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Bankruptcy risk, costs and corporate diversification

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ABSTRACT

This paper studies the impact of diversification on firms that file for Chapter 11 bankruptcy. Prior research suggests that diversification affects both the probability and costs of distress. Treating bankruptcy as a special case of distress, we find that diversification reduces the likelihood of bankruptcy and liquidation in Chapter 11, which is consistent with the coinsurance hypothesis. However, we observe higher bankruptcy costs as measured by time spent in Chapter 11 and inefficient segment investment for diversified firms. Our evidence is consistent with the idea that diversification provides benefits to managers in terms of job security rather than to firms. Our findings may help firms to make diversification decisions and creditors determine lending policies toward different forms of organizations.

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1. Introduction

The expected costs of financial distress are relevant for many financial decisions. These costs can be decomposed into the risk and costs of distress. The finance literature suggests that corporate diversification affects both the probability and costs of distress for firms. While other effects of corporate diversification have been extensively studied in the literature, the impact of diversification on the risk and the costs of distress has received relatively less empirical attention. Further, the theoretical research in the area disagrees over whether corporate diversification reduces or increases the risk and costs of distress. Using a sample of distressed firms, we provide evidence of the impact of diversification on expected distress costs by studying *both* the changes in probability and the costs of distress. Our findings contribute to the growing body of literature about the effect of corporate diversification on firms.

In this paper, our measure of diversification is the number of business segments (BUSSEG) as reported by Compustat. We define the onset of distress as a Chapter 11 filing by a firm and test the impact of diversification on the risk and costs of bankruptcy. We argue that a sample of bankrupt firms is likely to consist of firms that are at least as distressed as firms restructuring privately and that it is more accurate to identify the beginning and the end of the Chapter 11 process than the distress process. First, we study the issue of bankruptcy probability. The coinsurance effect argu-

ment suggests that corporate diversification helps to reduce the risk of distress if there is an imperfect correlation among the segment cash flows of a multi-segment firm (e.g., Lewellen, 1971; Mansi and Reeb, 2002; Leland, 2007). By contrast, Scott (1977) and Furfine and Rosen (2011) raise the interesting possibility that diversification may not reduce the risk of distress. Our result is consistent with the prediction of the coinsurance hypothesis—focused firms have a higher probability of filing for Chapter 11 than comparable diversified firms. Further, once in Chapter 11, the focused firms in our sample liquidate more often than diversified firms.

By focusing on the risk of distress alone, the aforementioned papers implicitly assume that the costs of distress are similar for diversified and focused firms. While we cannot identify any empirical research, several theoretical studies on the impact of diversification on the costs of distress indicate that diversification may increase or reduce these costs (e.g., Rajan et al., 2000; Scharfstein and Stein, 2000; Khanna and Tice, 2001; Matsusaka, 2001). In this paper, we empirically examine the impact of corporate diversification on the costs of distress. We note that the costs include those incurred by firms both when they are distressed outside of formal bankruptcy (financial distress costs) and when they are operating in Chapter 11 (bankruptcy costs). We measure the costs of distress by examining the costs incurred by bankrupt firms during the Chapter 11 process.¹

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E-mail addresses: singhal@oakland.edu (R. Singhal), zhu2@oakland.edu (Y. Zhu).¹ Most large firms prefer the Chapter 11 bankruptcy process (see Bris et al., 2006). Therefore, bankruptcy refers to the Chapter 11 bankruptcy process in this paper.

We employ two techniques to estimate the effect of diversification on bankruptcy costs. Lawless and Ferris (2000) find that each additional year in Chapter 11 results in direct bankruptcy costs of about 2.2% of the total distribution in a bankruptcy case. Further, Thorburn (2000) and Bris et al. (2006) argue that time spent in Chapter 11 is a proxy for indirect bankruptcy costs because the negative effects of bankruptcy on a firm's position in the product and capital markets are likely to increase with the time the firm spends in the bankruptcy process. For example, a bankrupt firm may find it difficult to retain customers and employees, raise funds, and make much needed investments the longer it spends in the bankruptcy process. Therefore, we seek to determine whether diversification has an impact on the time that our sample firms spent in the bankruptcy process. Another reason diversification may increase costs for firms in Chapter 11 is that diversified firms may have investment inefficiencies because efficient segments of diversified firms may cross-subsidize inefficient ones (e.g., Berger and Ofek, 1995; Shin and Stulz, 1998; Scharfstein and Stein, 2000; Rajan et al., 2000; Gertner et al., 2002). Therefore, we further investigate whether there is evidence of inefficient segment investment by diversified firms.

Our empirical results show that, on average, diversified firms stay in Chapter 11 three months longer before they are reorganized, liquidated, or acquired, which implies that these firms have higher direct and indirect costs than focused firms in Chapter 11. Next, we examine the investment patterns of our sample firms and find evidence of inefficient segment investment by diversified firms that reorganize. Furthermore, diversified firms tend to divest segments with larger sales and assets during the Chapter 11 process, which may be costly if divestitures take place at fire sale prices.

We recognize the possibility that our findings regarding the impact of diversification on the risk and costs of distress may arise from the endogeneity of the diversification decision. Following Campa and Kedia (2002), we attempt to alleviate the endogeneity problem by employing a two-stage instrumental variable (IV) approach. The instrumental variables used to model the propensity to diversify include two variables that capture the overall attractiveness of a given industry to diversify and two additional variables for merger waves in a given year. The variables capturing industry attractiveness are the fraction of all firms in the industry, which are conglomerates (*PNDIV*), and the fraction of sales by firms in the industry accounted for by diversified firms (*PSDIV*). The two merger trend variables are the natural log of the number of merger/acquisition announcements in a given year (*LNMMNUM*) and the natural log of the annual value of announced mergers/acquisitions in billions of dollars (*LNVALUEB*). We believe these instruments affect the probability of diversification but do not have a direct theoretical relationship with the probability of bankruptcy. Although the results using this method are qualitatively similar to those reported earlier, we concede that our efforts to control for the endogeneity problem may be less than adequate. Consequently, our results may in part be driven by endogeneity. Moreover, it is likely that our measures of diversification are correlated with size and that our results are driven by size, not diversification. Various specifications of our models show that our regression results are robust with respect to size. We believe that these alternative specifications confirm that size is not the driver of our results.

To summarize, we provide evidence that focused firms are more likely to file for bankruptcy and liquidate once in bankruptcy but that the bankruptcy costs for diversified firms are larger than those for focused firms. This paper's findings may help firms to make potentially important diversification decisions. This paper also has implications for the lending policies of creditors towards different organizational forms. Our results also suggest that

diversification benefits managers, in terms of increased job security, as diversified firms are less likely to go bankrupt or liquidate once in bankruptcy. Therefore, we believe our results provide support for the agency explanation for diversification: managers are willing to undertake value-destroying diversification to derive private benefits.

The rest of this paper is organized as follows. Section 2 presents a literature review. Section 3 describes the sample selection and descriptive statistics. Section 4 discusses the empirical results and provides robustness checks. Section 5 offers our conclusions.

2. Related literature and testable hypotheses

Our paper relates to several strands of the financial literature – the coinsurance effect of corporate diversification, financial distress and bankruptcy costs, and the impact of corporate diversification on distressed and bankrupt firms.

2.1. Coinsurance effect of corporate diversification

Traditional wisdom suggests that corporate diversification helps to reduce the risk of distress if there is imperfect correlation among the segment cash flows of a multi-segment firm; this is known as the coinsurance effect. In an early paper on coinsurance, Lewellen (1971) argues that in the presence of capital market imperfections, diversified firms have a lower probability of bankruptcy. Leland (2007) presents a model showing that combining firms may result in a reduced probability of financial distress and that a diversified firm may have higher value due to greater optimal leverage and tax savings. Consistent with the hypothesis that corporate diversification reduces the risk of distress, Mansi and Reeb (2002) find that the book value of debt for a diversified firm has a downward bias when used as a proxy for the market value of debt.

Several papers provide support for the coinsurance effect by examining the impact of cash flow and stock return volatility on the probability of bankruptcy. A diversified firm with imperfectly correlated segment cash flows should observe a reduction in cash flow volatility, which should in turn lead to lower volatility of stock returns. In an early work, Aharony et al. (1980) find significant differences in unsystematic risk between bankrupt and non-bankrupt firms. Shumway (2001) finds that firms with lower idiosyncratic stock return volatility are less likely to go bankrupt than firms with higher volatility.

If the coinsurance effect reduces the probability of distress for a diversified firm, there may be an agency explanation for diversification. Some authors find that managers face significant personal costs if their firms become financially distressed or bankrupt (see, e.g., Betker, 1995; Thorburn, 2000). Further, Henderson (2007) argues that in Chapter 11 creditors wield significant influence over issues important to managers such as executive compensation. Personal costs will likely be higher for managers of firms that become bankrupt and liquidate. Therefore, managers have the incentive to diversify to reduce the likelihood of their firms going into bankruptcy, and they may be willing to make potentially value-destroying diversification decisions to derive and preserve private benefits. These benefits include enhanced status, high perquisites, future employment prospects, and reduced employment risk (see, e.g., Jensen, 1986; Shleifer and Vishny, 1989; Morck et al., 1990; Aggarwal and Samwick, 2003). By contrast, managers may choose not to diversify if diversification reduces the volatility of a firm's cash flows. Higher cash flow volatility leads to greater variance in stock returns. Therefore, diversifying and reducing the volatility of cash flows may result in reduced equity-based compensation for managers.

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