-0.9141	-18.44	-0.6254	-9.25
multiseg	-0.1266	-17.77	-0.0781	-11.58	-0.0577	-8.87	-0.0561	-6.95
logasset	0.0411	16.54	0.3622	18.08	0.4010	21.35	0.4126	15.30
capxsales	0.3632	15.51	0.2403	9.90	0.2609	10.28	0.2859	6.48
ebitsales	0.2718	6.27	0.1761	6.82	0.1368	6.47	0.1100	2.95
logasset1			-0.1769	-9.14	-0.1957	-10.84	-0.2050	-7.15
capxsales1			0.0724	3.77	0.0669	3.65	0.0943	2.09
ebitsales1			0.0061	1.25	0.0043	1.03	0.1387	3.21
logasset2			-0.0860	-8.02	-0.0523	-5.12	-0.0519	-3.08
capxsales2			0.0000	0.40	0.0003	2.95	-0.0003	-1.46
ebitsales2			-0.0050	-4.48	-0.0032	-3.07	-0.0097	-4.03
lev			-0.6355	-43.50			-0.5126	-24.34
ass2			-0.0030	-2.71	-0.0059	-5.67	-0.0068	-4.88
dlev1					0.6200	43.45		
dlev2					0.3223	24.26		
dlev3					0.1604	12.50		
dlev4					0.1047	8.29		
dlev5					0.0316	2.49		
dlev6					-0.0210	-1.70		
dlev7					-0.0573	-4.67		
dlev8					-0.0544	-4.49		
dlev9					-0.0717	-5.88		
Adjusted R2	0.0633		0.2103		0.2798		0.1764	

Table 8. Distribution of Firms by Diversification Profiles

This table reports the distribution of firms in the sample of the excess value by diversification profiles. The sample consists of 3789 firms and 23409 firm-year observations. Firms are classified using all available Compustat segment data.

	Firm-years	Number of Firms
Firms that were always in single segments	8105	1552
Firms that diversified	4964	803
Firms that diversified once from one segment to multiple segments	2675	442
Firms that diversified once from multiple segments to multiple segments	261	47
Firms that diversified multiple times	2028	314
Firms that refocused	1338	211
Firms that refocused once from multiple segments to single segments	749	117
Firms that refocused once from multiple segments to multiple segments	128	26
Firms that refocused multiple times	461	68
Firms that both focused and diversified	8797	1161
Multisegment firms that did not change the number of segments	205	62
Total	23409	3789

Table 9. Controlling for Endogeneity of the Diversification Decision

This table reports the results of estimation when endogeneity of the diversification decision is controlled for. As in Campa and Kedia (2002), we separately examine diversifying and refocusing firms. The sample of diversifying firms includes all focused firms and all diversifying firms, the latter consisting of firms that diversify once from single to multiple segments, firms that diversify once from multiple to multiple segments, and firms that diversify multiple times. The sample of refocusing firms includes all focused firms and all refocusing firms, the latter consisting of firms that refocus once from multiple to single segments, firms that refocus once from multiple to multiple segments, and firms that refocus multiple times. The dependant variable is the excess value, which is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value. Firm value is calculated as the sum of the market value of common stock and the book value of total debt and preferred stock. The imputed firm value is the sum of the imputed value of its segments, which is calculated by multiplying the median ratio of firm value to sales in the segment's industry by the segment's sales. Each industry grouping is based on the narrowest SIC code that contains at least five single-segment firms. The variable multiseg is a dummy variable that equals one if a firm is diversified. The variable logasset is the natural log of a firm's total assets. The variable ebitsales is the ratio of EBIT to sales. The variable capxsales is the ratio of capital expenditures to sales. The variables logasset1, capxsales1, and ebitsales1 are one-lag values. The variables logasset2, capxsales2, and ebitsales2 are two-lag values. The variable ass2 is the squared log of total assets. The variable snp is a dummy variable that takes the value 1 if the firm belongs to the S&P industrial index or the S&P transportation index. The variable lev is defined as the sum of the book value of total debt and preferred stock divided by its market value. The fixed-effect model has two-way fixed effects i.e. firm effects and year effects. Year dummies are included in the instrumental variable model as well as the Heckman's two-step procedure and are not reported.

Panel A: diversifying firms

	Unbalanced Sample										Balanced Sample							
	Model 1		Model 2		Fixed Effects		Instrumental Variable		Heckman		Model 2		Fixed Effects		Instrumental Variable		Heckman	
Variable	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue
Intercept	-0.2563	-12.38	-0.1361	-1.91	-0.0114	-0.08	-0.5330	-6.58	-0.5341	-6.60	-0.1980	-1.04	0.9068	2.55	-0.5850	-2.39	-0.5878	-2.41
multiseg	-0.1269	-8.24	-0.0935	-6.54	-0.1246	-7.02	-0.0648	-3.84	-0.0677	-4.04	-0.0414	-1.86	-0.0151	-0.41	-0.0427	-1.31	-0.0444	-1.38
logasset	0.0315	8.96	0.2979	10.79	0.2559	9.2	0.4118	13.98	0.4111	13.97	0.3007	4.02	0.2120	2.33	0.4019	4.57	0.4013	4.57
capxsales	0.3444	10.36	0.2329	7.08	0.1487	7.23	0.2048	6.42	0.2047	6.42	0.2770	2.02	0.2806	2.73	0.2906	1.92	0.2926	1.94
ebitsales	0.4746	9.17	0.2282	5.52	-0.0916	-3.59	0.1614	4.83	0.1619	4.85	0.5931	3.88	0.1014	1	0.4018	3.37	0.4002	3.37
logasset1			-0.1558	-5.78	-0.2292	-14.11	-0.2066	-7.49	-0.2065	-7.50	-0.1078	-1.22	-0.2799	-5.88	-0.1670	-1.91	-0.1661	-1.90

capxsales1			0.0601	2.24	0.0302	2.07	0.1144	3.77	0.1142	3.77	0.2507	1.51	0.2282	2.07	0.0918	0.46	0.0903	0.45
ebitsales1			0.0042	0.8	0.0004	0.11	0.0576	1.82	0.0576	1.82	-0.1450	-0.86	-0.1895	-1.95	-0.2984	-2.45	-0.2977	-2.45
logasset2			-0.1026	-7.08	-0.0787	-7.48	-0.0771	-4.60	-0.0772	-4.61	-0.1644	-3.13	-0.0439	-1.18	-0.1352	-2.60	-0.1352	-2.61
capxsales2			-0.0007	-2.08	-0.0010	-2.56	0.0392	2.33	0.0392	2.33	-0.0113	-0.12	-0.1097	-1.53	0.1469	1.18	0.1468	1.18
ebitsales2			-0.0143	-3.22	-0.0131	-3.13	0.0007	0.11	0.0007	0.10	0.3009	2.02	0.1442	1.44	0.6559	4.84	0.6551	4.85
snp							0.1253	8.37	0.1251	8.36					0.0808	1.99	0.0795	1.97
lev			-0.7483	-37.8	-0.8011	-31.8	-0.7245	-36.49	-0.7240	-36.51	-0.7512	-13.47	-0.9052	-11.52	-0.7105	-11.36	-0.7151	-11.47
ass2			0.0020	1.22	0.0078	3.67	-0.0051	-2.85	-0.0051	-2.81	0.0021	0.54	0.0131	2.02	-0.0028	-0.58	-0.0028	-0.58
Adjusted R2	0.0640		0.2455		0.6811		0.2644		0.2658		0.2593		0.7104		0.2601		0.2634	

Panel B: refocusing firms

	Unbalanced Sample										Balanced Sample							
	Model 1		Model 2		Fixed Effects		Instrumental Variable		Heckman		Model 2		Fixed Effects		Instrumental Variable		Heckman	
Variable	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue	Estimate	tValue
Intercept	-0.3108	-11.38	-0.1615	-1.59	-0.1037	-0.64	-0.5248	-4.76	-0.5240	-4.76	-1.3298	-3.06	-0.9409	-1.47	-1.9006	-3.07	-1.8633	-3.01
multiseg	-0.1854	-7.74	-0.1384	-5.81	-0.2497	-7.38	-0.1456	-5.53	-0.1433	-5.43	-0.1245	-3.09	0.0723	0.69	-0.1266	-2.40	-0.1419	-2.65
logasset	0.0417	9	0.3093	8.06	0.2903	8.04	0.4071	10.32	0.4067	10.32	0.5294	2.87	0.6049	3.1	0.5648	2.71	0.5410	2.60
capxsales	0.2914	10.68	0.1871	7.62	0.1467	7.17	0.1579	5.06	0.1580	5.07	-0.2144	-0.88	0.6309	2.09	-0.4995	-0.97	-0.4877	-0.95
ebitsales	0.3773	7.24	0.1268	3.11	-0.1364	-5.03	0.0958	2.79	0.0958	2.79	0.0372	0.27	-0.0604	-0.33	0.6834	1.42	0.7223	1.51
logasset1			-0.1557	-5.01	-0.2229	-11.63	-0.1899	-5.87	-0.1897	-5.87	-0.0305	-0.19	-0.2317	-2.45	-0.0302	-0.16	-0.0156	-0.08
capxsales1			0.0264	1.36	0.0250	1.81	0.0834	2.84	0.0833	2.84	0.0226	0.87	-0.1048	-1.84	0.6072	1.24	0.6034	1.23
ebitsales1			-0.0002	-0.04	-0.0011	-0.28	0.0465	1.43	0.0465	1.43	0.8995	3.32	0.4187	1.79	0.9164	1.82	0.9233	1.83
logasset2			-0.1070	-6.5	-0.0787	-6.36	-0.0900	-4.61	-0.0901	-4.62	-0.1390	-1.58	-0.0412	-0.56	-0.0740	-0.59	-0.0739	-0.59
capxsales2			0.0123	0.93	0.0092	0.89	0.0291	1.79	0.0291	1.79	0.4974	2.36	0.0774	0.31	0.0775	0.19	0.0474	0.12
ebitsales2			-0.0099	-1.73	-0.0122	-2.52	0.0004	0.06	0.0004	0.06	0.3287	2.49	0.2180	1.28	0.2501	1.40	0.2408	1.35
snp							0.1681	8.71	0.1681	8.71					-0.0155	-0.19	-0.0162	-0.20
lev			-0.6912	-30.86	-0.7679	-26.31	-0.6422	-28.31	-0.6425	-28.34	-0.3730	-3.52	-0.6580	-5.41	-0.3017	-2.57	-0.2923	-2.49
ass2			0.0014	0.54	0.0041	1.42	-0.0055	-2.03	-0.0054	-2.02	-0.0243	-2.17	-0.0324	-1.91	-0.0318	-2.21	-0.0311	-2.15
Adjusted R2	0.0606		0.2355		0.6700		0.2496		0.2506		0.1581		0.7547		0.1475		0.1504	