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Abstract

Extant theories agree that debt should inhibit diversification, but predict opposing performance consequences. While agency theory predicts that debt should lead to higher performance for diversifying firms, transaction cost economics (TCE) predicts that more debt will lead to lower performance for firms expanding into new markets. Our empirical tests on a large sample of Japanese firms support TCE by showing that firms accrue higher returns from leveraging their resources and capabilities into new markets when managers are shielded from the rigors of the market governance of debt, particularly bond debt. Furthermore, we find that the detrimental effects of debt are exacerbated for R&D intensive firms, and that debt is not necessarily harmful to firms that are either contracting or managing a stable portfolio of markets.

"Equity is soft; debt is hard. Equity is forgiving; debt is insistent. Equity is a pillow; debt is a dagger… Equity lulls a company's management to sleep, forgiving its sins more readily than a deathbed priest… But put a load of debt on that same company's books and watch what happens when its operating profits begin to fall off even a little bit" ~ G. Bennett Stewart (1991: 580-581)

Both product and international diversification have the potential to generate economic rents from leveraging critical resources and capabilities across multiple markets (Barney, 1991; Hitt *et al.*, 2006; Teece *et al.*, 1997). Inappropriate diversification, however, can destroy firm value (Hoskisson & Hitt, 1990). As managers' goals can diverge from those of owners and lenders, governance mechanisms are needed to ensure the pursuit of appropriate strategies that enhance firm value (Shleifer & Vishny, 1997). Flawed governance mechanisms foster inadequate monitoring and misaligned incentives that result in inappropriate diversification strategies and poor financial performance (Hitt *et al.*, 2006; Hoskisson & Hitt, 1990; Wan *et al.*, 2011). Prior research has explored the governance role of ownership structure (David *et al.*, 2010; Tihanyi *et al.*, 2003), business group affiliation (Kim *et al.*, 2004), and national institutional context (Wan & Hoskisson, 2003) in shaping the performance consequences of diversification strategies.

A firm's capital structure (*i.e.*, the relative mix of debt and equity capital) is an important governance mechanism that shapes monitoring and incentives (Jensen & Meckling, 1976; Williamson, 1988) and impacts corporate diversification strategy (Kochhar, 1996). While considerable research has explored how the governance exercised by equity owners shapes the performance consequences of diversification (for a review see Connelly *et al.*, 2010), the influence of lenders on diversification remains unexplored. This gap is surprising considering that the suppliers of debt, just like equity, use governance mechanisms to safeguard their investments (Williamson, 1988). In fact, debt can be even more salient because it accounts for

over 90 percent of all new external financing (Mayer, 1988). Accordingly, we study the role of debt in shaping the performance consequences of diversification strategies.

Extant theories yield opposing predictions about the impact of debt on the performance consequences of diversification. Debt contractually obligates managers to a repayment schedule and default gives lenders the right to recoup their assets through bankruptcy (Jensen & Meckling, 1976). According to AT, the high-powered incentives posed by the threat of bankruptcy induce managers to eschew excessive diversification and only pursue value-enhancing diversification (Jensen, 1986). Transaction cost economics (TCE), by contrast, argues that the high-powered incentives preclude the forbearance and discretion needed for exploring and capitalizing on opportunities in new markets as they arise (Kochhar, 1996). Both theories agree that debt inhibits diversification, but predict opposing performance consequences: debt leads to higher performance according to AT, but lower performance according to TCE.

Existing empirical research has emphasized direct relationships between diversification and debt and has not directly addressed the governance role of debt in shaping the performance consequences of diversification. Most research investigates the role of diversification in the choice of debt financing. Diversification helps to reduce earnings volatility because the cash flows across the firm's various markets will be imperfectly correlated, thereby allowing firms to employ more debt in their capital structure and hence enjoy the concomitant cost of capital and tax benefits (Barton & Gordon, 1988; Kim *et al.*, 1993; Kochhar & Hitt, 1998; Lim *et al.*, 2009; Low & Chen, 2004; Lowe *et al.*, 1994). Empirical research has also explored the reciprocal relationship of debt on diversification (Yoshikawa & Phan, 2005) and found that debt tends to inhibit related diversification (Chatterjee & Wernerfelt, 1991) and to foster restructuring through

reductions in diversification (Gibbs, 1993). Empirical research has not, however, investigated how the governance role of debt shapes the performance consequences of diversification.

In the following sections, we first draw on AT to link capital structure to changes in diversification. Next, we draw on the RBV to explicate the critical role of key strategic resources and capabilities in reaping the maximal possible returns from diversification. Following that, we draw on TCE to explain how capital structure can influence the returns to diversification. In doing so, we make several important contributions to the strategy literature. First, we show that capital structure can strongly influence the success of new market entry. Second, we make a theoretical contribution by demonstrating that TCE can serve as a useful bridge between the RBV and AT because it helps to clarify the appropriate form of governance for strategic resources. Third, we extend our core arguments to explicate the contingencies that shape the relationship between debt, diversification, and performance. Specifically, we argue that: debt is more detrimental to R&D intensive firms; bond debt is more detrimental than bank debt; debt is more detrimental to firms increasing diversification than firms decreasing diversification; and that debt can potentially be beneficial to diversified firms that are not actively expanding. Our empirical tests on a large sample of Japanese firms support our arguments. Finally, although our empirical tests are based on Japanese firms, our theory is developed using the general tenets of AT, the RBV, and TCE. Hence, we our results should generalizable to all contexts where the institutional environment gives teeth (or daggers, as our opening quote would put it) to lenders.

Theory and Hypotheses

The Relationship between Diversification and Capital Structure

While debt financing has benefits for firms because it helps shield some income from taxes and can lower the firm's overall cost of capital, it also poses risks because failure to make

periodic interest and loan payments can lead to financial distress and bankruptcy (Kochhar, 1996). Operating in multiple markets helps firms to diversify risk and smooth earnings volatility, thereby allowing them to reap the potential benefits of carrying more debt. Accordingly, research in economics and strategy has shown that greater levels of product diversification tend to lead to higher levels of debt (Barton & Gordon, 1988; Kochhar & Hitt, 1998; Lim *et al.*, 2009; Lowe *et al.*, 1994). However, empirical evidence on international diversification is more equivocal (Low & Chen, 2004). Although Chkir and Cosset (2001) did find a positive relationship between international diversification and leverage, other studies have found a negative relationship (Burgman, 1996; Chen *et al.*, 1997; Lee & Kwok, 1988), and others have even argued that debt capacity will vary according to the riskiness of the countries entered (Kwok & Reeb, 2000).

From a purely financial perspective, it is quite reasonable that diversified cash flows should allow most firms to carry more debt. Furthermore, if debt has tax or cost of capital benefits, or if most firms simply follow some sort of pecking-order model of capital structure (Myers & Majluf, 1984), then diversification should positively influence debt levels. We believe that one of the reasons for the mixed empirical results may be the complex relationship between diversification and capital structure. While diversification should influence capital structure, it is also endogenous in that it is likely a function of other strategic or governance variables that also influence capital structure. Moreover, the relationship between the two is likely to be reciprocal. While *ex post* (*i.e.*, after a firm has diversified) diversified cash flows help support higher debt levels, *ex ante* (*i.e.*, before diversification) debt should constrain a firm's ability to diversify.

Frictions in capital markets increase the cost of external capital relative to internally generated funds, thereby inducing firms with insufficient financial slack to sometimes forego valuable investment opportunities (Myers & Majluf, 1984). Hence, if a firm has high debt levels,

managers will have both less free cash flow to invest in new markets and will also have less leeway to borrow capital to fund market expansion. Accordingly, following prior research (Chatterjee & Wernerfelt, 1991; Gibbs, 1993), we present a baseline hypothesis that *ex ante*, high levels of debt will constrain a firm's ability to further diversify.

Hypothesis 1 (baseline): *Debt has a negative impact on changes in diversification.*

Although firms with high levels of debt will generally be less inclined to increase diversification, the influence of debt on diversification is not deterministic, and at least some firms with modest to high levels of debt will nonetheless expand into new markets. The performance consequences of such diversification initiatives, however, are less clear. Jensen's (1986) free cash flow theory suggests that managers may attempt to 'build their empires' by entering new markets if they have discretion over ample free cash flows (Brush *et al.*, 2000), potentially at a cost to shareholders (Kim *et al.*, 2004). According to AT, high debt levels should increase the returns to diversification because debt reduces the free cash flows that managers have discretion over, thereby curtailing excessive growth that destroys value (Chatterjee & Wernerfelt, 1991; Gibbs, 1993). Furthermore, debt increases the incentives to keep performance strong (Hoskisson *et al.*, 1994; O'Brien & David, 2010), thereby compelling managers to only enter new markets if the expected returns are promising. Yet, as we explain below, consideration of the governance of strategic assets leads to divergent predictions.

The Resource Based View and Diversification

Diversification into multiple product and geographic markets has been the focus of much research in strategy and international business (Hitt *et al.*, 2006; Hoskisson & Hitt, 1990; Palich *et al.*, 2000). Firms can generate rents from the intra-firm sharing of core resources (Barney,

1991; Kim *et al.*, 1993; Teece, 1982; Teece *et al.*, 1997), and hence expansion into new markets can provide a firm with a variety of opportunities to reduce costs and increase revenues (Geringer *et al.*, 2000; Lu & Beamish, 2004). Market expansion can also provide substantial opportunities to develop new resources and capabilities, which can lead to positive spillovers that can be applied in subsequent diversification moves (Chang, 1995). However, as noted by Penrose (1956), expansion into new markets may be motivated by not just attractive opportunities in the new market, but also by poor prospects in the firm's existing markets (Chang, 1992; Christensen & Montgomery, 1981; Rumelt, 1974; Stimpert & Duhaime, 1997). Despite the potential promise of unrelated diversification for poor performers, scholars since Rumelt (1974) have argued that diversifiers should generally exhibit better performance if they enter related markets (Bettis, 1981; Datta *et al.*, 1991) because the firm is more likely to be able to leverage its core resources and capabilities in related markets.

Although firms will generally perform better when they expand into markets that are related to existing operations, market relatedness is far from deterministic and significant debate remains over both the importance of relatedness (Miller, 2006). Implementation of the expansion move may be just as important as market relatedness (Gary, 2005). Adaptation of some existing resources and capabilities will be required in order for the firm to succeed in the new market regardless of the level of relatedness. While market relatedness may make adaptation easier and hence raise the probability of appropriate adaptation, high relatedness does not guarantee, nor does low relatedness preclude, success in the new market. Many forays into highly related markets fail miserably, while firms like Honeywell, GE, Tyco International, and the Virgin Group (to name just a few) have repeatedly successfully adapted their resources or capabilities to new markets that appeared to have little in common with existing operations. Below, we argue

that TCE yields valuable insights into how managerial incentives can facilitate or encumber successful adaptation to new markets, and also illuminates how capital structure is one of the primary determinants of managerial incentives.

Adaptation and the Dynamics of TCE

Although AT is the most commonly employed theoretical framework for studying corporate governance, TCE provides a highly complementary perspective (Lajili & Mahoney, 2006; Williamson, 1988). Both AT and TCE focus on the application of managerial discretion, and both are concerned with incentives, contract structures, and the monitoring role of the board of directors. However, for AT the basic unit of analysis is the individual agent, and as such the primary focus is on *ex ante* incentive alignment to reduce residual loss. In contrast, for TCE the unit of analysis is the transaction, and the focal transaction in corporate governance is the money invested in the firm. Thus, in addition to *ex ante* incentive alignment, TCE also considers *ex post* adaptation to unfolding contingencies. Markets and hierarchies are two alternative forms of governance for guiding adaptation, and the appropriateness of each form is dependent upon how money invested in the firm is put to use. Thus, while AT primarily encompasses the use of incentives and monitoring to induce managers to make appropriate decisions, TCE more broadly considers how the nature of the firm's strategic investments create contingencies that impact the appropriateness of alternative governance structures.

TCE can serve as a valuable complement to the RBV because it prescribes the optimal form of governance given the type of resources and capabilities in which the firm invests (Williamson, 1991b, 1999). Although there is a variant of TCE, perhaps best exemplified by Klein, Crawford, and Alchian (1978), that is relatively static and primarily focused on rent-seeking, there also exists another variant of the theory, best exemplified by Williamson (1999),

that is more dynamic and focused on 'adaptive, sequential decision-making' (Gibbons, 2005). According to this latter variant, the governance choice matters not so much because of current conditions (*i.e.*, static transaction cost economizing), but rather because transacting parties are uncertain as to how conditions will unfold in the future. Transaction costs encompass all future expected costs and even opportunity costs. Furthermore, the costs of mal-adaptation (*i.e.*, failure to adapt as circumstances change over time) may be the most severe of all transaction costs (Williamson, 1991a). Hence the most critical distinction between alternative governance structures pertains to the frameworks that they employ to facilitate adaptation to unfolding contingencies. The choice between market and hierarchical governance is critical not so much because of static transaction cost economizing, but because they offer polar opposite frameworks for guiding adaptation as conditions unfold (Williamson, 1999).

Williamson (1991a) clearly outlines the distinction between market and hierarchical governance with regard to how they guide dispute resolution and adaptation as circumstances change over time. Market governance relies on contracts and rules to induce autonomous adaptation. Markets employ high-powered incentives because failure to adhere to the objective criteria outlined in the contract can result in costly and obtrusive court adjudication. While some simple courses of action may be prescribed by the contract, most critical organizational decisions are made autonomously by the transacting parties, motivated by both the need to remain compliant with the objective terms of the contract and the need to secure new contracts in the future. In contrast, hierarchical governance employs administrative discretion in order to achieve directed adaptation. Incentives within hierarchies are often muted relative to markets because outside court intervention is eschewed and disputes are instead resolved via the judicious tempering of administrative fiat with forbearance. Rather than allowing agents to make critical

organizational decisions autonomously, subject only to the constraint of complying with preexisting contracts, administrative hierarchies invest more heavily in monitoring both objective and subjective information, and subsequently use this information to actively direct adaptation.

Management research has generally under-appreciated not only the inherently dynamic nature of TCE, but also the generality of the theory. While TCE has most commonly been applied to the question of whether a transaction should be internalized or outsourced to a market firm, the theory is actually a much more general theory of governance (Williamson, 1985). According to TCE, there are fundamentally two different ways in which the managers of the firm may be disciplined: through the rigid high powered incentives of market governance; or through the flexible and forbearing monitoring and guidance of the hierarchical governance wielded by the board of directors. If appropriate, incentives are a first-best solution because they involve lower monitoring costs and, moreover, managers necessarily have superior knowledge about the firm's operations and opportunities than the monitors. However, the forbearance of hierarchical governance may be preferred when performance objectives cannot be pre-specified and hence the performance of managers must be evaluated flexibly and problems worked out as they arise via the discretionary assessment of subjective information by the board of directors.

According to TCE, the best framework for guiding adaptation will depend upon the context, and hierarchical governance is best when investments entail high degrees of either specificity or uncertainty. First, in terms of specificity, firms will perform best in new markets when they can leverage key strategic resources into those markets (Delios & Beamish, 1999). To be strategic, a resource must be imperfectly mobile and imperfectly imitable, and hence strategic resources are almost necessarily firm specific (Chi, 1994). Furthermore, superior performance will depend upon making investments in learning about the new market and then adapting and

tailoring these resources to the new market. These investments will generally be highly specific to that market. Hierarchical governance is preferable when specificity is high because it can more effectively safeguard the continuity of the transaction than market governance.

Second, leveraging the firm's key strategic resources into new domains is a process that is fraught with uncertainty. The firm's most valuable capabilities will be those tacit and socially complex capabilities that even the firm's managers may not fully understand (Barney, 1991). Although they generally lead to high performance, managers cannot be sure that they will be able to successfully replicate such capabilities in a new context. Additionally, managing expansion requires the development and transfer of tacit knowledge between operations to exploit synergies (Kogut & Zander, 1993). Such knowledge involves hazards that are difficult to motivate using high-powered incentives. Hierarchical governance using monitoring and administrative devices should do a better job of motivating such knowledge sharing (Felin *et al.*, 2009; Foss, 2006; Nickerson & Zenger, 2004). Furthermore, strategies may also have to be adapted after market entry. After entry, the firm may realize that it would be optimal to contract and outsource some activities or to expand and encompass others. High powered incentives with pre-specified performance targets will dissuade the type of experimentation with the firms' resources and capabilities that can help maximize the returns from the new endeavor. Hierarchical governance is preferable when resources involve ongoing and intentional adaptation over time (Williamson, 1991a), and thus firms will reap greater returns from diversification if managers are subject to the flexibility and forbearance of hierarchical governance.

Financial Structure: A Primary Determinant of Governance Regimes

Most corporate governance research focuses on considerations such as board composition and ownership structure, commonly overlooking the critical governance role played by the firm's

capital structure (Barton & Gordon, 1987). Selecting the firm's capital structure is one of the most important decisions made by senior managers (Mizruchi & Stearns, 1994) as it significantly influences the ability of managers to make discretionary investments (Jensen, 1986; Stearns & Mizruchi, 1993). TCE provides a useful lens for furthering our understanding of the governance implications of capital structure because it explicates how capital structure determines the primary governance regime to which managers are subjected.

The focal transaction in corporate governance is the capital invested in the firm. Investors supply capital to a firm in the form of either debt or equity, which are really just alternative governance structures for safeguarding that capital (Williamson, 1988). Lenders safeguard their investment with market governance: the rigid rules of the debt contract. Debt subjects managers to high powered incentives because failure to adhere to the contract can result in financial distress, bankruptcy, and even organizational demise (Gilson, 1989), outcomes which can erode the personal wealth of managers and damage, if not ruin, their careers (Sutton & Callahan, 1987). However, as long as managers conform to the objective terms of the debt contract, they are afforded the discretion to autonomously decide (*i.e.*, without input from lenders) how best to adapt to unfolding contingencies. Managers face strong incentives to adapt appropriately not only to stay compliant with the covenants of the debt contract, but also to ensure that the debt can be repaid at the end of the contract, or a new debt contract can be secured. The suppliers of equity, in contrast, employ hierarchical governance to safeguard their investment (Williamson, 1988). Performance incentives for managers are muted because the equity holders are not promised any specific returns, the equity never has to be repaid, and outside court intervention is eschewed. Instead, equity holders exercise ultimate discretion over managers via the board of directors, which tempers administrative fiat with forbearance in dealing with disputes or

performance shortfalls. Furthermore, the board invests heavily in gathering both objective and subjective information, which it uses to take an active role in guiding adaptation.

Of course, all firms have equity holders and most firms have at least some debt. Whether managers are primarily disciplined by market or hierarchical governance depends on property rights. Equity holders are residual claimants. When debt levels are low, managers are primarily disciplined by the hierarchical governance of the equity holders. Even if the board does not diligently monitor managers, other mechanisms such as competition (Fama, 1980) and the market for corporate control (Manne, 1965) provide a measure of discipline. Thus, managers must ultimately care about performance, but will be relatively free to experiment and adopt a medium to long term perspective. However, lenders are priority claimants. As debt levels rise, the pressing market demands of lenders come to the forefront, overshadowing the hierarchical governance of equity holders and engendering high powered incentives (Jensen, 1986). Thus, while factors such as board composition or ownership structure are important, their relevance is diminished if managers are focused on the high powered, short term, incentives of debt. Likewise, diligent monitoring by boards may be superfluous or possibly even counter-productive if managerial efforts are primarily focused on meeting the pressing market demands of lenders.

Our theory proposes that the hierarchical governance of equity provides the most appropriate form of governance for firms that are leveraging their resources and capabilities into new markets. The TCE logic lends itself to two types of tests regarding such discriminating matches between the situational circumstances and the form of governance. The first is that firms will tend to make the efficient choice as long as the environment is sufficiently competitive (Klein, 2005), and hence the form of governance selected will depend upon the characteristics of the investments being made. In this regard, TCE would make the same prediction as AT in terms

of hypothesis 1. However, TCE also lends itself to a second test which predicts an interaction between the characteristics of the investment, the governance choice, and performance.

Interestingly, TCE suggests that if firms always made the correct governance choice, there would be no empirically detectable relationship between governance and performance (Masten, 1993). Performance in a competitive environment is always relative, so if virtually every firm made the correct governance choice then doing so would confer no competitive advantage and hence there would be no empirical relationship between the governance choice and performance even though it may be an important decision. However, due to both mistakes and governance inseparabilities (Argyres & Liebeskind, 1999), misfits between governance and the characteristics of the investment do occur and should be associated with lower performance due to higher costs and less efficient adaptation. In our case, a firm's existing capital structure may not be optimal for market expansion. If that firm expands into new markets, the high levels of debt and the ensuing high-powered incentives may constrain the managers' ability to explore and capitalize on new opportunities as they arise. Therefore, while a firm may still be relatively successful in its expansion efforts, on average it will realize lower returns, and hence lower firm value, when managers are subjected to market governance instead of hierarchical governance.

> ***Hypothesis 2:*** *Debt negatively moderates the relationship between increases in diversification and firm value.*

We contend that high levels of debt expose managers to the pressures of market governance, thereby attenuating the discretion and motivation that mangers have to experiment and adapt when leveraging resources into a new market. While financial and agency theories predict relationships between diversification and debt, we are not aware of any other theories that would readily predict the relationship proposed in hypothesis 2. According to AT, debt should

constrain excessive diversification (Johnson, 1996), thereby enhancing the performance returns to diversification. In marked contrast, a TCE perspective (augmented by the RBV) emphasizes the *ex post* challenges of diversification and argues that debt can be harmful when firms leverage strategic resources into new markets because it inhibits discretion and adaptive experimentation.

Debt and Diversification: The Good, the Bad, and the Ugly

While our central argument is that debt will be detrimental to firm value when firms expand into new markets, both the RBV and TCE suggest that the story is much more nuanced and that this relationship may vary according to other considerations. According to TCE, the detrimental effects of the market governance of debt will intensify as exchange hazards (i.e., asset specificity and uncertainty) increase. We have previously argued that virtually all market expansion efforts will entail considerable uncertainty and some degree of specific investments. However, the RBV can help us understand how these exchange hazards vary with firm strategy.

Numerous strategy scholars have argued that pursuing an R&D intensive strategy raises exchange hazards for firms, and hence debt is particularly bad for such firms (Balakrishnan & Fox, 1993; David *et al.*, 2008; Kochhar, 1996; O'Brien, 2003; Simerly & Li, 2000; Vincente-Lorente, 2001). Although R&D creates valuable knowledge-based resources, those resources are best used in conjunction with the firm's complimentary resources (Helfat, 1994) and lose considerable value if redeployed elsewhere (Kochhar & David, 1996). In addition to being highly specific, investments in R&D also tend to be characterized by distant and highly uncertain payoffs (Hill & Snell, 1988). Firms will generally attempt to leverage their existing capabilities into new markets that they enter. Thus, if a firm pursues an R&D intensive strategy, the investments it makes in entering a new market will likely be knowledge intensive, highly specific, and entail considerable uncertainty. The market governance of debt is ill-suited for such

investments because it impedes the development and transfer of tacit knowledge between operations and undermines both the motivation and ability to experiment, adapt, and capitalize on emerging opportunities. Thus, while our theory suggests that debt is generally bad for diversifying firms, it is downright 'ugly' for R&D intensive firms. Accordingly, we propose:

> ***Hypothesis 3:*** *The detrimental effect of debt on increases in diversification will be stronger for R&D intensive firms.*

The detrimental effects of debt on increases in diversification should also vary with the type of debt the firm utilizes. Thus far, our description of debt has conformed to descriptions offered by Williamson (1988) and Jensen (1986). While all forms of debt do share certain critical characteristics, there are important differences between bank debt and bond debt (for a review see Boot, 2000). In fact, the classical description of debt pertains mainly to bond debt, whereas a bank may be more likely to employ hierarchical governance. Bond holders rely on the rigid rules of the debt contract because they have no alternative: as bonds are generally diffusely held, individual bondholders lack the incentive to monitor the firm, and it is costlier for joint action by bondholders to renegotiate debt contracts. In contrast, banks tend to have more concentrated holdings, allowing them to more easily renegotiate debt contracts if the client firm encounters financial difficulties. Banks also typically form a close relationship with their clients, which allows them to gather more detailed subjective information on the firm, and often further garners them a seat on the firm's board of directors (Kaplan & Minton, 1994). Finally, banks may even use their influence to take an active role in guiding adaptation. The close monitoring, ability to exercise administrative discretion, and be forbearing in the face of performance shortfalls makes the governance of bank debt more akin to a hierarchy than a market (David et al., 2008).

Prior research has noted that banks influence diversification strategy (Ramaswamy *et al.*, 2002). We propose that the choice between bank debt and bond debt should have significant performance implications for firms expanding into new markets. If the relationship between diversification and capital structure was primarily about the cost of capital, then we might expect bond debt to yield marginally superior performance because it generally entails a slightly lower interest rate (at least for large firms) than bank debt. However, if the governance exerted by bank debt is more akin to hierarchical governance than it is to the market governance of bonds, then bank debt should not hinder the returns to changes in diversification as severely as do bonds.

Hypothesis 4: *Bond debt is more detrimental for firms increasing diversification than bank debt.*

While thus far we have focused on how capital structure relates to increases in diversification, the RBV suggests that debt may have very different implications for firms that are either decreasing diversification or simply managing a stable but diversified portfolio of markets. Increases in both product and geographic diversification will necessitate that the firm make specific investments in learning about the new market, possibly tailoring their product or service to that market and continuing to experiment and adapt after entry. Although many of the investments made in entering a new market may be market-specific, and hence sunk, some of the investments may be fungible enough to be redeployed from an abandoned market back into ongoing segments if the firm contracts (Anand & Singh, 1997; Helfat & Eisenhardt, 2004). Although market contraction could be thought of as simply the 'reverse' of market expansion, the RBV suggests that expansion and contraction are very asymmetric processes.

As discussed earlier, entering new markets entails significant uncertainty, and performance will likely improve when managers are afforded more freedom to react flexibly, experiment, and potentially delay short-term payoffs in favor of newly discovered greater long-term payoffs. While hierarchical governance can potentially provide such latitudes, the pressures of market governance usurp such motivations. In contrast, redeploying resources and capabilities back into mature operating segments is rather mechanistic in comparison to leveraging them into new markets. As managers are highly familiar with the existing markets, there is significantly less uncertainty, much less need to adapt and experiment, and the resources being redeployed are more fungible (i.e., less specific). Hence, the market governance of debt is not nearly as consequential to market contraction as it is to market expansion.

Hypothesis 5: *Debt is more detrimental to increases in diversification than it is to decreases in diversification.*

Similarly, debt may not necessarily be detrimental to diversified firms that have stopped aggressively expanding and are focused on managing a stable portfolio of businesses. As noted earlier, debt has numerous potential benefits, including managerial discipline (Jensen 1986; Williamson, 1988), tax benefits, and an overall lower cost of capital (Barton & Gordon, 1987). In fact, many diversified firms capitalize on their diversified earnings streams and attempt to reap these benefits by adopting more leverage in their capital structure (Barton & Gordon, 1988; Kim *et al.*, 1993; Kochhar & Hitt, 1998; Lim *et al.*, 2009; Low & Chen, 2004; Lowe *et al.*, 1994). While our theory predicts that the market governance of debt is detrimental to firms that are actively leveraging their resources and capabilities into new markets, it should be much less consequential once the need for rapid experimentation and adaptation abates. Indeed, the benefits

of debt may well outweigh the costs under such circumstances. Thus, while we expect that debt will generally be bad for firms expanding into new markets, it will be 'less bad' and possibly even 'good' for mature firms that are managing a diversified but stable portfolio of markets.

Hypothesis 6: *Debt is more detrimental to firm value for firms that are increasing diversification than it is for firms with a stable level of diversification.*

Methods

Data Sources and Sample

In order to test our theory, we require a sample of firms with detailed financial information that distinguishes between bank debt and bond. While such a distinction is not readily available for U.S. firms, such information is available in the Pacific-Basin Capital Markets (PACAP) Database for Japanese firms. As we believe that our theory should apply to both geographic and product expansion, we combined the PACAP data with two different data sources to produce measures of both international and product diversification.

We constructed our sample by starting with all firms listed in the PACAP Japan database that had market value information available from 1991 to 2001, the years for which diversification information was available. As small firms may be effectively locked out of the foreign markets, we deleted 1081 observations for firms that had book value of equity of less than 3 billion Yen (see Anderson & Makhija, 1999). We also excluded firms in the highly regulated financial, public utilities, and communications sectors (443 observations). This left us with a sample of 1986 firms and 16,363 observations. We then merged this sample with all firms that were listed in either of the annual publications *Japanese Overseas Investments* (which was used to compute international diversification) or the *Japan Company Handbook* (which was used

to compute product diversification), producing a sample of 11759 firm/year observations. However, the information used to compute product diversification (*i.e.*, from the *Japan Company Handbook*) was available for slightly fewer firms, and occasional missing data items slightly reduced the number of observations used in models reported. Finally, data for the variable *R&D* was not available in PACAP and was imported from the NIKKEI NEEDS database.

Variables

Our dependent variable, *performance*, was measured using the firm's market-to-book ratio. This measure, which closely corresponds to Tobin's Q (Chung & Pruitt, 1994), is appropriate because it incorporates both current performance and also expectations of future cash flows. This measure is calculated as the market value of the firm (MVF) divided by total assets, where the MVF is computed as the sum of the book value of debt and the market value of equity. As *performance* was highly skewed by large values, we transformed it by taking the natural log. Likewise, the independent variable *bank debt* represents the sum of all bank loans divided by the MVF, and the variable *bond debt* is the sum of all bonds and long term notes divided by the MVF. *Leverage* is total debt (*i.e.*, bank loans plus bond debt) divided by the total MVF, and the variable *R&D* is the ratio of the firm's R&D expenditures to sales.

To measure the extent of a firm's international *diversification*, we collected data on Japanese firms' overseas subsidiaries from the publication *Japanese Overseas Investments*. Then, following Delios, Xu and Beamish (2008), we calculated an entropy-based measure of diversification based upon the concentration of the firms subsidiaries across different geographic markets. Similarly, to measure product *diversification*, we collected data on each firm's product-segment sales, classified using three-digit SIC codes from the *Japan Company Handbook* (Delios & Beamish, 1999), then computed diversification via the entropy measure (Palepu,

1985). Once we had measures of product and international diversification, we then computed measures of change in diversification. However, change scores could reflect random variation instead of genuine change (Bergh & Fairbank, 2002), and in our case yearly fluctuations in sales across segments could falsely indicate changes in diversification. Thus, we first smoothed the base time series measures of diversification with a moving average function, and then computed change scores for each measure. The variable *Δdiversification* is the year to year change for each type of diversification, computed as difference between the focal year and the previous year. Although correlation between a simple change score and other independent variables can induce problems (Bergh & Fairbank, 2002), Table 1 suggests that this is not a concern in our data. We also created two directional additional measures of change in diversification. Following Greve (2003), we employed a spline function whereby ↑*diversification* represents the positive values of *Δdiversification* with the negative values replaced by zeros, while ↓*diversification* is the negative values of *Δdiversification* with the positive values replaced by zeros.

We controlled for a number of other factors that might impact either diversification or performance. *Free cash flow* is calculated as the ratio of operating income less taxes, interest and dividends paid divided by total assets. The variable *fixed assets* is defined as net fixed assets divided by total assets. *Cash* is total cash and marketable securities divided by total assets, and *size* is the natural log of total firm assets. *Volatility* assesses the instability of the firm's earnings, and is measured as the standard deviation of return on assets over the previous five years, and *firm growth* is the year over year change in firm sales. As ownership structure can strongly influence the strategic decisions of Japanese firms (Ahmadjian & Robbins, 2005; O'Brien & David, 2014), we also controlled for the ownership structure of the firm with the variables *foreign ownership*, which is the total number of shares owned by foreigners divided by total

shares; *financial ownership*, which is the total number of shares owned by banks and insurance companies divided by total shares; and *corporate ownership*, which is the total number of shares owned by Japanese business corporations (excluding financial institutions) divided by total shares. Furthermore, since keiretsu membership can have important governance implications for Japanese firms (Kim *et al.*, 2004), we include the dummy variable *keiretsu*, which equals one if the firm is a member of a keiretsu and zero otherwise. We also control for the square of our various debt measures to account for potential nonlinear effects of debt. In addition to the firm level control variables, we also included two industry level control variables: *industry performance,* the median value of the variable *performance* for all firms in each industry; and *industry growth*, the year over year growth rate in sales for the median firm in each industry.

Analysis

Unobserved heterogeneity is a concern because our data contains multiple observations per firm. Furthermore, some of our independent variables (most notably capital structure and diversification) are potentially endogenous. To address these problems, we employ the Hausman-Taylor instrumental variables (IV) regression model. This approach offers two key benefits for analyzing our sample. First, similar to a fixed effects model, it accounts for unobserved heterogeneity by allowing for correlation between regressors and the individual [firm] effects. However, unlike a fixed effects model, it allows for the estimation of regressors that are invariant over time within individuals [or firms] (Greene, 2003). Second, it accounts for endogeneity by using both the between and the within variation of the exogenous variables as instruments for the specified endogenous variables (Baltagi, 2001).

Finally, it should be noted that when *performance* is the dependent variable, we used contemporaneous measures for the independent variables because *performance* is measured on

the last day of the [fiscal] year and can adjust rapidly to changes in expected future performance. However, when *diversification* is the dependent variable, simultaneity is a greater concern because the levels of debt and diversification might both rise during the year if debt is used to fund increases in diversification. Thus, for these models the independent variables were lagged one year (e.g. diversification in year *t* is modeled as a function of capital structure on the last day of year *t-1*). Descriptive statistics for our sample are given in Table 1.

Results

The results of our empirical analyses for international and product diversification are given in Tables 2 and 3, respectively. All models in these tables used the Huasman-Taylor IV regression models and treat our measures of leverage and diversification (when used as an independent variable) as endogenous. For all regressions, the Sargan-Hansen overidentification test statistic was insignificant, thus confirming two critical assumptions of IV regressions: that the instruments are uncorrelated with the error term (i.e., they are exogenous), and that they are correctly excluded from the estimated equation. Model 1 in Tables 2 and 3 present the results of our analysis of the determinants of changes in international and product diversification, respectively. Interestingly, most of the control variables have a weak effect, at best. However, leverage does have a significant negative effect on changes in both international ($p<0.01$) and product diversification ($p<0.05$). Hence, we find support for hypothesis 1, and it would appear that higher levels of debt do indeed generally constrain future changes in diversification.

Models 2 through 8 of Table 2 present the results of our analysis of the impact of changes in international diversification on firm value. Model 2 reveals that *Δdiversification* has a positive and significant main effect on performance and leverage has a significant negative effect on performance, although the significant coefficient for the square term indicates that it is a

nonlinear effect. However, taking the first derivative of the regression equation with respect to leverage and solving for the inflection point reveals that the relationship is monotonically negative within the observed range of the variable *leverage*. Model 3 adds in the interaction between *Δdiversification* and leverage, which is found to be negative and significant ($p<0.01$). This supports hypothesis 2, and indicates that the market governance of leverage reduces the benefits that firms accrue from increases in diversification.

Models 4 and 5 test hypothesis 3 by splitting the sample based on R&D intensity. Model 4 reports the results for the R&D intensive subsample (defined as R&D to sales ratio greater than 5%) and model 5 reports the results for the remaining firms. Although the interaction between *Δdiversification* and leverage and is significant in both subsamples, it is almost six times larger in Model 4. This difference between the two coefficients is significant ($p<0.01$) and supports hypothesis 3. Furthermore, consistent with hypothesis 4, model 6 shows that bond debt impairs the benefits of increases in diversification significantly more than does bank debt (Chi-square=5.79, $p<0.05$). Model 7 tests hypothesis 5 by also controlling for the absolute level of diversification. In support of our hypothesis, the interaction between *Δdiversification* and leverage significantly more strongly negative (Chi-square=46.37, $p<0.01$) than the interaction between *diversification* and leverage. Interestingly, when controlling for the effects of changes in diversification, the interaction between the absolute level of diversification and leverage is actually positive. This suggests that debt can have benefits for diversified firms that have a stable level of diversification. Finally, model 8 separates out the effects of increases in diversification from decreases. Consistent with hypothesis 6, the significant negative coefficient for the interaction between ↑*diversification* and leverage is significantly more strongly negative (Chi-square=14.71, $p<0.01$) than the insignificant interaction between ↓*diversification* and leverage.

Models 2 through 8 of Table 3 replicate the results of models 2 through 8 of Table 2 using product diversification instead of international diversification. It is interesting to note that product diversification also has a positive main effect on performance. However, this should not be surprising, as in Japan conglomerates tend to exist at the keiretsu level but not at the firm level. For example, in our data there are 18 different firms (each a distinct legal entity with its own stock, managers and board) that are all members of the Mitsubishi keiretsu. Furthermore, during the time frame of our study, each of these individual firms tend to use unconsolidated subsidiaries for unrelated diversification that they engage in, while consolidating the results for related diversification. Thus, our measure of product diversification is largely a measure of related diversification. Hence, our results (unsurprisingly) reveal that more related diversification leads to improved performance. In terms of the tests of our hypotheses, the results for product diversification are very similar to those of international diversification.

The only noteworthy differences in Table 3 versus Table 2 are that the interactions between the level of diversification and leverage is slightly weaker and only marginally significant, and the interaction between decreases in diversification and leverage is significant and negative. However, the results of all of our hypothesis tests are all substantively equivalent. Hence, overall the results provide strong support for our hypotheses. Finally, we note that in unreported models, we also tried interacting our measures of changes in diversification with the square terms for our measures of debt, but found these interactions to be insignificant.

The benefits of matching governance structures to the context are not only statistically significant, but also economically significant. By taking the first derivative of the regression equation in model 8 of Table 2 with respect to the ↑*diversification*, we can compute the marginal effect that increases in international diversification have on firm *performance* at varying levels of

debt. Doing so reveals that as leverage rises from 0 to 0.50, the slope of the relationship between ↑*diversification* and *performance* would fall from a healthy 0.86 to a -0.21. Repeating this analysis for product diversification shows that the slope would fall from 0.91 to -0.31. Thus, debt influences not only the magnitude of the benefits firms reap from diversification, but can actually influence whether those returns are generally positive or negative.

Discussion and Conclusions

We have argued that TCE can provide a useful lens for understanding whether a firm will reap benefits from leveraging its resources and capabilities into new markets. Managers will generally be unsure of their capabilities and the applicability of the firm's resources when their firm expands, and may well need to experiment and react flexibly and quickly as conditions unfold. Under such conditions, the rigid and unforgiving nature of market governance, with its high powered incentives, can inhibit both the ability and the willingness of managers to act quickly and to experiment in the new domain. Thus, shielding managers from the rigors of market governance can help ensure that firms reap greater benefits from their expansion efforts.

We argue that TCE and the RBV are highly complementary in explaining the success of corporate strategies. Organizational capabilities differ in the nature of hazards they pose and will yield the highest returns when they are governed by mechanisms that best facilitate adaptation as contingencies evolve in the future. We explain that the capabilities underlying successful diversification require development and transfer in order to exploit synergies, and therefore involve considerable hazards. Market governance utilizing high-powered incentives is not conducive to the ongoing adaptation needed for successful implementation. Instead, hierarchical governance mechanisms utilizing elaborate monitoring and administrative mechanisms provide appropriate safeguards for guiding the adaptation needed for successful diversification.

The discretion to engage in experimentation and capitalize on opportunities as they arise facilitates successful diversification. We find that debt, which constrains managerial discretion over how resources can be deployed, reduces the benefits that firms accrue from diversification. However, we also find that this relationship needs to be contextualized in several regards, as debt is not always necessarily bad for diversified firms. First, we find that the detrimental effects of debt on increases in diversification will vary with the firm's strategy. Specifically, we find that the negative consequences of debt are amplified for R&D intensive firms and relatively mild for firms with a low R&D intensity. Second, we note that debt is not homogeneous, and its effect on diversification depends on the nature of debt. In contrast to bond holders, banks tend to form closer relationships, monitor their clients, and even take an active role in guiding adaptation. Accordingly, bank debt does not reduce the benefits of diversification to the extent that bond debt does. Third, we argue and find that the resource deployment and redeployment that accompanies changes in diversification is an asymmetric process, such that debt is much more harmful for increases in diversification than it is for decreases in diversification.

Fourth, our theory suggests that the negative aspects of debt are most pronounced during market expansion and shortly after, when the firm is still learning and experimenting. However, the discipline provided by debt may be beneficial to a diversified firm that is no longer entering new markets and is focusing on improving the efficiency of its operations. Accordingly, we find that debt can potentially be beneficial to a diversified firm that is not actively expanding into new ones. We believe that this is an important finding because most previous research examining the link between capital structure and diversification has focused on whether diversification allows firms to carry more debt. Yet, as Low and Chen (2004) point out, the evidence that product diversification leads to higher debt levels is scant, and the evidence that international

diversification does so is equivocal. By focusing not on how much debt diversified firms *can* carry, but how much they *should* carry, our research not only helps highlight why the capital structure decision is so important, but also may help explain the mixed results.

We built our theoretical arguments on general theories of governance which, although they were largely developed in the U.S., proved useful in predicting diversification performance in Japan. Despite this, the generalizability of our results is worth further consideration and future empirical examination. As our theories are general, our results for the effects of capital structure on changes in diversification should generalize to any country or time where the institutional or legal context allows lenders to exercise market governance over their investments in the firm, and where performance in new markets is contingent upon learning and adapting key resources and capabilities to those markets. Hence, our theory should generalize to any well-developed capitalist economy where the board of directors has, at least, a fiduciary duty to act in the best interests of shareholders and where contract law and property rights protections give lenders the power to force a firm into bankruptcy. Furthermore, our results regarding the differences between bond debt and bank debt should generalize to any context where firms can engage in 'relational banking', thereby allowing banks to exercise a more hierarchical form of governance over their investments in the firm. Thus, our theory implies that debt will not be as bad for increases in diversification in contexts where banks are the dominant providers of corporate debt (such as France and Germany) as it is where bond debt is dominant (such as the U.S. and the U.K.). However, even in the U.S., some large corporations do rely heavily on bank debt (Stearns & Mizruchi, 1993). Therefore, we believe that our results should be broadly applicable.

While we do believe that our results should generalize to other contexts, we do acknowledge some limitations of our data. First, our sample was limited to the years 1991-2001

because the sources that were used to construct the diversification measures changed the way they report segment information in the early 2000s. Hence, we would not be able to form consistent time series, which is critical to constructing a measure of change in diversification. However, we are interested in uncovering theoretical truths that apply across both countries and time, and we have no reason to believe that the relationships we investigate would be unique to the 1990s. Second, endogeneity is always an important concern in empirical studies like ours. While we believe that the Hausman-Taylor IV regressions were well-suited for the nature of our data, it does handle the instrumentation of endogenous variables in a rather mechanistic manner. While only a controlled experiment with random assignment (which is not practical for topics such as this) can definitively establish causality, more research employing a diversity of samples and econometric approaches would be helpful in corroborating our findings.

Finally, we suggest some potentially fruitful avenues for extending our work. We argue that the flexible and forbearing governance of the board of directors is overshadowed by the market governance of priority claimants when debt is high. Perhaps the mixed results often found in corporate governance research (Coles *et al.*, 2001; Daily *et al.*, 2003) arise because the most commonly studied variables in the corporate governance literature mainly pertain to hierarchical governance, and hence may be of little consequence when market governance is high. When examining corporate governance, the pressure exerted by owners (David *et al.*, 2001), the significance of the composition of the board of directors (Dalton *et al.*, 1998), or the nuances of the CEO's [generally generous] pay package (Gomez-Mejia & Wiseman, 1997), may pale in comparison to capital structure, for the ire of shareholders is but a pillow in comparison to the dagger wielded by lenders. Future research should more closely scrutinize a firm's capital structure to identify when the board of directors really matters (Beatty & Zajac, 1994).

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Table 1: Descriptive Statistics

Variable	Mean	St.Dev	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) Performance	-0.174	0.487																		
(2) ΔIntl. Diver.	0.007	0.042	0.07																	
(3) ΔProd. Diver.	0.004	0.037	0.07	0.47																
(4) Leverage	0.335	0.243	-0.37	-0.09	-0.07															
(5) Bond Debt	0.101	0.111	-0.03	-0.02	0.00	0.26														
(6) Bank Debt	0.234	0.239	-0.36	-0.09	-0.07	0.89	-0.20													
(7) Free Cash	0.004	0.026	0.17	-0.01	-0.04	-0.26	-0.10	-0.21												
(8) Cash	0.103	0.085	0.17	0.03	0.04	-0.33	-0.04	-0.31	0.11											
(9) Size	11.80	1.252	0.18	-0.09	-0.08	0.12	0.27	-0.01	0.05	-0.06										
(10) Fixed Assets	0.255	0.133	0.05	0.01	0.00	0.11	0.09	0.07	0.01	-0.28	-0.06									
(11) R&D	0.027	0.058	0.12	-0.03	-0.04	-0.14	0.00	-0.14	0.07	0.00	0.07	-0.04								
(12) Volatility	0.016	0.013	0.15	0.00	0.01	-0.10	-0.09	-0.05	-0.19	0.12	-0.20	-0.02	0.12							
(13) Firm Growth	-0.011	0.108	0.18	0.05	0.05	-0.20	-0.03	-0.19	0.35	0.02	0.04	-0.02	-0.08	-0.09						
(14) Frgn. Owner.	0.077	0.088	0.35	-0.03	-0.04	-0.32	-0.01	-0.32	0.20	0.10	0.37	-0.09	0.18	0.06	0.11					
(15) Fin. Owner.	0.373	0.147	0.31	-0.02	-0.02	-0.10	0.23	-0.21	0.00	0.00	0.48	-0.03	0.08	-0.13	0.05	0.19				
(16) Corp. Owner.	0.273	0.168	-0.20	0.07	0.07	0.07	-0.12	0.13	-0.05	-0.04	-0.29	0.09	-0.16	0.02	-0.01	-0.39	-0.66			
(17) Keiretsu	0.159	0.366	0.09	-0.04	-0.03	0.14	0.18	0.06	-0.03	-0.18	0.47	0.07	0.06	-0.10	-0.02	0.14	0.27	-0.19		
(18) Ind. Growth	-0.008	0.050	0.10	0.04	0.03	-0.09	0.00	-0.10	0.16	0.01	0.03	-0.01	-0.10	-0.06	0.49	0.05	0.02	0.00	-0.02	
(19) Ind. Perform.	-0.221	0.282	0.55	0.14	0.14	-0.29	0.05	-0.32	-0.15	0.12	-0.03	0.11	-0.05	0.12	0.11	0.05	0.19	-0.01	0.04	0.20

n = 9602

Table 2: Instrumental Variables Regressions on International Diversification

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Diversification							-0.17 **	
ΔDiversification		0.24 **	0.64 **	2.25 **	0.47 **	0.78 **	0.65 **	
↑Diversification								0.86 **
↓Diversification								0.20
Leverage	-0.02 **	-1.74 **	-1.72 **	-2.30 **	-1.61 **		-1.87 **	-1.70 **
Leverage^2		1.78 **	1.74 **	2.20 **	1.67 **		1.73 **	1.74 **
Bond Debt						-0.36 **		
Bond Debt^2						-0.42 **		
Bank Debt						-1.40 **		
Bank Debt^2						1.51 **		
Free Cash Flow	0.02	1.87 **	1.85 **	1.13 **	1.96 **	1.84 **	1.81 **	1.84 **
Cash	0.02 *	0.20 **	0.19 **	0.17	0.18 **	0.13 **	0.18 **	0.20 **
Size	0.00 **	-0.03 **	-0.03 **	-0.02	-0.06 **	-0.03 **	-0.02 **	-0.03 **
Fixed Assets	0.00	-0.11 **	-0.11 **	-0.27 *	-0.09 +	-0.07 +	-0.10 *	-0.11 **
R&D	0.05 **	0.32 **	0.32 **	0.15	0.09	0.31 **	0.32 **	0.32 **
Volatility	-0.07 +	2.13 **	2.14 **	2.31 **	1.95 **	2.35 **	2.12 **	2.13 **
Firm Growth	0.01	0.09 **	0.09 **	0.06	0.11 **	0.09 **	0.09 **	0.09 **
Foreign Owner.	-0.01	1.82 **	1.82 **	1.69 **	1.62 **	1.80 **	1.82 **	1.82 **
Financial Owner.	0.00	1.22 **	1.22 **	1.29 **	1.13 **	1.17 **	1.23 **	1.22 **
Corporate Owner.	0.00	0.75 **	0.75 **	0.84 **	0.66 **	0.71 **	0.74 **	0.75 **
Keiretsu	0.00	0.08 *	0.07 *	0.06	0.11 **	0.08 *	0.07 *	0.07 *
Indus. Growth	0.00	-0.16 *	-0.16 *	-0.29 +	-0.08	-0.16 *	-0.16 *	-0.16 *
Indus. Perform.	-0.01 +	0.66 **	0.66 **	0.65 **	0.66 **	0.66 **	0.67 **	0.66 **
ΔDiver. x Leverage			-1.31 **	-5.87 **	-0.98 **		-1.31 **	
ΔDiv. x Bond Debt						-2.58 **		
ΔDiv. x Bank Debt						-1.46 **		
Divers. x Leverage							0.28 **	
↑Div. x Leverage								-2.13 **
↓Div. x Leverage								-0.13
Observations	10,441	11,455	11,455	1,887	9,568	11,455	11,455	11,455
Wald Chi-square	753.8 **	17586 **	17673 **	1980 **	15716 **	17249 **	17779 **	17711 **

+ p<0.10; * p<0.05; ** p<0.01 (two-tailed)

Table 3: Instrumental Variables Regressions on Product Diversification

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Diversification							-0.04	
ΔDiversification		0.16 *	0.75 **	2.07 **	0.62 **	0.86 **	0.75 **	
↑Diversification								0.91 **
↓Diversification								0.45 *
Leverage	-0.01 *	-1.80 **	-1.77 **	-2.62 **	-1.63 **		-1.84 **	-1.75 **
Leverage^2		1.83 **	1.78 **	2.55 **	1.68 **		1.77 **	1.78 **
Bond Debt						-0.41 **		
Bond Debt^2						-0.33 *		
Bank Debt						-1.38 **		
Bank Debt^2						1.48 **		
Free Cash Flow	-0.02	1.81 **	1.78 **	0.81 **	1.93 **	1.79 **	1.78 **	1.78 **
Cash	0.02 **	0.17 **	0.17 **	0.27 **	0.15 **	0.11 *	0.16 **	0.16 **
Size	0.00 **	-0.03 **	-0.03 **	-0.02	-0.06 **	-0.03 **	-0.03 **	-0.03 **
Fixed Assets	0.00	-0.10 *	-0.10 *	-0.20 +	-0.09 +	-0.06	-0.10 *	-0.11 *
R&D	0.02	0.30 **	0.31 **	0.11	-0.10	0.29 **	0.31 **	0.31 **
Volatility	0.03	2.01 **	1.99 **	2.40 **	1.82 **	2.28 **	1.98 **	1.99 **
Firm Growth	0.01 **	0.07 **	0.07 **	0.04	0.09 **	0.07 **	0.07 **	0.07 **
Foreign Owner.	0.00	1.92 **	1.93 **	1.68 **	1.74 **	1.91 **	1.93 **	1.93 **
Financial Owner.	0.01 *	1.26 **	1.27 **	1.27 **	1.17 **	1.21 **	1.27 **	1.27 **
Corporate Owner.	0.01 *	0.80 **	0.81 **	0.85 **	0.69 **	0.77 **	0.81 **	0.81 **
Keiretsu	0.00	0.08 *	0.08 *	0.09	0.12 **	0.08 *	0.08 *	0.08 *
Indus. Growth	0.00	-0.11	-0.12 +	-0.22	-0.04	-0.13 +	-0.12 +	-0.12 +
Indus. Perform.	-0.01 +	0.66 **	0.66 **	0.57 **	0.65 **	0.66 **	0.66 **	0.66 **
ΔDiver. x Leverage			-1.89 **	-6.12 **	-1.67 **		-1.89 **	
ΔDiv. x Bond Debt						-3.06 **		
ΔDiv. x Bank Debt						-1.85 **		
Divers. x Leverage							0.08 +	
↑Div. x Leverage								-2.43 **
↓Div. x Leverage								-1.06 *
Observations	8,850	9,602	9,602	1,713	7,889	9,602	9,602	9,602
Wald Chi-square	578.7 **	14309 **	14436 **	1942 **	12582 **	13954 **	14437 **	14446 **

+ p<0.10; * p<0.05; ** p<0.01 (two-tailed)