Conglomerates and Industry Distress

*Radhakrishnan Gopalan and Kangzhen Xie**

July 10, 2008

Abstract

Using economic distress in an industry as a natural experiment, we test the alternate theories of conglomeration. We find that segments in distressed industries experience better performance than single-segment firms. The distressed segments have higher sales growth,higher R&D expenditure and greater cash flows than single-segment firms. Indicating greater financial constraints for single segment firms, the superior performance of segments is confined to the sub-sample of firms without credit ratings. Single-segment firms reduce their investment in non-cash current assets and significantly increase their cash holdings in response to industry distress. There is some evidence that the single-segment firms that accumulate cash also reduce their R&D expenditure. The diversification discount almost disappears in the years when one of the conglomerate segments is in distress. Overall, our evidence highlights the benefits of conglomerates in enabling segments to avoid financial constraints during periods of industry distress.

JEL Classification: G

*Both authors are from the Olin Business School, Washington University. We thank seminar participants at the Olin Business School for valuable comments. The second author thanks the Olin Business Schools Center for Research in Economics and Strategy (CRES) for funding. Please direct all correspondents to: gopalan@wustl.edu ph. 314-9359196.

Introduction

A great stream of current research has focussed on the costs and benefits of conglomeration.[1] Their costs include greater agency problems because their manager's access to larger and steadier streams of free cash flows (Jensen (1986)) and their internal capital budgeting process's inefficient redistribution of cash, commonly referred to as the internal capital market (ICM) (see Lamont (1997), Scharfstein and Stein (2000), Rajan et al. (2000)). On the benefit side, the availability of capital from the ICM may enable the segments to avoid external financial constraints (Lewellen (1971), Billett and Mauer (2003), Gopalan et al. (2007)). Furthermore conglomerate CEOs who administer the ICM may posses better information about the segment investment opportunities and may ration the weaker segments to benefit the stronger ones, i.e.,they may engage in winner picking (Stein (1997)). Such behavior may make conglomerates more flexible in allocating capital in response to changing investment opportunities (see Matsusaka and Nanda (2002), Mathews and Robinson (2006)). Finally, diversified conglomerates may have lower cash flow volatility enabling them to have a higher leverage and greater tax benefits (e.g. Kim and McConnell (1977)).

Empirical research on conglomerates has focussed on shedding light on the existence of these costs and benefits by studying the functioning of the ICM. Early research established the existence of ICMs (Lamont (1997), and Houston and Marcus (1997)) and subsequent work has tried to distinguish between the costs and benefits of ICMs (Shin and Stultz (1998), Scharfstein (1998), and Rajan et al. (2000)). Most of these studies find evidence of inefficient cross-subsidization within conglomerates, a result that is consistent with prior work showing that diversified firms trade at a discount relative to comparable portfolios of single-segment firms.[2] Some recent studies have disputed the empirical findings of the cross-subsidization literature both on methodological grounds and also on the data quality (see Chevalier (2004), Graham et al. (2002), Campa and Kedia (2002) and Villalonga (2004)). We discuss these and other related work in the next section.

In this paper, we use periods of economic distress in an industry as a natural experiment to study the functioning of the conglomerate ICMs. Our motivation for using periods of distress is four-fold. First, in our empirical analysis, we rely on the time-varying behavior of conglomerates and single-segment firms for identification. Hence our tests are less subject to biases arising from time invariant differences across conglomerates and single-segment firms and from industry misclassification. Second, our methodology helps identify periods of *unexpected* industry distress. This ensures that our results are less subject to the endogenity bias of firms efficiently organizing in anticipation. Third, our experimental setting allows us

[1] See Stein (2003) and Maksimovic and Phillips (2007) for a good summary of the current research in this area.

[2] Comment and Jarrell (1994), Lang and Stulz (1994), and Berger and Ofek (1995).

to test multiple predictions of conglomerate behavior. Thus our tests do not solely rely on relating investments to cash flows and Tobin's Q (see Whited (2001) for a critique of that approach). Finally, the different theories of conglomeration have distinct predictions in our setting both for firm behavior and for value. Testing these helps us distinguish between the theories.

To identify industries in economic distress, we follow Opler and Titman (1994). We classify an industry as being distressed if the median sales growth of single-segment firms in the industry is negative and the median stock return is less than -30%. This definition results in identifying 48 episodes of distress. As is evident from Table I, the distressed industries are uniformly spread over our sample period of 1984-2002. Searching news reports, we find that the common causes for industry distress include a fall in demand or an increase in input prices. A definition of distress based on stock returns ensures that distress was unanticipated by the market and firm managers. In using industry distress to study conglomerates, we go back to the research design in Lamont (1997).[3] Lamont shows that when oil prices fell, conglomerates with segments in oil industry reduced their investments in non-oil segments. Lamont (1997) cites this as evidence of the presence of ICMs in conglomerates. While our research design is similar, our tests are significantly different from the ones in Lamont. Unlike Lamont (1997), we compare both the performance and value of conglomerates to single-segment firms in the distressed industry. Such comparison helps us contrast the bright and dark side of conglomerate ICMs.

To develop the hypothesis relevant for our setting, we use the existing literature which provides us with three distinct hypotheses. They are a) the cross-subsidization hypothesis b) the financial constraints hypothesis and c) the flexibility hypothesis. In our empirical analysis, we start by comparing the sales growth, investment and cash flows across conglomerate segments and single-segment firms. The cross-subsidization hypothesis formulated by Scharfstein and Stein (2000) and Rajan et al. (2000) argues that conglomerate ICMs inefficiently transfer resources from the productive segments to the non-productive segments. Such transfers occur either to reduce inefficient rent seeking by division managers (Scharfstein and Stein (2000)) or to ensure sufficient investment by division managers in joint production technology (Rajan et al. (2000)). If the segment in the distressed industry has a lower productivity than the non-distressed segments, then the cross-subsidization hypothesis predicts higher sales growth, more investments and higher cash flows in the distressed segments than in similar single-segment firms. The differences are likely to be greater among conglomerates more prone to cross-subsidize. Since the higher investment by distressed conglomerate segments is likely to be non-productive, the cross-subsidization

[3]Our methodology is also similar to that of Campello (2002) who studies small bank behavior during episodes of monetary tightening. We discuss the similarities and differences between the papers in the related literature section.

hypothesis predicts a deeper value discount for conglomerates than for single-segment firms.

The starting point for the financial constraints hypothesis is the presence of frictions such as information problems in the external financial markets. Such frictions are likely to worsen during periods of industry distress. single-segment firms that rely on the external market for financing are likely to experience greater difficulty in raising outside finance during periods of industry distress. Conglomerate segments, on the other hand, can rely on the ICM for continued financing. The diversified nature of a conglomerate is likely to ensure its continued ability to raise external funds. Thus, like the cross-subsidization hypothesis, the financial constraints hypothesis also predicts that distressed segments of conglomerates are likely to have higher sales growth rates, higher investments and better cash flows than single-segment firms. The performance difference is likely to be greater among the sample of firms that are ex ante likely to face financial constraints. Since the external market frictions are by assumption inefficient, conglomerate investments in the distressed segments are likely to be efficient. Thus the financial constraint hypothesis predicts that the conglomerate value discount is likely to reduce during periods of distress. This is an important difference between the financial constraints and the cross-subsidization hypothesis.

Finally the flexibility hypothesis, as proposed by Matsusaka and Nanda (2002) and Mathews and Robinson (2006), highlights the ability of conglomerates to internally shift resources towards the most productive segments. If industry distress reduces the productivity of the distressed segments, then according to the flexibility hypothesis, the conglomerate is likely to shift resources *away* from the distressed segment and towards the non-distressed segments. On the other hand, single-segment firms lacking alternate investment opportunities, may continue investing in the distressed industry. Thus, according to the flexibility hypothesis, the distressed conglomerate segments will experience slower sales growth and investment than single-segment firms. Furthermore, since the redirection of resources by conglomerates is likely to be ex post efficient, the flexibility hypothesis predicts better value for conglomerates than for single-segment firms.

We use data from CRSP and Compustat business segment files to test the predictions of the three hypotheses. As mentioned, we identify an industry as distressed if the median two-year sales growth among single-segment firms is negative and the median two-year stock return is less than -30%. Based on this procedure, we classify 48 out of 2267 industry-years as distressed. The year-wise distribution of distressed industries is given in Panel A of Table 1. During our sample period, 1989, 1990-91 and 2001 are classified as recessionary periods by NBER. As can be seen, the number of industries in distress increases during recession years. But apart from recession years, we also find that there are idiosyncratic episodes of industry distress. We classify firms as conglomerates if they report positive assets and sales in more than one segment in different 3-digit SIC code industries.

Our results can be summarized as follows. First we find that segments of conglomerates in distress experience significantly higher sales growth than single-segment firms. While an average distressed single-segment firm experiences no sales growth, conglomerate segments experience a 7% sales growth. The higher sales growth of conglomerates translates into higher market shares in the distressed industries for the next two years. While there is no difference across conglomerates and single-segment firms in their capital expenditure, we find that single-segment firms significantly reduce their investment in R&D during times of distress. We also find that the higher sales growth in distressed segments of conglomerates translates into higher cash flows during periods of industry distress. While single-segment firms experience a 40% fall in cash flows during periods of distress, conglomerate segments experience only an 11% fall. The superior performance of conglomerates in comparison to single-segment firms is consistent with both the cross-subsidization and the financial constraints hypothesis.

To distinguish between the hypotheses, we rely on their cross-sectional predictions. According to the financial constraints hypothesis, the difference between conglomerates and single-segment firms should be greater among the sub-sample of firms that are ex ante more likely to face financial constraints. Following existing literature (see Dimitrov and Tice (2006)), we identify firms with credit ratings as likely to be less constrained than firms without credit ratings. Consistent with the financial constraint hypothesis, we find that the higher sales growth, R&D investment and cash flows in the distressed conglomerate segments is confined to the sub-sample of firms that do not have credit rating. To test the cross-subsidization hypothesis, we follow Rajan et al. (2000) and identify conglomerates with greater asset size diversity among their segments as more likely to cross-subsidize. Using the Rajan et al. (2000) measure of diversity, we find no systematic relationship between the degree of diversity within a conglomerate and the performance difference with single-segment firms.

Consistent with single-segment firms facing financial constraints, we find that they reduce investments in non-cash current assets such as inventory, receivables and significantly increase their cash reserves during times of distress. As argued by Almeida et al. (2004), the increase in cash reserves among single-segment firms is consistent with these firms facing greater financial constraints. Furthermore, there is some evidence that the single-segment firms that increase their cash holdings during times of distress also reduce R&D expenditure to a greater extent. Finally, we find that there is a significant reduction in the conglomerate value discount when one of the segments is in distress. In fact, our estimates indicate that the conglomerate value discount disappears during times of distress. We interpret this as indicating efficient conglomerate behavior during times of industry distress. Overall our evidence indicates that the financial constraints hypothesis is most appropriate in explaining

conglomerate behavior during times of industry distress.

We test robustness of our results in a number of ways. First we repeat our tests with alternate definitions of a conglomerate, i.e., we define a firm as a conglomerate if it reports positive assets and sales in more than one Fama-French industry. We find that our results are actually stronger with this more stringent definition of a conglomerate. Second, since the Financial Accounting Standards Board (FASB)changed the rule for reporting segment data in 1997, pooling data from before and after 1997 may be problematic. To overcome this difficulty, we repeat our regressions separately for the pre- and post-1997 samples and still we obtain results qualitatively similar to the ones reported here.

Related Literature

Our paper is related to the broad stream of research on conglomerates. Among the empirical papers, our paper is closely related to Dimitrov and Tice (2006), who investigate the effect of diversification across the business cycle. They find that corporate diversification helps segments alleviate financial constraints during recession years. The methodological difference between the papers is that, unlike Dimitrov and Tice (2006), we use periods of idiosyncratic industry distress. This ensures sufficient disparity in the investment opportunities and cash flows across the conglomerate segments, an ideal setting to test the theories of conglomeration. Furthermore, unlike their paper, we show that the behavior of conglomerates during periods of industry distress enhances value. Our paper is also closely related to Billett and Mauer (2003) who introduce proxies for the extent of cash transfer across conglomerate segments and show that transfer of resources to financially constrained segments of conglomerates is associated with excess value. Similar to their paper, we also conclude that the difference between conglomerates and single-segment firms during periods of industry distress arises mainly on account of lower financial constraints among the conglomerate segments. Our methodology is also similar to Campello (2002), who studies the response of small banks to monetary policy. Unlike Campello (2002), we look at economic distress in multiple industries and also ensure that conglomerates have both distressed and non-distressed segments.

A number of papers have raised important methodological questions about the empirical papers that test the cross-subsidization hypothesis. Chevalier (2004), Graham et al. (2002), and Campa and Kedia (2002) question the validity of comparing conglomerates to single-segment firms by highlighting fundamental differences between conglomerates and single-segment firms. Since we rely on across-time variation in the behavior of conglomerates and single-segment firms, our tests are less subject to biases arising from time invariant differences across conglomerates and single-segment firms.

Villalonga (2004) highlights the problems with using Compustat industry classification and argues that if the firm's activities are broken down into business units instead of Compustat segments, then the diversification discount reverts to a diversification premium. Here again, since we rely on time-series changes in behavior, time-invariant noise is unlikely to bias our conclusions. Whited (2001) discusses in detail the problems associated with the use of industry Tobin's Q (based on single-segment firm Qs) as a proxy for conglomerate segments' Qs. To avoid this problem, we do not rely on the differential response of conglomerate and single-segment firm investments to Tobin's Q for our conclusions.

Maksimovic and Phillips (2002) offer a neo-classical model of firm organization to rationalize the differences across conglomerates and single-segment firms. They highlight some important differences across the largest and the other segments of a conglomerate in their response to industry shocks. Following Maksimovic and Phillips (2002), in some of our tests, we differentiate between the behavior of the largest segment and the other segments of the conglomerate.

Our paper is also related to Khanna and Tice (2000), who study the response of pure play discount stores and discount stores which are part of a retail conglomerate to Walmart's entry into the local market. Similar to their paper, we identify periods of industry distress and study the response of conglomerate segments and single-segment firms. But unlike their paper, we study such behavior across a number of industries.

Similar to our paper, other papers also highlight the role of conglomerates in overcoming external financial constraints. Hubbard and Palia (1999) show that bidder returns in conglomerate mergers were significantly higher when financially unconstrained buyers acquired constrained targets during the conglomerate merger wave of the 1960s, when arguably U.S. capital markets were less developed than they are today. Khanna and Palepu (2000), and Lins and Servaes (1999) find little evidence of a diversification discount in emerging markets where the capital markets are less developed.

The rest of the paper proceeds as follows. Section 1 outlines the three hypotheses and derives their main testable predictions. Section 2 both describes our data and sample selection and outlines our empirical specification. Section 3 presents the summary statistics and discusses our empirical tests. Section 4 presents the robustness tests, and Section 5 concludes.

1 Hypotheses

In our empirical tests, we compare the performance of of segments of conglomerates and single-segment firms during times of industry distress. We group the hypotheses that are

relevant for this comparison into three groups: They are the a) cross-subsidization b) financial constraints and c) flexibility hypotheses. We now outline the hypotheses and list their main predictions. Specifically, we list predictions for firm sales growth, investments, cash flow, and value.

The cross-subsidization hypothesis as formulated in Scharfstein and Stein (2000) and Rajan et al. (2000) argues that conglomerate ICMs inefficiently transfer resources from the productive segments to the less-productive segments. Such transfers occur either to reduce inefficient rent seeking by division managers (Scharfstein and Stein (2000)) or to ensure sufficient investment by division managers in efficient joint technologies (Rajan et al. (2000)). Segments in distressed industries are likely to have lower productivity in comparison to those in non-distressed industries. In light of this, the cross-subsidization hypothesis predicts a transfer of resources by conglomerates *into* the distressed segments and away from the non-distressed segments. Such transfers are likely to boost the sales growth, investment and cash flow of the distressed segments above that of single-segment firms who do not have the ability to engage in such cross-subsidization. Since the transfers are inefficient, they are likely to reduce the value of conglomerates in comparison to single-segment firms. All these effects are likely to be greater in conglomerates more prone to cross-subsidization. To test this prediction, we follow Rajan et al. (2000) and classify conglomerates with a greater degree of asset size diversity across their segments as having a greater tendency to cross-subsidize.

The financial constraints hypothesis arises from the presence of frictions such as information problems in the market for external finance. Such frictions are likely to worsen during times of industry distress. Single-segment firms that depend on the external financial markets for financing are likely to face greater difficulty in raising finance during times of distress. Conglomerate segments, on the other hand, can rely on the ICM for their financing needs. Due to their diversified nature, conglomerates are likely to retain their access to the external financial market. This is likely to result in lesser financial constraints for conglomerate segments during times of distress. Thus the financial constraints hypothesis predicts a higher sales growth, investment, and cash flow for the distressed conglomerate segments in comparison to single-segment firms. Furthermore, since the greater investment by the conglomerates is likely to be efficient, it is likely to increase the valuation of conglomerates in comparison to single-segment firms. These effects are also likely to be stronger in the sub-sample of firms that are ex ante more likely to face external financial constraints.

Finally, the flexibility hypothesis highlights the ability of conglomerates to redistribute resources internally into the most productive segment. The conglomerate CEOs who administer the ICM are likely to possess better information about the investment opportunities in their segments. When faced with diminished investment opportunities in one of the seg-

ments, they may engage in "winner picking" and redirect the resources towards the more productive segments (Stein (1997)). Single-segment firms, on the other hand, lack such alternate investment opportunities and may hence continue investing in the distressed industry despite the lower investment opportunities. Hence the flexibility hypothesis predicts that conglomerates are likely to reduce investments in the distressed segment and redirect it towards other productive segments. This would result in distressed segments of conglomerates having lower growth rates, investments levels, and cash flows than comparable single-segment firms. Since the redirection of resources by conglomerates is likely efficient, the flexibility hypothesis predicts a higher value for conglomerates.

For ease of reference, we summarize the predictions of the three hypothesis. We state the predictions as a comparison of conglomerate segment performance to that of single-segment firms.

Performance Measure	Cross-subsidization	Financial Constraints	Flexibility
Sales Growth	Higher	Higher	Lower
Investment	Higher	Higher	Lower
Cash Flow	Lower	Higher	Higher
Value	Lower	Higher	Higher

We now outline the data we use to test these predictions.

2 Data Description and Empirical Methodology

We obtain our data from two standard sources. Stock returns and firm financials are obtained from CRSP-Compustat merged database and financial data on conglomerate segments are obtained from the Compustat business segment files. Our sample period covers the years from 1984 to 2002, and we exclude financial firms (SIC codes 6000-6999) and regulated firms (SIC codes 4900-4941) from our analysis. Since conglomerates tend to be larger firms, we drop all firms with asset values less than $20 million to ensure that our results are not disproportionately influenced by the small single-segment firms. We identify firms as conglomerates using the Compustat business segment files. To do this, we start by dropping all observations with missing SIC codes or negative values for segment asset or sales. We then classify firms as conglomerates in a given year if they report positive assets and sales in more than one 3-digit SIC code industry. For robustness, we repeat all our tests with a conglomerate identification based on the Fama-French industry classification (see Fama and French (1997)), i.e., we classify firms as conglomerates only if they report positive sales and assets in more than one Fama-French industry. Prior research

has shown that Compustat industry classification of conglomerate segments is noisy (see Villalonga (2004)). For our identification we rely on differences across time between the behaviors of conglomerate segments and single-segment firms. In this regard, noisy industry classification is unlikely to bias our conclusions. However, our conclusions may be affected if conglomerates systematically reclassify segments in anticipation of industry distress. In Section 4, we describe the robustness tests that we perform to control for this potential bias.

Table I provides the year-wise distribution of our sample. We identify distressed industries using the methodology outlined in Opler and Titman (1994). Specifically, for every year, we calculate the two-year stock return and sales growth for all single-segment firms. That is, for year t, we calculate the stock return and sales growth for the two year period starting from the beginning of year t till the end of year $t+1$. We define a firm's industry using 3-digit SIC code and classify an industry as distressed during a particular year if the median two-year sales growth in that industry is negative and the median two-year stock return is less than -30%. For robustness, we repeat all our regressions using 4-digit SIC codes and get comparable results. A definition of distress based on stock returns ensures that the distress was at least partly unanticipated by the market and firm insiders. This ensures that firms are unlikely to have fully anticipated and endogenously adjusted their organization and behavior prior to the distress period. We identify 48 distressed industries during the sample period. We classify approximately 2.1% of the industries as distressed (48 out of 2267), and this is comparable to Opler and Titman (1994). The year-wise distribution of distressed industries is given in Table 1. During our sample period, 1989, 1990-91, and 2001 are classified as recessionary periods by NBER. As can be seen, the number of industries in distress increases during recession years. But apart from recession years, we also find that there are idiosyncratic episodes of industry distress. Table I also reports the year-wise distribution of the number of conglomerates and single-segment firms. We have a total of about 55,600 firm-year observations comprising approximately 44,200 stand-alone firm years and 11,400 conglomerate firm-years. The number of observations for the different tests vary depending on whether we conduct the tests at the firm level or at the segment level and also due to missing data. We classify approximately 20% of the sample firms as conglomerates. As can be seen, while the number of conglomerates has gone down from 671 in 1984 to 460 in 2002, the number of single-segment firms has increased from 1303 in 1984 to 2249 in 2002. We now outline our empirical methodology.

2.1 Empirical Specification

In our empirical tests, we are interested in comparing the performance of segments of conglomerates to that of single-segment firms during times of industry distress. We do this

by estimating variants of the following model:

$$y_{i,j,t} = \alpha + \beta_1 \text{Distress}_{j,t} + \beta_2 \text{Distress}_{j,t} \times \text{Conglomerate}_{i,t} + \beta_3 X_{i,j,t-1} + \mu_t + \mu_{i,j} \quad (1)$$

where the subscript i refers to a segment of a conglomerate or a single-segment firm, the subscript j refers to the industry, and subscript t refers to time in years, μ_t refers to time fixed effects and $\mu_{i,j}$ refers to segment fixed effects. The dependent variable y is a measure of performance measured at the segment level for conglomerates and at the firm level for single-segment firms. In the first set of tests, we model *Sales Growth*, *R&D/Asset*, and *Cash Flow/Asset* as the dependent variables. *R&D/Asset* is the ratio of research and development expenditure to the book value of segment assets. We use *R&D/Asset* as a measure of investment by conglomerates and single-segment firms. Since R&D expenditure is highly discretionary, it is likely to be impacted the most when firms change their investment policies.[4] *Cash Flow/Asset* is the ratio of segment cash flow to segment assets where cash flow is the sum of operating profit and depreciation. *Distress* is a dummy variable that takes a value of 1 if the industry is in distress during a particular year. *Conglomerate* is a dummy variable that takes a value of 1 for segments of conglomerates. As mentioned, we identify a firm as a conglomerate in a given year if it reports positive assets and sales in more than one 3-digit SIC code industry. In the above specification, β_2 is a measure of the difference between conglomerate segments and single-segment firms in distress. Our predictions are about the sign of β_2. X refers to a set of segment or firm-level control variables. The specific control variables vary with the dependent variable being modeled and include one or more of *Sales Growth*, *Cash Flow/Asset*, *Industry Q*, *Investment/Asset*, and *Leverage*. *Industry Q* is the median ratio of the market value of total assets to the book value of total assets of all single-segment firms in the same 3-digit SIC code industry; *Investment/Asset* is the ratio of capital expenditure to segment assets; and *Leverage* is the ratio of the book value of total debt to the book value of total assets.

Apart from segment level comparison, we also compare a number of firm level characteristics across conglomerates and single-segment firms. We do firm level comparison mainly because of the lack of segment level data. The variables we model at the firm level include *Inventory/Sales*, *Receivable/Sales*, *Payable/Sales*, and *Cash/Asset*. To compare these variables across conglomerates and single-segment firms, we use a model similar to (1) but replace *Distress* with $Distress^F$, a dummy variable that takes a value of 1 if *any* of the segments of the conglomerate are in a distressed industry. In the case of single-segment firms, $Distress^F$ takes a value of 1 if the firm's industry is in distress. Finally, we also test how the diversification discount varies during periods of industry distress. To do this, we model *Discount*, a measure of the diversification discount, as a function of firm, time,

[4] In unreported tests we also model *Capex/Asset*. We discuss this in greater detail in the next section.

and industry characteristics. We measure *Discount* as the difference between the Tobin's Q of the conglomerate and the asset-weighted average industry-Q of the segments of the conglomerate. We use the fraction of the book value of the segments'assets as the weights in calculating the average industry-Q. Unless specified otherwise, all our regressions include fixed effects either at the segment level or at the firm level (depending on whether the dependent variable is measured at the segment level or the firm level) and year fixed effects. The standard errors are clustered at segment or firm level and are robust.

2.2 Summary Statistics

Table II provides the summary statistics for the key variables in our sample. Panel A summarizes the data for conglomerates, while Panel B summarizes the data for single-segment firms. From the table, we find that segments of conglomerates are comparable to single-segment firms in terms of sales, \$936 million as compared to \$863 million. Single-segment firms, on the other hand, have a higher sales growth and a higher *R&D/Asset* than conglomerate segments. Since we have segment-level fixed effects in all our tests, this difference in the level of the variable across conglomerates and single-segment firms is unlikely to affect our results. We also find that single-segment firms have a lower *Cash Flow/Asset* and are in industries with better investment opportunities, as indicated by a higher *Industry Q*. The other important difference across the two panels is that single-segment firms maintain significantly higher cash balances as a fraction of total assets than conglomerates. This can be seen from the higher values of *Cash/Asset* for single-segment firms. The high cash balance may indicate precautionary saving by single-segment firms which may face constraints in raising external finance. The higher mean value for *Rated* for conglomerates indicates that a greater fraction of conglomerates than single-segment firms have short-term credit rating from Standard and Poor. We also find that the average conglomerate discount in our sample is 19.0%, comparable to earlier studies. Before we outline our empirical tests, we do some univariate tests of our predictions.

Table III compares the mean value of the key variables for conglomerates and single-segment firms in both distressed and non-distressed periods. From the table, it is clear that while both conglomerate segments and single-segment firms experience a steep fall in sales growth during periods of distress, the fall is greater for single-segment firms than conglomerate segments (-.186 in comparison to -.091). This greater fall in sales growth for single-segment firms is consistent with both the cross-subsidization and the financial constraints hypotheses. There is no significant change in *R&D/Asset* for both conglomerates and single-segment firms. Since we have not controlled for both the composition of distressed and non-distressed industries and for firm composition within the industries, the comparison is only indicative. Similar to sales growth, we find that *Cash Flow/Asset* also

falls by a greater extent for single-segment firms during industry distress. We find that both conglomerates and single-segment firms increase their investment in inventory during times of industry distress. In the case of receivables, while there is no significant difference for conglomerates, single-segment firms actually decrease their receivables in times of distress. Conglomerates on the other hand, increase the amount of payable during distress. The other important difference across conglomerates and single-segment firms is that the latter significantly increase their investment in cash and marketable securities during times of industry distress. Finally, we find that there is no significant change in the diversification discount between distress and non-distress periods. Here again, the univariate comparison does not control for any differences in firm composition between distressed and non-distressed periods.

3 Empirical Tests and Results

3.1 Segment Performance and Industry Distress

In the first set of tests, we compare the *Sales Growth*, *R&D/Asset* and *Cash Flow* of single-segment firms and segments of conglomerates during times of industry distress. We do this by estimating the panel data regression (1) and report the results in Table IV. In the first two columns, our dependent variable is *Sales Growth*. In the regressions, we include lagged values of *Cash Flow*, *Investment*, *Leverage*, and *Industry-Q* as additional controls. Note that all variables except *Leverage* are measured at the segment level for conglomerates and at the firm level for single-segment firms. Due to lack of segment data, we measure *Leverage* at firm level for both conglomerates and single-segment firms. Please see Appendix A for a definition of the variables. We estimate the regression on the full sample and present the results in column (1) of Table IV. The negative coefficient on *Distress* indicates that on average, firms experience a fall in sales growth during times of industry distress. On the other hand, the positive coefficient on *Distress*Conglomerate* shows that segments of conglomerates in distressed industries have a higher sales growth than single-segment firms. We find that the sum of the coefficients on *Distress* and *Distress*Conglomerate* is -.038 and is statistically not significant. This shows that segments of conglomerates do not experience a lower sales growth during times of industry distress than they do in non-distressed periods. Our result is consistent with both the cross-subsidization and the financial constraints hypothesis, but is inconsistent with the flexibility hypothesis. From the coefficients on the control variables, we find that segments that generate higher cash flows in the past, that do more capital expenditure in the past and that are in industries with higher Tobin's Q experience a higher sales growth. We also find that firms with higher leverage have lower sales growth rates.

In column (2) we include additional terms to compare the sales growth between single-segment firms and segments of conglomerates in the years before and after industry distress. We do this to see if the higher sales growth rate of conglomerates is a continuation of a pre-existing trend and also to see if the higher sales growth continues in the year following industry distress. To do this, we include four additional terms, namely lagged and lead values of *Distress* and *Distress*Conglomerate*, and report the results in column (2). The negative co-efficient on $Distress_{t-1}$ indicates that all firms experience a reduction in sales growth in the year after distress, and the positive co-efficient on $Distress_{t+1}$ indicates that all firms experience a higher sales growth in the year before distress. There is no significant difference between conglomerate segments and single-segment firms in either the year before or the year after distress. Our results indicate that the higher sales growth of conglomerates'segments in the year of distress is not a continuation of a pre-existing trend, nor does it continue in the year following financial distress.

In columns (3) & (4) we compare the R&D expenditures of the segments of conglomerates and single-segment firms during times of industry distress. As mentioned, we use R&D expenditure as a proxy for the investment in the distressed segment. The cross-subsidization and the financial constraints hypothesis would predict that distressed conglomerate segments are likely to have higher R&D expenditures than single-segment firms. On the other hand, the flexibility hypothesis would predict that distressed conglomerate segments are likely to have lower R&D expenditure than single-segment firms. To test these predictions, in column (3) we estimate (1) with *R&D/Asset* as the dependent variable. We include lagged values of *Sales Growth*, *Cash Flow*, *Leverage*, and *Industry Q* as additional controls. Here again we find that while firms on average reduce R&D expenditure during times of industry distress (negative coefficient on *Distress*), segments of conglomerates in distressed industries have a higher R&D expenditure than single-segment firms (positive coefficient on *Distress*Conglomerate*). Overall, we find that the sum of the coefficient on *Distress* and *Distress*Conglomerate* is actually positive and significant, indicating that conglomerates actually increase their R&D expenditure during times of industry distress. In column (4), we include additional terms to compare the R&D intensity of single-segment firms and segments of conglomerates in the years before and after industry distress. The results indicate that there is no significant change in R&D intensity either for single-segment firms or for conglomerates either before or after the year of industry distress.

In columns (5) & (6), we compare the cash flows of the segments of conglomerates and single-segment firms in distressed industries by estimating (1) with *Cash Flow/Asset* as the dependent variable. We include the lagged values of *Sales Growth*, *Investment*, *Leverage*, and *Industry-Q* as additional control variables. The results in column (5) show that while on average firms experience a fall in cash flows in times of industry distress (negative coefficient

on *Distress*), segments of conglomerates in distressed industries experience a higher cash flow than single-segment firms (positive coefficient on *Distress*Conglomerate*). We find that the sum of the coefficients on *Distress* and *Distress*Conglomerate* is -.019 and is statistically significant. This indicates that segments of conglomerates do experience a marginal decrease in cash flows in times of distress. This result is consistent with column (1), which shows a higher sales growth for conglomerates during times of industry distress. In column (6), we compare the cash flows of single-segment firms with those of segments of conglomerates in the years before and after industry distress. The results indicate that while all firms have a lower cash flow in the year after distress, there is no significant difference between conglomerates and single-segment firms in their cash flows either in the year before or in the year after distress. Summarizing our results in this table, we show that distressed segments of conglomerates have higher sales growth,greater R&D expenditure and higher cash flows than single-segment firms. There is no evidence that the differences are a continuation of a pre-existing trend. Our results are consistent with the cross-subsidization and the financial constraints hypotheses, but are inconsistent with the flexibility hypothesis.

3.2 Further Test Within Sub Samples

Our results so far indicate that segments of conglomerates have a higher sales growth, higher R&D expenditure, and higher cash flows during times of industry distress. These results are consistent with both the cross-subsidization and the financial constraints hypotheses. In this section, we do further tests to distinguish between the two hypotheses. If the better performance of conglomerate segments is due to their ability to overcome financial constraints, then we expect the difference between the performance of conglomerate segments and single-segment firms to be greater among the sub-sample of firms that are ex ante likely to face more financial constraints. On the other hand, if the performance difference is due to inefficient cross-subsidization by the conglomerates, then we expect the difference to be greater among the sub-sample of conglomerates that are more prone to cross-subsidize. We now test these predictions. In our tests we use the presence of short-term credit rating as indicating better access to capital. Following existing literature, we classify firms with credit ratings as less constrained than firms without credit ratings. Thus the financial constraints hypothesis predicts that the difference between conglomerates and single-segment firms uncovered in Table IV should be greater in the sub-sample of firms that do not have a credit rating.

Following Rajan et al. (2000) we use the diversity among the segments of a conglomerate in terms of asset size to measure the conglomerate's propensity to cross-subsidize. The idea is that conglomerates with a greater degree of diversity among their segments are likely to have a greater incentive to cross-subsidize. We follow Rajan et al. (2000) in measuring the

degree of diversity across the segments of a conglomerate and create a dummy variable *High Diversity* which takes a value of 1 for conglomerates that have a value of diversity above the sample median. To test the cross-subsidization hypothesis, we successively compare single-segment firms with conglomerates that have above- and below- median levels of diversity.

In Panel A we use *Sales Growth* as the dependent variable, and in columns (1) & (2), we divide our sample into firms with and without credit rating and repeat our tests. Consistent with the financial constraints hypothesis, we find that the difference in performance between conglomerate segments and single-segment firms is confined to the sample of firms without credit rating. In columns (3) & (4), we test the cross-subsidization hypothesis by successively comparing single-segment firms to conglomerates with above- and below-median levels of diversity. The results indicate that while both high and low diversity conglomerates exhibit better sales growth than single-segment firms in times of industry distress, the difference is not statistically significant for both. This evidence is inconsistent with the cross-subsidization hypothesis.

In Panel B, we repeat our tests with *R&D/Asset* as the dependent variable. Again, consistent with the financial-constraints hypothesis, we find that the difference between conglomerates and single-segment firms is greater among the sample of firms without credit ratings. In unreported tests, we find that the difference between the coefficients in columns (1) and (2) is statistically significant. From columns (3) & (4), we find that conglomerates with both high and low diversity have significantly higher R&D expenditure than do single-segment firms. This evidence is again inconsistent with the cross-subsidization hypothesis.

In Panel C, we repeat our tests with *Cash Flow/Asset* as the dependent variable. In columns (1) & (2), we repeat the estimation in the sub-samples with and without credit ratings. Here again we find that conglomerates only have a superior performance if they also have a credit rating. In columns (3) & (4), we compare single-segment firms to conglomerates with high and low diversity. The results indicate that conglomerates with both high and low levels of diversity exhibit better performance than single-segment firms. This result again is inconsistent with the cross-subsidization hypothesis.

The results in this section show that the better performance of segments of conglomerates in comparison to single-segment firms is greater among the sub-sample of firms that do not have a short-term credit rating. Since these firms are likely to be more financially constrained than firms with credit ratings, our results are consistent with the financial constraints hypothesis. We do not find consistent evidence that performance is better in segments of conglomerates that have a higher level of diversity. Thus our evidence offers limited support for the inefficient cross-subsidization hypothesis. Our evidence is also consistent with the findings in Dimitrov and Tice (2006) who find that conglomerates have

a higher sales growth than focused firms in the bank dependent sample.

3.3 Other Firm Characteristics in Distressed Industries

Our results so far indicate that segments of conglomerates have a higher sales growth,greater R&D expenditure and higher cash flow during times of industry distress. We also have evidence that the performance difference is greater among the sample of firms that do not have a credit rating. In this section, we try to probe further to uncover the reasons for the poor performance of single-segment firms. If, according to the financial constraints hypothesis, the performance of single-segment firms is affected because they cannot raise external funding, then it is likely to be reflected in lower investment in working capital by single-segment firms. Furthermore, as argued by Almeida et al. (2004), firms facing financial constraints are also likely to increase the amount of cash balance that they maintain as a precautionary saving. If financial constraints worsen for single-segment firms during periods of industry distress, then this would predict that they are likely to increase their cash balance in comparison to conglomerates. To test these predictions in Table VI, we compare the individual working capital items of conglomerates and single-segment firms. Since we do not have data on working capital for the segments of conglomerates, we run these regressions at the individual firm level. Hence we use $Distress^F$ instead of *Distress* and estimate (1). As mentioned, $Distress^F$ takes a value of 1 for all single-segment firms in distressed industries and also for all conglomerates that have at least one segment in distress. Since a conglomerate is likely to be diversified, even if the distressed segment of the conglomerate changes its working capital level by the same extent as a single-segment firm, since we test at the firm level, we are likely to detect a difference between conglomerates and single-segment firms. Our results have to be interpreted with this caveat in mind.

In column (1) of Table VI, we estimate (1) with *Inventory/Sales* as the dependent variable. The significant negative coefficient on $Distress^F$ indicates that all firms reduce their inventory levels in times of distress. The positive coefficient on $Distress^F * Conglomerate$ indicates that conglomerates have a higher inventory level than single-segment firms. Comparing the coefficients on $Distress^F$ and $Distress^F * Conglomerate$ we find that that conglomerates do not experience a fall in inventory levels when one of their segments is in distress. In column (2), we repeat our regression with *Receivable/Sales* as the dependent variable and obtain similar results. While single-segment firms experience a fall in *Receivable/Sales* during times of industry distress (negative coefficient on $Distress^F$), conglomerates do not experience a corresponding fall. In fact conglomerates actually increase the level of receivables during times of distress. In column 3 we repeat the estimation with *Payable/Sales* as the dependent variable but do not find any significant change in the level of *Payable/Sales* for the average firm. There is some evidence that conglomerates actually increase the level

of payable in comparison to single-segment firms during times of distress. Our results so far indicate that while single-segment firms experience a significant fall in the levels of inventory and receivables during times of industry distress, conglomerates do not experience a corresponding fall. Note that from our results in Table IV, we know that single-segment firms experience a slower sales growth during times of distress. Since we normalize both inventory and receivables by sales, our results in Table VI show that these firms reduce their current assets to a greater extent than warranted by the fall in sales growth.

As mentioned, if single-segment firms experience greater financial constraints during times of distress, then one might expect the firms to accumulate cash due to precautionary motives. In column (4) we test this prediction with *Cash/Asset* as the dependent variable. Consistent with our conjecture, we do find that single-segment firms significantly increase the amount of cash balance they retain during times of industry distress. Conglomerates do not show any corresponding evidence of greater cash balance during times of industry distress. This result is consistent with single-segment firms facing financial constraints during periods of industry distress.

3.4 Why do single-segment firms invest less?

Our results in the previous sections showed that single-segment firms have lower sales growth,lower R&D, lower cash flows and non-cash current assets, and higher cash holdings in times of industry distress. In this section, we try to see if there is any relationship between a firm's propensity to reduce its R&D and non-cash current assets and its tendency to increase cash balance. We do this by estimating (1) on single-segment firms with *R&D/Asset*, *Inventory/Sales* and *Receivable/Sales* as the dependent variables and after including *Cash/Assets* and *Distress*Cash/Assets* as additional regressors. If the firms that reduce their investments during periods of distress are the same firms that increase the amount of cash they retain, then we expect a negative coefficient on the interaction term. In column (1) of table VII, we repeat the estimation from Table VI only on single-segment firms. The negative coefficient on *Distress* indicates that single-segment firms experience a reduction in R&D expenditure during times of industry distress. In column (2) we repeat the regression after including lagged values of *Cash/Assets* and an interaction term between *Distress* and lagged *Cash/Assets*. The negative coefficient on the interaction term clearly shows that the firms that reduce R&D expenditure also increase their cash reserves during times of industry distress. This offers further evidence consistent with the financial constraints hypothesis. In columns (3) & (4) we repeat the estimation with *Inventory/Sales* as the dependent variable. The results in column (4) indicate no significant relationship between the *Cash/Asset* and the *Inventory/Sales* of single-segment firms during times of industry distress. In columns (5) & (6) we repeat the estimation with *Receivables/Sales* as

the dependent variable, and here again we find no significant relationship between a firm's receivables and its cash holdings during times of distress. The results in this section show that, consistent with the financial constraints hypothesis, there is evidence that the single-segment firms that reduce their R&D expenditure during times of distress also increase their cash reserves. There is not much evidence of the firms simultaneously decreasing non-cash working capital and increasing cash balances during times of distress.

3.5 Diversification Discount in Distressed Industries

Our results so far indicate that segments of conglomerates experience a higher sales growth,greater R&D investment and higher cash flow during times of industry distress. Furthermore, we also have evidence that unlike single-segment firms, conglomerates do not reduce their investment in non-cash current assets during times of distress. An important question that is yet to be answered is whether the higher sales growth of conglomerate segments during times of distress is value-enhancing. To answer this question, we estimate how the diversification discount – a measure of conglomerate value in comparison to single-segment firms – changes during times of industry distress. If the increased investment by conglomerates is efficient, then we expect the discount to reduce during times of distress. On the other hand, if the higher sales growth in conglomerates arises due to inefficient cross-subsidization, then we expect the discount to increase during times of distress. We test these alternate predictions in Table VIII, where we estimate a model similar to (1) on all conglomerate firms with *Discount* as the dependent variable. As mentioned, *Discount* is the difference between the Tobin's Q of the conglomerate and an asset-weighted average industry-Q of the segments of the conglomerate. We use the fraction of book value of the segments'assets as the weights for calculating the average industry-Q. Our main variable of interest is $Distress^F$. If the discount reduces during times of industry distress, then we expect a negative coefficient on $Distress^F$. We estimate the regression on all conglomerate firms and provide the result in column (1). The negative coefficient on $Distress^F$ shows that the discount significantly reduces during times of industry distress. Interestingly, we do not find any change in the discount from the sample average both in the year before and in the year after distress. Our results earlier indicate that the difference in performance between conglomerates and single-segment firms is greater in the sub-sample of firms that do not have a credit rating. To see if the reduction in diversification discount is also greater for the conglomerates without a credit rating, in columns (2) & (3) we divide the sample into two sub-samples based on whether or not the firm has a credit rating. The results indicate that the reduction in diversification discount is confined to the sub-sample of conglomerates that do not have a credit rating. This offers significant support for our hypothesis. In columns (4) & (5), we repeat the estimation in sub-samples of conglomerates with high and low

levels of diversity. Surprisingly, the results indicate that the reduction in discount is greater for conglomerates that have a higher level of diversity. This offers evidence inconsistent with the cross-subsidization hypothesis. Overall, our results indicate that conglomerates, especially those without a credit rating, experience a significant reduction in the diversification discount during times of industry distress. We note that the average discount in our sample is 0.19. Comparing this to the coefficient in column (3), we find that the discount almost disappears among conglomerates without a credit rating during times of distress. Our evidence is thus consistent with the financial constraints hypothesis.

4 Robustness Tests

We do a number of robustness tests of our results. First, we repeat our tests with alternative definitions of conglomerate. To recall, we define a firm as a conglomerate if it reports positive assets and sales in more than one 3-digit SIC code industry. We repeat our tests by classifying firms as conglomerates if they report positive assets and sales in more than one 4-digit SIC code industry and obtain results similar to the ones reported. We also define a firm as a conglomerate if it reports positive assets and sales in more than one Fama-French industry and get similar results. Since the Financial Accounting Standards Board (FASB) changed the rule for reporting segment data in 1997, pooling data from before and after 1997 may be problematic. To overcome this, we repeat our regressions separately for the pre- and post-1997 samples. While our results are statistically less significant for some of the specifications, they are qualitatively similar in both the sub-samples to the ones reported here. There is a concern whether we should pool the data before and after 1997.

Prior research has indicated that there is significant arbitrariness in the way Compustat and the firms identify individual segments. To control for any arbitrary changes in divisional identification, we repeat our tests after confining the sample to single-segment firms and conglomerates that do not change the number of reported segments for one year before the industry distress and get results similar to the ones reported here.

Conclusion

The conglomerate as an organizational form has received tremendous attention from academics and investors. Research about conglomerates has thus far tried to answer the question of whether the ICMs in conglomerates are efficient. Stein (2003) suggests that instead of treating the bright-side and dark-side models of conglomerates as competing hypotheses, it might be more fruitful to ask,"When are internal capital markets most likely to add

value?" Our paper is an attempt to answer this question. We compare the behavior of conglomerate segments to single-segment firms during periods of industry distress to evaluate the applicability of the different theories.

We find that conglomerate segments have a higher sales growth, greater R&D expenditure and higher cash flows during periods of industry distress. The differences are greater in a sample of firms that do not have credit ratings, indicating greater financial constraints. We also find that single-segment firms reduce their inventory and receivables and significantly increase their cash holding during times of industry distress. There is some evidence that the firms that accumulate cash also reduce R&D to a greater extent. Most importantly, we find that the valuation discount for conglomerates in comparison to single-segment firms decreases when one of the conglomerates' segments is in distress. Overall, our evidence is consistent with the financial constraint hypotheses and highlights the benefits of conglomerates during periods of industry distress.

Table I: Year-wise Distribution of Distressed Industries and Firms

This table reports the year-wise distribution of our sample. column (1) reports the number of distressed industries and column (2) the number of non-distressed industries. The number of firms in distressed and non-distressed industries is given in columns (3) & (4) while the number of conglomerates and single-segment firms is given in columns (5) & (6). We identify industries in distress following the procedure in Opler and Titman (1994). Specifically, we classify an industry identified by a 3-digit SIC code as being distressed if the median stock return for the two-year period beginning from that year is less than -30% and the median sales growth for the same two-year period is negative. We classify firms as conglomerates if they report positive sales and total assets in more than one 3-digit SIC industry.

Year	Distressed Industries	Non-Distressed Industries	Distressed Firms	Non-Distressed Firms	Conglomerates	single-segment Firms
1984	3	92	193	1781	671	1303
1985	2	100	163	1893	651	1405
1986	2	104	136	2019	610	1545
1987		108		2327	606	1721
1988		110		2256	585	1671
1989	4	116	123	2173	572	1724
1990	5	115	103	2229	584	1748
1991	1	118	6	2508	590	1924
1992	1	121	7	2796	616	2187
1993	1	129	17	3156	623	2550
1994	1	125	26	3379	630	2775
1995		133		3688	627	3061
1996	1	138	57	4164	631	3590
1997	2	141	69	4250	579	3740
1998	8	123	118	3547	633	3032
1999		122		3352	627	2725
2000	6	111	233	3107	571	2769
2001	10	105	614	2377	512	2479
2002	1	108	13	2696	460	2249
Total	48	2219	1878	53698	11378	44198

Table II: Summary Statistics

This table reports the summary statistics of the key variables used in our analysis. Panel A summarizes the data for segments of conglomerates while Panel B summarizes the data for single-segment firms. *Sales* is the annual sales in $ Million. *R&D/Asset* is the ratio of research and development expenditure to the book value of segment assets; *Cash Flow/Asset* is the ratio of total cash flow to the book value of segment assets where cash flow is the sum of segment's operating profit and depreciation; *Industry Q* is the median ratio of the market value of total assets to the book value of total assets of all firms in the same 3-digit SIC code industry; *Leverage* is the ratio of the book value of total debt to the book value of total assets; *Inventory/Sales* is the ratio of the book value of inventory at the end of the year to total sales; *Receivable/Sales* is the ratio of the book value of receivables at the end of the year to total sales; *Payable/Sales* is the ratio of the book value of payables at the end of the year to total sales; *Cash/Asset* is the ratio of the book value of cash and marketable securities to total assets; *Discount* is the difference between the conglomerate's Tobin's Q and an asset-weighted average industry-Q. We use the fraction of book value of assets of the conglomerate's segments as the weights for measuring average industry-Q. *Rated* is a dummy variable that takes a value of 1 if the firm has a short-term credit rating from S&P; *High Diversity* is a dummy variable that identifies conglomerates that have a diversity index above the sample median. We measure the diversity index of a conglomerate following the procedure outlined in Rajan et al. (2000). The data covers the period 1988-2002.The stock price data is from CRSP; segment-level financial data is from the Compustat Business Segment Files; and firm-level data is from the Compustat Industrial Annual files.

Panel A: Conglomerates

Variable	N	Mean	Min.	Median	Max.	Std. Dev.
Sales[1]($MM)	23132	936	0	133	141230	4060.390
Sales Growth[1]	16136	0.146	-0.611	0.067	3.171	0.464
R&D/Asset[1]	16169	0.005	0	0.000	0.441	0.027
Cash Flow/Asset[1]	16169	0.174	-0.518	0.166	0.680	0.182
Industry Q[1]	23132	1.641	0.893	1.473	5.598	0.653
Leverage	22382	0.427	0.042	0.409	1.158	0.210
Inventory/Sales	18487	0.122	0	0.097	0.902	0.133
Receivable/Sales	18476	0.153	0	0.142	1.272	0.155
Payable/Sales	18601	0.075	0	0.059	1.272	0.111
Cash/Asset	23130	0.070	0	0.024	0.857	0.108
Rated	23132	0.358	0	0	1	0.479
Discount (%)	23132	0.190	-2.858	0.220	2.406	0.766
High Diversity	23132	0.565	0	1	1	0.496

[1] Segment level variables.

Panel B: single-segment Firms

Variable	N	Mean	Min.	Median	Max.	Std. Dev.
Sales[1]($MM)	44198	863.287	0.000	122.412	195805	4502.786
Sales Growth[1]	34810	0.216	-0.611	0.109	3.171	0.504
R&D/Asset[1]	35084	0.052	0	0	0.441	0.093
Cash Flow/Asset[1]	35084	0.122	-0.518	0.136	0.680	0.182
Industry Q[1]	44198	1.948	0.893	1.666	5.598	0.889
Leverage	43194	0.391	0.042	0.354	1.158	0.237
Inventory/Sales	35052	0.130	0	0.080	0.902	0.163
Receivable/Sales	35113	0.197	0	0.160	1.272	0.207
Payable/Sales	35415	0.109	0	0.066	1.272	0.177
Cash/Asset	44196	0.168	0	0.066	0.857	0.218
Rated	44198	0.156	0	0	1	0.363

Table III: Univariate Tests

This table reports the mean values of the key variables for segments of conglomerates and single-segment firms in distressed and non-distressed industries. *R&D/Asset* is the ratio of segment's research and development expenditure to the book value of segment assets; *Cash Flow/Asset* is the ratio of segment's cash flow to segment assets, where cash flow is measured as the sum of segment's operating profit plus depreciation; *Inventory/Sales* is the ratio of book value of inventory at the end of the year to total sales; *Receivable/Sales* is the ratio of book value of receivables at the end of the year to total sales; *Payable/Sales* is the ratio of book value of payables at the end of the year to total sales; *Cash/Asset* is the ratio of book value of cash and marketable securities to total assets; *Leverage* is the ratio of book value of total debt to book value of total assets, *Discount* is the difference between the conglomerate's Tobin's Q and an asset-weighted average industry-Q. We use the fraction of the book value of the assets of the conglomerate's segments as the weights for measuring average industry-Q. The data covers the period 1984-2002. The stock price data is from CRSP; segment-level financial data is from the Compustat Business Segment Files; and firm-level data is from the Compustat Industrial Annual files.

	Conglomerates			single-segment Firms		
	Distressed	Non-Distressed	Difference	Distressed	Non-Distressed	Difference
Sales Growth[1]	0.057	0.148	-0.091***	0.035	0.221	-0.186***
R&D/Asset[1]	0.0028	0.0047	-0.002	0.055	0.052	0.003
Cash Flow/Asset[1]	0.139	0.175	-0.036***	0.034	0.125	-0.091***
Inventory/Sales	0.143	0.126	-0.017*	0.153	0.130	0.024***
Receivable/Sales	0.164	0.155	0.009	0.173	0.198	-0.024***
Payable/Sales	0.101	0.076	0.025***	0.109	0.113	0.004
Cash/Asset	0.064	0.071	0.007	0.185	0.167	0.018***
Leverage	.409	0.428	-0.019*	0.350	0.392	-0.042***
Discount	.182	.184	.002			

[1] Segment level variables.

Table IV: Performance of Conglomerate Segments and single-segment Firms in Distressed Industries

This table reports the results of a panel data regression of segment *Sales Growth*, *R&D/Asset* and *Cash flow/Asset* on segment and firm characteristics. Specifically, we estimate the following panel regression model:

$$y_{i,j,t} = \alpha + \beta_1 \text{Distress}_{j,t} + \beta_2 \text{Distress}_{j,t} \times \text{Conglomerate}_{i,t} + \gamma \text{Controls} + \text{Time FE} + \text{Segment FE},$$

where the dependent variable y is *Sales Growth* in columns (1) & (2), *R&D/Asset* in columns (3) & (4) and *Cash Flow/Asset* in columns (5) & (6). *R&D/Asset* is the ratio of research and development expenditure to the book value of segment's assets; *Cash Flow/Asset* is the ratio of segment's cash flow to segment's assets; where cash flow is measured as the sum of operating profit plus depreciation; *Distress* is a dummy variable that takes a value of 1 if the segment's industry is in distress in that year. We classify an industry as being distressed if the median firm has a negative two-year sales growth and a two-year stock return less than -30%. *Conglomerate* is a dummy variable that takes a value of 1 if the firm reports positive assets and sales in more than one 3-digit SIC industry; *Investment/Asset* is the segment's investment (capital expenditure) normalized by firm's total assets; *Industry Q* is the median Tobin'Q of all single-segment firms in the same 3-digit SIC code industry; *Leverage* is the ratio of the book value of total debt to the book value of total assets. The data covers the period 1988-2002. The stock price data is from CRSP; segment level financial data is from the Compustat Business Segment Files; and firm-level data is from the Compustat Industrial Annual files.

	Sales Growth		**R&D**		**Cash Flow**	
	(1)	(2)	(3)	(4)	(5)	(6)
Distress_t	-.137	-.152	-.008	-.010	-.054	-.067
	(.019)***	(.021)***	(.002)***	(.002)***	(.006)***	(.008)***
Distress_t*Conglomerate	.069	.108	.010	.013	.035	.055
	(.032)**	(.040)***	(.002)***	(.002)***	(.011)***	(.014)***
Distress_{t-1}		-.090		.0004		-.042
		(.031)***		(.002)		(.007)***
Distress_{t-1} *Conglomerate		-.005		-.0005		.013
		(.042)		(.002)		(.014)
Distress_{t+1}		.055		.0005		-.006
		(.021)***		(.002)		(.008)
Distress_{t+1} *Conglomerate		-.037		-.001		.006
		(.044)		(.002)		(.014)
Cash Flow/Asset_{t-1}	-.235	-.239	-.00007	.001		
	(.033)***	(.038)***	(.004)	(.004)		
Sales Growth_{t-1}			-.0005	-.0004	.023	.021
			(.0009)	(.001)	(.002)***	(.003)***
$\text{Investment/Asset}_{t-1}$	.476	.409			.008	.012
	(.043)***	(.049)***			(.012)	(.014)
Industry Q_{t-1}	.039	.028	.0002	-.0006	.012	.012
	(.006)***	(.007)***	(.0007)	(.0008)	(.002)***	(.002)***
Leverage_{t-1}	-.082	-.065	.003	.003	-.003	-.0009
	(.020)***	(.024)***	(.003)	(.003)	(.007)	(.008)
Obs.	38238	29663	38191	29627	38191	29627
R^2	.404	.403	.878	.884	.709	.704

Table V: Further Test within Sub Samples

This table reports the results of a panel data regression of segment *Sales Growth*, *R&D/Asset* and *Cash flow/Asset* on segment and firm characteristics. Specifically we estimate the panel regression

$$y_{i,j,t} = \alpha + \beta_1 \text{Distress}_{j,t} + \beta_2 \text{Distress}_{j,t} \times \text{Conglomerate}_{i,t} + \gamma \text{Controls} + \text{Time FE} + \text{Segment FE},$$

where the dependent variable y is *Sales Growth* in Panel A, *R&D/Asset* in Panel B, and *Cash Flow/Asset* in Panel C. *R&D/Asset* is the ratio of research and development expenditure to book value of segment's assets; *Cash Flow/Asset* is the ratio of segment's cash flow to segment's assets, where cash flow is measured as the sum of segment's operating profit plus depreciation; and *Distress* is a dummy variable that takes a value of 1 if the segment's industry is in distress that year. We classify an industry as being distressed if the median firm has a negative two-year sales growth and a two-year stock return less than -30%; *Conglomerate* is a dummy variable that takes a value of 1 if the firm reports positive assets and sales in more than one 3-digit SIC code industry. The sample in column (1) is limited to firms that have a credit rating, while the sample in column (2) is limited to firms without a credit rating. The sample in column (3) is limited to single-segment firms and conglomerates that have a diversity index above the sample median, while the sample in column (4) is limited to single-segment firms and conglomerates that have a diversity index below the sample median. We measure the diversity index of a conglomerate following the procedure outlined in Rajan et al. (2000). The control variables in Panel A include *Cash Flow/Asset*, *Investment/Asset*, *Industry Q* and *Leverage*. *Investment/Asset* is the segment's investment (capital expenditure) normalized by segment's assets; *Industry Q* is the median Tobin'q of all single-segment firms in the same 3-digit SIC code industry; *Leverage* is the ratio of book value of total debt to book value of total assets. The data covers the period 1988-2002. The stock price data is from CRSP, segment level financial data is from the Compustat Business Segment Files while firm level data is from the Compustat Industrial Annual files.

	Panel A: Sales Growth			
	Rated	Not Rated	High Diversity	Low Diversity
	1	2	3	4
Distress_t	-.096 (.035)***	-.140 (.022)***	-.134 (.019)***	-.139 (.019)***
Distress_t*Conglomerate	-.028 (.047)	.104 (.047)**	.076 (.046)	.060 (.042)
Obs.	9783	28455	33290	31996
R^2	.527	.408	.41	.401

The sample in column (1) is limited to firms that have a credit rating, while the sample in column (2) is limited to firms without a credit rating. The sample in column (3) is limited to single-segment firms and conglomerates that have a diversity index above the sample median, while the sample in column (4) is limited to single-segment firms and conglomerates that have a diversity index below the sample median. We measure the diversity index of a conglomerate following the procedure outlined in Rajan et al. (2000). The control variables whose coefficients are suppressed include *Sales Growth*, *Cash Flow/Asset*, *Industry Q* and *Leverage*. The data covers the period 1988-2002. The stock price data is from CRSP; segment level financial data is from the Compustat Business Segment Files and firm-level data is from the Compustat Industrial Annual files.

	Panel B: R&D/Asset			
	Rated	Not Rated	High Diversity	Low Diversity
	1	2	3	4
Distress_t	-.006 (.003)*	-.008 (.002)***	-.008 (.002)***	-.008 (.002)***
Distress_t*Conglomerate	.006 (.004)*	.011 (.002)***	.010 (.002)***	.009 (.002)***
Obs.	9778	28413	33249	31956
R^2	.879	.881	.878	.875

The sample in column (1) is limited to firms that have a credit rating, while the sample in column (2) is limited to firms without a credit rating. The sample in column (3) is limited to single-segment firms and conglomerates that have a diversity index above the sample median, while the sample in column (4) is limited to single-segment firms and conglomerates that have a diversity index below the sample median. We measure the diversity index of a conglomerate following the procedure outlined in Rajan et al. (2000). The control variables whose coefficients are suppressed include *Sales Growth*, *Investment/Asset*, *Industry Q* and *Leverage*. The data covers the period 1988-2002. The stock price data is from CRSP; segment-level financial data is from the Compustat Business Segment Files; and firm-level data is from the Compustat Industrial Annual files.

	Panel C: Segment Cash Flow			
	Rated	Not Rated	High Diversity	Low Diversity
	1	2	3	4
Distress_t	-.032	-.052	-.054	-.054
	(.013)**	(.007)***	(.006)***	(.006)***
Distress_t*Conglomerate	.006	.042	.036	.037
	(.017)	(.015)***	(.014)**	(.013)***
Obs.	9778	28413	33249	31956
R^2	.716	.724	.713	.715

Table VI: Other Firm Characteristics in Distressed Industries

This table reports the results of a panel data regression of firm *Inventory/Sales*, *Receivable/Sales*, *Payable/Sales* and *Cash/Assets* on firm and industry characteristics. Specifically, we estimate the panel regression

$$y_{i,t} = \alpha + \beta_1 \text{Distress}^F_{j,t} + \beta_2 \text{Distress}^F_{j,t} * \text{Conglomerate} + \gamma \text{Controls} + \text{Time FE} + \text{Firm FE},$$

where the dependent variable y is *Inventory/Sales* in column (1), *Receivable/Sales* in column (2), *Payable/Sales* in column (3) and *Cash/Assets* in column (4). *Inventory/Sales* is the ratio of the book value of inventory at the end of the year to total sales; *Receivable/Sales* is the ratio of the book value of receivables at the end of the year to total sales; *Payable/Sales* is the ratio of the book value of payable at the end of the year to total sales; *Cash/Asset* is the ratio of book value of cash and marketable securities to total assets;and Distress^F is a dummy variable that takes a value of 1 if the firm's industry is in distress and 0 otherwise. In the case of conglomerates, this variable takes a value 1 if the industry of any one of the segments of the conglomerate is in distress. *Conglomerate* is a dummy variable that takes a value of 1 if the firm reports positive assets and sales in more than one 3-digit SIC code industry. The data covers the period 1988-2002. The stock price data is from CRSP; segment-level financial data is from the Compustat Business Segment Files;and firm-level data is from the Compustat Industrial Annual files.

	Inventory/Sales	Receivable/Sales	Payable/Sales	Cash/Asset
	(1)	(2)	(3)	(4)
Distress^F_t	-.010	-.015	-.002	.017
	(.005)*	(.006)**	(.004)	(.005)***
Distress^F_t * Conglomerate	.010	.029	.018	-.017
	(.007)	(.009)***	(.007)**	(.006)***
Log(Sales)_{t-1}	-.039	-.094	-.090	
	(.003)***	(.003)***	(.004)***	
Log(Assets)_{t-1}				-.024
				(.002)***
Obs.	44068	44105	44495	44714
R^2	.734	.657	.72	.758

Table VII: R&D, Inventory and Accounts Receivable in single-segment Firms in Distressed Industries

This table reports the results of a panel data regression of *R&D/Asset*, *Inventory/Sales*, and *Receivable/Sales* on firm and industry characteristics. Specifically we estimate the panel regression

$$y_{i,t} = \alpha + \beta_1 \text{Distress}_{j,t} + \beta_2 \text{Cash/Asset}_{i,t-1} + \beta_3 * \text{Distress}_{j,t} * \text{Cash/Asset}_{i,t-1} + \gamma * \text{Controls} + \text{Firm FE} + \text{Time FE},$$

where y is *R&D/Asset* in columns (1) & (2), *Inventory/Sales* in columns (3) & (4) and *Receivables/Sales* in columns (5) & (6). Here since we are looking at single-segment firms, segment level variables are actually at firm level. *R&D/Asset* is the ratio of firm's research and development expenditure to the book value of firm's total assets; *Inventory/Sales* is the ratio of book value of inventory at the end of the year to total sales; *Receivable/Sales* is the ratio of book value of receivables at the end of the year to total sales; *Distress* is a dummy variable that takes a value 1 if the firm's industry is in distress and 0 otherwise; *Cash/Asset* is the ratio of the book value of cash and marketable securities to total assets; *Industry Q* is the median Tobin'Q of all single-segment firms in the same 3-digit SIC code industry; *Cash Flow/Asset* is the ratio of firm's cash flow to the book value of total assets, and *Leverage* is the ratio of book value of total debt to book value of total assets. The data covers the period 1988-2002 and the stock price data is from CRSP; segment level financial data is from the Compustat Business Segment Files; and firm-level data is from the Compustat Industrial Annual files.

	R&D/Asset		Inventory/Sales		Receivable/Sales	
	(1)	(2)	(3)	(4)	(5)	(6)
Distress_t	-.008	-.006	-.006	-.005	-.015	-.015
	(.002)***	(.002)***	(.005)	(.005)	(.006)**	(.006)**
Cash/Asset_{t-1}*Distress_t		-.043		-.017		.007
		(.010)***		(.027)		(.034)
Cash/Asset_{t-1}		-.005		-.017		.003
		(.005)		(.007)**		(.011)
Industry Q_{t-1}	.00009	.0002				
	(.0008)	(.0008)				
Sales Growth_{t-1}	-.0004	-.0004				
	(.001)	(.001)				
Cash Flow/Asset_{t-1}	-.0008	-.0004				
	(.005)	(.005)				
Log(Sales)_{t-1}			-.041	-.042	-.102	-.102
			(.003)***	(.003)***	(.004)***	(.004)***
Leverage $_{t-1}$	.004	.003	-.019	-.021	-.025	-.025
	(.003)	(.003)	(.005)***	(.005)***	(.008)***	(.008)***
Obs.	27014	27013	33762	33761	33831	33830
R^2	.871	.871	.729	.73	.664	.664

Table VIII: Diversification Discount

This table reports the results of a panel regression that investigates the impact of industry distress on the conglomerate discount. Specifically we estimate the panel regression

$$\text{Discount}_{i,t} = \alpha + \beta_1 \text{Distress}^F_{j,t-1} + \beta_2 \text{Distress}^F_{j,t} + \beta_3 * \text{Distress}^F_{j,t+1} + \text{Time FE} + \text{Firm FE},$$

where *Discount* is the difference between the conglomerate's Tobin's Q and an asset-weighted average industry-Q. We use the fraction of book value of assets of the conglomerate's segments as the weights for measuring the average industry-Q. $Distress^F$ is a dummy variable that takes a value of 1 if any of the segments of a conglomerate is in a distressed industry. In column (1) we estimate the regression on all conglomerates, while the sample in column (2) is confined to conglomerates with a credit rating, in column (3) the sample is limited to conglomerates without a credit rating; the sample in column (4) is limited to conglomerates that have a diversity index above the sample median, while in column (5) the sample is limited to conglomerates that have a diversity index below the sample median. We measure the diversity index of a conglomerate following the procedure outlined in Rajan et al. (2000). The standard errors are robust and clustered at the level of individual firms.

	Diversification Discount				
	Full Sample	Sub-samples on Rating		Sub-samples on Diversity	
		Rated	Non-Rated	High Diversity	Low Diversity
	(1)	(2)	(3)	(4)	(5)
Distress^F_t	-.125	-.034	-.170	-.180	.010
	(.053)**	(.093)	(.065)***	(.069)***	(.096)
Distress^F_{t-1}	-.012	-.043	.009	.001	-.039
	(.063)	(.106)	(.077)	(.074)	(.135)
Distress^F_{t+1}	.021	-.001	.017	.033	-.012
	(.070)	(.121)	(.085)	(.087)	(.113)
Obs.	7714	2573	5141	5299	2415
R^2	.018	.026	.018	.019	.022

References

Almeida, H., M. Campello, and M. S. Weisbach (2004). The cash flow sensitivity of cash. *Journal of Finance 59*(4), 1777–1804.

Berger, P. G. and E. Ofek (1995). Diversification's effect on firm value. *Journal of Financial Economics 37*(1), 39–65.

Billett, M. T. and D. C. Mauer (2003). Cross-subsidies, external financing constraints, and the contribution of the internal capital market to firm value. *Review of Financial Studies 16*(4), 1167–1201.

Campa, J. M. and S. Kedia (2002, 08). Explaining the diversification discount. *Journal of Finance 57*(4), 1731–1762.

Campello, M. (2002). Internal capital markets in financial conglomerates: Evidence from small bank responses to monetary policy. *Journal of Finance 57*(6), 2773–2805.

Chevalier, J. (2004). What do we know about cross-subsidization? evidence from merging firms. *Advances in Economic Analysis & Policy 4*(1), 1218–1218.

Comment, R. and G. A. Jarrell (1994). Corporate focus and stock returns. *Journal of Financial Economics 37*, 67–87.

Dimitrov, V. and S. Tice (2006). Corporate diversification and credit constraints: Real effects across the business cycle. *Review of Financial Studies 19*(4), 1465–1498.

Fama, E. F. and K. R. French (1997). Industry costs of equity. *Journal of Financial Economics 43*(2), 153–193.

Gopalan, R., V. Nanda, and A. Seru (2007). Affiliated firms and financial support: Evidence from indian business groups. *Journal of Financial Economics* forthcoming.

Graham, J. R., M. L. Lemmon, and J. G. Wolf (2002). Does corporate diversification destroy value? *Journal of Finance 57*(2), 695–720.

Houston, Joel, C. J. and D. Marcus (1997). Capital markets frictions and the role of internal capital markets in banking. *Journal of Financial Economics 46*, 135–164.

Hubbard, Glenn, R. and D. Palia (1999). A reexamination of the conglomerate merger wave in the 1960s: An internal capital markets view. *Journal of Finance 54*, 1131–1152.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review 76*(2), 323–29.

Khanna, N. and S. Tice (2000). Strategic responses of incumbents to new entry: The effect of ownership structure, capital structure, and focus. *Review of Financial Studies 13*(3), 749–79.

Khanna, T. and K. Palepu (2000). Is group affiliation profitable in emerging markets? an analysis of diversified indian business groups. *Journal of Finance 55*, 867–891.

Kim, Han, E. and J. J. McConnell (1977). Corporate mergers and the co-insurance of corporate debt. *Journal of Finance 32*, 349–363.

Lamont, O. (1997). Cash flow and investment: Evidence from internal capital markets. *Journal of Finance 52*(1), 83–109.

Lang, L. and R. Stulz (1994). Tobins q, corporate diversification and firm performance. *Journal of Political Economy 102*, 1248–1280.

Lewellen, W. G. (1971). A pure financial rationale for the conglomerate merger. *Journal of Finance 26*(2), 521–37.

Lins, K. and H. Servaes (1999). International evidence on the value of corporate diversification. *Journal of Finance 54*, 2215–2239.

Maksimovic, V. and G. Phillips (2002). Do conglomerate firms allocate resources inefficiently across industries? theory and evidence. *Journal of Finance 57*(2), 721–767.

Maksimovic, V. and G. Phillips (2007, May). Conglomerate firms and internal capital markets. In B. E. Eckbo (Ed.), *Handbook of Corporate Finance:Empirical Corporate Finance*, Volume 1, Chapter 8, pp. 423–480. North Holland.

Mathews, R. D. and D. T. Robinson (2006). Market structure, internal capital markets, and the boundaries of the firm. Working Paper, Duke University.

Matsusaka, J. G. and V. Nanda (2002). Internal capital markets and corporate refocusing. *Journal of Financial Intermediation 11*(2), 176–211.

Opler, T. C. and S. Titman (1994). Financial distress and corporate performance. *Journal of Finance 49*(3), 1015–40.

Rajan, R., H. Servaes, and L. Zingales (2000). The cost of diversity: The diversification discount and inefficient investment. *Journal of Finance 55*(1), 35–80.

Scharfstein, D. S. (1998). The dark side of internal capital markets ii: Evidence from diversified conglomerates. *NBER Working Paper 6352*.

Scharfstein, D. S. and J. C. Stein (2000). The dark side of internal capital markets: Divisional rent-seeking and inefficient investment. *Journal of Finance 55*(6), 2537–2564.

Shin, H.-H. and R. Stultz (1998). Are internal capital markets efficient? *Quarterly Journal of Economics 113*, 531–552.

Stein, J. C. (1997). Internal capital markets and the competition for corporate resources. *Journal of Finance 52*(1), 111–33.

Stein, J. C. (2003). Agency, information and corporate investment. In G. Constantinides, M. Harris, and R. M. Stulz (Eds.), *Handbook of the Economics of Finance*, Volume 1, Chapter 2, pp. 111–165. Elsevier.

Villalonga, B. (2004). Diversification discount or premium? new evidence from bits establishment- level data. *Journal of Finance 59*(2), 475–502.

Whited, T. M. (2001). Is it inefficient investment that causes the diversification discount? *Journal of Finance 56*(5), 1667–1691.

Appendix A : Variable definition and data sources

Variable	Definition
Segment sales growth	Segment sales divided by the segment sales in last year Data are from Compustat Segment files
Investment/Asset$_{t-1}$	Segment capital expenditure divided by the segment asset in last year Data are from Compustat Segment files
Cash flow /Asset$_{t-1}$	Segment cash flow divided by the segment asset in last year Data are from Compustat Segment files
Industry Q	The average Tobin's Q of the three digit SIC industry in which the segment operates
Leverage	The sum of current liabilities and long-term debt divided by total firm assets Compustat((Item 34+Item9)/Item 6)
Distress	Dummy variable which equals to 1 if the median firm in the four digit SIC industry composed by single-segment firms has a negative two year sales growth and a two year stock return less than -30%
Conglomerate	Dummy variable which equals to 1 if a firm reports positive sales and assets in more than one Fama-French industry
Sales	Firm sales (Compustat Item 12)
Assets	Firm assets(Compustat Item 6)
Inventory/Sales	Firm inventory(Compustat Item 3)divided by firm sales
Receivable/Sales	Firm accounts receivable (Compustat Item 2) divided by firm sales
Payable/Sales	Firm accounts payable (Compustat Item 70) divided by firm sales
Cash/Assets	Firm cash and short-term equivalent (Compustat item 1) divided by firm assets
$Distress^F$	Dummy variable which takes a value 1 if any of the segments of a conglomerate is in distress
Rated	Dummy variable which takes a value 1 if the firm has short-term credit rating from S&P
High Diversity	Dummy variable which equals to 1 if the conglomerate has a diversity index above the sample median.We measure the diversity index of a conglomerate following the procedure outlined in Rajan et al. (2000)
Discount	The difference between the conglomerate's Tobin's Q and an asset weighted average industry-Q. We use the fraction of book value of assets of the segments of the conglomerate as the weights for measuring average industry-Q