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Abstract

We survey the recent literature on corporate diversification. How does corporate diversification influence firm value? Does it create or destroy value? While, until the beginning of this century, the predominant thinking among researchers and practitioners was that corporate diversification leads to an average discount on firm value, several studies cast doubt on the diversification discount. In the last decade, there has been no clear consensus of whether there is a discount or even a premium on firm value. However, the recent literature concludes that the effect on value differs from firm to firm, and that corporate diversification alone does not drive the discount or premium. Rather, the effect is heterogeneous across certain industry settings, economic conditions, and governance structures.

JEL-Classification: G11, G34, L25

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1 Introduction

We survey the recent literature on the impact of diversification on firm value. We extend the reviews of Martin and Sayrak (2003), as well as the round table discussion of Villalonga (2003) and focus on the latest developments in this comprehensive literature. Empirical studies on firm diversification have often shown that diversified firms¹ trade at a discount, compared to a portfolio of comparable single-segment firms (e.g., Lang and Stulz, 1994; Berger and Ofek, 1995). These findings have led researchers into assuming that diversification destroys value and that conglomerates are inefficient.² The recent literature concludes that the effect on firm value can differ from firm to firm and depends on industry settings and economic environments. Santalo and Becerra (2008) argue that the effects of diversification are heterogeneous across industries. That is, diversified firms might be valued at a discount in some industries, but trade at a premium in others. Several recent studies examine the value impact of diversification across the business cycle and conclude that corporate diversification becomes more efficient when external capital markets are relatively inefficient and when the various segments of a diversified firm would be financially constrained as single-segment firms (e.g., Dimitrov and Tice, 2006; Yan et al., 2010; Hovakimian, 2011). Under these circumstances, external capital supply will be highly restricted, enabling diversified firms to benefit from their internal capital markets, especially during recessions and exogenous (industry) shocks. During the financial crisis of 2007 to 2009, Kuppuswamy and Villalonga (2010) find that the relative value of diversified firms increased significantly. The findings indicate that financial constraints and the state of the capital market apparently continue to play a key role in determining the value of diversification, and that there should be a dynamic change in the diversification discount or premium over time.

In this article, we focus on the recent contributions on corporate diversification that have most influenced financial research over the last decade. Since our objective is to extend the

¹The corporate finance literature usually defines a diversified firm as one that operates in different industries, which are generally classified by the Standard Industrial Code (SIC).

²A number of studies suggest that the diversification discount is may be a result of (a) sample selection biases, (b) endogeneity, (c) biases related to the COMPUSTAT database, or (d) further improper measurement techniques.

work of Martin and Sayrak (2003), we do not consider all aspects of their article.³ We do not summarize the business strategy literature in detail and do not deal with research on geographic diversification. In Section 2, we provide an overview of the main literature dealing with the key theoretical concepts. For example, why do firms operate various lines of business under one corporate umbrella, rather than as independent single-segment firms? Section 3.1 summarizes the empirical evidence which has mainly supported the diversification discount on firm value, and Section 3.2 discusses articles which have questioned the methodology and assumptions underlying the evidence presented in Section 3.1. Some of these studies have shown that the diversification discount can in fact disappear. Section 4 reviews evidence that the value effect of diversification is heterogeneous across industries and Section 5 summarizes the evidence that the value of diversified firms varies across the business cycle and might increase during times of financial constraint. The final Section 6 concludes the article.

2 Overview of Main Theoretical Contributions

Before empirically examining the effects of diversification on firm value, it is helpful to consider why firms diversify in the first place. In perfect capital markets under the Modigliani-Miller assumptions, diversification should be irrelevant to firm value. If stockholders aspire to diversify away unsystematic risk, they may not want firms to diversify, if they can diversify directly within their own portfolio. However, most firms operate in more than one industry. Over the last decades, numerous theories on diversification motives and ex ante costs (benefits) associated with the diversification decision have been developed. The most notable are (a) agency theory, (b) the theory of internal capital markets, (c) the debt co-insurance effect, (d) value-maximization models, as well as (e) corporate refocusing theory.⁴

³For example, we omit extensive discussions on (a) trends in corporate diversification, (b) bias in reported segment financial data, and (c) measurement errors, due to a firm's endogeneity of the diversification decision.

⁴We focus on theories that have been empirically tested. Further diversification motives include the achievement of economies of scope (Teece, 1980) and increased market power (Scott, 1982).

Agency Theory

Agency theory predicts that, regardless of actual investment efficiency from the shareholder perspective, diversification will typically be in the interests of management. Specifically, managers have incentives to diversify their firms in order to (a) increase their power, compensation and perquisites (Jensen, 1986; Jensen and Murphy, 1990; Stulz, 1990), (b) reduce their individual employment risk that is closely related to firm risk (Amihud and Lev, 1981), and (c) to entrench themselves (Shleifer and Vishny, 1989). That is, they wish to increase the value differential between themselves and potential replacement managers. Therefore, managers generally have a tendency to overinvest and grow their firms beyond the optimal size. Investment level and type are not necessarily value-maximizing and investing in unprofitable projects, rather than paying out cash to shareholders, is likely to diminish firm value. Aggarwal and Samwick (2003) integrate the two agency explanations of diversification - private benefits and risk reduction - into a single combined model. Their evidence does not show that managers diversify their firms to reduce their exposure to risk, but supports the notion of private benefits. Finally, Fulghieri and Hodrick (2006) examine the interaction between agency conflicts and synergies, suggesting that the presence of synergies modifies the entrenchment incentive of a divisional manager.

Theory of Internal Capital Markets

The creation of internal capital markets is one of the most important diversification motives.⁵ In internal capital markets, a segment's assets can be used as collateral for obtaining funding for other segments, and cash flows generated by one segment may be used to subsidize investment in other divisions of the firm. Theoretical models imply on one hand, that this cross-subsidization can be efficient, if it helps the firm eliminate some of the costs of financial constraints. On the other hand, it may be inefficient, if the firm underinvests in divisions with better growth opportunities and overinvests in those with worse prospects. Specifically, Stein (1997) argues

⁵Interested readers are referred to the comprehensive review of Maksimovic and Phillips (2007) on internal capital markets in diversified firms.

that, in contrast to outside investors (external capital), the CEO has insider information about the various segments' investment prospects and may thus be able to engage in winner-picking. He achieves a more efficient allocation of a given amount of funding across divisions through internal capital markets. Gertner et al. (1994) conclude that the difference in ownership structure between internally and externally funded projects results in a comparative advantage of internal capital markets, although the total effect on firm value depends on whether the benefits (higher monitoring incentives, improved asset redeployability) or costs (decreased entrepreneurial incentives) of internal capital markets dominate. Hence, internal capital markets are not necessarily beneficial.⁶ Several articles question the efficiency of internal capital markets and argue that investment in diversified firms is actually inefficient. For example, Scharfstein and Stein (2000) demonstrate how division manager rent-seeking behavior can lead to inefficient cross-subsidization across divisions. Rajan et al. (2000) show that a greater diversity of investment opportunities across segments leads to a greater misallocation of internal capital by diversified firms, due to power struggles between divisions. Meyer et al. (1992) show that inefficiency through lobbying costs occurs, if managers of a division with poor growth prospects attempt to lobby the firm's top management to increase the investment flows available to their division, but it does not lead to misallocated resources per se. Moreover, Wulf (2009) links the efficiency problems of internal capital markets with agency problems in a moral hazard model, whereby investment inefficiency depends on (a) division manager ability to skew information, (b) division manager compensation incentives, and (c) the public image of the investment opportunity.

Debt Co-Insurance Effect

As Lewellen (1971) points out, there is also a purely financial rationale for diversification. A combination of different businesses, with imperfectly correlated cash flows, reduces overall firm

⁶Inderst and Müller (2003) investigate the effects of internal capital markets, as a result of centralized funding for multiple projects. With an optimal contracting approach, they identify the benefits and costs of centralized project funding. On the one hand, excess liquidity can be used to relax financing constraints, but, on the other hand, it might lead to inefficient follow-up investments with no return for investors.

risk and thereby decreases the probability of insufficient debt service. This so-called debt co-insurance leads to a higher (potential) debt capacity and, in turn, to gains in firm value, through an increased tax shield, due to substitution of equity with debt capital.

Value-Maximizing and Dynamic Models

Recently, academics have developed models of diversification as an ex ante rational and value-maximizing strategy, although it might turn out to be inefficient ex post. Matsusaka (2001) describes diversification as a dynamic matching process for a firm's organizational capabilities. He argues that ex ante, a firm does not know how well a new business will match its organizational capabilities. Hence, the process of searching for businesses with successful matching, is characterized by uncertainty, which can often only be resolved by experimenting, i.e., by diversifying. The model yields some important implications. Firstly, a large number of divestitures may not be evidence of corporate failure, but rather a result of a failed matching experiment. Secondly, the model can explain the existence of a possible diversification discount, despite diversification being an ex ante value-maximizing strategy. With a profit-maximizing neoclassical model of optimal firm size and growth, Maksimovic and Phillips (2002) show how diversified firms allocate resources across divisions and how they adjust their resource allocation compared to single-segment firms in response to industry shocks. The model indicates that the diversification decision depends on the division's productivity and on industry demand shocks. Using plant-level data and taking productivity and optimal firm size into account, they find that the resource allocation of most diversified firms is consistent with value maximizing. Gomes and Livdan (2004) develop a dynamic model of optimal corporate behavior, in which diversification is a value-maximizing response to increasing firm age and growth. In their model, firms diversify for two reasons. Firstly, after a certain time span, investment in a firm's current business is no longer profitable, so that diversification becomes a rational strategy for firms that experience insufficient profitability in their core business. Secondly, diversified firms can use economies of scope, due to declining fixed costs of production and eliminating redundancies across different

activities. Gomes and Livdan (2004) argue that the endogenous selection mechanism - that firms diversify when they become relatively unproductive in their current businesses - accounts for the discount on value of diversified firms. Bernardo and Chowdhry (2002) offer an explanation for the diversification discount as an implication of their real options framework. They predict that firms follow a certain life cycle, from being specialized to discovering broader investment opportunities, and finally ending up either focused or diversified, after having learned about their resources throughout this process. Given that young firms have more to learn about their resources, their volatility of resource uncertainty is higher, which leads to a higher value in this real options approach.

Corporate Refocusing Theory

Finally, the corporate refocusing theory assumes that diversified firms trade at a discount, relative to what their segments would be worth if they were split up into individual firms. The numerous theories of corporate refocusing include (a) information asymmetries (Krishnaswami and Subramaniam, 1999), (b) analyst specialization (Gilson et al., 2001), (c) transaction costs of internal and external funds (Matsusaka and Nanda, 2002), (d) or market liquidity (Schlingemann et al., 2002).⁷

The theory offers no clear predictions on how corporate diversification ultimately affects firm value. That is, the overall value of a diversification strategy will depend on whether the potential costs outweigh the potential benefits, or vice versa. Hence, several empirical studies have been conducted, to determine the average effect of diversification on firm value.

⁷See also Villalonga (2003).

3 Empirical Evidence

3.1 Empirical Studies: Is There a Diversification Discount?

To determine the average value of diversification, there are essentially three empirical approaches: (a) cross-sectional studies directly determining the value of diversified firms relative to comparable single-segment firms, (b) event studies showing how the stock market reacts to divestitures and acquisitions, and (c) studies on the investment efficiency of internal capital markets in diversified firms.

Cross-Sectional Studies

In their seminal article, Lang and Stulz (1994) find a diversification discount for diversified firms, compared to a portfolio of comparable single-segment firms, i.e., diversified firms trade on average at lower Tobin's q than their single-segment peers over the period 1978 to 1990.⁸ Lang and Stulz (1994) show that the discount remains significant even after controlling for firm size, R&D, and access to financial markets. Using their so-called excess value methodology instead of Tobin's q , Berger and Ofek (1995) confirm the results of Lang and Stulz and find that diversified firms trade at an average 13% to 15% discount, relative to single-segment firms over the period 1986 to 1991.⁹ Berger and Ofek (1995) also conclude that substantially more value is lost when firms engage in unrelated diversification¹⁰ and that overinvestment and inefficient cross-subsidization in internal capital markets might account for at least part of the value loss

⁸Lang and Stulz (1994) obtain comparable results by calculating mean and median Tobin's q of single-segment firms (operating in the same 3-digit SIC code) for each segment of a conglomerate. Tobin's q is defined as the market value of the firm (equity and debt) scaled by the replacement value of the firm's assets. Note that replacement values are usually unavailable, so that Lang and Stulz (1994) use book values of assets.

⁹Berger and Ofek (1995) examine the natural logarithm of the ratio of the actual market firm value (equity and debt) to the imputed firm value, obtained by multiplying the reported accounting value (assets, sales, or earnings) by the median ratio for single-segment firms in the same industry. The industry median ratios are based on the most refined SIC code that includes at least five stand-alone firms with at least \$20 million of sales. Negative excess values then indicate a diversification discount, while positive excess values suggest a diversification premium.

¹⁰Segments are generally classified as 'unrelated', if they do not share a common 2-digit SIC code, and are labeled 'related' otherwise.

experienced by diversified firms. The results have been replicated for different sample periods, other countries and globally diversified firms. Servaes (1996) and Klein (2001) find an average discount for the conglomerate merger wave¹¹ and Hoechle et al. (2011) for a more recent time frame. Lins and Servaes (1999) replicate the results for the U.K. and Japan, but do not find evidence of a discount for Germany. In their study of diversification across different national markets, Denis et al. (2002) document that global diversification results in average valuation discounts of the same magnitude as those for industrial diversification, i.e., increases in global diversification reduce excess value. Furthermore, they suggest that global diversification can yield benefits, because firms that are both globally and industrially diversified do not suffer a diversification discount on average. Their findings indicate that the benefits and costs of diversification might change over time. Most of the empirical studies focus on mature markets, especially the U.S. However, some studies analyze emerging markets, yielding mixed results. While Claessens et al. (1998) and Lins and Servaes (2002) find a (significant) diversification discount for their samples, Khanna and Palepu (2000) find a premium for diversified Indian business groups, due to their ability to internalize market failures, and Fauver et al. (2003) show that in emerging markets, the excess value of diversified firms is often close to zero or even (insignificantly) positive. Fauver et al. (2003) find that diversification is relatively more valuable in an environment where capital markets are less developed and investor protection is low (i.e., in emerging economies), and therefore the value of diversification varies substantially across countries.¹²

There are also some empirical studies that attempt to explain the diversification discount through limitations of a firm's corporate governance structure. Denis et al. (1997) suggest that agency problems are at least partially responsible for firms maintaining a value-reducing diversified status. They find that decreases in the level of diversification are related to external

¹¹The results of both studies suggest that the value of diversification is time-varying. Martynova and Renneboog (2008) discuss the increase and decrease in diversification activity.

¹²In more recent research, empirical studies of financial conglomerates by Laeven and Levine (2007), van Lelyveld and Knot (2009), and Schmid and Walter (2009) report - at least in some cases - a diversification discount.

corporate control threats. However, the results do not provide reliable evidence that the diversification discount is related to managerial ownership, in that a higher ownership level is associated with a lower level of diversification, but not with more valuable types of diversification. The findings of Anderson et al. (2000) suggest that while governance structures are related to the level of corporate diversification, they fail to explain the magnitude and persistence of the diversification discount. In a related article, Hoechle et al. (2011) report evidence that corporate governance failures can explain the diversification discount in certain settings.¹³

Hund et al. (2010) provide an explanation of the encountered diversification discount, which does not rely on managerial action. Using a rational learning model from Pástor and Veronesi (2003), they find that rational learning about average profitability can lead to a discount, if diversified firms have less uncertainty about average profitability than focused firms. In this case, diversification would be neither good nor bad.

Event Studies

Event studies provide further empirical evidence of the effects of diversification on firm value. The main idea underlying these studies is that diversified firms trade at a discount, relative to what those firms would be worth, if they were split into separate single-segment firms. That is, the firm's decision to refocus (divest) creates value. Empirical evidence that the stock market tends to react positively to refocusing spin-offs and divestitures is provided by Comment and Jarrell (1995), John and Ofek (1995), Daley et al. (1997), Berger and Ofek (1999), Desai and Jain (1999), and Krishnaswami and Subramaniam (1999). For example, John and Ofek (1995) find improvements in operating performance over the three years following the refocusing decision, Daley et al. (1997) find evidence of adding value through refocusing spin-offs, rather than through own-industry spin-offs, whereas the continuing firm units and the spin-off segment belong to different 2-digit SIC codes. Desai and Jain (1999) show that long-run returns, after

¹³In their study, Hoechle et al. (2011) account for endogeneity of both diversification and corporate governance. For a more detailed discussion of endogeneity problems, see Section 3.2.

a refocusing spin-off, are greater than the returns to firms from non-focus-increasing spin-offs. Morck et al. (1990), Agrawal et al. (1992), and Morgan et al. (2000) provide evidence of negative returns from acquiring firms that increase corporate diversification. In a related article, Loughran and Vijh (1997) show that the post-acquisition returns of acquiring firms depend on the acquisition type. Firms which complete stock mergers earn significant negative abnormal returns and those that complete cash tender offers earn significant positive abnormal returns. However, several event studies also document that the stock market tends to react positively (or non-negatively) to diversifying acquisitions (e.g., Schipper and Thompson, 1983; Bradley et al., 1988; Matsusaka, 1993; Hubbard and Palia, 1999; Chevalier, 2004; Akbulut and Matsusaka, 2010). Furthermore, Chevalier (2004) finds that event returns of the acquirer are higher if the mergers are more closely related.¹⁴ In contrast, Akbulut and Matsusaka (2010) show that returns from diversifying acquisitions are not lower than those from related acquisitions.¹⁵ Examining cross-border M&A transactions over the period 1990 to 1999, Dos Santos et al. (2008) find no evidence that on average, U.S. acquiring firms' excess values significantly decrease in the two-year period surrounding the acquisition. Nevertheless, they also find that U.S. acquirers experience a significant post-merger drop in their excess values, when the acquirers have been involved in unrelated cross-border M&As. However, most of these event studies suffer from several caveats.¹⁶ Firstly, the results depend heavily on the choice of sample period. Secondly, the choice of a performance benchmark often proves problematic. Thirdly, stock returns at the time of diversification announcements might reflect information that is totally unrelated to the diversification decision itself, but which cannot be isolated from information that is directly associated with it. Fourthly, in order to constitute performance indicators, stock returns have to be risk-adjusted, when comparing diversified to focused firms. Assuming market efficiency, firms should generally be unable to earn abnormal returns after accounting appropriately for risk. Thus, the finding

¹⁴As a possible reason, Devos et al. (2009) demonstrate that operational synergies are much greater in focused mergers relative to diversifying mergers. These operating synergies arise primarily from cutbacks in investment expenditures, rather than from higher operating profits.

¹⁵Even Kaplan and Weisbach (1992) do not find strong evidence that related acquisitions are more successful than diversifying ones.

¹⁶See Lang and Stulz (1994) for a more detailed description.

of excess returns could be due to inappropriate risk adjustment. Furthermore, poor ex-post performance by diversified firms does not necessarily prove that diversification is an inefficient strategy ex ante. Exogenous shocks (e.g., technological changes) can substantially influence the value of diversification ex post, although it might initially have been a value-maximizing choice.

Internal Capital Markets

The literature reveals both positive and negative effects of internal capital markets on firm value. Several empirical studies identify inefficiencies in internal capital markets as a major source of diversification discount. Lamont (1997), Shin and Stulz (1998), Scharfstein (1998), Rajan et al. (2000), and Ozbas and Scharfstein (2010) show that diversified firms either exhibit inefficiencies in their allocation of internally generated funds, or that diversified firms suffer from poor capital allocations, due to agency problems. In particular, Lamont (1997) finds that oil firms significantly reduced their non-oil investments as a result of the oil-price shock, suggesting that the aggregation of single-segment firms into a single diversified entity indeed leads to financial interdependence between firm segments. He argues that the evidence indicates overinvestment and inefficient cross-subsidization of poorly performing segments in diversified firms. Shin and Stulz (1998) find that while a segment's investment depends more on its own cash flow than on those of the firm's other segments, investment sensitivity for segments of highly diversified firms is substantially lower than for comparable stand-alone firms. They conclude that diversified firms may invest less efficiently than single-segment firms. Furthermore, when a segment of a diversified firm is adversely affected by an exogenous shock, each of the other segments will cut investment by the same amount, regardless of whether they have comparatively better or worse growth opportunities than other segments. This indicates inefficient capital allocation in diversified firms. In a related article, Scharfstein (1998) finds that diversified firms tend to overinvest in their low-q segments, while they underinvest in their high-q segments, compared to single-

segment peers.¹⁷ Interestingly, these effects are stronger for smaller divisions and for firms with low managerial ownership, suggesting that inefficiencies in capital allocation are closely related to agency problems, as proposed by Scharfstein and Stein (2000). More recently, Ozbas and Scharfstein (2010) report similar findings, focusing on unrelated segments of diversified firms. Their sample for 1979 to 2006, reveals higher investments of single-segment firms in high-q industries and lower investments of unrelated segments in low-q industries. The results are more pronounced for diversified firms with low management ownership. Rajan et al. (2000) show that a higher diversity of investment opportunities across segments leads to greater internal capital misallocation by diversified firms and a greater diversification discount, i.e., on average, as diversity increases, firms underinvest in divisions with above-average growth opportunities and overinvest in those with below-average growth opportunities. Rajan et al. (2000) find a negative impact of diversity on excess value, through the value added by allocation.¹⁸

Using a natural experiment, Khanna and Tice (2001) show that internal capital markets are likely to be efficient, at least for related diversifiers. Peyer (2002) finds that diversified firms with an efficient internal capital market, tend to use more external capital than focused firms. This greater use of external capital by diversified firms is associated with higher excess values, due to a lower cost of external capital, when the firms' internal capital markets are efficient. Maksimovic and Phillips (2002) use plant-level data and find that diversified firms generally allocate resources efficiently. However, they also find that diversified firms are less productive than comparable single-segment firms (see also Gomes and Livdan, 2004). By contrast, using also plant-level data, Schoar (2002) does not find evidence that plants of diversified firms are less productive than those of stand-alone firms. She demonstrates that conglomerates pay out higher

¹⁷Ahn et al. (2006) argue that the allocation of debt service across the segments of diversified firms can at least partly explain this inefficient capital allocation. Although the overall investment of these firms might be constrained by higher leverage, as is also true for focused firms, the firm-level allocation of diversified firms can lead to an overproportional debt service burden in specific segments.

¹⁸They measure diversity as the standard deviation of segment asset-weighted qs for the firm, divided by the equally weighted average q of segments in the firm. To investigate the overall efficiency of transfers, they regress the value added by allocation for each diversified firm, on the inverse of the equally weighted q of its segments and the segment diversity. They include firm fixed effects to control for any heterogeneity across firms, calendar-year dummies, and firm size as the logarithm of total sales.

wages and benefits than stand-alone firms, which may at least in part explain a diversification discount.

In their study of corporate governance and internal capital markets, Sautner and Villalonga (2010) are the first to control for the endogeneity of corporate governance, by exploiting an exogenous shock to corporate ownership structures. They find that a higher ownership concentration leads to lower corporate diversification, but enhances the efficiency of internal capital markets. Considering ownership concentration, agency benefits seem to prevail over agency costs, since powerful stockholders can more effectively restrain managers from self-serving and inefficient investments. Duchin and Sosyura (2011) demonstrate conditions under which positive and negative effects of internal capital markets dominate. Since divisional managers with social ties to the CEO receive more capital, for firms with weak corporate governance, managerial ties are associated with lower investment efficiency and lower firm value. Conversely, when information asymmetry is high, connections between managers and the CEO are positively related to investment efficiency and firm value, by simplifying information transfer. Glaser et al. (2011) find evidence that managerial power and connections may lead to frictions in internal capital allocation, that is, divisions headed by powerful and connected managers are able to achieve substantially higher capital allocations at times of financial slack.

Ghosh and Jain (2000) find that the financial leverage of multi-business firms increases significantly after mergers, which they interpret as an outcome of increasing debt capacity. Furthermore, the results of Hadlock et al. (2001) appear inconsistent with the hypothesis that stock markets anticipate that funds raised by equity issues of diversified firms will be spent on particularly poor investments. In fact, they find that equity issues of diversified firms are less costly than equity issues for focused firms, suggesting that diversified firms suffer relatively less from the adverse selection problem.

3.2 Bias in the Valuation Methodology

The prevailing literature suggests that diversified firms trade at a discount. However, over the last decade, research has questioned the causal relationship between diversification and firm value and tested whether the discount appears due to (a) sample selection bias, (b) endogeneity, (c) biases related to the COMPUSTAT database, or (d) further improper measurement techniques. There is presently no clear consensus on whether a discount really exists. Moreover, a number of studies suggest that a possible discount does not necessarily indicate value destruction.

Sample Selection Bias

Previous research assumes that single-segment firms are a valid benchmark for diversified firm's segments. An underlying implicit assumption is that diversified firms and single-segment firms face the same investment opportunities and are of similar ability. However, this assumption might be invalid. In fact, Hyland and Diltz (2002) find systematic differences in firm characteristics between diversified firms and focused firms. In particular, compared to single-segment firms, diversifiers have lower q_s , more cash, lower sales growth and invest significantly less in R&D.¹⁹ Hyland and Diltz (2002) show that diversification does not seem to reduce firm value and that differences in several firm characteristics might influence a firm's decision to diversify. Diversifying firms seem to operate in high- q industries prior to diversification, suggesting that they do not diversify primarily because of poor opportunities in their core industries. Instead, it appears that diversifiers are not successful in their core industries, leading them to seek alternative growth opportunities outside their core business. Maksimovic and Phillips (2008) demonstrate that diversified and single-segment firms differ both in the type of investment and in the level of total investment. Similarly, Campa and Kedia (2002) find that diversified firms differ from single-segment firms in terms of their size, industry growth rate, capital expenditures/sales,

¹⁹The finding that R&D expenditures at the firm level are consistently lower for diversified firms and that the capital expenditures/assets ratio is similar for diversifying and matched firms, suggests that diversification is not driven primarily by the ex-ante benefits of internal capital markets, and that agency theory seems to play an important role in the diversification decision.

EBIT/sales, and R&D/sales. They find that diversified firms trade at a discount prior to increasing diversification. Graham et al. (2002) also show that in diversifying acquisitions, target firms are already discounted prior to their acquisition. They find that half the value loss exhibited by diversifying firms is attributable to the addition of an already discounted segment.²⁰ Furthermore, Lamont and Polk (2001) find that diversified firms have substantially higher actual and expected returns than specialized firms. Hence, assuming other firm characteristics to be equal, these differences in expected returns will, by definition, lead to a diversification discount. In particular, using variance decomposition, they find that approximately half the variance can be explained through future cash flow differences between single-segment and diversified firms, and the remaining half is due to differences in future returns and the covariance between cash flows and returns. Mitton and Vorkink (2010) provide a possible explanation of the return differential. They argue that stock returns for diversified firms have lower variance and skewness (upside potential) than stock returns for single-segment firms. Thus, investors may require higher average returns for diversified firms, to compensate for the lack of upside potential. Systematic differences in firm characteristics between single-segment and diversified firms and the finding that diversified firms are already discounted prior to acquisition, imply that the use of focused firms as benchmarks for the values of conglomerate segments, is subject to selection bias. A single-segment firm is only a noisy value approximation of what a diversified firm's segment would be worth after a spin-off. This sample selection bias constitutes a potential explanation of a diversification discount.

The Endogeneity of Diversification Decision

Since firms deliberately choose to diversify, the diversification decision is not random, but based on information obtained by the firm. If one assumes that the conglomerate status can be treated

²⁰Even Lang and Stulz (1994) argue that diversified firms are poor performers, prior to diversification. They find evidence that diversifying firms indeed have below-average segment-adjusted qs prior to diversification, indicating that firms diversify when growth opportunities in their existing industries are exhausted (see also Gomes and Livdan, 2004).

as exogenous in the estimation procedure, it can be misleading. The average difference in outcomes (excess values) between control (matched single-segment firms) and treatment groups (diversified firms) is only an unbiased estimate of the actual treatment effect (the incremental value of diversification), when observations are randomly assigned to the treatment group. However, in the context of corporate diversification, assignment is more likely to be non-random and leads to biased OLS estimates. The estimation procedure must then take the endogeneity of the decision into account. Campa and Kedia (2002) and Villalonga (2004b) use different econometric techniques, such as a fixed-effects estimator, simultaneous-equation estimation using instrumental variables, Heckman's two-stage method and propensity scoring, all in order to control for the endogeneity of the diversification decision. Their results indicate that diversification does not reduce firm value, i.e., it is not causally related to the discount. In fact, when corrected for selection bias, the diversification discount disappears or even turns into a premium. Chevalier (2004) analyzes the importance of cross-subsidization in internal capital markets, as a possible source of the diversification discount, by determining the extent to which the results of the cross-subsidization literature have been contaminated by this selection bias. She examines the pre-merger investment behavior of a sample of firms that subsequently engage in diversifying mergers and finds an 'undetected relatedness', even in firms that exhibit unrelated segments. The investment opportunities of these segments might thus be correlated. In this case, other segments' cash flows could predict the investment of a different division, in the absence of any cross-subsidization. These findings cast doubt on the causality between inefficient investment and corporate diversification. Marinelli (2011) investigates the relationship between diversification and firm performance and concludes that this relationship is not causally attributed to the extent of internal capital markets or to the degree of relatedness among business segments. By contrast, Lamont and Polk (2002) provide evidence supporting the diversification discount, even after controlling for the endogeneity of the firm's decision to diversify.²¹ They find that exogenous changes in corporate diversity are negatively related to firm value and conclude that

²¹Additionally, Ammann et al. (2011) use a simultaneous equations framework to specify endogeneity and find that the diversification discount remains significant.

diversification reduces this value.²²

Biases in Segment Data

Most of the empirical studies on the value of diversification are based on COMPUSTAT segment data. However, the use of segment data raises several important concerns.²³ Firstly, Lichtenberg (1991) argues that the reported extent of disaggregation in COMPUSTAT segment data is lower than the true extent of firm diversification. Secondly, Denis et al. (1997) and Hyland and Diltz (2002) find that many segment increases documented by COMPUSTAT are mere reporting changes and do not represent actual diversifying events. Thirdly, the definition of a ‘business segment’ itself is problematic, because it can entail an aggregation of several activities. Davis and Duhaime (1992) find that firms often group together segments that are neither related nor vertically integrated, thereby reducing the comparability of segments across different firms.²⁴ Fourthly, Maksimovic and Phillips (2008) argue that studies based on COMPUSTAT segment data, which use segment capital expenditures as a proxy for investment and do not include acquisitions, neglect an important part of investment by diversified firms. Hence, as argued by Villalonga (2004a), when employing COMPUSTAT segment data, there is considerable risk that the extent of diversification is not measured correctly, which could in turn introduce bias in the assessment of diversification effects on firm value. Specifically, firms may be misallocated to industries in which they do not actually operate, and firms that are actually diversified might be reported falsely as focused in COMPUSTAT. Consequently, such misclassifications can distort industry qs, which constitutes the benchmark of segment valuation. Hence, estimates of the extent of diversification, based on segment data, might be quite different from what could be obtained from alternative data sources, for example, the Business Information Tracking

²²Villalonga (2003) argues that Lamont and Polk’s ‘diversity’ measure varies from the traditional diversification measure. She mentions that exogenous changes in diversity are negatively correlated with diversification.

²³See Martin and Sayrak (2003) for a more detailed discussion.

²⁴The change in U.S. segment reporting, by implementing SFAS 131, that superseded SFAS 14 in 1997, has reduced these concerns, e.g., Berger and Hann (2003) show that the change in segment reporting mitigates the aggregation of dissimilar business activities and raises the number of reported segments for many firms.

Series (BITS) used by Villalonga (2004a) or the Longitudinal Research Database (LRD) used by Maksimovic and Phillips (2002) and Schoar (2002). Using BITS, Villalonga (2004a) finds a significant cross-sectional premium of diversified firms, compared to single-segment firms. She also replicates the earlier Berger and Ofek results of the diversification discount for the same sample using COMPUSTAT data. One possible explanation is that COMPUSTAT data may implicitly measure unrelated diversification, whereas Census data covers related diversification. Thus, her findings can be interpreted as evidence of a premium for related diversification, while a conglomerate discount might exist. She also suggests that COMPUSTAT-based studies would yield a diversification discount, because managers report segment data in ways that make them appear to be worse performers than they actually are, in order to avoid disclosing valuable information to competitors.

Further Measurement Problems

Measurement errors might occur not only due to sample selection bias, but also as a result of the characteristics of applied measurement techniques. For instance, approaches to examining the efficiency of internal capital markets are exposed to the nature of measurement of segment growth opportunities. Since market-based measures, such as Tobin's q , do not exist at a segment level, most of the empirical studies attempt to proxy segment growth opportunities by those of comparable single-segment firms operating in the same industry. This assumption is problematic, if a segment of a diversified firm differs systematically from its stand-alone counterpart. For instance, Maksimovic and Phillips (2002) argue that investments of a diversified firm segment depend in a different way on investment opportunities than is the case for single-segment firms. That is, diversified firms allocate more resources to their more productive divisions when those divisions undergo positive demand shocks. Hence, the use of Tobin's q s for single-segment firms

might be an inappropriate measure for estimating segment investment opportunities.²⁵ Whited (2001) shows that this measurement error seems to be responsible for previously documented inefficiencies in internal capital markets. A more promising means of testing the value of internal capital markets could thus be to investigate the investment behavior of diversified firms before and after a refocusing decision. A benefit of this approach, over studies which compare refocusing firms with non-refocusing firms, is that it might reduce a potential omitted variables bias by examining changes in the investment efficiency and firm value of a single sample of firms. Furthermore, comparing the firm performance before and after the refocusing decision reduces potential measurement bias. Gertner et al. (2002), Burch and Nanda (2003), Dittmar and Shivdasani (2003), and Ahn and Denis (2004) conclude that the investment efficiency of diversified firms trends to increase to those of focused firms, when diversified firms decide to refocus. The higher investment efficiency leads to increases in firm value. However, after controlling for endogeneity, Colak and Whited (2007) do not find evidence that refocusing decisions necessarily lead to efficient investments.²⁶ Beside those articles that have sought to determine the efficiency of internal capital markets following corporate spin-offs, Doukas and Kan (2008) analyze the workings of internal capital markets in diversified firms that engage in corporate acquisitions. They find that diversifying bidders continue to allocate financial resources from less profitable core segments to more profitable non-core segments, and conclude that this capital resource allocation indicates that a greater diversification does not result in capital allocation inefficiency, given the low profitability of diversifying bidders' core business.

Further sources of measurement error in the methodology of previous studies are (a) the minimum of five pure-play firms required for industry median computation, (b) the exclusion of firms with segments in financial industries, and (c) the book value of debt as a proxy for its market value. For example, Mansi and Reeb (2002) find that measures of firm value based

²⁵Lang and Stulz (1994) also mention a possible bias in Tobin's q . When diversified firms are more frequent acquirers or sellers, compared to single-segment firms, and their acquisitions are market to market, q could be biased towards one, since asset market values converge to their respective book values. When the assets of focused firms are not market to market frequently, their q s would be biased upward.

²⁶A more detailed overview of this strand of literature is presented by Maksimovic and Phillips (2007).

on book values of debt instead of market values, systematically undervalue diversified firms relative to focused firms. Similar results are obtained by Glaser and Müller (2010) and Ammann et al. (2011). Using a contingent claim framework and accounting for risk effects, Mansi and Reeb (2002) find that diversification is not associated with reductions in overall firm value. Their results imply that diversification does not destroy value, but rather results in a wealth transfer from shareholders to bondholders, due to a reduction in firm risk.²⁷ By contrast, using contingent claim analysis, Grass (2010) rejects the hypothesis that risk-shifting can explain the diversification discount. On the other hand, Hann et al. (2011) find that the coinsurance effect can even reduce systematic risk and that multi-business firms on average have lower capital costs than comparable portfolios of single-segment firms.

In summary, it seems that a diversification discount - should it exist at all - is apparently not caused by inefficient investment, but instead appears to be at least partially an artifact of inappropriate measurement techniques. Moreover, the studies indicate that diversification does not necessarily reduce value, but might actually create it in some cases. Most empirical research focuses on whether or not there is an average diversification discount. Their common approach of examining all diversified firms as a homogeneous group might overlook substantial differences within the group. As mentioned by Graham in Villalonga (2003), it should be beneficial for some firms to operate multiple businesses (e.g., due to synergies or cost savings), while it is probably bad for others (e.g., due to managers with insufficient expertise to manage a division in a new industry). Thus, it seems reasonable that some diversified firms trade at a premium and others at a discount. Instead of focusing on the average discount, it would create added value to examine characteristics of successful diversified firms. It is rational to assume that there is some heterogeneity, both in the cross-section and in the time-series of diversified firms (e.g., Basu, 2010).

²⁷Diversified firms can smooth cash flows across segments. The lower volatility of cash flows directly benefits bondholders by reducing their risk. On the other hand, shareholders might actually be made worse off, by reduced cash flow volatility, since they hold a call option on the firm's assets.

4 Heterogeneous Effect of Diversification Across Industries

While several studies on the value impact of corporate diversification (e.g., Campa and Kedia, 2002; Villalonga, 2004b) acknowledge that industry characteristics influence the diversification decision, none considers their effects on firm value. Specifically, the diversification literature generally computes the average effects of diversification on firm value, under the implicit assumption that these effects are either homogeneous across industries or that they vary randomly across them. However, Santalo and Becerra (2008) argue that the effects of diversification are not homogeneous across industries. Diversified firms might be valued at a discount in some industries, while they trade at a premium in others. They find that diversified firms perform better in industries with less focused competitors, i.e., where the combined market share of focused firms is small. On the other hand, diversified firms perform worse in industries where the number of focused competitors is high.

Using the number of focused competitors in a given industry as a control variable in various regressions, they compare the relative performance of diversified firms in industries dominated mainly by focused firms, with their performance in industries dominated by multi-segment firms. The rationale behind using this proxy is that if a large number of diversified firms operate in a given industry, it seems logical to infer that these firms have a comparative advantage over focused competitors - driven by some form of natural selection process. Prior literature relying on Berger and Ofek's excess value measure, typically varies the industry definition, depending on the number of focused firms in an industry when constructing median industry excess values.²⁸ Santalo and Becerra (2008) examine two subsamples of firms, based on four-digit SIC codes for the period of 1993 to 2001: (1) firms in industries with five or more specialists, and (2) firms in industries with one to four specialized competitors. Pooled OLS regressions yield a significant diversification discount of between 12% and 28% for the subsample of industries with more than five specialized firms, while they yield a significant premium of 14% to 18% in industries with

²⁸Santalo and Becerra (2008) use a consistent industry definition at the four-digit SIC code level, independent of the number of focused firms in the respective industry. Clearly, this procedure might introduce noise in the estimation of industry medians, in industries with only a small number of focused firms.

a low number of focused firms. The results for the full sample are rather mixed. The finding of a discount or premium depends on the specification of the excess value measure. Furthermore, Santalo and Becerra (2008) include an interaction term between the diversification dummy and a measure of the number of focused firms in an industry into their regression model. The results are striking. The coefficient on the diversification dummy becomes positive in all regressions, while the interaction term is negative and significant. Hence, it appears that diversification creates value for firms when the number of focused competitors in an industry does not exceed a certain threshold.²⁹

Santalo and Becerra (2008) provide two possible reasons for a heterogeneous value of diversification across industries. Firstly, they argue that the relative importance of hard versus soft information may determine the competitiveness of diversified firms in a given industry.³⁰ Intuitively, diversified firms have a competitive advantage over focused firms in industries where soft information is important, since such information is easier to transfer within a diversified firm, relative to a focused single-segment firm. Hence, multi-segment firms might have access to valuable information that is unavailable to single-segment firms, depending on external capital markets. Thus, diversification improves access to financial resources, due to cross-subsidization, while a focused firm may be financially constrained and invest less than the optimum level. Especially diversified firms might perform better financially in industries in which soft information is important. Secondly, it can be expected that diversified firms perform superior than focused firms in more concentrated and vertically connected industries, due to their lower transaction costs in dealing with such industries.

The evidence presented by Santalo and Becerra (2008) has important implications for the assumptions made in prior literature. Firstly, Berger and Ofek's standard excess value methodology biases the value of diversification downward across different industries, because it selectively

²⁹In robustness tests, Santalo and Becerra (2008) also find that industry size and concentration are important determinants of diversification value. However, the number of focused competitors captures the effects of industry characteristics on the diversification value, beyond what can be explained by industry concentration and size.

³⁰In contrast to hard information, soft information is defined as that which might not be plausible communicated to an outside agent (e.g., Stein, 2002; Faure-Grimaud et al., 2003).

alters industry definitions and, hence, neglects industry heterogeneity. Secondly, Santalo and Becerra (2008) question the underlying assumptions of instrumental variable techniques used to control for self-selection in the diversification decision. They argue that the use of industry instruments is critical, because such instruments are correlated with both the diversification decision and the firm value. Hence, instrumental variable estimators are likely to yield upwardly biased estimates of the average value of diversification across all industries.

5 Firm Value Across the Business Cycle

In addition to the finding that the effects of diversification are heterogeneous across industries, several recent studies examine the role of financing constraints in corporate diversification and how the value of diversified firms varies across the business cycle. Fluck and Lynch (1999) argue that the underlying rationale is that diversification should be especially beneficial for firms with segments that would be financially constrained if operated as stand-alone firms, and thus unable to fund valuable projects. Moreover, one can argue that financial constraints should be more binding during recessions, thus leading to differential value impacts over time.³¹

Financial Constraints and the Diversification Effect

Billett and Mauer (2003) point out the importance of financial constraints for the value of internal capital markets. As has been established, studies on the value of internal capital markets and the investment efficiency in diversified firms yield distinctly mixed results.³² However, none of these studies establish a direct link between the efficiency of internal capital markets and the excess value of diversified firms. Bridging this gap, Billett and Mauer (2003) are the first to measure directly the relationship between firm value and that of internal capital markets. They

³¹In their survey of evidence from CFOs, Mukherjee et al. (2004) find that most managers justify a diversifying merger decision with the objective of reducing losses during economic downturns.

³²Some researchers suggest that internal capital markets are inefficient (e.g., Shin and Stulz, 1998). Others argue that possible inefficiencies are artifacts of measurement error (e.g., Whited, 2001), while Khanna and Tice (2001) find evidence of efficient internal capital markets.

employ a valuation measure that differentiates between efficient and inefficient cross-subsidies and determines the relative efficiency of these cash flows. Their measure takes into account whether subsidized segments would face binding financial constraints, if they operated as stand-alone firms. They show that the excess value is increased by efficient subsidies for financially constrained segments, while efficient subsidies for financially unconstrained segments do not affect excess value. However, Billett and Mauer (2003) find that there is no reliable evidence that the excess value is connected to the overall measure of internal capital market efficiency. Thus, they conclude that inefficient internal capital markets are unlikely to be caused by the diversification discount. Despite the fact that external capital markets in developed countries have become more efficient over the years, financing constraints apparently continue to play a key role in determining the value of diversification. If financial constraints and the state of the capital markets determine the effects of diversification on firm value, there should be a dynamic value change of diversified firms across the business cycle.

The Value Impacts of Diversification Over the Business Cycle

Dimitrov and Tice (2006) provide evidence that diversified firms perform differently to their focused counterparts during recessions, and examine whether differences in access to credit are the source of this performance differential between the two types of firms. Dimitrov and Tice (2006) argue theoretically, that the difference in access to credit extends during recessions because of two effects. Firstly, external finance premiums increase more for focused firms. Secondly, focused firms are more likely to become credit-rationed, due to bank reserve shortages. Both effects are driven by the greater cash flow volatility and the resulting lower credit ratings of focused firms.³³ Hence, the investment rates of focused firms are expected to drop more during recessions, relative to their diversified peers.

These predictions are tested empirically by comparing the sales and inventory growth of single

³³Consistent with Lewellen (1971), Dimitrov and Tice (2006) find that diversified firms have significantly lower cash flow volatility.

and multi-segment firms during recessions. Sales growth is used as a proxy for the effect of credit constraints on firm pricing, output and marketing, as well as on investment behavior. Inventory growth, on the other hand, should reflect fluctuations in credit constraints, since the adjustment costs of inventories are lower than for fixed assets. Firms are separated into two subsamples: bank-dependent (firms which have neither a bond nor a commercial paper rating) and bank-independent (firms with rated debt). This differentiation ensures that observable differences in performance between focused and diversified firms are actually attributable to differences in credit access. Dimitrov and Tice (2006) use COMPUSTAT data for the period of 1978 to 1996 and identify three recessions with NBER turning points during their sample period. For the bank-dependent subsample, they find that the industry-adjusted sales and inventory growth of focused firms yields a larger drop, compared to segments of diversified firms during recessions. This is consistent with the notion that bank-dependent single-segment firms face binding credit constraints during recessions. However, Dimitrov and Tice (2006) point out that, while their results indicate that diversified firms perform significantly differently and relatively better than focused firms during recessions, it is unclear whether better access to capital for diversified firms actually leads to more efficient investment, since sales and inventory growth need not necessarily be profitable. Specifically, one could argue that better access to credit may also lead firms to overinvest.

Do diversified firms also invest more efficiently during recessions? This question has been an important subject of recent research. Yan et al. (2010) provide empirical evidence on the value of internal capital markets in a depressed capital market environment. They study how the investment of focused and diversified firms is affected by deteriorating external financing conditions. They focus on the diversified firms' ability to substitute costly external capital with relatively cheaper internal capital. In a cross-sectional analysis over the period 1985 to 1997, Yan et al. (2010) find that corporate investment only declines for focused firms as a result of increased financing costs at the macroeconomic level, while it remains constant for diversified

firms.³⁴ Hence, diversified firms seem to have a financial advantage over single-segment firms, even when they have no cost advantage in raising external capital. This finding is unlikely to be driven by either systematic differences in firm-characteristics of focused and diversified firms or by general differences in their investment opportunities. Rather it suggests that multi-segment firms seem to profit from an improved investment efficiency of internal capital markets during recessions.³⁵ Yan et al. (2010) find that the internal capital allocation of diversified firms becomes relatively more efficient during depressed market conditions. Moreover, the excess values of diversified firms are less negatively affected than those of focused firms, when external capital becomes more costly. Hence, Yan et al. (2010) argue that internal capital markets seem to create significant value for diversified firms during recessionary periods.

In a related study, Hovakimian (2011) seeks to establish whether the efficiency of internal capital allocation in diversified firms depends on their ability to raise external capital over the period 1980 to 2008. In line with Yan et al. (2010), he finds that the investment efficiency of diversified firms improves when external capital markets are distressed. He identifies financially-constrained phases through an exogenous-macroeconomic characteristic (NBER indicator) and firm-specific characteristics (e.g., dividend payout, firm size).³⁶ The evidence suggests that during recessions, diversified firms modify their capital allocation in favor of their high- q segments, while cutting investment in segments with lower q 's. These improvements in investment efficiency are significantly higher for financially constrained firms. Binding financial constraints apparently improve corporate investment behavior by reducing free cash flows under managerial discretion, thereby limiting potential overinvestment (see Jensen, 1986). In particular, given a

³⁴They regress COMPUSTAT's firm-level capital expenditures scaled by lagged capital stock, as the measure of firm investment, on macro-economic variables, a conglomerate dummy, and further control variables. Furthermore, they measure the degree of a firm's external financing constraint by (a) bank-dependence, (b) firm size, and (c) payments of any cash dividends.

³⁵One result of this financial advantage is that diversified firms need to hold less cash than focused ones (Duchin, 2010). Because holding cash is costly, diversified firms benefit from holding less cash, which should ultimately affect firm value positively. His results further suggest that holding less cash is associated with efficient cross-divisional transfer to high-productivity divisions. This seems to be a progressively more important advantage of diversified firms, since Bates et al. (2009) reveal that cash holdings of U.S. industrial firms more than doubled from 1980 to 2006.

³⁶To reduce the endogeneity bias, the exogenous NBER indicator defines financially-constrained phases which represent exogenous liquidity shocks to firm investment.

restricted amount of capital, diversified firms seem to exercise the valuable option of transferring capital between divisions, so as to protect their more valuable investment projects at the expense of unprofitable ones.

Yan (2006) and Gopalan and Xie (2008) show that the excess value differential between focused and diversified firms narrows significantly during recessions. Yan (2006) shows how the excess value of diversified firms responds to shocks in external capital markets. Specifically, he addresses the following issues. (1) When external capital becomes more costly at the macroeconomic level, the value of diversified firms and their internal capital markets increases relative to focused firms, and (2) such increases should be greater for those firms that are financially constrained (bank-dependent). He measures capital market conditions by (a) the tightness of monetary policy, (b) equity and debt financing conditions, and (c) overall external financing activities. In line with the first hypothesis, Yan (2006) finds that diversified firms effectively experience higher excess values, relative to focused firms, when capital market conditions are unfavorable, e.g., when equity is undervalued or interest rates are high. Furthermore, and consistent with the second hypothesis, the higher excess value is more pronounced for bank-dependent diversifiers, relative to bank-independent ones. Thus, it seems that during periods of industry distress, diversified firms profit from their ability to substitute costly external capital with relatively less costly internal capital. The overall results indicate that multi-segment firms - while not (necessarily) more valuable than focused firms per se - can benefit substantially from their diversification status during recessions, when external financing constraints are more binding.³⁷

In a similar study, Gopalan and Xie (2008) define periods of industry distress³⁸, in order to analyze internal capital markets and the dynamic effects of diversification on firm value over the business cycle. Gopalan and Xie (2008) find that segments of diversified firms have

³⁷However, it should be acknowledged that Yan (2006) also finds that the average value of diversification over the period 1984 to 1997 gradually declines. He argues that this decline could be attributable to the development of external financial markets, which might reduce the advantages of internal capital markets.

³⁸An industry is defined as distressed, if the median two-year sales growth among focused firms is negative and its two-year stock return lies below -30%. Gopalan and Xie (2008) argue that a definition based partly on stock returns ensures that firms are unlikely to have fully anticipated distressed periods and adjusted their diversification status and behavior endogenously ex ante.

significantly higher sales growth, as well as higher R&D expenditures, relative to focused firms during distressed periods. Sales growth generally translates into relatively higher cash flows and increased market share. However, and consistent with Dimitrov and Tice (2006), this superior performance is confined to a subsample of bank-dependent diversified firms. Gopalan and Xie (2008) also examine whether the superior performance of diversified firms, relative to their focused competitors, actually leads to increases in excess value. In particular, their findings indicate that the diversification discount is significantly reduced for diversified firms during periods of industry distress and that the discount almost disappears for bank-dependent diversified firms during distressed periods. This, in turn, raises the question of how diversified firms perform, relative to focused firms, during the financial crisis of 2007 to 2009, as opposed to a natural fluctuation in the business cycle?

The Value of Diversification During the Financial Crisis of 2007 to 2009

Since the origins of the 2007 to 2009 financial crisis lie in consumer finance (subprime loans), rather than in depressed capital markets, the crisis represents an exogenous shock to the corporate sector and to external financing conditions, therefore providing an ideal setting for studying the effects of diversification on firm value and internal capital markets under external financing constraints. In particular, the extreme market conditions resulting from the financial crisis significantly limited firms' ability to raise external capital.³⁹

Kuppuswamy and Villalonga (2010) study the effects of the financial crisis and find that the excess value of diversified firms increases significantly, compared to focused firms, and that the diversification discount completely disappears at the peak of the crisis (Q4 2008). They identify two sources of this increase: (1) the more-money effect and (2) the smarter-money effect.⁴⁰ Consistent with Lewellen (1971), the more-money effect refers to the potentially higher debt

³⁹Ivashina and Scharfstein (2010) show that new loans to large borrowers declined by almost 50% during the peak of the financial crisis (Q4 2008), compared with the prior quarter. Furthermore, using a survey-based measure of financial constraint, Campello et al. (2010) find that the inability to borrow external capital causes firms to restrict investment opportunities.

⁴⁰The terms 'more-money' effect and 'smarter-money' effect are introduced in Stein (2003)

capacity of diversified compared to focused firms, resulting from their relatively lower cash flow volatility.⁴¹ Kuppuswamy and Villalonga (2010) explain that firms do not always make use of their full debt capacities. Instead, they seek to achieve an equilibrium level of external financing. Since this optimal level of financing is significantly more difficult to achieve during the crisis, diversified firms may benefit from their ability to maintain their financing equilibrium. This, in turn, would lead to an increase in the relative value of diversified firms. On the other hand, the smarter-money effect results from the potential benefits of internal capital markets. (1) The ability to efficiently allocate a given amount of capital across segments (winner-picking), and (2) the ability to fund valuable projects of divisions that would face binding financial constraints as single-segment firms.⁴² Evidence on possible sources of the increased value of diversification varies across the two excess value measures (sales and asset-based). Using sales multiples, the value increase of diversified firms seems to be driven primarily by a decline in focused firm excess values, resulting from a relatively sharper drop of their sales during the financial crisis.⁴³ On the other hand, when excess values are computed on the basis of assets, the documented value increase seems to stem from an increase in the value of diversified firms, possibly driven by an increase in their asset base, relative to single-segment firms during the crisis.

Kuppuswamy and Villalonga (2010) regress excess value on a financial crisis indicator variable, a diversification dummy and a number of control variables. The focus of their analysis lies on the interaction term of the crisis indicator and the diversification dummy, the sign of its coefficient serving as a proxy for the value contribution of corporate diversification during the crisis. In all regressions, the coefficient of the diversification dummy is negative for the full sample period. However, the coefficient of the interaction term is always and significantly positive (4% to 5%), suggesting that multi-segment firms gain in value, relative to single-segment firms during the crisis. Specifically, during the peak of the crisis, the diversification discount decreases

⁴¹Aivazian et al. (2010) also investigate the more-money effect and find that diversified firms take advantage of their lower costs of bank debt, by raising more external financing, but they reveal a limit to this beneficial effect when the extent of diversification reaches a certain level, after which the cost of bank debt ultimately rises again.

⁴²See also Stein (1997).

⁴³See also Dimitrov and Tice (2006).

to roughly 40% to 60% of its original magnitude.

In robustness checks, Kuppuswamy and Villalonga (2010) use treatment-effect models and switching regressions to control for self-selection in the diversification decision.⁴⁴ In fact, after controlling for endogeneity, the diversification discount fully disappears, suggesting that diversified firms do not destroy any value during the sample period. In switching regressions, the difference in excess values of multi and single-segment firms during the financial crisis is highly significant, revealing a 4% to 5% increase in the relative value of diversified firms. Kuppuswamy and Villalonga (2010) conclude that diversified firms may indeed profit from the more and smarter-money effects.⁴⁵ As the next step, Kuppuswamy and Villalonga (2010) test for the more-money effect, by introducing a measure of a firm's excess debt⁴⁶ into their analysis. They find that the gap in excess debt between multi versus single-segment firms significantly increases in Q1 2009. At the same time, diversified firms increase their net debt/assets ratio relative to their focused comparables. Hence, it can be inferred that the financial crisis makes debt co-insurance more valuable, in that lenders allocate significantly more of their capital to diversified firms. Further analysis reveals that diversified firms apparently make efficient use of this capital. Consistent with the predictions of the smarter-money effect, the relative value increase of diversified firms during the crisis is confined to firms with active internal capital markets. By contrast, Kuppuswamy and Villalonga (2010) find that differences in debt maturity structure (i.e., the proportion of a firm's long-term debt maturing after the bankruptcy of Lehman Brothers) or debt types (investment versus speculative-grade bonds), cannot explain the value increase of diversified firms during the crisis.

Overall, Kuppuswamy and Villalonga (2010) provide conclusive evidence that the value of corporate diversification increases significantly during the financial crisis. They argue that the

⁴⁴Similar to Campa and Kedia (2002) and Villalonga (2004b), Kuppuswamy and Villalonga (2010) find that firms do not diversify at random and hence argue that corrections for selection bias are essential when estimating the effects of diversification on firm value.

⁴⁵They test how the crisis affects the efficiency of internal capital markets, by estimating multivariate regressions, using absolute value added by internal capital allocation (AVA) as the dependent variable. For the definition of AVA, see Rajan et al. (2000).

⁴⁶The excess debt is defined as the natural logarithm of the ratio of a firm's actual net debt to its imputed net debt.

financing advantages of diversified firms might enable them to make valuable investments that could potentially give them a sustainable competitive advantage over their focused competitors. Moreover, because the financial crisis of 2007 to 2009 represents an exogenous shock to the financial system, the results cannot be attributed to endogenous differences in firms' financial constraints. Thus, the evidence suggests a causal link between external financing constraints and the value of diversification and, specifically, the value of internal capital markets in diversified firms.

6 Conclusion

We review the literature on corporate diversification and discuss why firms choose to diversify and how corporate diversification affects firm value. The theory provides numerous explanations of why firms diversify, including agency theory, internal capital markets, and debt co-insurance. However, since the theory offers no clear predictions as to how diversification ultimately affects firm value, numerous studies empirically examine the effects of diversification on firm value until the beginning of this century, by comparing the value of diversified relative to comparable focused firms. These studies almost uniformly document the existence of a diversification discount, suggesting that firms generally destroy value by diversifying.

This line of literature implicitly assumes that single-segment firms serve as an appropriate benchmark for diversified firms' segments. However, subsequent studies question the comparability of the two types of firm. Specifically, diversified firms seem to (1) have significantly different returns than focused firms, (2) systematically acquire already discounted segments, and (3) differ from single-segment firms in various characteristics influencing the diversification decision. Furthermore, the diversification discount literature suffers from important methodological problems. Specifically, it neglects the endogeneity of the diversification decision, and ignores the risk effects of diversification, by using the book value of debt as a proxy for market value. Interestingly, a number of recent publications find that, in fact, firms choose to diversify

and that characteristics leading a firm to diversify are negatively related to firm value, thus calling into question the causal relationship between diversification and the diversification discount. Strikingly, when controlling for self-selection in the diversification decision and for the book-value bias of debt, the diversification discount may disappear.

Taking skepticism towards the diversification discount one step further, Villalonga (2004a) argues that it is likely to be an artifact of COMPUSTAT segment data, the primary data source of almost all relevant studies. Using an alternative data source, she finds a significant diversification premium, suggesting that, on average, diversification enhances firm value. In addition, most studies implicitly assume that the value of diversification is homogeneous, or varies randomly, across industries and over time. However, Santalo and Becerra (2008) demonstrate that this is not the case. Diversified firms actually trade at a significant premium in industries with few focused competitors. Interestingly, the value of diversification also varies considerably over the business cycle. During recessions, diversified firms increase in value relative to focused firms, driven by their superior access to credit and the comparative advantages of internal, relative to external capital markets. Examining the financial crisis of 2007 to 2009, Kuppuswamy and Villalonga (2010) find that diversified firms significantly increase in value relative to their focused comparables, most likely due to (a) their superior ability to obtain external financing and (b) their improved investment efficiency.

Overall, the literature on corporate diversification is highly controversial and still has not reached a consensus. In fact, it is difficult to argue that diversification is generally value-reducing or enhancing. However, one can make certain predictions about the circumstances under which diversification is most likely to be valuable:

- Related diversification seems to be more valuable than unrelated diversification. Intuitively, related diversifiers can yield a competitive advantage, by using existing skills and transferring them across businesses, and winner-picking in internal capital markets becomes easier when segments are related.

- Diversified firms perform better in industries dominated by multi-segment firms. Additionally, because of their lower risk, diversifiers should have an advantage in cyclical industries, due to superior investment opportunities in distressed periods.
- Diversification is relatively more valuable for firms with efficient corporate governance mechanisms, since in such firms, potential agency problems, such as overinvestment and managerial entrenchment, can be monitored adequately.
- Diversification becomes more efficient when external capital markets are relatively inefficient and the segments of a diversified firm would be financially constrained as single-segment entities. Under these circumstances, the external capital supply will be highly restricted, enabling diversified firms to benefit from their internal capital markets, especially during recessions and in the event of exogenous (industry) shocks.

Even if one argues that a diversification discount still exists on average, it does not imply that there is a discount for any particular firm. It seems that in some cases, diversified firms outperform single-segment firms. Instead of focusing on the average discount and in conformity with the recent literature, it is more important to examine the characteristics of successfully diversified firms, compared to unsuccessful ones, and to investigate how diversification affects firm value across different industry settings and economic environments. These topics should be of future interest to researchers.

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