A STAKEHOLDER THEORY
OF CORPORATE DIVERSIFICATION

DISSEYATION

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ABSTRACT

Broadly speaking, the focus of this dissertation is on corporate level strategy and the sources of value creation through diversification. Of particular interest are issues relating to the benefits of firm risk management and the impact of firm-specific asset investments made by a firm's employees, suppliers and customers on total firm value and equity holder wealth.

The dissertation is composed of three essays. The first essay develops a stakeholder-based reason for corporate diversification. It originated from the observation that most non-financial stakeholders of a firm have significant firm-specific asset investments. Since the risks associated with these assets are difficult to diversity, the firm often has an incentive to induce its stakeholders to make more firm-specific investments by engaging in risk management activities. This essay shows that corporate diversification may be particularly effective in inducing these stakeholders to make firm-specific investments.

In the second essay, a formal model is developed to examine the interaction of two risk management mechanisms: financial hedging and corporate diversification. At first it might appear that they are substitutive means of risk management. However, when hedging contracts are available for reducing a firm's risk exposures, the opportunity to
hedge in financial markets changes the incentives to manage risks through diversification, because hedging contracts do not serve equally well for hedging different types of risks. The results of the model show that, contrary to common belief, the ability for firms to use financial hedging instruments can increase the benefit obtained from diversification.

The third essay empirically tests the stakeholder theory of corporate diversification developed in the first two essays. This essay describes the relationship between a firm's diversification strategy and the extent to which the firm relies on its stakeholders' firm-specific asset investments. Particularly, I examine the risk reduction potential through a firm's acquisition moves. The results indicate that when stakeholders' specific asset investments are important in a firm's operations, the firm has an incentive to engage in mergers or acquisitions that have relatively high risk-reduction potential.
Dedicated to my mother
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CHAPTER 1

INTRODUCTION

One of the most important questions that need to be addressed in corporate strategy literature is: how does the operation of multiple lines of business under the same ownership change the incentives and opportunities for participants in the corporation? Scholars in several fields of research have tried to examine this question from different aspects for the better part of a century. One common feature in the literature is its almost exclusive focus on firms’ financial participants, especially equity holders, but much less attention has been paid to firms’ other non-financial stakeholders such as employees, suppliers and customers. It is not surprising why this is the case given that the widely accepted objective of a publicly traded corporation has been to maximize the wealth of its equity holders. Consequently, studies on diversification have also been focusing on how diversification directly affects the wealth of a firm’s equity holders. For example, theory has established that pure risk reduction effect of corporation diversification will not add value to equity holder wealth, because portfolio theory shows that equity holders can reduce risks by themselves more efficiently through portfolio diversification.
The central objective of this dissertation is to provide another rationale for corporate diversification by extending attention from equity holders to other non-stakeholders of a firm. However, the focus on a firm’s other stakeholders is NOT inconsistent with firms’ objective of maximizing equity holder wealth. As a matter of fact, the major conclusion drawn from this dissertation is that focusing on a firm’s stakeholders, specifically, corporate diversification aimed to reduce the risks associated with stakeholders’ firm-specific investments, eventually leads to increased equity holder wealth. Thus reducing risks through corporate diversification can achieve certain benefits that equity holders cannot achieve themselves through portfolio diversification. Specifically, risk reduction through portfolio diversification does not affect firms’ stakeholders’ investment incentive, while risk reduction through corporate diversification does.

1.1 Diversification and Performance

Corporate diversification is one of the most researched areas in industrial organization, finance, and strategy fields. The relationship between corporate diversification and firm value has fascinated scholars in several fields of research for over a century (Berle and Means, 1932; Chandler, 1962). Over the years, much of this research suggests two broad propositions. These propositions are, first, that unrelated diversification cannot create value for a firm, and second, that related diversification can (Collis and Montgomery, 1997).
The logic that underlies these two propositions is well known (Hoskisson and Hitt, 1990). Unrelated diversification cannot create value for a firm because equity holders are efficient diversifiers. That is, equity holders can realize all the benefits of unrelated diversification on their own at low cost by investing in a diversified portfolio of equity investments. On the other hand, to the extent that related diversification exploits real economies of scope, it can create value for a firm. This is because equity holders cannot realize these sources of value on their own through equity investments. Thus, equity holders will be unwilling to "hire" managers to pursue a strategy of unrelated diversification, but may be willing to "hire" managers to pursue a strategy of related diversification if that strategy exploits real economies of scope.

These two propositions have been subjected to numerous empirical tests. These efforts have taken several forms. For example, some scholars have focused on different ways of characterizing the relatedness of a firm's diversification strategy and then correlating these measures of relatedness with different measures of firm performance (e.g., Robins and Wiersema, 1995). Other scholars have examined the impact of a firm's diversification strategy on firm performance compared to the impact of that firm's business strategies and the industries within which it operates (e.g., Rumelt, 1991). A third group of scholars has examined stock market reactions to various forms of diversification (e.g., Lang and Stulz, 1994).

Despite this empirical effort, controversy remains about the relationship between corporate diversification and firm value. Results of this research are often inconsistent. At times it seems that every possible empirical relationship between corporate
diversification and firm value that could exist has been demonstrated in some previous paper. Sometimes not diversifying creates value (e.g., Hoskisson, Johnson, and Moesel, 1994), other times failing to diversify destroys value (Silverman, 1999); sometimes related diversification creates value (e.g., Markides and Williamson, 1994), other times it destroys value (e.g., Lang and Stulz, 1994); sometimes unrelated diversification creates value (e.g., Amit and Wernerfelt, 1990), other times it destroys value (Chatterjee and Lubatkin, 1990; Comment and Jarrell, 1995).

Of course, much of this empirical diversity reflects different methodological approaches taken by different authors. However, taken as a whole, these empirical results do not unambiguously support the two propositions discussed earlier, namely, that unrelated diversification cannot create value while related diversification can.

1.2 Agency Theory and Diversification

In addition to the mixed empirical research results, anecdotes suggest that there are still a large number of unrelated mergers and acquisitions going on in recent years, involving firms of almost all sizes and all industries. And although portfolio theory suggests equity holders themselves can reduce risks more efficiently than the firm, we still often hear managers engaging in diversification arguing that there is a risk reduction benefit through diversification strategy.

Agency theory (Jensen & Meckling, 1976) has been adopted to explain the above paradox. Agency theory states that a utility-maximizing agent may behave in a way inconsistent with the interests of the principle. This theory applied to firm diversification
decision argues that the corporate policy towards diversification of risk can cause a conflict of interests between managers and stockholders (Amihud & Lev, 1981; Agrawal & Mandelker, 1987; Saunders, Strock & Travlos, 1990; May, 1995; Warfield, Wild & Wild, 1995). For example, Amihud and Lev (1981) argued that although stockholders can generally fully diversify away firm-specific risk, managers’ “employment risk” (the risk of losing job, professional reputation etc.) is largely undiversifiable. Therefore, risk averse managers pursue unrelated diversification in order to reduce their “employment risk”, but at an expense of the stockholders.

However, both the theoretical arguments and the empirical results are recently questioned by some other researchers. For example, Lane, Cannella and Lubatkin (1998) questioned Amihud and Lev’s hypothesis and retested them using Amihud and Lev’s data from the 1960s and new data from the 1980s. They found that neither study supported the conclusions of Amihud and Lev, nor the agency theory belief that monitoring efforts by principals affect the strategic behaviors of agents or the performance of the firms. The debate on whether corporate ownership structure affects its strategy toward diversification is still going on (Amihud & Lev, 1999; Denis, Denis, & Sarin, 1999; Lane, Cannella, & Lubatkin, 1999).1

1.3 Stakeholder Specific Investments and Diversification

Although this dissertation is not yet able to fully account for this empirical diversity, it suggests an additional rationale for firm diversification that has been almost

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1 For a detailed discussion on this topic, see Nov. 1999 issue of Strategic Management Journal.
ignored in the literature. The central assertion of this dissertation is that corporate
diversification can be used to align the interests of a firm's equity holders and its other
stakeholders in ways that can increase a firm's economic value. The argument recognizes
the important role that specific asset investments made by a firm’s stakeholders play in
firm operations and the benefits of these investments to both the firm’s equity holders and
its other stakeholders.

This dissertation is composed of three essays. Taken together, these essays revisit
the causes and consequences of corporate diversification, addressing issues relating to the
impact of firm-specific asset investments made by a firm’s employees, suppliers and
customers on firm value and equity holder wealth, and the benefit of reducing risks
associated with these firm-specific investments through corporate diversification.

The first essay develops a stakeholder-based reason for corporate diversification.
It originated from the observation that most non-financial stakeholders of a firm have
significant firm-specific asset investments. These assets have two important features.
First, the risks associated with them are difficult to diversify; second, these assets are
likely to be among the most important sources of firm economic rents. Thus, the firm
often has an incentive to induce its stakeholders to make more firm-specific investments
by engaging in risk management activities, such as altering capital structure, purchasing
insurance or financial hedging contract and engaging in real asset diversification. This
essay shows that while each of the alternatives to diversification can be effective in some
settings, there are likely to be circumstances where these alternatives will leave a firm’s
employees, customers, and suppliers unwilling to make specific investments in a firm. It
is in these settings that corporate diversification may be particularly effective in inducing these stakeholders to make firm-specific investments, especially if the costs of implementing corporate diversification can be kept low.

In the second essay, a formal model is developed to examine the interaction of two major risk management mechanisms: financial hedging and corporate diversification. At first it might appear that financial hedging and corporate diversification are substitutive means of risk management. However, when hedging contracts are available for reducing a firm’s risk exposures, the opportunity to hedge in financial markets changes the incentives to manage risks through diversification, because hedging contracts do not serve equally well for hedging different types of risks. A firm can partly hedge its systematic risks but it is hard to hedge its firm-specific risks. The results of the model show that, contrary to common belief, the ability for firms to use financial hedging instruments can increase the benefit obtained from diversification.

The third essay empirically tests the stakeholder theory of corporate diversification developed in the first two essays. This essay describes the relationship between a firm’s diversification strategy and the extent to which the firm relies on its stakeholders’ firm-specific asset investments. One implication that can be drawn from the stakeholder-based reason for corporate diversification is that the extent to which a firm relies on its stakeholders’ specific asset investments affect a firm’s decision in choosing target while the firm implements a diversification strategy through merger or acquisition. Particularly, I examine the risk reduction potential through a firm’s merger or acquisition moves (measured by the correlation between pre-merger monthly stock returns of
acquiring firms and those of target firms). The results indicate that when stakeholders’
specific asset investments are important in a firm’s operations, the firm has an incentive
to engage in mergers or acquisitions that have relatively high risk-reduction potential.
CHAPTER 2

A STAKEHOLDER VIEW OF CORPORATE DIVERSIFICATION

The relationship between corporate diversification and firm value has fascinated scholars in several fields of research for over a century (Berle and Means, 1932; Chandler, 1962). Over the years, much of this research has tried to examine the empirical implications of two broad propositions. These propositions are, first, that unrelated diversification cannot create value for a firm, and second, that related diversification can (Collis and Montgomery, 1997).

The logic that underlies these two propositions is well known (Hoskisson and Hitt, 1990). Unrelated diversification cannot create value for a firm because equity holders are efficient diversifiers. That is, equity holders can realize all the benefits of unrelated diversification on their own at low cost by investing in a diversified portfolio of equity investments. On the other hand, to the extent that related diversification exploits real economies of scope, it can create value for a firm. This is because equity holders cannot realize these sources of value on their own through equity investments. Thus, equity holders will be unwilling to "hire" managers to pursue a strategy of unrelated
diversification, but may be willing to "hire" managers to pursue a strategy of related
diversification if that strategy exploits real economies of scope.

Of course, these two propositions have been subjected to numerous empirical
tests. These efforts have taken several forms. For example, some scholars have focused
on different ways of characterizing the relatedness of a firm's diversification strategy and
then correlating these measures of relatedness with different measures of firm
performance (e.g., Robins and Wiersema, 1995). Other scholars have examined the
impact of a firm's diversification strategy on firm performance compared to the impact of
that firm's business strategies and the industries within which it operates (e.g., Rumelt,
1991). A third group of scholars has examined stock market reactions to various forms of
diversification (e.g., Lang and Stulz, 1994). Yet another has applied agency theory and
transactions cost economics to focus on the performance implications of how a
diversification strategy is implemented within a firm (e.g., Amihud and Lev, 1981).

Despite this empirical effort, controversy remains about the relationship between
corporate diversification and firm value. Results of this research are often inconsistent.
At times it seems that every possible empirical relationship between corporate
diversification and firm value that could exist has been demonstrated in some previous
paper. Sometimes not diversifying creates value (e.g., Hoskisson, Johnson, and Moesel,
1994), other times failing to diversify destroys value (Silverman, 1999); sometimes
related diversification creates value (e.g., Markides and Williamson, 1994), other times it
destroyes value (e.g., Lang and Stulz, 1994); sometimes unrelated diversification creates
value (e.g., Amit and Wernerfelt, 1990), other times it destroys value (Chatterjee and Lubatkin, 1990; Comment and Jarrell, 1995).

Of course, much of this empirical diversity reflects different methodological approaches taken by different authors. However, even when authors adopt very similar methodologies, they can obtain different results (e.g., Lang and Stulz, 1994 and Miller, 2000). Taken as a whole, these empirical results do not unambiguously support the two propositions discussed earlier, namely, that unrelated diversification cannot create value while related diversification can.

The purpose of this paper is to develop a theory of corporate diversification that begins to account for this empirical diversity. The central assertion of this theory is that corporate diversification can be used to align the interests of a firm's equity holders and its other stakeholders in ways that can increase a firm's economic value. The theory specifies conditions under which no diversification, related diversification, and unrelated diversification can each create or destroy value, and thus when these different corporate strategies will and will not be consistent with the interests of a firm's equity holders. The development of this theory begins by recognizing the important role that specific asset investments made by a firm’s stakeholders play in firm operations and the benefits of these investments to both the firm’s equity holders and its other stakeholders.

2.1 The Benefits Of Firm Specific Stakeholder Investments

Some scholars have described a firm as a "nexus of contracts" among factors of production (Jensen and Meckling, 1976). Management theorist call these factors of
production stakeholders, and suggest that stakeholders will be willing to join together with a firm when the benefits outweigh the costs of doing so. Simon (1976) calls these stakeholder benefits *inducements* and the costs *contributions*. More broadly, contributions are the investments that stakeholders make in a firm, and inducements are the return they receive from their investments.

Different stakeholders make different kinds of investments in firms. Equity and debt holders provide financial capital to a firm, employees provide human capital, suppliers provide raw material and other supplies, customers provide demand for a firm's products, and so forth. Despite this variety, stakeholder investments can be divided into two broad categories: specific and general (Becker, 1964). Specific investments are investments that have more value in a particular exchange the in alternative exchanges. Specific investments cannot be re-deployed to other exchanges without a significant loss in the value they created in the original exchange. On the other hand, the value of general investments does not vary across different exchanges.

While each of a firm's stakeholders can make both specific and general investments in a firm, investments made by a firm's equity and debt holders are often more general in character, while investments made by a firm's employees, customers, and suppliers are often more specific in character. This is because the value of the financial investments made in a firm typically does not drop significantly when those investments are re-deployed to another firm. On the other hand, the value of the non-financial investments made by a firm's employees, suppliers, and customers in a firm can drop significantly if those investments are re-deployed to another firm.
For example, employee firm-specific investments – including close trusting relationships with others in a firm, knowledge about a firm's culture, and knowledge about how to manage critical firm processes—have limited value in other firms. Customer and supplier firm-specific investments, including, for example, decisions to design production systems around the unique products provided by a firm, also have little value in exchanges with other firms. The economic value destroyed when these specific investments are re-deployed in an alternative exchange can be very large (Altman, 1984; Dyer and Ouchi, 1993; Ferris, Jayaraman, and Makhija, 1997; Miller, 1998).

Stakeholders can make specific investments in a firm as a whole-when, for example, employees learn how to facilitate cross-business cooperation in a diversified corporation-or in specific businesses within a diversified corporation-when, for example, a supplier builds a unique component for a specific business owned by a diversified corporation. To the extent that these investments are a source of economic profits, they can both benefit a firm's equity holders as well as its employees, customers, and suppliers. The conditions under which specific investments in a firm can benefit a firm's equity holders and its employees, customers, and suppliers are described in the next two sections of the paper.

### 2.1.1 How Equity Holders Benefit From Specific Investments Made By Stakeholders

Equity holders can benefit from the specific investments made by a firm's employees, customers, and suppliers because of the status of equity holders as residual
claimants and because of the impact of specific investments made by these other stakeholders on the ability of a firm to generate economic profits. As residual claimants, equity holders receive payment on their investment in a firm only after all other claims are satisfied. This means that, in principle, all of a firm's other stakeholders must receive their promised payments for making their assets available to a firm before equity holders can receive payments for their investment in a firm. In order for there to be some residual to pay equity holders, the total economic value created by integrating all the assets made available to a firm by all of its other stakeholders must be greater than the payments required to induce these other stakeholders to make their assets available to a firm. In other words, for there to be a residual to pay equity holders, a firm must generate economic profits on the assets other stakeholders have made available to it (Barney, 1986).

Strategic management theory describes several ways that firms can generate economic profits (Porter, 1980; Barney, 1991). For example, the resource-based view suggests that firms can generate economic profits when they use valuable, rare, costly-to-imitate, and nonsubstitutable resources in developing and implementing strategies (Barney, 1991). One important class of these resources are the specific investments made by a firm's employees, customers, and suppliers. Because firm specific investments made by these stakeholders can often be valuable, rare, costly-to-imitate, and non-substitutable they can often be sources of economic profits that can then be used to make residual payments to a firm's equity holders.
Since equity holders need a firm to generate economic profits to receive payment on their investment in a firm, and since specific investments made by a firm's employees, customers, and suppliers can often be a source of these economic profits, equity holders clearly benefit when these other stakeholders in a firm make specific investments (Jensen and Meckling, 1976).

### 2.1.2 How Other Stakeholders Benefit From Firm Specific Investments

Equity holders can benefit when a firm's employees, customers, and suppliers make firm specific investments. Thus, equity holders have a strong incentive to induce other stakeholders to make specific investments. Inducing employees, customers, and suppliers to make specific investments in a firm can make these other stakeholders better off than they otherwise would have been, and thus, these other stakeholders can benefit from making firm specific investments.

The simplest way to induce employees, customers, and suppliers to make specific investments in a firm is for the firm to share some of the economic profits these specific investments generate with these stakeholders. While the residual payment received by equity holders will be smaller than what would have been the case if these profits had not been shared, without sharing, there may have been no specific investments made in the first place. And without these investments there may be no economic profits and no residual payments to equity (Hashimoto, 1981; Christofides and Oswald, 1992). Thus, self-interested equity holders will want a firm to share enough of the profits generated by
specific investments made by employees, customers, and suppliers with these stakeholders to induce them to make these investments.

Sharing profits with a firm's employees, customers, and suppliers can take many forms. For example, employees that have made significant firm specific investments may receive higher levels of compensation than employees that have not made these investments (Levine, 1993). This is one reason that employee compensation is often tied to employee tenure (Becker and Lindsay, 1994). Customers that have made specific investments may gain access to new products or technologies before their competitors; suppliers that have made these investments may be able to continue selling to a firm long after other suppliers have been cut off (Dyer, 1997; Dyer and Singh, 1998). All these actions—and many others—compensate a firm's employees, customers, and suppliers for making specific investments in a firm.

How much of the profit generated by the specific investments made by a firm's employees, customers, and suppliers will be appropriated, as compensation, by these stakeholders, and how much will be appropriated by a firm's equity holders depends on a variety of factors (Coff, 1998). However, for purposes of this paper, how much of these profits are appropriated by a firm's equity holders and its other stakeholders is less important than recognizing that, in general, all of these stakeholders will be better off if a firm's employees, customers, and suppliers make specific investments in a firm.
2.2 Impediments To Stakeholders Making Firm Specific Investments

Since both a firm's equity holders and its employees, customers, and suppliers can benefit from firm-specific investments made by these other stakeholders, it is reasonable to expect that these other stakeholders will be willing to make these investments. However, there are important impediments that can lead these other stakeholders to make fewer specific investments than might otherwise be expected. Indeed, a firm's employees, customers, and suppliers can decide to not make any specific investments in a firm. In order to induce these other stakeholders to make more firm specific investments these impediments must be either reduced or eliminated.

Of course, reducing or eliminating these impediments is costly. However, as long as this cost is less than the benefits gained-by equity holders and a firm's other stakeholders-when specific investments are made, there is an incentive for the firm to engage in these activities.

Impediments to the willingness of a firm's employees, customers, and suppliers to make firm specific investments fall into two categories. First, once stakeholders have made these investments in a firm, they can be subject to the threat of hold-up. In anticipation of hold-up, a firm's employees, customers, and suppliers may be reluctant to make firm-specific investments. Second, the downside risks associated with these specific investments-risks that reflect the uncertain financial future of a firm-can be very difficult to diversify. The inability to efficiently diversify these risks can lead a firm's employees, customers, and suppliers to be reluctant to make specific investments in a firm.
2.2.1 Hold Up and Firm Specific Investment

Hold-up is a form of opportunism that is well documented in the transactions cost economics and related literature (Williamson, 1985; Klein, Crawford, and Alchian, 1978). Once a party to a transaction has made a transaction specific investment, that party can be subject to “post-contractual opportunism.” Such opportunism occurs when parties in a transaction that have not made a specific investment renege on promises that were made to induce other parties in that transaction to make their specific investments. Once a party to a transaction makes a specific investment, it has few options besides accepting the post-contractual opportunism it faces. This is because the value this party would lose if it withdrew from this transaction will often be larger than the loss it is suffering because of the opportunism it is experiencing.

Among employees, customers, and suppliers investing in a firm, firm specific investments create a potential for hold-up. This threat can manifest itself in several ways. For example, firms can promise to share the economic profits created by the specific investments made by these stakeholders in order to induce these investments. However, once these investments are made, firms may renege on these promises altogether or share a much smaller percentage of the profits created by these specific investments than promised. Concern about opportunism may lead employees, customers, and suppliers to be reluctant to make firm specific investments ex ante, even if those investments could benefit themselves and equity holders.
2.2.2 Financial Distress and Firm Specific Investment

A second problem that employees, customers, and suppliers face when they make firm specific investments is that it is often very difficult for these stakeholders to manage the risks associated with making these investments. Every investment that equity holders and other stakeholders make in a firm is risky. The level of that risk is a function of the probability that a firm will experience financial distress some time in the future. When a firm experiences financial distress, none of its stakeholders, including equity holders, receive their expected payment for investing in a firm (Milgrom and Roberts, 1992; Miller, 1998; Stulz, 2000).

Equity holders recognize these risks. However, equity holders are able to manage them at low cost through investing in a diversified portfolio of firms. Through investing in such a portfolio, equity holders eliminate all the firm-specific risks associated with their investments. The only remaining risks equity holders face are systematic, or the undiversifiable risks associated with fluctuations in the overall economy (Copeland and Weston, 1983).

The risks associated with some of the investments that employees, customers, and suppliers make in a firm can also sometimes be managed at low cost. For example, employees can manage some of their risk exposure by "cashing out" their pension funds in a particular firm and using this money to invest in a diversified portfolio. Customers can do the same by investing in options to hedge risks associated with price changes in key commodities they buy from a firm. Suppliers can manage the risks associated with
their investments in a firm by selling their accounts receivable and investing in a diversified portfolio.

However, the risks associated with one class of investments that employees, customers, and suppliers can make in a firm are often very costly to diversify: the risks associated with firm specific investments. Because the value of these investments depends on their use in the transaction between a particular stakeholder and a particular firm, they cannot be transformed into assets that can be more widely traded without losing much of their value. Since these investments cannot be transformed into tradable assets, the risks associated with them cannot be efficiently diversified. Because employees, customers, and suppliers cannot efficiently diversify the risks associated with their specific investments in a firm, these stakeholders may become risk averse with respect to these investments and may avoid making them altogether (Jensen and Meckling, 1976).

2.3 Diversification And Impediments To Firm Specific Stakeholder Investments

Thus, the modern corporation faces a dilemma. On the one hand, firm specific investments made by its employees, customers, and suppliers can, in principle, benefit both a firm's equity holders and these other stakeholders. On the other hand, concerns with hold-up and with the inability to manage the risks associated with these investments can lead employees, customers, and suppliers to not make these specific investments. Thus, the task facing firms is to implement strategies that have the effect of reducing the impact of these impediments on the willingness of employees, customers, and suppliers
to make specific investments, and to do so at the lowest cost possible. A strategy of corporate diversification can be one of these strategies.

2.3.1 Diversification and the Threat of Hold-up

In transactions cost economics, governance is seen as the primary solution to problems of hold-up due to high transaction specific investments (Williamson, 1985). If the level of specific investment required to complete a transaction is low, market forms of governance are preferred. As the level of specific investment required to complete a transaction increases, more elaborate forms of governance are required, up to and including hierarchical governance. Under hierarchical governance, both parties to an exchange are incorporated within the boundary of the firm and problems of post-contractual opportunism are minimized through managerial fiat.

There is little doubt that hierarchical forms of governance can help reduce the threat of hold-up facing a firm's employees, customers, and suppliers, and thus can help reduce one of the impediments these stakeholders face in making specific investments in a firm. Indeed, governance is cited as an alternative to corporate diversification later in this paper. However, hierarchical governance is costly and can reduce a firm's flexibility (Kogut, 1991). Moreover, as noted by Grossman and Hart (1986), simply bringing an exchange within the boundaries of a firm does not necessarily eliminate the threat of opportunism in that exchange. It simply transforms the nature of that opportunism from, for example, the threat of "cheating" on market contracts to the threat of "cheating" on employment contracts. Thus, bringing employees, customers, and suppliers within the
boundaries of a firm does not necessarily eliminate the threat of hold-up if these stakeholders were to make firm specific investments. When this is the case, these stakeholders may still be reluctant to make firm specific investments.

In addition to any impact that hierarchical governance can have on the willingness of a firm's employees, customers, and suppliers to make specific investments in a firm, Klein, Crawford, and Alchian (1978) have observed that the market for corporate reputations can reduce the threat of hold-up directly. If a firm induces its employees, customers, and suppliers to make specific investments and then engages in hold-up, it develops a reputation as opportunistic. In the future, these stakeholders will be unwilling to make specific investments in firms with the reputation of being opportunistic, or will only be willing to make such investments under conditions that guarantee that they will not be held-up. Thus, the short-term benefits of the decision to behave opportunistically vis-à-vis current stakeholders must be compared with the benefits foregone vis-à-vis future stakeholders that will be unwilling to make specific investments in a firm. Klein, Crawford, and Alchian (1978) show that in many circumstances, the future benefits lost from behaving opportunistically now are much greater than the current benefits gained from these actions, and thus that hold-up will not be forthcoming.

Of course, for the benefits lost from opportunism to outweigh the benefits gained, employees, customers, and suppliers must anticipate that a firm will be operating for some time. Without such a future, there are no benefits foregone if a firm behaves opportunistically. In this setting, it is much more likely for a firm to engage in the hold-up of its current stakeholders since the downside from doing so is so small. Thus, when
employees, customers, and suppliers perceive that a firm is not likely to continue operating for some time into the future, these stakeholders are unlikely to be willing to make substantial specific investments in a firm.

In order to send a credible signal that they will not behave opportunistically vis-à-vis their employees, customers, and suppliers, firms need to be able to demonstrate that they are financially stable, and thus will be able to operate for some time. There are several ways to do this, some of which are discussed in subsequent sections of this paper. However, implementing a strategy of corporate diversification is one way that stakeholders can be assured that a firm has the financial stability needed to survive for some time, and thus has an incentive to not hold-up its employees, customers, and suppliers if these stakeholders make specific investments in a firm.

A firm that diversifies increases the number of its sources of cash flow. To the extent that these cash flows are not perfectly correlated over time, diversification reduces the chance that serious problems in one particular business will put the entire firm at risk (Amit and Wernerfelt, 1990; Amit and Livnat, 1988). Because diversification reduces the probability of financial distress, stakeholders can be assured that a firm is likely to continue in operation for the foreseeable future. Because stakeholders are assured that a firm is likely to continue in operation for the foreseeable future, stakeholders can be assured that a firm will need to retain its current stakeholders and attract new stakeholders. Because of the firm's need to retain and attract future stakeholders, current stakeholders can know that a firm has only limited incentives to behave opportunistically, for the cost of developing a reputation as an opportunistic firm will be very high for firms
that have a long future ahead of them. Because of these limited incentives, the threat of hold-up is moderated, and employees, customers, and suppliers will be more willing to make the specific investments that benefit equity holders and themselves.

The kinds of diversification that can assure stakeholders of a firm's long-term survival are broader than the kinds of diversification usually examined in the diversification literature. That literature typically examines diversification across industries (Hoskisson and Hitt, 1990). However, to the extent that diversification across technologies within a single industry, or diversification across markets within a single industry, has the effects on financial stability discussed above, these too can reassure stakeholders to the point that they will be willing to make specific investments in a firm. Also note that these effects of corporate diversification do not necessarily depend on realizing any economies of scope through diversification.

2.3.2 Diversification and the Risks Associated with Making Firm Specific Investments

Not only can diversification be used to reduce the threat of hold-up associated with making specific investments in a firm, it can also be used to manage the risks that are associated with making these investments. Of course, not all of a firm's stakeholders will benefit directly from this strategy. In particular, since a firm's equity holders can efficiently diversify the risks associated with their investments in a firm on their own at low cost, equity holders do not have a direct interest in a firm pursuing diversification for risk management purposes. However, to the extent that corporate diversification induces
a firm's employees, customers, and suppliers to make specific investments in a firm, and
to the extent that these specific investments are a source of economic profits for a firm,
diversification can indirectly benefit a firm's equity holders.

As suggested above, a firm's employees, customers, and suppliers will be reluctant to make specific investments in a firm if the risks associated with making these investments cannot be managed. Because the firm specific investments made by these stakeholders cannot be transformed into assets with risks that can be managed at low cost without sacrificing much of the value of these investments, these stakeholders are often not efficient diversifiers on their own. Thus, unlike a firm's equity holders, these stakeholders do have an interest in a firm pursuing strategies that will help them manage these risks.

One of these strategies is corporate diversification. Any diversification that has the effect of reducing the threat of a firm experiencing financial distress will help a firm's employees, customers, and suppliers manage the risks associated with specific investments in a firm. As with hold-up, diversifying across industries, across technologies in a single industry, and across markets in a single industry can each reduce the chance that a firm will experience financial distress, and thus reduce the risks associated with making a specific investment in a firm.

Moreover, as was suggested earlier, to the extent that this diversification induces employees, customers, and suppliers to make specific investments in a firm, it also indirectly benefits equity holders. Recall that it is these kinds of investments can enable a firm to generate economic profits to compensate its equity holders as residual claimants.
As was the case with the relationship between diversification and hold-up, note that these benefits of diversification do not necessarily depend on a firm's diversification strategy realizing any economies of scope.

2.4 Alternatives To Corporate Diversification

Thus, corporate diversification can be used by a firm to induce its employees, customers, and suppliers to make firm specific investments. Through its impact on a firm's financial stability, corporate diversification can reduce the threat of hold-up. It can also be used to manage the risks associated with the firm-specific investments made by stakeholders. To the extent that corporate diversification has these effects, it can lead a firm's employees, customers, and suppliers to make firm specific investments they might otherwise not make. These specific investments, in turn, can benefit both a firm's equity holders and these other stakeholders.

Of course, corporate diversification is only one of several actions that a firm can take to induce its employees, customers, and suppliers to make specific investments. Several alternatives exist. These alternatives, to the extent that they reduce the threat of hold-up and help these stakeholders manage the risks associated with their firm-specific investments, can be either substitutes or complements for corporate diversification.

Alternatives to corporate diversification as a way to induce employees, customers, and suppliers to make specific investments in a firm fall into two broad categories: (1) operating in industries where the probability of financial distress is low and (2) using a variety of financial mechanisms that reduce the probability of a firm experiencing
financial distress or the effects of this distress on stakeholders. While each of these alternatives can be effective in some settings, there are circumstances where these alternatives will leave a firm's employees, customers, and suppliers still unwilling to make firm-specific investments. It is in these settings that corporate diversification may be particularly effective in inducing these stakeholders to make firm-specific investments, especially if the costs of implementing corporate diversification can be kept low.

2.4.1 Operating in Industries Where the Probability of Financial Distress is Low

One way to induce a firm's employees, customers, and suppliers to make firm-specific investments is for a firm to only operate in industries where the probability that it will face financial distress is low. If the probability of financial distress is low, the market for corporate reputations is likely to be very effective in deterring hold-up, and the risk that the value of firm specific investments will be lost due to financial distress is also low. In this setting, stakeholders may be willing to make firm-specific investments even if a firm does not pursue diversification.

Firms can operate in industries where the probability of facing financial distress is low in several different ways. For example, they can choose to operate in only highly regulated industries. They can also only operate in very mature industries. Finally, they can choose to only operate in industries where they enjoy a sustained competitive advantage that does not depend on any specific investments made by their employees,
customers, or suppliers. In these settings, these stakeholders may be willing to make specific investments in a firm. However, this approach to inducing such investments in a firm can also have significant limitations.

First, while employees, customers, and suppliers of firms that only operate in highly regulated or very mature industries may be willing to make firm-specific investments, in general, these investments will not substantially increase the size of the residual payment for a firm's equity holders. In these kinds of industries, the size of the residual payment to a firm's equity holders is limited either by regulation—in the case of regulated industries—or by imitation and substitution (Barney, 1991) in the case of mature industries. Thus, while stakeholders may be willing to make specific investments for firms that operate in these kinds of industries, these specific investments will not create much value for a firm's equity holders.

Second, only operating in industries where a firm possesses sustained competitive advantages that do not depend on firm specific investments made by its employees, customers, and suppliers can induce these stakeholders to make specific investments. However, this alternative is only available to firms that have such competitive advantages. Certainly, some of these firms do exist in some industries. For example, some firms can gain sustained competitive advantages from possessing a defendable patent, from their geographic location, or from possessing other path dependent resources (Barney, 1991; Dierickx and Cool, 1989). Firms that enjoy these kinds of advantages will have employees, customers, and suppliers that often will be willing to make substantial firm specific investments. These stakeholders know that the chance of
financial distress for these firms is low, as is the chance of their being held-up or having the value of their specific investments be destroyed. In this setting, specific investments made by these stakeholders may further increase residual payments to a firm's equity holders.

However, while examples of firms with these kinds of sustained competitive advantages can be identified, most strategic management scholars believe that firm specific investments made by a firm's stakeholders are often more important sources of sustained competitive advantage than other sources of competitive advantage (Barney, 1991; Dierickx and Cool, 1989). This is especially the case in information intensive industries where knowledge and knowledge management are critical sources of competitive advantage (Kogut and Zander, 1992). When non-stakeholder based competitive advantages do not exist for a firm, challenges associated with inducing employees, customers, and suppliers to make specific investments remain.

2.4.2 Financial Alternatives: Governance, Capital Structure, Insurance, and Hedging

In addition to operating in industries where the probability of financial distress is low, firms can adopt a variety of governance, capital structure, insurance, and hedging strategies to induce stakeholders to make firm-specific investments. However, these policies can also have important limitations in providing incentives for a firm's employees, customers, and suppliers to make firm-specific investments.
Hierarchical Governance and Stakeholder Investments. It has already been suggested that governance, and in particular, hierarchical governance, can play an important role in motivating employees, customers, and suppliers to make specific investments in a firm. This governance can take a wide variety of forms, including a firm's organizational structure (e.g., board structure, CEO duality, multi-divisional structure, and so forth), its managerial controls (e.g., capital budgeting, accounting controls, internal labor markets, and so forth), and its compensation policies (e.g., salary, cash bonuses, stock and stock options, and so forth).

To the extent that governance choices help reduce the threat of hold-up and help employees, customers, and suppliers manage the risks associated with making firm-specific investments, governance can reduce the disincentives that these stakeholders might have in making these investments. Indeed, at least some aspects of governance can have these effects. For example, stock-based compensation can reduce the threat of hold-up, since this form of compensation directly benefits employees based on the specific investments they make. Also, capital allocation processes can be used to manage risks associated with specific investments.

However, as was suggested earlier, while hierarchical governance can reduce the impediments that employees, customers, and suppliers face in making firm-specific investments, it rarely eliminates them. Thus, while governance is often helpful in combination with other alternatives for reducing these impediments, governance, by itself, is usually not sufficient to induce employees, customers, and suppliers to make firm-specific investments (Vives, 2000).
Capital Structure and Stakeholder Investments. It is well known that lowering a firm's level of debt can increase its financial slack and thus reduce its probability of financial distress (Bronailey, 1991; Altman, 1968). In this sense, changing a firm's capital structure can effect the probability of a firm experiencing financial distress, and thus change the incentives that a firm's stakeholders face in making firm specific investments (Amit and Livnat, 1988; Amit and Wernerfelt, 1990). A firm that chooses a lower level of debt than would otherwise be optimal pre-commits itself to a policy that, over the long run, will lower the probability that it will face financial distress compared to firms with higher levels of debt. This should induce more firm specific investments by its stakeholders.

However, reducing the probability of financial distress is only one of the numerous factors that determine a firm's optimal capital structure. Other important determinants include agency costs (Stulz, 1990), asymmetric information (Myers and Majluf, 1984), product/input market interactions (Brander and Lewis, 1986), corporate control (Harris and Raviv, 1988) and taxes (Copeland, Koller, and Murrin, 1995). These other factors may cause a firm to choose a different capital structure than what would be optimal from the point of view of inducing a firm's employees, customers, and suppliers to make specific investments in a firm.

Moreover, even though reducing a firm's level of debt can reduce its probability of facing financial distress, it does not eliminate that possibility. Indeed, all equity firms can experience financial distress. In this sense, the ability to use capital structure to
induce employees, customers, and suppliers to make specific investments in a firm can be limited.

**Insurance and Stakeholder Investments.** Firms can also engage in activities that have the effect of insuring stakeholders against losing the value of firm specific investments should a firm experience financial distress. Firms can provide this insurance on their own, or they can purchase insurance protection from outside agencies. However, both these ways of insuring a firm's employees, customers, and suppliers against financial distress have important limitations.

First, firms that attempt to self-insure will often be unable to convince employees, customers, and suppliers that they will actually pay should they experience financial distress. That is, self-insurance often does not credibly prevent hold-up. The reason that the promise to pay in this setting is often not credible is that firms in financial distress typically do not have the financial resources required to compensate these stakeholders for their specific investments. When this promise is not credible, these stakeholders will not make firm specific investments.

For example, in the 1980's, General Motors, Ford, and Chrysler promised their employees unprecedented income insurance. By combining state-provided unemployment benefits with firm-provided funds, workers were promised that they would receive up to 85 percent of their regular take-home pay for up to three years if they were laid off (Milgrom and Roberts, 1992). However, during the recession in the early 1990s, these three firms did not fully meet their promises to employees. The funds that these firms had established to compensate employees for being laid off ran out.
prematurely, and they were unwilling or unable to tap other resources for this purpose. Because firms facing financial distress may be unwilling or unable to pay off on promises to stakeholders that make specific investments in a firm, these "self insurance" schemes are often not credible, and thus will often not lead these stakeholders to make firm specific investments.

Second, firms may be able to purchase this kind of insurance from outside suppliers. Assuming these suppliers are financially sound, they are much more credible sources of payment to employees, customers, and suppliers than the firm itself. However, such insurance can create important moral hazard problems between the insurer and the firm. Suppose, for example, that a firm purchases insurance such that if its performance falls below some pre-specified level, the insurance provider will pay that firm's employees, customers, and suppliers some pre-specified sum of money. In this setting, a firm's stakeholders may actually have an incentive to reduce firm performance below the specified level and force the insurance provider to pay off. Of course, insurance providers will anticipate this kind of behavior, will impose restrictive contractual provisions in the insurance they provide, and raise prices accordingly. In the extreme, these institutions may simply withdraw from this market altogether.

In practice, even when insurance can be purchased for these stakeholders, stakeholder compensation is typically limited to some proportion of the payment between a firm and a stakeholder that is specified in an explicit contract. This is the case, for example, with unemployment insurance. The value of a stakeholder's total investment in a firm, including the full value of its firm specific investments, is generally not insured.
Hedging and Stakeholder Investments. A variety of financial instruments, including futures, options, and derivatives, can sometimes be used to reduce the probability of a firm's financial distress at low cost (Miller, 1998; Bethel, 1999; Wang and Lim, 2001). This will particularly be the case when the probability of such financial distress depends critically on the price of raw materials and commodities, or risks associated with exchange rates or interest rates.

For example, when the probability of a firm's financial distress depends critically on the price of a certain commodity, employees, customers, and suppliers in firms that fully hedge their raw materials risk through the use of financial instruments may be willing to make specific investments in that firm. In the same way, if the probability of a firm's financial distress depends critically on exchange rate or interest rate volatility, firms that fully hedge these risks can also induce these stakeholders to engage in more firm-specific investments.

On the other hand, when the risk of a firm's financial distress does not depend critically on the price and availability of raw materials and commodities, or on the volatility in exchange rates or interest rates, the use of financial instruments to manage this risk will not reassure these stakeholders. In this setting, absent other actions, these stakeholders will be unwilling to make firm specific investments.

2.5 Implications For Corporate Diversification Research

When alternatives to corporate diversification are too costly or ineffective, firms can use a corporate diversification strategy to reduce the impediments that prevent its
employees, customers, and suppliers from making specific investments in a firm. These investments directly benefit a firm's employees, customers, and suppliers because they will receive some of the economic profits these specific investments generate. They benefit a firm's equity holders because they are the source of the cash needed to pay equity holders as residual claimants. In short, corporate diversification can benefit a firm's equity holders through its impact on the willingness of a firm's employees, customers, and suppliers to make firm specific investments. These observations have important empirical implications for the study of diversification.

2.5.1 Related, Unrelated, and No Diversification and Firm Performance

Thus far, the discussion of how corporate diversification can create value by reducing the impediments facing employees, customers, and suppliers in making specific investments in a firm has not relied on any economies of scope being associated with this diversification. This is very different from previous diversification research. Previous research suggests that only related diversification, i.e., diversification that exploits real economies of scope, can be consistent with the interests of a firm's equity holders. This, in turn, suggests that whether or not diversification is related determines whether or not it can create value for a firm.

In fact, the stakeholder analysis developed in this paper is not inconsistent with the notion that related diversification can create value for a firm. Indeed, related diversification can create value in at least two ways. First, it can directly benefit equity holders to the extent that it exploits economies of scope that equity holders cannot realize
on their own at low cost. Second, to the extent that related diversification induces a
firm's employees, customers, and suppliers to make firm specific investments, it can also
have an indirect benefit for equity holders. This indirect benefit depends on the
economic profits these specific investments can generate, profits that can be the source of
residual payments to a firm's equity holders.

However, this analysis also suggests that unrelated diversification can be
consistent with the interests of equity holders. This can happen when the cost of realizing
economies of scope is greater than their value; when alternatives to corporate
diversification are too costly or ineffective in motivating a firm's employees, customers,
and suppliers to make specific investments in a firm; and when the cost of corporate
diversification is less than the benefits this strategy creates for a firm and its stakeholders.
In this setting, unrelated diversification may not benefit equity holders directly (through
the realization of economies of scope) but it can still benefit equity holders indirectly by
increasing the likelihood that a firm's employees, customers, and suppliers will make
specific investments in a firm that can be a source of economic profits. As suggested
previously, these profits can affect the residual payment to a firm's equity holders.

Moreover, this analysis also suggests conditions under which no diversification
will be consistent with the interests of equity holders. This can happen when the cost of
realizing economies of scope is greater than their value and when the probability of
financial distress for a firm can be effectively managed using low cost alternatives to
corporate diversification. In this setting, a firm's stakeholders will still be willing to
make firm specific investments that can be a source of economic profits for equity holders.

The implications of this stakeholder theory of corporate diversification seem to be consistent with the diversity of relationships between corporate diversification and firm value documented in previous literature and discussed earlier in this paper. Indeed, this theory suggests that the three corporate diversification strategies—related, unrelated, and no diversification—can each be positively or negatively related to firm value. It also suggests a variety of empirical controls—the alternatives to diversification discussed above—which should be incorporated into research on the relationship between diversification and firm value.

### 2.5.2 Organizing to Realize Economies of Scope and Limited Related Diversification

Traditional research on corporate diversification has focused on realizing economies of scope as the only motivation for pursuing this strategy that is consistent with the interests of equity holders. However, this research has also documented the significant organizational challenges that exist in realizing these benefits of diversification (Lubatkin and Chatterjee, 1994; Lubatkin and O’Neil, 1987).

The realization of economies of scope in a related diversified firm often involves integrating the operations of several different businesses within a firm to at least some extent. This integration necessarily involves managing the balance between cooperation and competition among these businesses. Cooperation is essential if the economies of
scope in a corporation are to be realized. However, competition is also essential, since businesses in a diversified firm competes with each other for corporate capital and other corporate resources (Williamson, 1975).

Managing the tensions between cooperation and competition in a related diversified firm difficult and complex. Some scholars have suggested that few firms have been able to realize is balance over time (Collis and Montgomery, 1997). Put differently, this research seems to suggest that the costs of implementing a related diversification strategy can be high. Previous theory suggests that when the cost of realizing economies of scope is greater than their value, a firm should pursue no diversification as its corporate strategy.

The theory developed here generates different hypotheses. As suggested earlier, assuming that low cost substitutes for diversification are too costly or not effective, unrelated diversification can still provide benefits for a firm’s equity holders, and thus would be preferred over no diversification when the cost of realizing economies of scope is greater than their value. However, a more nuanced analysis suggests that some economies of scope are probably less costly to realize than others. In this context, firms are likely to pursue what might be called a limited related diversification strategy, i.e., they may diversify and only attempt to realize a few low cost economies of scope across the businesses they operate in.

Previous theory suggests that such limited related diversification often cannot be justified since it provides few direct benefits to a firm’s equity holders. According to this theory, these limited direct benefits are unlikely to offset the disadvantages that a strategy
bordering on unrelated diversification generates for a firm's equity holders. However, the theory developed here suggests that these limited benefits are augmented by the impact that diversification has on the willingness of a firm's employees, customers, and suppliers to make firm specific investments, investments that then can benefit a firm's equity holders. Together, the direct and indirect benefits of diversification may lead a firm to implement a strategy of limited related diversification, even if the direct benefits of this strategy for equity holders are small.

Indeed, casual observation suggests that most diversified firms seem to follow a strategy of limited related diversification (Collis and Montgomery, 1997). That is, these firms identify one or two economies of scope that they can realize at relatively low cost, and then count on the indirect benefits of their diversification efforts to be a source of economic profits for their equity holders. Certainly, it is apparently rare for firms to integrate the operations of their diversified businesses along numerous dimensions simultaneously.

### 2.5.3 Internal Capital Market Efficiency

Recent work in finance suggests that internal capital markets are, on average, inefficient, in the sense that firms continue to invest in poorly performing businesses beyond the time that the external capital market would have continued investing (Lamont, 1997; Shin and Sufz, 1998; Rajan, Servaes, and Zingales, 2000). Several explanations for this apparent inefficiency have been developed in the literature. For example, some have argued that managers have more information about poorly
performing businesses than external capital markets, are allocating capital in a way that exploits this informational advantage, and thus internal capital markets only appear to be inefficient (Williamson, 1975). Some have argued that this pattern of over-investment reflects a tendency towards the escalation of commitment (Staw, 1981), a cognitive bias that leads managers in firms to increase their investment in a failing course of action. Still others have argued that this inefficiency is a manifestation of traditional agency problems and can be best remedied by changes in corporate governance (Rajan, Servaes, and Zingales, 2000).

The theory developed here suggests that this apparent "inefficiency" may, in fact, be consistent with interests of equity holders. Moreover, this argument does not depend on asymmetric information between a firm's managers and equity holders.

In diversified corporations, financial distress first manifests itself in the individual businesses a firm operates in. If these businesses were free standing, this financial distress could lead to their economic bankruptcy. However, in a diversified corporation, cash flow generated by well performing businesses can be used to support the operations of an under performing business. Such support reduces the probability of a business going bankrupt compared to what would have been the case if it was a freestanding entity.

From the point of view of the theory developed here, this is one of the benefits of corporate diversification. Indeed, one of the reasons that a firm's employees, customers, and suppliers are more willing to make specific investments in a diversified corporation is that this corporation can reduce the probability of a particular business going bankrupt.
below what would have been the case if it was an independent entity. Shifting cash from a high performing business to a low performing business by investing in that business beyond what would have occurred in the external capital market is simply a manifestation of the stakeholder insurance properties of a firm's corporate diversification strategy.

And, for reasons described here, this "over-investment" in a poorly performing business can actually be consistent with the interests of equity holders if it induces a firm's employees, customers, and suppliers to make firm-specific investments. Thus, there may be no informational asymmetry between a firm's managers and equity holders, and investing in a business in ways that are inconsistent with how external capital markets would operate can still be consistent with the interests of a firm's equity holders.

Of course, at some point, continuing to invest in a failing concern can begin to hurt a firm's equity holders and its other stakeholders. Certainly, by the time that continuing to invest in a poorly performing business puts the financial viability of the diversified firm at risk, continuing to invest in this operation can adversely effect all of a firm's stakeholders.

2.6 Conclusion

At a recent press conference, the CEO of a well-known diversified electronics firm touted his firm's performance. This CEO suggested that not only had this firm's overall economic performance recently improved, but that this performance improvement was occurring among many of the firm's diversified businesses. He strongly emphasized
the importance of having high levels of performance in multiple businesses simultaneously.

All theories of corporate diversification can explain why this CEO would be interested in the overall economic performance of his firm. The theory developed in this paper also explains why this CEO would be concerned about how this performance was distributed across its multiple businesses.

Imagine, for example, a customer that was about to purchase millions of dollars of new hardware and software from this firm. In the markets where this firm operates, these hardware and software investments are highly firm specific. Before making this huge specific investment, this customer is likely to want some assurance that this firm is financially viable, that if difficult economic times come it will still be able to provide the hardware and software support necessary to make its investment useful. Put differently, this customer is not just investing in hardware and software from this firm. As a stakeholder, it is also making a specific investment in the company that makes this hardware and software.

Also, imagine that a supplier was about to commit millions of dollars to a massive research and development project to create some new technologies for this firm. In the industries where this firm operates, the development of new technologies is highly firm specific—a technology developed for this firm is not likely to be valuable to any other firms. Before making this huge firm specific investment, this supplier is likely to want some assurance that this firm is financially viable, that if difficult economic times come it

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2 This firm was Cisco Systems and the information used in this example was presented in a news
still will be able to compensate this supplier for its research efforts. Put differently, this supplier is not just investing in a new technology for this firm. As a stakeholder, it is also making a specific investment in the company it plans to sell this technology to.

Finally, imagine an electrical engineer deciding whether or not to accept a job offer from this firm. The offer is to work on a particular project in one of this firm's many different businesses. However, this project, like all projects in this firm, has an uncertain future. Difficult to anticipate technological changes, shifts in market demand, and changes in complementary technologies can all lead this firm to abandon what it currently sees as an important project. Moreover, if this engineer accepts this position, several other attractive offers will be foregone. Before accepting this offer, this engineer is likely to want some assurance that this firm is financially viable, that if this particular project is cancelled, that there will be other projects available. Put differently, this engineer is not just deciding whether or not to accept a job offer. As a stakeholder, this engineer is also making a specific investment in the company that has made the offer.

In all three of these cases, this firm's corporate diversification strategy increases the likelihood that these stakeholders will make the firm specific investments they are contemplating. By operating in multiple businesses simultaneously, this firm is able to reduce the variance in its cash flows, which, in turn, reduces its probability of financial distress. These actions reassure this firm's stakeholders—its employees, customers, and suppliers—who are then willing to make specific investments in this firm. Moreover, these

conference broadcast on CNBC on November 12, 2000.
are the kinds of firm specific investments that are likely to generate economic profits for this firm's equity holders and thus are consistent with equity holder's interests. All this is the case whether or not this diversification strategy realizes any economies of scope.
CHAPTER 3

STAKEHOLDER FIRM-SPECIFIC INVESTMENTS,
FINANCIAL HEDGING, AND CORPORATE DIVERSIFICATION

This paper develops a model to examine the interaction between financial hedging and corporate diversification (or operational hedging), the two most commonly used risk management mechanisms by firms. Specifically, it addresses a series of questions regarding modern corporations in a coherent framework. First, since equity holders can manage risks by themselves at low cost, is there still a direct relationship between business risks and firm value? Second, if reducing risks indeed increases firm value, what is the relationship between financial hedging and corporate diversification – are they substitutive or complementary? Third, what implications will the ideas developed here have on corporate risk management? Although each of these specific areas has been studied extensively but often separately, in this article we view them as being closely related and study them together.

The core idea of this paper is built on a stakeholder-based rationale for firm risk management (Titman, 1984; Cornell and Shapiro, 1987; Miller, 1998 and Stulz, 2000). Most non-financial stakeholders, including employees, suppliers, and customers, have a
large portion of their physical or human resources invested in one firm. These firm-specific asset investments are often very important sources of firm value. On the other hand, the risks associated with these firm-specific investments are difficult to diversify. While equity holders can effectively eliminate unsystematic risks by forming a diversified portfolio of stocks, it is difficult for non-equity stakeholders to diversify risks associated with their firm-specific investments.\(^3\) This implies that these stakeholders will care about unsystematic risks as well as systematic risks. A firm with higher business risks is likely to have more severe under-investment problems in firm-specific assets from its stakeholders. Since firm-specific asset investment is often one of the most important sources of economic profits for a firm, the firm has an incentive to engage in risk management activities, such as financial hedging or diversification, to induce more firm-specific asset investments from its stakeholders.

Financial hedging and corporate diversification (i.e., operational hedging) are two major means of reducing firm risks. There are plausible arguments about why financial hedging and corporate diversification are substitutive means of risk management (e.g. Bethel, 1999 and Stulz, 2000), which implies that with the rapid development of the financial hedging market, there will be less need for a firm to manage risks through costly diversification. If so, an intriguing issue is why firm diversification, especially in the conglomerate form, which is hard to be justified by operational gains other than risk.

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\(^3\) For example, employees, as Treynor and Black (1976) point out, do not have a portfolio of employers. Although suppliers and customers sometimes can partially diversify away specific risks associated with one firm by having multiple transaction partners, it is still quite common for suppliers or customers to have substantial specific investments in only one or two firms.
reduction, still remain popular even with the well-developed financial hedging markets. The result derived from this model resolves this puzzle: when hedging products are available for reducing a firm's risk exposures, the opportunity to hedge in financial markets changes the incentives to manage risks through diversification, because financial hedging contracts do not serve equally well for hedging different types of risks. A firm can partly hedge its systematic risk components but it is hard to hedge its firm-specific component with financial hedging instruments (e.g., Hirshleifer and Subrahmanyam, 1993). On the other hand, similar to the logic of portfolio diversification, corporate diversification is more effective in reducing firm-specific risks but not as effective in reducing systematic risks. For example, a firm operating in the oil industry can use interest rate or oil futures/options contracts to hedge risk associated with interest rate volatility, which is market-wide systematic risk exposure, or risk associated with oil price volatility, which is industry-wide systematic risk exposure. On the other hand, there are generally no financial contracts available for hedging the firm's specific risk exposure, such as the risk associated with R&D for developing a new oil extracting process. However, a firm can reduce this type of firm-specific risks through diversifying into different product markets. In this paper, we focus on the risk-reduction effect of

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4 A substantial part of economic activity continues to be carried out within diversified firms. Between 1990 and 1996, for instance, diversified firms owned about 60% of the total assets of firms trading in U.S. stock markets (Villalonga, 2000). Furthermore, despite the emphasis placed on corporate refocusing due to the findings of "diversification discount", research shows that all this firm restructuring during the 1980s has resulted in lower, rather than higher, aggregate industry specialization (Hatfield, Liebeskind, and Opler, 1996).

5 Two reasons can be given for why hedging is not very effective in reducing firm-specific risk exposures. First, transaction costs for small numbers of hedging contracts are very high, therefore it is either very expensive for firms to use financial hedging for specific risks or financial hedging contracts may not be available at all for these risks; second, hedging contracts are more likely to fail when moral hazard and adverse selection problems are severe, which is the case when the risk to be contracted on is firm-specific.
diversification and examine how the benefit of risk reduction through diversification changes when there are financial hedging instruments available. Building on the stakeholder reason for firm risk management and modeling firm-specific investment decisions of stakeholders, we derive firm value as a function of firm risks, and examine how financial hedging and corporate diversification jointly affect firm value through their different roles in reducing risks. Our model shows that the ability for firms to use financial hedging instruments could increase their incentives to diversify, and that the range of conditions under which financial hedging and diversification are complementary is broader than has been recognized.

In the next section, we begin with a literature review and some discussion on why there is a need for firms to manage business risks when equity holders can effectively manage risks themselves, along with a brief description on financial hedging and diversification as two commonly adopted risk management mechanisms by firms. In section 3, we introduce the model. Section 4 examines the effect of diversification on firm value in the absence of financial hedging markets. Section 5 describes firm optimal hedging positions and conditions under which financial hedging complements or substitutes different types of diversification. In section 6, we discuss the empirical implications drawn from the results of the model. In the last section, section 7, we summarize and conclude the paper.
3.1 A Literature Review

3.1.1 Why manage risks

Equity holders of a firm can generally manage risks more efficiently themselves than if they let the firm manage risks for them. For systematic risks, equity holders can use asset allocation to achieve their desired risk level, based on individual risk preferences; for idiosyncratic risks, equity holders can manage them at low cost by holding a diversified portfolio (Markowitz, 1959). Based on these theories, it seems that equity holders generally will not want the firm to engage in any risk management activities. In reality, however, risk management is taken very seriously by corporate managers, and the usage of financial hedging contracts by firms has grown consistently over the years (e.g. Bodnar, Hayt and Marston, 1998).

Researchers have identified several conditions where equity holders’ ability to allocate assets and diversify cannot substitute risk management by the firm. Most of the rationales for risk management developed in the literature fall into one of the following three categories: 1) alleviating financing costs (e.g. Froot, Scharfstein, and Stein, 1993, 1994 and Stulz, 1990); 2) realizing tax benefits (e.g. Smith and Stulz, 1985 and Graham and Smith, 1999); 3) reducing risk for less than fully diversified managers and/or investors (e.g. Stulz, 1984 and Smith and Stulz, 1985).\(^6\)

Although still relatively underdeveloped, another stream of literature argues that firms may manage risks to protect firm-specific asset investments made by their non-financial stakeholders such as employees, suppliers and customers (Titman, 1984;

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\(^6\) For a complete and detailed literature review on the rationales for firm risk management, see Stulz (2000).
Cornell and Shapiro, 1987; Miller, 1998; and Stulz, 2000). In this paper, we build our model based on this rationale for risk management.

A firm's assets can be classified as two types: firm-specific assets and general-purpose assets (e.g. Becker, 1975 and Williamson, 1975). The first group includes physical or human assets that are valuable only in the context of a particular firm. Examples of firm-specific asset investments include a plant built by suppliers next to the particular firm, an employee's knowledge of the firm's decision procedures, or products sold to customers with high switching costs. An important feature of these firm-specific assets is that they cannot be sold to other business settings without significant loss. General-purpose assets, on the other hand, involve investments that increase the investor's productivity when transacting with any firms, for example, general skills in sales and marketing (Milgrom and Roberts, 1992).

Most non-financial stakeholders of a firm, including employees, suppliers and customers, have a large portion of firm-specific assets invested in one firm. Because the value of firm-specific asset investments depends on their use in the transaction between a particular stakeholder and a particular firm, they cannot be transformed into assets that can be more widely traded without losing much of their value. Thus, the risks associated with these assets cannot be efficiently diversified. Because employees, customers, and suppliers cannot efficiently diversify the risks associated with their specific investments in a firm, these stakeholders may under-invest in firm-specific assets and may even avoid making them altogether.
Generally speaking, the level of risks associated with stakeholders’ firm-specific asset investments is a function of the firm’s \textit{total} risks, which include both systematic risks and idiosyncratic risks, since stakeholders cannot effectively diversify away the idiosyncratic risks of their firm-specific investments. Thus, the willingness of stakeholders to invest in firm-specific assets is a function of firm \textit{total} risks: the higher the risks, the less firm-specific investment will be made (see Cornell and Shapiro (1987) for a detailed discussion on this point). Thus, firms have incentives to engage in risk management activities, such as financial hedging or diversification, to reduce the firm’s total risks and thus induce their stakeholders to make more firm-specific asset investments. The fact that equity holders can efficiently diversify away these risks cannot substitute for risk management by the firm.

The importance of firm risks on stakeholder firm-specific asset investments has been addressed by the literature that links a firm’s capital structure or accounting method choices to stakeholders’ implicit claims with the firm (Titman, 1984; Titman and Wessels, 1988; Helwege, 1989 and Bowen et al., 1995). The theory and empirical evidence from these studies are consistent with the assertion here that providing incentives for stakeholders to engage in firm-specific asset investment is an important reason for firms to manage risks.

\textbf{3.1.2 Risk management mechanisms and their interactions}

Trading financial hedging contracts and corporate diversification are two commonly used risk management mechanisms. In general, reducing risks through financial hedging contracts, such as futures, forwards, and options, is less costly than
diversification through manipulating real assets. It might first appear that using financial hedging and firm diversification would be substitutive means of risk management, suggesting that the introduction of financial hedging markets would reduce the need for costly corporate diversification.

There is relatively little theoretical work on the systematic analysis of the interaction between financial hedging and diversification as two different risk management mechanisms. Chowdhry and Howe (1999) derive conditions under which multinational firms engage in geographical diversification and financial hedging. They consider two specific risk factors – exchange rate and demand uncertainty – and show that multinational firms will engage in operational hedging only when both exchange rate uncertainty and demand uncertainty are present. Another work more closely related to ours is Hirshleifer and Subrahmanyam (1993). Although their main focus is on the output risk of commodity suppliers, they make an important observation that a futures contract is useful for hedging common risks that are correlated with the price of the commodity, while purchasing output shares from a number of different growers can reduce the idiosyncratic risks that are specific to the grower or his locality.

Our paper differs from the above papers in two important perspectives. First, our rationale for risk management is built upon a stakeholder-based reason which none of the above papers address. Second, we extend the research question to a general firm risk management context, providing much broader implications.

Before we move on to the formal model, however, it is important to note that besides financial hedging and corporate diversification, there is a wide variety of other
actions that firms may take to directly manage risks associated with stakeholder firm-specific asset investments or indirectly manage these risks through reducing firm total risks. These actions include, among others, altering capital structure to reduce probability of the firm being liquidated, having a higher level of cash holdings as slack resources, outsourcing projects or process to which certain risks are associated or directly insuring against the loss associated with firm-specific investments.

In this paper, we make the explicit assumption that a firm’s usage of all of these other risk management tools is exogenously given. Specifically, we focus on financial hedging and diversification for the following reasons: a) isolating them from other alternative risk management mechanisms will help us more clearly illustrate the interaction effect of financial hedging and corporate diversification. b) not only are financial hedging and diversification two of the most commonly used risk management mechanisms by firms, they have also been the main focus of study by scholars in the risk management field.

3.2 The Model

Consider an all-equity financed firm $i$ whose terminal value takes the following form:

$$V_i = \alpha_i + \beta_i f_m + \gamma_i f_j + \varepsilon_i$$  \hspace{1cm} (1)

where $f_m$ is the market-wide factor, $f_j$ is the $j$th industry factor where the firm $i$ belongs, and $\varepsilon_i$ is the firm-specific or idiosyncratic risk that is not shared by any other
firm. As commonly assumed in factor structure models, \( f_m \), \( f_i \), and \( \varepsilon \) are all independent and normally distributed with mean zero and variances \( \sigma^2_{f_m} \), \( \sigma^2_{f_i} \), and \( \sigma^2_{\varepsilon} \), respectively.

It is important to note here that the "industry factor" \( f_i \) is not necessarily an industry factor in the traditional sense. Strictly speaking, \( f_i \) should be more precisely termed a "group-wide factor", which represents a risk factor common to a group of firms. For example, firms using oil as input in their productions or services share the same oil price risk exposure but these firms do not necessarily operate in the same industry as traditionally classified. However, since industry is very frequently applied as a means of classifying firms, we still use the term "industry factor" in this paper as an illustration.

The expected value and the variance of \( V_i \) are:

\[
E(V_i) = \alpha_i, \quad Var(V_i) = \beta_i^2 \sigma^2_{f_m} + \gamma_i^2 \sigma^2_{f_i} + \sigma^2_{\varepsilon} \equiv \sigma^2_i
\]  

We now consider the firm-specific investment decision by the stakeholders. An important feature of firm-specific assets is that the risks associated with holding these assets are difficult to diversify. To capture this idea, consider a stakeholder of firm \( i \) choosing an optimal investment level on firm-specific assets. We denote the amount of firm-specific investments made by this stakeholder as \( x_i \). Let \( g(V_i) \) be the amount of implicit and explicit payoff that the stakeholder obtain from per unit of her firm-specific investment. It is plausible to consider \( g(V_i) \) as positively related with the firm value: when a firm does well, the payoff from firm-specific investments made by its stakeholders is likely to be higher, and it is lower when firm is in trouble. We control for
the size effect on firm value by assuming that $g(V_i)$ is proportional to firm value $V_i$, scaled by number of stakeholders who make firm-specific investments. Specifically,

$$g(V_i) = a \frac{V_i}{N_i},$$  

(3)

where $a$ is a constant and $N_i$ is the number of stakeholders that have firm-specific investments within the firm.

The stakeholder chooses the amount of firm-specific investment that maximizes the utility.

$$\max_{x_i} U = E(w) - \frac{A}{2} \text{var}(w)$$

where $w = x_i g(V_i) + \bar{w}$

(4)

Without loss of generality, we normalize the risk-aversion parameter $A$ to one ($A = 1$). $w$ is the stakeholder's total wealth, which includes the payoffs from both her general assets investments ($\bar{w}$) and firm-specific assets investments ($x_i g(V_i)$). When the stakeholder increases the level of firm-specific investment (higher $x_i$), the expected payoff will be greater, but also her total wealth will covary more with the firm value (higher risk).  

$\bar{w}$ can be interpreted as the value of the stakeholder's general asset investments – knowledge or skills that can be transferred to any other firm without loss.  

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7 Higher level of firm-specific investment increases the expected total wealth of a stakeholder, but also increases the variance of the wealth. Thus the stakeholder’s total wealth is not first-order stochastically dominant with higher firm-specific investment.

8 For simplicity, we assume that firm-specific investment does not incur any opportunity costs. In other words, the decision of a stakeholder to make more or less firm-specific investments does not have effect on the level of her general asset investments. However, the general results still hold even if we included opportunity costs in the analysis.
It is important to note that these payoffs to stakeholders do not have to be explicitly measured in monetary terms such as salaries or bonuses – it is very often the case that payoffs associated with firm-specific investments are implicit, such as promotion opportunities or increased wage bargaining power in the future.

From the first order condition with normalized risk-aversion parameter \( A = 1 \), the optimal amount of firm-specific investment chosen by the stakeholder is:

\[
x_i^* = \frac{E[g(V_i)]}{\text{var}[g(V_i)]}.
\]  

(5)

Using the functional form of \( g(V_i) \) given in (4),

\[
E[g(V_i)] = \frac{a\alpha_i}{N_i}, \quad \text{var}[g(V_i)] = a^2 \frac{\text{var}(V_i)}{N_i^2} = a^2 \frac{\sigma_i^2}{N_i^2}
\]  

(6)

Then the optimal investment \( x_i^* \) in equation (4) becomes

\[
x_i^* = \frac{\alpha_i}{a \sigma_i^2 / N_i}.
\]  

(7)

Here we assume that when the stakeholder makes firm-specific investment decision, she does not take into account the effect of her own investment on expected firm value \( \alpha_i \). Although firm-specific investments by all stakeholders affect firm value at an aggregate level, it is plausible to assume that each stakeholder will consider the effect of her own investment on the firm value negligible when \( N_i \) is large. Thus \( \alpha_i \) here is taken as exogenous in solving for \( x_i^* \).

Generally speaking, a firm's expected value, \( \alpha_i \), is the sum of the value of its general-purpose assets and that of its firm-specific assets. Assuming the value of a firm's
general-purpose assets is a constant, we can think of \( \alpha_i \) as a function of \( x_i \), the amount of firm-specific investment per stakeholder, and of \( N_i \), number of stakeholders or a measure of the size of the company.

\[
\alpha_i = \alpha_i(x_i, N_i).
\]

where \( \frac{\partial \alpha_i}{\partial x_i} > 0 \), \( \frac{\partial^2 \alpha_i}{\partial x_i^2} < 0 \) \hspace{1cm} (8)

The expected firm value increases with \( x_i \), but at a decreasing rate.

For expository purpose, we adopt a specific form of \( \alpha_i \),

\[
\alpha_i(x_i, N_i) = N_i \sqrt{x_i} \hspace{1cm} (9)
\]

Since \( x_i \) is the amount of firm-specific investment per stakeholder and \( \alpha_i \) is the total value of firm assets, \( \alpha_i \) is likely to be proportional to \( N_i \).

From (7) and (9), we can obtain the expected firm value \( E(V_i^*) = \alpha_i^* \) as follows.

\[
E(V_i^*) = \frac{N_i^3}{a\sigma_i^*},
\]

(10)

We can see from the above equation that the expected firm value \( E(V_i^*) \) is inversely related to the risk level of the firm. Intuitively, higher risk is associated with lower level of stakeholders' firm-specific investment and thus, lower total firm value.

Having derived the expected firm value function and established its link to stakeholders' firm-specific investment decision, now we are able to move on to examine the effect of diversification and financial hedging on firm value. As a benchmark, we start with considering the effect of diversification on firm value in the absence of
financial hedging markets. We then examine how the presence of financial hedging changes the effect of diversification.

In order to focus on the pure risk effects on firm value, we start by assuming that there are no other effects from diversification. These other effects may include, among others, operational or financial synergies, increased market power, or increased bureaucratic costs due to poor management and agency costs. Later we relax the assumption by incorporating the change in firm value due to these other effects. It can be shown that the relationship between financial hedging and diversification derived from the model – whether they are complementary or substitutive – remains the same even when we relax the assumption, as long as the presence of financial hedging does not change these other effects of diversification on firm value.

3.3 The Effect of Diversification on Firm Value in the Absence of Financial Hedging Markets

As a benchmark, we start with examining how combining two single business firms changes firm value in the absence of financial hedging markets. As shown in equation (7), a stakeholder's optimal amount of firm-specific investments is negatively related to the total variance in firm value. Therefore, intuitively, if firm diversification can reduce firm risks, it will have a positive effect on firm value through increased firm-specific investment of its stakeholders, holding other things constant.

Let us consider two firms $A$ and $B$ operating in industries $l$ and $k$, respectively. Their values are expressed as follows.
\[ V_A = \alpha_A + \beta_A f_m + \gamma_A f_I + \epsilon_A. \]
\[ V_B = \alpha_B + \beta_B f_m + \gamma_B f_k + \epsilon_B. \]  
(11)

To make the comparison easier, assume that these two firms are almost identical except for the possible difference in the industries to which they belong – they have the same size/number of stakeholders and same amount of exposure to each risk component.

\[ N_A = N_B = N, \]
\[ \beta_A = \beta_B = \beta \]
\[ \beta_A^2 \sigma_{f_m}^2 = \beta_B^2 \sigma_{f_m}^2 = \sigma_m^2, \]
\[ \sigma_{e_I}^2 = \sigma_{e_k}^2 = \sigma_e^2, \]
\[ \gamma_A^2 \sigma_{f_i}^2 = \gamma_B^2 \sigma_{f_i}^2 = \sigma_{md}^2, \]
\[ \Rightarrow \quad Var(V_A) = Var(V_B) = \sigma_o^2 = \sigma_m^2 + \sigma_{md}^2 + \sigma_e^2. \]  
(12)

Then, following the same steps as in the previous section, we have:

\[ x_A^* = x_B^* = x_0 \quad \text{and} \quad E(V_A) = E(V_B) = \alpha_0 \]  
(13)

where,

\[ x_0 = \frac{\alpha_0}{\alpha_e / N}. \]  
(14)

When the two firms merge, the value of the merged firm is,

\[ V_{AB} = \alpha_{AB} + 2 \beta f_m + \gamma_A f_I + \gamma_B f_k + \epsilon_A + \epsilon_B. \]  
(15)

Note that \( \alpha_{AB} \neq \alpha_A + \alpha_B \), due to the change in stakeholders’ investment incentive from reduced risk through merger. After merger, the optimal amount of firm-specific investments by each stakeholder in the combined firm, \( x_{AB} \), satisfies,
\[ x_{AB} = \frac{\alpha_{AB}}{a \sigma_{AB}^2 / N_{AB}}. \]  
\[ (16) \]

The proportional value increase from the merger is defined as follows.

\[ \Delta V = \frac{E(V_{AB}) - (E(V_A) + E(V_B))}{E(V_A) + E(V_B)} = \frac{E(V_{AB})}{E(V_A) + E(V_B)} - 1. \]  
\[ (17) \]

Using the specific form of \( \alpha_i \) specified in equation (9), and assuming that \( N_{AB} = N_A + N_B = 2N \), we can show that

\[ E(V_A) = E(V_B) = \frac{N^3}{a \sigma_0^2}, \]

\[ E(V_{AB}) = \frac{8N^3}{a \sigma_{AB}^2}, \]  
\[ (18) \]

From the above results, the proportional change in the firm value in (17) becomes:

\[ \Delta V = \frac{4 \sigma_0^2}{\sigma_{AB}^2} - 1. \]  
\[ (19) \]

By inspection of equation (15), the variance of the merged firm \( \sigma_{AB}^2 \) can be written as follows.

\[ \sigma_{AB}^2 = 4 \beta_1^2 \sigma_{f_1}^2 + \gamma_A^2 \sigma_{f_1}^2 + \gamma_B^2 \sigma_{f_1}^2 + 2 \gamma_A \gamma_B \rho_{k} \sigma_{f_1} \sigma_{f_1} + 2 \sigma_\epsilon^2 \]

\[ = 4 \sigma_m^2 + 2(1 + \rho_{k}) \sigma_{md}^2 + 2 \sigma_\epsilon^2. \]  
\[ (20) \]

\( \rho_{k} \) is the correlation coefficient between two industry factors \( f_i \) and \( f_k \). Then from equation (12) and (20),

\[ \frac{4 \sigma_0^2}{\sigma_{AB}^2} - 1 = \frac{2 \sigma_{md}^2 (1 - \rho_{k}) + 2 \sigma_\epsilon^2}{\sigma_{AB}^2} > 0 \], since \( \rho_{k} \leq 1 \).
Thus, the pure risk effect of diversification on the firm value is positive. And the smaller the correlation coefficient $\rho_{ik}$, the greater the increase in value from diversification. This result is quite intuitive. When the risk is reduced through diversification, a risk-averse stakeholder’s optimal amount of firm-specific asset investments increases. Since firm value is an increasing function of the amount of firm-specific investments by its stakeholders, firm value eventually increases. The benefit will be smaller when two firms operate in the same industry ($\rho_{ik} = 1$) since there is risk reduction only in idiosyncratic risks, and will be larger when there is risk reduction also in industry risks when two firms are operating in different industries.

3.4 Diversification with Financial Hedging

3.4.1 Optimal hedging positions

When hedging instruments are available for reducing a firm's risk exposure, it changes the benefit from diversification because hedging contracts are not equally effective in reducing different types of risks. In general, a firm can partially hedge its market and industry risks, but it is difficult to hedge its firm-specific risks through financial markets.

Consider the use of futures contracts to hedge the market and industry risks. Let $\Phi_m$ be the contracted futures price of a financial asset designed to track movements in the overall market. The actual value of this financial asset is $P_m$, so the payoff from the hedging contract will be $P_m - \Phi_m$ when the contract is settled. If the markets for financial
hedging are efficient, the futures price should be such that \( E(P_m - \Phi_m) = 0 \). Similarly, \( P_j \) and \( \Phi_j \) are the spot and futures price of the financial hedging instrument for industry \( j \)'s risk, with \( E(P_j - \Phi_j) = 0 \). So, using hedging instruments does not change the expected firm value directly but does so indirectly through risk reduction which influences the firm-specific investment decisions of its stakeholders.

Let \( \xi_m \) and \( \xi_j \) be the hedging positions taken by the firm. With hedging, the firm value can be written as:

\[
V_{i}^{H} = \alpha_i + \beta_i f_m + \gamma_i f_j + \xi_m (P_m - \Phi_m) + \xi_j (P_j - \Phi_j) + \varepsilon_i. \tag{21}
\]

The variance of \( V_{i}^{H} \) is as follows.

\[
\sigma_{i}^{2} = \beta_i^2 \sigma_{f_m}^2 + \gamma_i^2 \sigma_{f_j}^2 + \xi_m^2 \sigma_{P_m}^2 + \xi_j^2 \sigma_{P_j}^2 + 2\beta_i \xi_m \text{Cov}(f_m, P_m) + 2\gamma_i \xi_j \text{Cov}(f_j, P_j) + \sigma_{\varepsilon_i}^2. \tag{22}
\]

The firm will choose the hedging position to minimize the variance. Differentiating equation (22) with respect to \( \xi_m \) and \( \xi_j \) gives the first order conditions.

\[
\frac{\partial \sigma_{i}^2}{\partial \xi_m} = 2\xi_m \sigma_{P_m}^2 + 2\beta_i \text{Cov}(f_m, P_m) = 0, \tag{23}
\]

\[
\frac{\partial \sigma_{i}^2}{\partial \xi_j} = 2\xi_j \sigma_{P_j}^2 + 2\gamma_i \text{Cov}(f_j, P_j) = 0. \tag{24}
\]

Hence, the optimal hedging positions are:

\[
\xi_m^* = -\frac{\beta_i \text{Cov}(f_m, P_m)}{\sigma_{P_m}^2}, \tag{25}
\]

\[
\xi_j^* = -\frac{\gamma_i \text{Cov}(f_j, P_j)}{\sigma_{P_j}^2}. \tag{26}
\]
The value of firm $i$ after hedging becomes:

$$V_i^H = \alpha_i + \beta_i \left[ f_m - \frac{\text{Cov}(f_m, P_m)}{\sigma_{f_m}^2} (P_m - \Phi_m) \right] + \gamma_i \left[ f_i - \frac{\text{Cov}(f_i, P_i)}{\sigma_{f_i}^2} (P_i - \Phi_i) \right] + \epsilon_i,$$

or

$$\equiv \alpha_i + \beta_i f_m^H + \gamma_i f_i^H + \epsilon_i. \quad (27)$$

where

$$f_m^H = f_m - \frac{\text{Cov}(f_m, P_m)}{\sigma_{f_m}^2} (P_m - \Phi_m) \quad \text{and} \quad f_i^H = f_i - \frac{\text{Cov}(f_i, P_i)}{\sigma_{f_i}^2} (P_i - \Phi_i). \quad (28)$$

The variance of firm value before hedging is

$$\sigma_i^2 = \beta_i^2 \sigma_{f_m}^2 + \gamma_i^2 \sigma_{f_i}^2 + \sigma_{\epsilon_i}^2, \quad (29)$$

and after hedging,

$$\sigma_i^2 = \beta_i^2 \sigma_{f_m}^2 + \gamma_i^2 \sigma_{f_i}^2 + \sigma_{\epsilon_i}^2. \quad (30)$$

where $\sigma_{f_m}^2 = Var(f_m^H)$ and $\sigma_{f_i}^2 = Var(f_i^H)$. As can be seen from equation (28),

$$\sigma_{f_m}^2 < \sigma_i^2 \quad \text{and} \quad \sigma_{f_i}^2 < \sigma_i^2.$$

With financial hedging, the expected values of two firms considered in the previous subsection now become:

$$E(V_A^H) = E(V_B^H) = \frac{N^3}{a \sigma_{\epsilon_i}^2},$$

(31)

---

9 Here, we assume that the effectiveness of hedging instruments for each industry risk is the same, i.e.,

$$\gamma_i^2 \sigma_{f_m}^2 = \gamma_i^2 \sigma_{f_i}^2.$$
\[ E(V_{AB}) = \frac{8N^3}{a\sigma_{AB}^2}. \]  

(32)

where

\[ \sigma_{0i}^2 = \beta^2 \sigma_{f_i}^2 + \gamma^2 \sigma_{f_i}^2 + \sigma_e^2 = \beta^2 \sigma_{f_i}^2 + \gamma^2 \sigma_{f_i}^2 + \sigma_e^2 \]

\[ = \sigma_{n_i}^2 + \sigma_{md}^2 + \sigma_e^2. \]  

(33)

\[ \sigma_{AB}^2 = 4\beta^2 \sigma_{f_i}^2 + \gamma^2 \sigma_{f_i}^2 + \gamma^2 \sigma_{f_i}^2 + 2\gamma AY_B \rho_{ki} \sigma_{f_i}^2 \sigma_{f_i}^2 + 2\sigma_e^2 \]

\[ = 4\sigma_{n_i}^2 + 2(1 + \rho_{ki})\sigma_{md}^2 + 2\sigma_e^2. \]  

(34)

The proportional increase in firm value from diversification with financial hedging becomes:

\[ \Delta V^H = \frac{E(V_{AB}^H) - [E(V_A^H) + E(V_B^H)]}{E(V_A^H) + E(V_B^H)} = \frac{4\sigma_{n_i}^2}{\sigma_{AB}^2} - 1. \]  

(35)

3.4.2 The interaction between financial hedging and diversification

To better illustrate how the benefit obtained from diversification changes when financial hedging contracts are available, consider two extreme cases. In the first case, firms A and B operate in the same industry \((\rho_{ki} = 1)\). We define the merger of A and B in this case as related diversification. In the second case, A and B operate in two completely independent industries \((\rho_{ki} = 0)\). We define the merger of A and B in this case as unrelated diversification.

The definitions of related and unrelated diversification adopted here do not strictly follow what is commonly used in the literature. Some of previous studies use industry SIC codes to classify whether two businesses are related and others define
relatedness based on whether there are synergies between the two businesses. Here, two firms are considered related when they are exposed to a common industry/group wide risk factor and they are considered unrelated if they do not share any common industry/group risks. While the correlations between two industry/group factors can range from $-1$ to $1$, we start with considering two cases $\rho_{ik} = 0$ and $\rho_{ik} = 1$, then we generalize the results by considering a continuous range of correlation, $-1 \leq \rho_{ik} \leq +1$ in Proposition 3.

**Proposition 1:** Financial hedging increases the benefit of related diversification, i.e., financial hedging and related diversification are complementary.

**Proof:** We will show that $\Delta V^H > \Delta V$ when $\rho_{ik} = 1$, i.e., the benefit of related diversification is greater with financial hedging than without financial hedging.

The changes in firm value from diversification with $(\Delta V^H)$ and without $(\Delta V)$ financial hedging instruments are:

$$\Delta V^H = \frac{4\sigma_0^2}{\sigma_{ab}^2} - 1 = \frac{\sigma_{md}^2 (1 - \rho_{ik}) + \sigma_\varepsilon^2}{2\sigma_m^2 + \sigma_{md}^2 (1 + \rho_{ik}) + \sigma_\varepsilon^2}. \quad (36)$$

$$\Delta V = \frac{4\sigma_0^2}{\sigma_{ab}^2} - 1 = \frac{\sigma_{md}^2 (1 - \rho_{ik}) + \sigma_\varepsilon^2}{2\sigma_m^2 + \sigma_{md}^2 (1 + \rho_{ik}) + \sigma_\varepsilon^2}. \quad (37)$$

When $\rho_{ik} = 1$, then the equations above become:

$$\Delta V^H = \frac{\sigma_\varepsilon^2}{2\sigma_m^2 + 2\sigma_{md}^2 + \sigma_\varepsilon^2}. \quad (38)$$
\[ \Delta V = \frac{\sigma_e^2}{2\sigma_m^2 + 2\sigma_{md}^2 + \sigma_d^2}. \]  

Since \( \sigma_{m''}^2 < \sigma_m^2 \) and \( \sigma_{md''}^2 < \sigma_{md}^2 \) as long as there is risk reduction from financial hedging, \( \Delta V'' > \Delta V \). Therefore, financial hedging increases the benefit of related diversification.

**Proposition 2:** Financial hedging can increase or decrease the benefit of unrelated diversification.

a. When hedging is less effective in reducing industry-wide risks than in reducing market-wide risks, financial hedging increases the benefit of unrelated diversification (i.e., financial hedging and diversification are complementary).

b. When hedging is more effective in reducing industry-wide risks than in reducing market-wide risks, whether financial hedging increases or decreases the benefit of unrelated diversification will depend on the relative size of different risk exposures. If firm-specific risks are sufficiently large, financial hedging can still increase the benefit of unrelated diversification (complementary). On the other hand, if firm-specific risks are relatively small, then hedging can decrease the benefit of unrelated diversification (substitutive).
Proof: For unrelated diversification ($\rho_k = 0$), equations (36) and (37) become:

$$
\Delta V^H = \frac{\sigma_{md}^2 + \sigma_e^2}{2\sigma_m^2 + \sigma_{md}^2 + \sigma_e^2}.
$$

(40)

$$
\Delta V = \frac{\sigma_{md}^2 + \sigma_e^2}{2\sigma_m^2 + \sigma_{md}^2 + \sigma_e^2}.
$$

(41)

From equations (40) and (41),

$$
\Delta V^H - \Delta V = \frac{2\sigma_{md}^2 \sigma_{md}^2}{(2\sigma_m^2 + \sigma_{md}^2 + \sigma_e^2)(2\sigma_m^2 + \sigma_{md}^2 + \sigma_e^2)} \left[ \frac{\sigma_e^2}{\sigma_{md}^2} (1 - \frac{\sigma_m^2}{\sigma_{md}^2}) + \left( \frac{\sigma_{md}^2}{\sigma_{md}^2} - \frac{\sigma_m^2}{\sigma_{md}^2} \right) \right]
$$

(42)

Since $\sigma_e^2 / \sigma_{md}^2 (1 - \sigma_m^2 / \sigma_{md}^2)$ is always positive, when $\sigma_{md}^2 / \sigma_{md}^2 > \sigma_m^2 / \sigma_m^2$, i.e., hedging is less effective in reducing industry risks than in reducing market-wide risks, then $\Delta V^H > \Delta V$. Therefore, hedging increases the benefit from unrelated diversification.

Now consider the other case where $\sigma_{md}^2 / \sigma_{md}^2 < \sigma_m^2 / \sigma_m^2$, i.e. hedging is more effective in reducing industry risks as compared to market risks. When firm-specific risks are sufficiently large compared with industry risks ($\sigma_e^2 / \sigma_{md}^2 >> 1$), we will have $\Delta V^H > \Delta V$. In this case, hedging still increases the benefit from unrelated diversification since the benefit of reducing firm-specific risks by diversification is large. But if firm-specific risks are relatively small, then hedging can decrease the benefit from unrelated diversification ($\Delta V^H < \Delta V$).

The implications of the above results can be illustrated by Figure 1:

---

Insert Figure 1 about here

---

67
As shown in Figure 1, hedging partly reduces the market and industry components of a firm's risks but is not helpful in reducing firm-specific risks. On the other hand, related diversification can only reduce firm-specific risks but is of no help in reducing market and industry risk exposures. Therefore, with hedging reducing the systematic components of risks, the firm-specific risk will comprise a larger part of total risk. Since related diversification can effectively reduce firm-specific risk exposures, it is quite intuitive that financial hedging and related diversification are complementary.

On the other hand, unrelated diversification and hedging overlap in that they can both reduce industry risks. Specifically, while an industry risk factor is considered systematic for related diversification, it is diversifiable for unrelated diversification since unrelated diversification often involves businesses in different industries. Therefore, whether financial hedging and unrelated diversification are complementary or substitutive will depend on the relative size of each risk component and the effectiveness of financial hedging in reducing the industry risks.

Since diversification generally involves a wider range of correlations between the industry factors, we extend our analysis by considering a continuum of correlations of industry factors, $\rho_{ik} \in [-1, +1]$ (we will use $\rho$ instead of $\rho_{ik}$ hereafter). We show that for certain parameter values, financial hedging and diversification are always complementary regardless the value of $\rho$, but for other cases, they can be complementary or substitutive depending on the value of $\rho$. For the latter case, it can be shown that financial hedging
and diversification are complementary when the correlation of industry factors, $\rho$, is greater than a critical value $\rho^*$. We will then discuss how the effectiveness of hedging instruments for managing different types of risks and the relative magnitude of each risk component affect the critical value $\rho^*$. 

**Proposition 3:** When financial hedging and diversification can be complementary or substitutive depending on the correlation of industry factors, $\rho$, they are complementary if $\rho$ is greater than a critical value ($\rho > \rho^*$) and substitutive if $\rho$ is smaller than the critical value ($\rho < \rho^*$). And financial hedging and diversification become more likely to be complementary (i.e., smaller $\rho^*$) as

a) Financial hedging becomes less effective in reducing industry-wide risks;

b) Financial hedging becomes more effective in reducing market-wide risks;

c) The magnitude of firm-specific risks increases relative to that of the industry-wide risks.

**Proof:** From equations (36) and (37),

$$
\Delta V'_H - \Delta V = \frac{\sigma_{md}^2 (1 - \rho) + \sigma_e^2}{2\sigma_m^2 + \sigma_{md}^2 (1 + \rho) + \sigma_e^2} - \frac{\sigma_{md}^2 (1 - \rho) + \sigma_e^2}{2\sigma_m^2 + \sigma_{md}^2 (1 + \rho) + \sigma_e^2}
$$

$$
2\sigma_m^2 \sigma_{md}^2 \rho \left[ \frac{\sigma_e^2}{\sigma_m^2} (1 - \frac{\sigma_{md}^2}{\sigma_{md}^2}) + \frac{\sigma_{md}^2}{\sigma_m^2} (1 - \frac{\sigma_{md}^2}{\sigma_m^2}) \right] + \left[ \frac{\sigma_e^2}{\sigma_m^2} (1 - \frac{\sigma_{md}^2}{\sigma_m^2}) - \frac{\sigma_{md}^2}{\sigma_m^2} \right]
$$

$$
\left[ 2\sigma_m^2 + \sigma_{md}^2 (1 + \rho) + \sigma_e^2 \right] \left[ 2\sigma_m^2 + \sigma_{md}^2 (1 + \rho) + \sigma_e^2 \right]
$$

(43)
We define the above formula as $D$

$$D = \rho \left[ \frac{\sigma^2_e}{\sigma^2_m} \frac{\sigma^2_{m^H}}{(1 - \sigma^2_{m^H}/\sigma^2_{m})} + \left(\frac{\sigma^2_{m^H}}{\sigma^2_m} - \frac{\sigma^2_{m^H}}{\sigma^2_{m}}\right) \right] \left[ \frac{\sigma^2_e}{\sigma^2_m} \frac{\sigma^2_{m^H}}{(1 - \sigma^2_{m^H}/\sigma^2_{m})} - \left(\frac{\sigma^2_{m^H}}{\sigma^2_m} - \frac{\sigma^2_{m^H}}{\sigma^2_{m}}\right) \right]$$

(44)

When $D > 0$, $\Delta V^H - \Delta V > 0$, and when $D < 0$, $\Delta V^H - \Delta V < 0$.

First, let's consider the case where

$$\frac{\partial D}{\partial \rho} = \frac{\sigma^2_e}{\sigma^2_m} \frac{\sigma^2_{m^H}}{(1 - \sigma^2_{m^H}/\sigma^2_{m})} + \left(\frac{\sigma^2_{m^H}}{\sigma^2_m} - \frac{\sigma^2_{m^H}}{\sigma^2_{m}}\right)$$

is negative. In this case, financial hedging and diversification are always complementary ($D > 0$) since $D$ is at minimum when $\rho = 1$ and the minimum value is positive (thus $D$ is always positive for any $\rho_\kappa \in [-1, +1]$).

Now let's consider the case, where $\frac{\partial D}{\partial \rho}$ is positive (i.e., $D$ is increasing with $\rho$). In this case, it is possible that $D$ is positive or negative depending on $\rho$. If there exists $\rho^*$ such that $D(\rho^*) = 0$, then for $\rho > \rho^*$, $D > 0$ (financial hedging and diversification are complementary), and for $\rho < \rho^*$, $D < 0$ (financial hedging and diversification are substitutive).

The critical value $\rho^*$ can be obtained by setting $D = 0$.

$$\rho^* = \frac{\frac{\sigma^2_{m^H}}{\sigma^2_m} - \frac{\sigma^2_{m^H}}{\sigma^2_{m}}}{\frac{\sigma^2_{m^H}}{\sigma^2_m} + \frac{\sigma^2_{m^H}}{\sigma^2_{m}} \left(1 - \frac{\sigma^2_{m^H}}{\sigma^2_{m}}\right)}$$

(45)

Using comparative statics analysis, we can see how the effectiveness of financial hedging in reducing market-wide or industry-wide risks and the relative magnitude of each risk component affect $\rho^*$.  

70
a) Comparative static on $\sigma_{md}^2 / \sigma_{md}^2$:

$$\frac{\partial \rho^*}{\partial (\sigma_{md}^2 / \sigma_{md}^2)} = \frac{-\sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2)}{\sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2) - \sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2)} < 0$$

(46)

Since the sign of the above static is always negative, as the effectiveness of financial hedging market for industry-wide risks decreases (higher $\sigma_{md}^2 / \sigma_{md}^2$), financial hedging and diversification are more likely to be complementary (smaller $\rho^*$).

b) Comparative static on $\sigma_{md}^2 / \sigma_{md}^2$:

$$\frac{\partial \rho^*}{\partial (\sigma_{md}^2 / \sigma_{md}^2)} = \frac{\sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2)}{\sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2) + \sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2)} > 0$$

(47)

Therefore, as the effectiveness of financial hedging market in reducing market-wide risks increases (lower $\sigma_{md}^2 / \sigma_{md}^2$), financial hedging and diversification are more likely to be complementary (smaller $\rho^*$).

c) Comparative static on $\sigma_{md}^2 / \sigma_{md}^2$:

$$\frac{\partial \rho^*}{\partial (\sigma_{md}^2 / \sigma_{md}^2)} = \frac{- (1 - \sigma_{md}^2 / \sigma_{md}^2)}{\sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2) + \sigma_{md}^2 (1 - \sigma_{md}^2 / \sigma_{md}^2)} < 0$$

(48)
Since the sign of the above static is always negative, as the magnitude of firm-specific risks becomes larger relative to that of industry-wide risks, financial hedging and diversification are more likely to be complementary ($\rho^*$ decreases with $\sigma_e^2 / \sigma_{ind}^2$).

We did not include comparative static on $\sigma_e^2 / \sigma_m^2$ since the sign is ambiguous.

$$\frac{\partial \rho^*}{\partial \sigma_m^2} = \frac{- (1 - \sigma^{2}_{ind}) \left[ \frac{\sigma^{2}_{mH}}{\sigma_{m}^{2}} - \frac{\sigma^{2}_{indH}}{\sigma_{ind}^{2}} - \frac{\sigma^{2}_{e}}{\sigma_{ind}^{2}} (1 - \frac{\sigma^{2}_{mH}}{\sigma_{m}^{2}}) \right]}{\sigma_{m}^{2} \left( \sigma_{m}^{2} (1 - \frac{\sigma^{2}_{indH}}{\sigma_{ind}^{2}} + \frac{\sigma^{2}_{mH}}{\sigma_{m}^{2}} - \frac{\sigma^{2}_{indH}}{\sigma_{ind}^{2}} \right)^{2}}$$

The sign of the above comparative static is not clear. Whether the expression is positive or negative will depend on the sign of $\left[ \frac{\sigma^{2}_{mH}}{\sigma_{m}^{2}} - \frac{\sigma^{2}_{indH}}{\sigma_{ind}^{2}} - \frac{\sigma^{2}_{e}}{\sigma_{ind}^{2}} (1 - \frac{\sigma^{2}_{mH}}{\sigma_{m}^{2}}) \right]$. 

Proposition 3 generalizes the intuition developed in Propositions 1 and 2. When $\rho$ becomes larger, the two firms are more related and diversification becomes less effective in reducing industry-wide risks. When diversification becomes less effective in reducing industry-wide risks, the overlapped portion of risk reduction between financial hedging and diversification becomes smaller (see figure 1), in which case, they are more likely to be complementary. Thus, financial hedging and diversification are more likely to be complementary when the two firms are more related.

Similarly, when financial hedging becomes less effective in reducing industry-wide risks (case a) in proposition 3), the overlapped portion of risk reduction between
financial hedging and diversification becomes smaller (figure 1). Thus, financial hedging and diversification become more likely to be complementary.

When financial hedging becomes more effective in reducing market-wide risks (case b) in proposition 3), it does not reduce the absolute portion of overlap of risk reduction from financial hedging and that from diversification. However, the relative magnitude of the overlap between financial hedging and diversification becomes smaller compared to total risk reduction due to larger reduction in market risks. Thus in this case, financial hedging and diversification are also more likely to be complementary.

Similar to case b), when the magnitude of firm-specific risks increases compared to that of industry-wide risks (case c) in proposition 3), the absolute overlap portion does not change. However, relative to the total amount of risk reduction, the overlap between risk reduction through financial hedging and risk reduction through diversification becomes smaller because of larger reduction in firm-specific risks. Thus, financial hedging and diversification are more likely to be complementary.

### 3.4.3 Incorporating other effects of diversification.

In the previous sections, we have focused on the risk reduction effect of diversification, by assuming that there are no synergy or market power effects, nor are there value-destroying agency effects or poor management effects of diversification. In this section, we incorporate these other effects of diversification and examine whether the presence of other effects changes the relationship between financial hedging and corporate diversification.
Let $\delta$ be the proportional change in firm value from combining two single business firms due to all other effects such as synergy, market power, poor management, etc. Since these other effects can either increase firm value (e.g. realized synergy and increased market power) or decrease firm value (e.g. increased bureaucratic costs and poor management), $\delta > 0$ if the positive effects dominate and $\delta < 0$ if the negative effects dominate.

It is quite likely that hedging using financial contracts does not have direct effect on the degree to which firm value changes from diversification due to factors other than risk reduction. Thus the overall value change through diversification, including risk reduction and all other effects, becomes $\Delta V + \delta$ without financial hedging and $\Delta V^H + \delta$ with financial hedging, where $\Delta V$ and $\Delta V^H$ are the changes in firm value from the risk effects of diversification, given in equations (19) and (35), respectively.

Therefore, even though pure risk effect of diversification is positive, the overall effect could be negative if other effects are negative and more than offset the benefit from risk reduction. Nevertheless, the relationship between financial hedging and diversification, i.e., the conditions under which they are complementary or substitutive do not change for the following reason.

Recall that when we only considered risk reduction effect of diversification, financial hedging and diversification are complementary if $\Delta V^H > \Delta V$ and substitutive if $\Delta V^H < \Delta V$. When all other effects are incorporated, financial hedging and diversification are complementary if $\Delta V^H + \delta > \Delta V + \delta$ and substitutive if $\Delta V^H + \delta < \Delta V + \delta$. As long as $\delta$ is independent of financial hedging usage, whether
financial hedging and corporate diversification are complementary or substitutive when other effects of diversification are present will still depend on whether $\Delta V^H > \Delta V$ or $\Delta V^H < \Delta V$.

To summarize, when we incorporate other effects of diversification, such as synergy, market power and transaction costs, etc., the direct benefit obtained from diversification will change from $\Delta V$ to $\Delta V + \delta$ (in the absence of financial hedging), or from $\Delta V^H$ to $\Delta V^H + \delta$ (with the presence of financial hedging). However, incorporating these other effects generally does not change the complementary or substitutive relationship between financial hedging and corporate diversification.

3.5 Discussions

3.5.1 The diversification “discount”

Although the focus of our paper is to examine the interaction of financial hedging and diversification, the results also suggest the positive performance effect of corporate diversification through risk reduction. This might seem to be at odds with the well-known empirical evidence of “diversification discounts”. Over the last decade, a number of studies have examined the relationship between diversification and firm value. These studies have generally found a “diversification discount” ranging from around 10 to 40% (e.g. Lang and Stulz, 1994; Berger and Ofek, 1995; Denis, Denis, and Sarin, 1997 and Rajan, Servaes, and Zingales, 2000), using various measures of performance, samples, and time periods.
However, a few recent papers question the finding of a diversification discount. For example, Campa and Kedia (1999) point out that firm diversification is an endogenous choice, therefore the issue of self-selection bias needs to be considered in examining the diversification discount. Villalonga (2000) addresses the self-selection problem by matching diversified firms and single-segment firms on their propensity scores. Both studies found that not only does the diversification discount disappear, there is also evidence that diversified firms are traded at a premium. In a more specific setting, Graham, Lemmon and Wolf (2002) analyze several hundred firms that expand via acquisition and/or increase their number of segments. They found that although acquiring firms excess value declines after the diversification event, much of the value reduction occurs because their sample firms acquire already-discounted business units, and not because diversifying destroys value. Some other efforts are made to further show the positive effect of diversification by using richer data. For example, Maksimovic and Phillips (1999) gather census information on manufacturing plants at over 50,000 firms and find investment patterns that contradict the claim that internal capital markets are inefficient. Jandik and Makhija (2000) document the ‘atypical’ diversification practices of electric utilities. They found that unlike other firms, electric utilities increased their diversification and gained from it over the period of 1980-1992.

While the debate about whether there is a diversification “discount” or “premium” probably will still go on, the relationship between diversification and overall firm performance itself may not help us much in understanding exactly what has contributed to the value change. It may well be that both positive (e.g. synergy gain and the rationale
provided in this paper) and negative effects (e.g. agency motive and inefficient internal capital markets) are at work simultaneously. This paper can be considered one of the efforts to understand how one specific element (i.e., change in the level of firm-specific asset investment due to risk reduction) contributes to the value change from diversification, and how firm diversification interacts with the use of financial hedging. Our model suggests that the “diversification discount” will be smaller (or the “diversification premium” will be larger) for firms that operate in environments where firm-specific asset investments are relatively more important for their operations.

3.5.2 Implications of the model and empirical evidence

The results derived in this paper carry implications for firm risk management policies and the effect of financial hedging on firms' incentives to diversify. For example, everything else being equal, for industries where hedging markets are readily available for reducing industry risk (e.g. gold mining industry), we would see more related diversification rather than unrelated diversification, since in this case hedging is substitutive to unrelated diversification but complementary to related diversification. On the other hand, if financial hedging markets are not well developed for reducing industry risk, then financial hedging and unrelated diversification are likely to be complementary. The results also suggest that a new development of a financial hedging instrument for a certain type of risk will affect firms’ diversification strategies over time. For example, introduction of exchange-traded oil futures and options will generally induce more related diversification than unrelated diversification of firms in oil industry.
To our knowledge, little work has specifically examined the interaction between financial hedging and different types of diversification. There are a few papers that study the interaction among different risk management mechanisms but none of them directly addresses the question whether the financial hedging and corporate diversification are complementary or substitutive, depending on the relatedness of divisions of diversified firms and the effectiveness of financial hedging instruments for different types of risks. We discuss a few representative empirical papers here to show to what extent their results may carry implications for supporting or rejecting our theory.

Mixed results for the relationship between financial hedging and diversification are found in Tufano (1996). Using a sample of firms in the North American gold mining industry, Tufano uses three potential ‘substitutes’ to financial hedging as control variables: diversification, leverage and cash reserve. His results show that diversification, which is measured by the percentage of firm assets outside the gold mining sector, does not significantly relate to the level of financial hedging contract usage. Haushalter (2000) examines the determinants of financial hedging policies of oil and gas producers, with “diversification” (ratio of revenues generated from oil and gas productions to total revenue) as one of the control variables. His Tobit regression results sometimes show a positive relationship between diversification and financial hedging, but the sign and level of significance differ across models and years. Another related paper is Geczy, Minton and Schrand (2000). They document that diversification increased significantly from 1979 to 1995 in the natural gas industry, in contrast to the general trend away from diversification during that period. This fact is notable considering that exchange-traded
contracts on gas prices became available around 1990. In addition, there is also some direct evidence that diversification is positively related to storage, cash holdings and derivative use, suggesting complementarity between diversification and other hedging instruments, including derivative use.

The most support for our theory can be found in a recent work by Allayannis, Ihrig and Weston (2000). The authors investigated both financial and operational exchange-rate risk management strategies of multinational firms, and found that although the usage of financial hedging is effective in reducing exchange rate exposure, operational hedging (geographical diversification) is not an effective substitute for financial risk management in managing exchange rate risks. Instead, they found that more geographically diversified firms are more likely to use financial hedging, and operational hedging strategies benefit shareholders only when used in combination with financial hedging strategies. These results are very consistent with the major predictions of the model developed here. Financial hedging can effectively reduce exchange rate risks since generally these risks can be considered as market/industry-wide risks shared by many firms. On the other hand, geographical diversification will be better at reducing firm-specific risks, for example, risks associated with operations in specific location. Thus, the finding of complementarity between financial and operational hedging, i.e., operational hedging benefiting shareholders only when combined with financial hedging, is consistent with the result of our model.

Overall, these studies lend some indirect support for our theory. However, the discussion also indicates the need to devise more demanding tests in order to directly
examine the specific predictions of our model. Future empirical studies will likely require more detailed longitudinal information about the development of financial hedging instruments and the pattern of diversification over time. In addition, since our theory predicts different effects of financial hedging on related vs. unrelated diversification, it is important to develop a plausible diversification measure that distinguishes between related and unrelated diversification.\footnote{Since the definition of related vs. unrelated diversification in this paper is based on whether a group of firms is exposed to common risk factors, which may or may not coincide with the traditional concept of diversification or operational hedging, it is important to take into consideration the difference in designing diversification measures.}

3.6 Conclusions

Built upon the stakeholder-based rationale for firm risk management, this paper examines the interaction between financial hedging markets and corporate diversification as two different risk management mechanisms.

While it appears at first that financial hedging and firm diversification may be substitutes in managing risks, the result of the model developed in this paper suggests that is not necessarily the case. Financial hedging contracts are generally uncorrelated with idiosyncratic risks and highly correlated with market-wide and industry-wide profit variability. It follows that financial hedging markets can be used to reduce the common component of profit variability; firm diversification, on the other hand, can reduce firm-specific risk exposures. By decomposing firm risks into market-wide, industry-wide and idiosyncratic components, we are able to examine the interactions between financial hedging and firm diversification. The results show that financial hedging and related
 diversification are complementary means of risk management. On the other hand, whether financial hedging and unrelated diversification can be complementary or substitutive depends on whether the industry-wide risks are significant compared to the firm-specific risks and to what extent hedging can reduce industry risks.

Unrelated diversification has been considered value destroying since unrelated diversification is unlikely to be synergistic. However, this paper has different implications. Unrelated diversification may add value to businesses because of increased firm specific investments of stakeholders through better risk reduction. In many industries, either hedging markets are not available or even if they are available, they have a limited effect in reducing industry-wide risk. Therefore, the limit of hedging in reducing industry-wide risk exposure suggests that there may still be an incentive to diversify into unrelated businesses to manage risk exposures.
Firm-value function:

\[ V_i = \alpha_i + \beta_i f_m + \gamma_i f_j + \varepsilon_i. \]

Figure 3.1: Components of firm risk exposures and the different effects of risk management mechanisms (financial hedging, related and unrelated diversification)
CHAPTER 4

RISK REDUCTION THROUGH MERGERS & ACQUISITIONS:
THE ROLES OF FIRM-SPECIFIC INVESTMENTS AND AGENCY HAZARDS

Strategic management research describes a variety of ways that firms can generate above-normal economic profits and gain long-lasting competitive advantage. For example, the resource-based view suggests that firms will be able to generate economic rents by exploiting valuable, rare, inimitable, and non-substitutable resources in developing and implementing strategies (Barney, 1991; Peteraf, 1993; Amit & Shoemaker, 1993). Firm-specific investments made by a firm’s employees, suppliers, and customers, represent an important class of these resources and capabilities. However, little is understood about what tradeoffs a firm’s stakeholders have to make in determining how much they should engage in making firm-specific investments.

Although stakeholders are often compensated for their specific investments (Becker, 1975; Hashimoto, 1981), they are still concerned about the risks associated with making these investments (Titman, 1984; Cornell & Shapiro, 1987; Miller, 1998). By definition, the value of these investments depends on their use in a transaction between a particular stakeholder and a particular firm, so these investments cannot be readily
transformed into assets that can be more widely traded without losing much of their value. It is therefore the case that the risks associated with these investments cannot be efficiently diversified. Thus, stakeholders of a high-risk firm may *ex ante* under-invest in firm-specific assets or demand higher compensation for making these investments (Titman, 1984; Cornell & Shapiro, 1987; Miller, 1998). A firm therefore has incentives to reduce its level of risk exposure in order to induce its stakeholders to make more firm-specific investments.

A strategy of corporate diversification can be one of these risk management strategies. To the extent that a business has a lower probability of financial distress if it is a division of a diversified firm rather than a stand-alone identity, its stakeholders have a greater incentive to engage in making specific investments. Because these investments are in turn sources of firm value, diversification based on a risk-reduction motive can be consistent with the interests of equity holders.

The literature on corporate diversification, however, has tended to maintain a very different view of why firms seek to reduce risks through diversification (e.g. Amihud & Lev, 1981; Scharfstein, 1998). Using portfolio diversification as an analogy, corporate diversification based on a pure risk reduction motive has often been considered to be value destroying since equity holders can reduce risks themselves at lower cost by holding a diversified portfolio of securities. Agency theory suggests that diversification in general, and unrelated diversification in particular, can stem from incentive misalignments arising from the separation of ownership and control. Due to the costs of monitoring managerial decisions, these problems encourage managers to diversify in
order to obtain private benefits in the form of reduced employment risk, but at the expense of equity holders’ interests (e. g. Amihud & Lev, 1981).

The main objective of this paper is to test the explanatory power of a stakeholder-based reason for firm diversification via mergers and acquisitions (M&As), alongside the baseline predictions offered by agency theory. To do so, we select variables to proxy the extent to which a firm relies on specific investments from its stakeholders, and we use variables reflecting firms’ ownership structures to account for agency hazards. We then examine the effects of these variables on the tendency of a firm to reduce risks through diversification. In order to examine firms’ motives behind diversifying acquisitions, we develop a new, ex ante measure of risk reduction via M&A.

The remainder of the paper is organized as follows: The following section offers the theoretical underpinnings of a stakeholder-based explanation for risk reduction through diversifying M&As and presents the paper’s core proposition. This section also discusses how this proposition differs from prior treatments of corporate diversification relying on agency theory. The next section provides details on the research design, and the empirical results are contained in a subsequent section. Evidence from a sample of 316 acquisitions suggests that firms are more likely to seek to reduce risks through acquisition when firm-specific investments are relevant to their operations. In the last section, we conclude with a discussion of the study’s implications and directions for future research.
4.1 Background Theory

4.1.1 Stakeholders' specific investments and firm risk

A firm's assets can be classified into two types: firm-specific assets and general-purpose assets (e.g., Becker, 1964; Williamson, 1975). Examples of firm-specific assets can include a plant built by a supplier next to a particular firm, an employee's knowledge of a firm's administrative procedures, or a customer's loyalty to a firm due to product switching costs. An important feature of these firm-specific assets is that they cannot be put to other uses without significant loss to the stakeholder. General-purpose assets, on the other hand, involve investments that increase the investor's productivity when transacting with any firm, such as an employee's general skills in sales and marketing (Milgrom & Roberts, 1992).

A growing body of literature in strategy has pointed to the importance of firm-specific assets in explaining variations in economic profits. For example, research has indicated that firm-specific assets, especially specific human assets such as firm-specific skills and tacit knowledge, often satisfy the criteria for sources of economic profits and sustained competitive advantage (e.g. Barney, 1991; Amit & Schoemaker, 1993). Thus, a firm's equity holders, as residual claimants, can benefit from firm-specific asset investments made by the firm's stakeholders.

Despite this theoretical progress, research has not given equal attention to the risks borne by stakeholders making firm-specific investments. Because the value of firm-specific investments depends on their use in an exchange relationship between a particular stakeholder and a particular firm, they cannot be transformed into assets that
can be more widely traded without losing much of their value. Thus, unlike equity holders, who can efficiently diversify away idiosyncratic risks associated with their investments, other stakeholders often cannot efficiently diversify away the risks associated with their investments.

It is important to point out that because stakeholders cannot diversify away the idiosyncratic risks of their firm-specific investments, the risks they bear when making firm-specific investments will be a function of the firm’s total risks, which include both systematic risks and idiosyncratic risks. Everything else equal, a firm with high total risks is more likely to be under financial distress and is therefore less likely to be able to fully compensate stakeholders as an alternative to reducing risks (Titman, 1984; Cornell & Shapiro, 1987; Miller, 1998; Stulz, 2000). Thus, the willingness of stakeholders to invest in firm-specific assets is inversely related to a firm’s total risks: the higher its total risks, the less specific investments will be made by its stakeholders. Consequently, a firm has incentives to reduce total risks in order to induce its stakeholders to make more firm-specific investments.

The relevance of stakeholders’ firm-specific investments for firms’ policies toward risk management has been supported by several studies in financial economics and accounting (Titman, 1984; Titman & Wessels, 1988; Helwege, 1989; Bowen et al., 1995). For example, Titman and Wessels (1988) noted that firms requiring greater firm-specific investments by stakeholders tend to utilize less debt as a means of reducing the likelihood of financial distress. Along similar lines, Helwege (1989) showed that lower specific investments by employees tend to accompany increases in the probability of a
firm’s bankruptcy. In sum, the theory and empirical evidence from these related studies are consistent with the suggestion that offering incentives for stakeholders to make firm-specific investment can be an important rationale for firms to manage risks.

### 4.1.2 Diversification and firm risk

Although there are a number of means of doing this, we focus on the strategy of corporate diversification as another risk management strategy. The rationale for diversification to reduce risks may appear to be straightforward. Generally speaking, a firm that diversifies increases the number of its sources of cash flow, and to the extent that these cash flows are not perfectly correlated, diversification reduces the likelihood that serious problems in one business will put the entire firm at risk. The above argument implicitly assumes that diversification reduces firm idiosyncratic risks in a similar way as investors building diversified portfolios. Several studies have found that diversified firms do have lower cash-flow variability (e.g., Amit & Wernerfelt, 1990; Amit & Livnat, 1988a, 1988b; Caves, 1996).

The validity of portfolio theory as applied to the context of corporate diversification has been tested in studies that examine the relationship between diversification and firms’ *ex post* risk. In fact, there is some evidence that diversification, especially unrelated diversification, increases rather than decreases firm risk (Lubatkin & O’Neill, 1987; Lubatkin & Chatterjee, 1994). In explaining their findings, Lubatkin and O’Neill (1987) and Lubatkin and Chatterjee (1994) suggest that unlike portfolio diversification of financial assets, real asset diversification adds complexity to the firm, which leads to less effective management and higher risk *ex post*.
The mixed results of the relationship between diversification and firm risks may reflect differences in sample selection, measurement, and methodology. In this study, rather than examining the overall effect of diversification on risk, we focus on whether a subset of firms reliant on firm-specific investment by stakeholders seek to reduce risk via diversifying M&As. The study is also unique in developing an ex ante measure of risk reduction appropriate to the M&A setting. The ex ante conceptualization of risk that is used here is consistent with prior research on strategy in general (e.g., Bettis, 1981; Pablo, Sitkin & Jemison, 1996) as well as on acquisitions in particular (Amihud & Lev, 1981).

In sum, the stakeholder-based rationale for corporate diversification has implications for the relationship between the degree to which a firm relies on its stakeholders' firm-specific investments and the firm's diversification strategy. Based on the arguments presented above, we posit that the benefits obtained from risk reduction will be higher for firms reliant on firm-specific investments by their stakeholders, holding everything else constant. The specific prediction we wish to test is as follows:

**Proposition 1:** The risk-reduction potential of a diversifying acquisition is positively related to the extent to which the acquiring firm depends on stakeholders’ firm-specific investments.

### 4.1.3 Agency Theory and Risk Reduction in Diversifying M&As

In addition to the rationale provided above for why firms diversify to reduce risk, agency theory offers a different explanation. The well-studied case in the literature is the
potential conflict of interests between managers of public corporations and their stockholders, who tend to be relatively small, dispersed, and uninformed about the firm’s operations. The separation between ownership and control and the conflicts that ensure lead to agency costs that reduce the value of the firm (Jensen & Meckling, 1976). Specifically, while dispersed stockholders can generally reduce risks at low costs by building diversified portfolios, managers cannot efficiently diversify their employment risk, and they therefore engage in risk-reduction activities such as corporate diversification. In a well-known study, Amihud and Lev (1981) provide evidence that managers attempt to reduce their employment risk through unrelated mergers and diversification unless large block shareholders exist to closely monitor a firm’s managers.

There has been recent debate on agency theory’s appropriate domain and on the interpretation of the evidence as it stands. Lane, Cannella and Lubatkin (1998) suggest that the range of managerial phenomena to which agency theory speaks in narrower than the finance field suggests. Citing stewardship theory (e.g., Donaldson, 1990), they suggest that the interests of managers do not diverge from those of shareholders for the majority of managerial decisions, obviating the need for the monitoring role of large block holders in many circumstances. While the debate on the relationship between ownership structure and corporate diversification is on-going (Amihud & Lev, 1999; Denis, Denis, & Sarin, 1999; Lane, Cannella, & Lubatkin, 1999), additional empirical analysis using different data and methodology should be helpful in providing further evidence on whether agency costs play a role in influencing firms’ risk-reduction motives. Moreover, in investigating the proposition above on the effects of firm-specific
investments by stakeholders, we also seek to examine the following proposition based on agency theory for the sake of completeness and because it provides a useful conceptual baseline in constructing our models.

**Proposition 2:** The risk reduction potential of a diversifying acquisition is positively related to the acquiring firm’s agency hazards as reflected in its ownership structure.

Note that there are no claims that the stakeholder-based explanation and agency explanation are mutually exclusive, nor that one explanation is more important than the other. It could well be the case that both perspectives play a role in determining firm’s diversification strategies. Moreover, the explanatory power of each perspective is ultimately a matter to be resolved empirically.

### 4.2 Methods

#### 4.2.1 Model specification

The multivariate statistical models regress an *ex ante* measure of the level of risk reduction through acquisition on variables representing stakeholders’ firm-specific investments, variables representing agency motives, and other controls. The models take the following form:
(1) \text{Risk Reduction}_{ij(t-3, t)} = \alpha + \beta_1 \text{Pension Plan}_{i(t-1)} + \beta_2 \text{Cost of Goods Sold}_{i(t-1)} + \\
\beta_3 \text{Advertising Intensity}_{i(t-1)} + \beta_4 \text{Insiders}_{i(t-1)} + \beta_5 \text{Institutions}_{i(t-1)} + \beta_6 \text{Blockholders}_{i(t-1)} + \\
\text{Controls}_{i(t-1)} + \epsilon_{i(t-1)},

where \( t \) is the year of acquisition announcement, and \( i \) and \( j \) refer to the acquiring firm and the target firm, respectively. The first three variables in the specification represent proxies for the firm’s reliance on firm-specific investments, and the next three variables characterize the firm’s ownership structure. In the next section, we discuss the construction of these measures as well as the control variables.

4.2.2 Measures and data

\textbf{Risk Reduction.} The dependent variable is the degree of potential risk reduction through a firm’s diversifying acquisition, which is measured as the correlation in monthly stock returns between the acquiring firm and the target firm for three years prior to the transaction. There are at least two advantages associated with this treatment of risk. First, the dependent variable is an \textit{ex ante} conceptualization of the degree of risk reduction through acquisition, which is more closely connected to a firm’s acquisition decisions (Jemison, Pabilio, & Sitkin, 1996). Second, by focusing on the degree of potential risk reduction through a diversifying acquisition instead of on the likelihood or number of acquisitions, we can limit the heterogeneity for which the model must account, including factors such as potential economies of scope between two businesses (e.g. Montgomery & Hariraharan, 1991; Silverman, 1999), potential increased market power (e.g. Tirole, 1995; Scott, 1982), and so forth.
The correlation in pre-merger monthly stock returns between the firm and its target was transformed as follows:

\[(2) \text{ Risk Reduction}_{ij(t-3,t)} = -\log \frac{1 + \delta_{y(t-3,t)}}{1 - \delta_{y(t-3,t)}}.\]

The logarithmic transformation is used to convert an otherwise bounded dependent variable into an unbounded one (e.g. Demsetz and Lehn, 1985). The negative sign is added purely for ease of description, so that the measure’s sign corresponds to the construct of the degree of potential risk reduction. Monthly returns data for both acquiring and target firms were obtained from the CRSP data files.

We assessed the sensitivity of the results to this transformation and to the construction procedure in two ways. First, we re-estimated the models using a non-transformed measure, and the interpretations remained the same. Second, to address the possibility that the correlation between returns of the two firms becomes higher when it is close to the acquisition announcement date due to information disclosures, we also estimated the models by excluding the returns data for the three months prior to the announcement. As before, the interpretations offered in the results section continued to hold for this alternative measure.

**Firm-Specific Investments by Stakeholders.** We selected several variables to proxy the extent to which a firm depends on specific investments made by its stakeholders. Although we discuss each stakeholder group in turn, each variable is not necessarily uniquely associated with a single stakeholder group. As discussed earlier, a few studies in financial economics and accounting have examined the role of
stakeholders’ implicit claims in determining firms’ policies toward risk (e.g. Titman & Wessels, 1988; Helwege, 1989; Bowen, Ducharme & Shores, 1995), and we rely on the proxies used in this literature to construct our models.

Our first proxy for a firm’s reliance on stakeholder firm-specific investment is whether or not the firm has a defined benefit pension plan (i.e. Pension Plan). The labor economics literature has interpreted defined benefit pension plans as implicit claims with employees (e.g. Ippolito, 1985; Ippolito & James, 1992). It has been found that workers in defined benefit pension plans have strong incentives to remain with the firm since premature voluntary or involuntary departure from the firm will trigger a sizable capital loss (Ippolito, 1985). As employee tenure increases, firm-specific human capital also tends to increase (e.g. Becker, 1964; Topel, 1991; Hamermesh, 1988). It follows that firms with defined benefit pension plans are heavily reliant on employee’s specific investments. We identify firms with defined benefit pension plans as those firms with a non-negative value for projected pension obligations (i.e., overfunded or underfunded) in Compustat, and we use a dummy variable to indicate the existence of a defined benefit plan (e.g. Bowen, Ducharme, & Shores, 1995).

Our second proxy for a firm’ reliance on stakeholders’ firm-specific investments is its cost of goods sold (i.e. Cost of Goods Sold). This proxy has been used to reflect the degree to which a firm depends on suppliers’ specific investments (Bowen, Ducharme, & Shores, 1995). Cost of goods sold represents the costs incurred in producing products or services, and the cost of raw materials tends to be a significant portion of this cost. Suppliers’ firm-specific investments may include specific knowledge about product
features, manufacturing skills, after-sale service, and timely delivery of the products and services to the firm (Bensaou & Anderson, 1999). A firm is more likely to rely on these products and services from its suppliers if costs of the products or services offered are high (Bowen et. al., 1995). Following Bowen et. al. (1995), we adjust cost of goods sold as reported on the income statement by subtracting the change in the LIFO reserve to attenuate the effects of accounting method choice on this variable. Without this adjustment, cost of goods sold scaled by total assets is likely to be a downwardly biased cross-sectional measure of specific investment for firms using FIFO vs. LIFO. Data on this variable can be directly obtained from Compustat.

Our third proxy for a firm’s reliance on stakeholders’ specific investments is advertising intensity (i.e. Advertising Intensity). Titman and Wessels (1988) and Bowen, Ducharme and Shores (1995) use this variable as a proxy for all stakeholder claims. It is likely to more closely indicate the need for firm-specific investments by customers, however. Nelson (1974) finds that experience goods (i.e., products whose quality cannot be ascertained prior to purchase) are advertised more than search goods (i.e., products whose quality can be ascertained prior to purchase). Generally speaking, experience goods require not only more of consumers’ specific knowledge in purchasing the goods, but also more warrantees and after-sale service, which increases customers’ switching costs. Data for this variable are obtained from Compustat and are scaled by total assets. Following the literature in finance and accounting, we coded missing values for advertising expenditures as zero. This is justified by the fact that firms are required to report their advertising expenditures unless it is nil and thus can be neglected. However,
as a robustness check, we used a different treatment of missing values by replacing them with industry averages. We found no significant difference in results between these two treatments.

**Agency Hazards.** In this paper, we use several variables to characterize firms’ ownership structures in order to examine the effects of agency hazards on the degree of potential risk reduction through diversifying acquisitions.

The association between ownership structure and agency costs can be traced back to Berle and Means (1932), who first observed that the large scale of modern technology makes concentrated ownership less likely in a large corporation. As ownership becomes more dispersed, incentive misalignments may become manifest in such corporations. Later seminal work by Jensen and Meckling (1976) more specifically discusses the agency costs that result from the divergence of interests between owners and managers. Following this literature, we use the inside ownership proportion as a negative indicator of agency hazards.

Two additional ownership variables that are used to proxy agency problems are based on the shares owned by institutional investors and by large block holders. Theories generally suggest that the greater the extent to which shares are concentrated in the hands of large individual or institutional investors, the more effectively management behavior should be monitored and disciplined (Grossman & Hart, 1980; Shleifer & Vishny, 1986). In addition, Barclay and Holderness (1991) and Bethel, Liebeskind, and Opler (1996) provide empirical evidence that blockholders play a monitoring role over managers, and Smith (1996) provides similar evidence for institutions. Thus, ownership proportions for
institutional investors and large blockholders are used as indicators of the degree of monitoring, and these variables should take on negative signs in the models. Data for these ownership variables were obtained from Compact Disclosure.

**Control Variables.** Although our objective is to develop a parsimonious model incorporating proxies representing the firm’s reliance on stakeholders’ firm-specific investments and measures characterizing the ownership structure of the firm, we incorporated a series of controls that might influence the risk reduction sought by acquirers and might be related to the variables from the two theoretical perspectives of interest. Data for all of these controls were obtained from Compustat.

First, we controlled for the initial risk level of the acquiring firms prior to acquisition. Everything else equal, the higher the acquiring firm’s risk, the greater the potential benefits from risk reduction (Shin & Stulz, 2000). This variable also accounts for potential mechanisms other than corporate diversification by which firms’ can reduce their risk levels. Miller and Reuer (1996) discuss several rationales for moving from variance-based measures of risk to downside measures, and their empirical analysis connects different downside risk measures to different stakeholder groups’ interests. Income stream risk reflects the interests of various stakeholder groups and is therefore attractive for the present analysis. We calculated this measure as a second order root lower partial moment as follows:

\[
(3) \text{Downside Risk, ROA} = \frac{1}{n} \sqrt[n]{\sum_{\text{ROA}_i < \text{IROA}_i} (\text{IROA}_i - \text{ROA}_i)^2},
\]
where ROA<sub>i</sub> is firm i’s return on assets and IR<sub>ROA</sub><sub>i</sub> is the average return on assets for firms in firm i’s two-digit industry in the preceding year, which serves as the firm’s target level. The squared difference term was summed over all n years of the five years prior to the acquisition announcement in which firm i’s ROA fell short of its target level. Following Miller and Leiblein (1996), we also constructed the same measure using ROE data, which we labeled Downside Risk, ROE. This measure is correlated with Altman’s Z, an indicator of bankruptcy risk (Miller & Reuer, 1996).

Second, we controlled for the acquiring firm’s free cash flow prior to the acquisition (i.e. Free Cash Flow). On the one hand, free cash flow can be considered to be a form of organizational slack, which acts as a buffer in case of financial distress (e.g. Bromiley, 1991). In this view, firms with more free cash flow will have less need to diversify to reduce risks. On the other hand, Jensen’s (1986) free cash flow theory suggests that firms use such resources to engage in unrelated acquisitions. Free cash flow is estimated as income before extraordinary items plus depreciation and amortization less capital expenditures, which is then scaled by dividing by the firm’s market value.

Third, we incorporated a control variable for the acquiring firm’s financial leverage (i.e., Leverage). The motivation for this control is that a reduction in a firm’s level of debt utilization represents an alternative way of reducing the firm’s risk than engaging in product-market diversification. Firms with lower leverage also have greater slack financial resources and are therefore have less need to diversify to reduce risk. Leverage is measured as the ratio of the firm’s total debt to its total assets.
Fourth, we controlled for the size of the acquiring firm (i.e., Size). Although to
our knowledge, there are no previous studies that have established a direct relationship
between firm size and the firm’s tendency to reduce risks through diversification, some
studies have found that firm size is related to market power (e.g., Rhoades, 1985),
organizational slack (e.g., Bromiley, 1991), and lower risks (e.g., Walls & Dyer, 1996).
Since firms with high market power, organizational slack, or low risks have less need to
reduce risks through corporate diversification, the predicted sign on the coefficient of this
variable is negative. We measured firm size based on the total assets of the acquirer, and
given the evident positive skewness in this measure, we took the natural logarithm of
total assets to be our proxy for firm size.

Finally, we controlled for the Tobin’s Q of the acquiring firm’s industry. Tobin’s
Q has often been used as a proxy for growth opportunities and intangibles (e.g. Pilote
1992; Yoon & Starks 1995). Firms with these opportunities or resources should have less
need to diversify into other less related industries. Following Chung and Pruitt (1994),
we approximated Tobin’s Q as the market-to-book ratio since this measure explains over
96 percent of the variance in a more sophisticated Tobin’s Q ratio that would require
arbitrary assumptions about depreciation and inflation rates for the calculation of assets’
replacement values (e.g., Lindenberg & Ross, 1981). The market value numerator is the
year-end market value of common stock plus the book value of preferred stock and debt,
and the book value denominator is year-end total assets.
In addition to the above control variables that are used in all models, as a robustness test we included dummy variables for the acquiring firms’ industries and for year effects, and the results for the theoretical variables did not change.

4.2.3 Sample

To test the two propositions developed above, we analyze a sample of diversifying acquisitions. Following Chevalier (2000), a diversifying acquisition is defined as an acquisition between two firms with no business segments in common in any single 2-digit SIC code in the year prior to the acquisition. In addition, to better account for the acquiring firms’ characteristics, the acquiring firms in the sample are all single business firms prior to the acquisition. This restriction implies that each transaction in our sample is an acquiring firm’s first diversification move and that multiple transactions are not made by the same acquiring company.

The initial sample comes from the SDC Mergers & Acquisitions Database. In addition to the sampling criteria noted above, we focused on acquisition announcements made during the 1990-2000 timeframe. Given the construction of the dependent variable, both the acquirer and target must be on the CRSP monthly returns database. After accounting for missing data from these sources as well as for missing accounting and ownership data, the final sample consisted of 316 firms.

Since the focus of our sample is on single business firms’ first diversification moves, we compared our sample with those single business firms that did not diversify in the same period. The comparison group from Compustat consists of 1287 single business firms that didn’t diversify between 1990 and 2000. A two-sample t-test for firm size
indicated that the sampled firms are on average 18% smaller than firms that did not diversify (p<0.001). A chi-square test also indicated that the sectoral distributions of the sampled firms and single business firms that did not diversify were different (p<0.001). While there is a large overlap of both groups of firms in industries such as chemical an allied products, electronic equipments, instruments and related products, and business services, deviation mostly comes from electric and gas, insurances, oil and gas extraction, and communications industries, where there are significantly larger number of single business firms than our sampled firms.

4.3 Results

Table 1 provides correlations among the variables as well as descriptive statistics. The correlations between the proxies for firm-specific investments by employees (Pension Plan), suppliers (Cost of Goods Sold) and customers (Advertising Intensity) are not significant. By contrast, the three ownership structure variables are significantly correlated with each other. Of the proxies for firm-specific investment, only the defined pension plan indicator is significantly correlated with the ownership structure variables. Firms with defined benefit plans tend to be larger and more highly leveraged (both p<0.001) and have ownership structures involving lower levels of inside ownership (p<0.001) and higher levels of institutional ownership (p<0.01). These correlations as well as the relationships with the control variables indicated that multivariate analysis is needed to examine the partial effects of the theoretical variables on the extent to which firms reduce risks through acquisition. We also investigated the possibility of
multicollinearity, yet the maximum variance inflation factor (VIF) obtained from the models is 2.29, which is substantially below the rule-of-thumb cutoff of ten for multiple regression models (Neter, Wasserman, & Kutner, 1985). Thus, multicollinearity does not present a problem for model estimation.

Table 2 presents the multivariate models for testing the two core propositions. F-values for all of the models indicate strong overall significance (p values are less than 0.001 for all models). Models I and II provide baseline models by restricting the analysis to the effects of the control variables. Models III and IV add ownership structure variables to examine the agency hypotheses. Models V and VI then presents the effects of firm-specific investment variables. Finally, the last two models, Models VII and VIII, offer full models with both firm-specific investments variables and agency variables as well as the controls.

By examining the full models, we find general support for our first proposition, which states that the risk-reduction potential of a diversifying acquisition is positively related to the extent to which the acquiring firm depends on stakeholders’ firm-specific investments. The hierarchical F-values of adding the three firm-specific investment proxies are 3.56 (i.e., comparing Models VII and III, p values are less than 0.1) and 4.14 (i.e., comparing Models VIII and IV, p values are less than 0.05), respectively. Advertising Intensity is significant for the two models that use the Downside Risk, ROE (downside risk measured using return on equity, Models VI and VIII) control, and the parameter estimate for this variable does not reach significance for the two models relying on Downside Risk, ROA (downside risk measured using return on assets,
(Models V and VII). The other two proxies for firm-specific investment by shareholders have positive and significant coefficients as hypothesized in all of the models. These results provide overall support for the proposition that the risk-reduction potential of a diversifying acquisition is positively related to the extent to which the acquiring firm depends on stakeholders’ firm-specific investments.

We also find some support for the second proposition motivated by agency theory (Models III, IV, VII and VIII). The hierarchical F-values obtained from adding the ownership structure variables are 1.82 (i.e., comparing Models VII and V) and 2.08 (i.e., comparing Models VIII and VI), which are both marginally significant at the 0.10 level. Both of the coefficients on ownership by institutional investors and insiders exhibit negative signs and are significant in three out of the four models in which they appear. This provides evidence that firms with better monitoring, as implied by higher levels of ownership by institutional investors, and firms with incentives aligned with those of owners, as implied by higher levels of ownership by insiders, are less likely to seek risk reduction in diversifying acquisitions. In none of the models is the ownership by block holders significant, however.

Part of the lack of significance for these variables may reflect the linear restrictions imposed on the ownership structure variables in the models in Table 2. Indeed, prior research in finance has found nonlinear relationships between inside ownership and corporate decisions and outcomes (e.g., Morck, Shleifer, & Vishny, 1988; McConnell & Servaes, 1990). In order to explore whether nonmonotonic effects for this variable might exist, we re-estimated the models by adding a squared term for inside
ownership (McConnell & Servaes, 1990) and by estimating a piecewise linear regression using Morek, Shleifer, and Vishny’s (1988) cutoff values, but in none of the models was there evidence for such nonlinear effects.

Finally, the control variables deserve some comment. The coefficients on the six control variables are generally significant, except for Tobin’q and Downside Risk ROE, which are either not significant or only significant in a subset of the models. Consistent with expectations, the coefficients for Downside Risk ROA take on a positive sign. Free cash flow has a positive and significant parameter estimate in all of the models, which is consistent with the explanation that managers use discretionary cash flows to reduce risk via diversifying acquisitions (Jensen, 1986). Consistent with the argument that firms with lower debt utilization ratios have greater financial slack resources and have less need to diversify via acquisitions to reduce risk, leverage takes on a positive sign in all of the eight models. Larger firms also do not tend to seek risk reduction through diversifying acquisitions, which is in accordance with prior observations that such firms have greater market power (e.g., Rhoades, 1985) and other slack resources (e.g., Bromiley, 1991).

4.4 Discussion

The main finding of this study is that the extent to which a firm depends on specific investments from its employees, suppliers and customers has a positive effect on the tendency for the firm to reduce risks in a diversifying acquisition. This relationship holds when considering different multivariate models, using different proxies for firm-specific
investments, and controlling for other factors that affect firms’ decision to reduce risks. The results of this paper reveal the importance of firm-specific investments by stakeholders in determining a firm’s diversification strategy, and the findings shed light on several areas of corporate strategy research.

First, the argument and evidence that firms are more likely to reduce risks through diversification when the extent to which they depend on stakeholders’ firm-specific investments is high offers another rationale for firm diversification. Incorporating this perspective in research on diversification motives holds out the potential for a more comprehensive understanding of this important phenomenon in modern corporations (e.g., Montgomery, 1994). Extensions to this study might consider other types of diversification involving geographic diversification or organic growth as well as whether the inducements offered by risk management for firm-specific investment indeed translate into enhanced firm-specific commitments and value gains to equity holders. This work might also be combined with research on the diversification discount, which has focused on the questions of whether there is a diversification discount on average and whether diversification per se causes this discount (e.g., Lang & Stulz, 1994; Berger & Ofek, 1995; Rajan et al., 2000; Campa & Kedia, 1999; Villalonga, 2000).

Second, the fact that we find support for both the stakeholder and agency theory based motives for firms to reduce risks through diversification also has implications for research on corporate governance. It implies that when the degree to which a firm depends on its stakeholders’ firm-specific investment is high, managers’ incentives to diversify to obtain private benefits may not always be problematic. To the extent that the
resulting managerial actions also induce other stakeholders to engage in more firm-specific investments, equity holders may also benefit. If self-interested behaviors by managers coincide with shareholders interests by stimulating firm-specific investments by other stakeholders, this suggests that the costs of setting up compensation contracts and monitoring mechanisms might be reduced.

Finally, this paper contributes to research on stakeholder theory. Since Freeman (1984), much of the literature in stakeholder management operates in a normative mode, arguing that firms should attend to the interests of all their stakeholders – not just their stockholders. A common theme in this literature is that firms should treat stakeholders as “ends” (e.g., Boatright, 1994; Clarkson, 1995; Goodpaster, 1991), implying that moral principles should drive stakeholder relations. More recent developments in stakeholder theory consider an alternative, instrumental view, which links "means" and "ends" (Jones, 1995). Under this perspective, the ultimate objective of corporate decisions is marketplace success, and stakeholder management is a means to that end. Such stakeholder management, however, requires an explication of the specific links between cause (i.e., different forms of stakeholder management) and effect (i.e., corporate performance) (Jawahar & McLaughlin, 2001). This study is consistent with the instrumental view of stakeholder theory, and it begins to elaborate specific links between stakeholder management, corporate strategy, and performance.

In addition to the suggestions highlighted above, a number of areas for future research stem from several of the current paper’s limitations. First, future research might further examine the relationships between alternative risk management mechanisms,
firm-specific investments by stakeholders, and corporate actions and performance. Although our key findings are consistent with the basic proposition advanced in this study, future research would benefit from studies that use more fine-grained, primary data to measure firm-specific investments as well as from longitudinal models that consider how stakeholders’ investments are responsive to risk management practices by the firm. Future studies could also examine the firm’s overall diversification profile rather than focusing on single corporate transactions such as diversifying acquisitions by single business firms. Research along lines such as these may contribute to the advancement of stakeholder theory, offer new insights into the debate surrounding the application of agency theory in strategy research and, more generally, lead to new insights at the intersection of research on corporate strategy and finance.
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^ p < .10  * p < .05  ** p < .01  *** p < .001

Table 4.1: Descriptive Statistics and Correlation Matrix
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Standard errors are shown in parentheses underneath the coefficients.
† p < .10  * p < .05  ** p < .01  *** p < .001

Table 4.2: Multiple Regression Results
CHAPTER 5

CONCLUSION

The results of this dissertation take research on corporate diversification to a level beyond the existing literature. It provides an additional rationale for firm diversification, and shows that the degree to which a firm relies on specific asset investments made by its employees, suppliers and customers has important impact on the firm’s diversification strategy. The three essays in this dissertation address the relationship between stakeholders’ specific investments and a firm’s diversification strategy from different angle.

Essay one (Chapter 2) establishes the fundamental argument of a stakeholder-based reason for corporate diversification. It originated from the observation that most non-financial stakeholders of a firm have significant firm-specific asset investments. These assets have two important features. First, the risks associated with them are difficult to diversity; second, these assets are likely to be among the most important sources of firm economic rents. In sum, Essay one shows that by reducing risks though firm risk management, such as diversification, stakeholders of the firm have more incentive to engage in firm-specific investments, which are potential sources of firm
value and equity holder wealth. Thus diversifying to reduce risks for stakeholders of a firm can indirectly benefit the firm’s equity holders.

The second essay (Chapter 3) is aimed to address whether a specific alternative to diversification, namely, financial hedging contracts, can reduce the need for firms to use costly corporate diversification to reduce risks for stakeholders. The central question of the essay is: with the rapid development of financial hedging markets, will there still be a need for corporate diversification? At first it might appear that financial hedging and corporate diversification are substitutive means of risk management. However, when hedging contracts are available for reducing a firm’s risk exposures, the opportunity to hedge in financial markets changes the incentives to manage risks through diversification, because hedging contracts do not serve equally well for hedging different types of risks. The results of the model show that, contrary to common belief, the ability for firms to use financial hedging instruments can increase the benefit obtained from diversification. Thus Essay two reemphasizes the important role of corporate diversification as a risk management mechanism.

Essay three (Chapter 4) is an empirical study designed to test the fundamental argument developed in the first two essays. This essay describes the relationship between a firm’s diversification strategy and the extent to which the firm relies on its stakeholders’ firm-specific asset investments. One implication that can be drawn from the stakeholder-based reason for corporate diversification is that the extent to which a firm relies on its stakeholders’ specific asset investments affects a firm’s decision in choosing target while the firm implements a diversification strategy through acquisition. The
results indicate that when stakeholders’ specific asset investments are important in a firm’s operations, the firm has an incentive to engage in mergers or acquisitions that have relatively high risk-reduction potential. Additional tests show that the relationship holds when considering different multivariate models, using different proxies for firm-specific investments, and controlling for other factors that affect firms’ decision to reduce risks. The results of this paper further reveal the importance of firm-specific investments by stakeholders in determining a firm’s diversification strategy.

Taken together, the three essays in this dissertation shed lights on a few areas of research in strategic management. Next I will discuss these areas in turn.

5.1 Diversification Research

This dissertation provides another rationale for firm diversification. Incorporating this perspective in research on diversification motives will provide us with a more comprehensive understanding of this important and economically significant phenomenon in modern corporations (Montgomery, 1994). Moreover, this study has implications for diversification performance: Through its ability to reduce the risk associated with firm-specific investments, diversification provides incentives for stakeholders to engage in more of these investments, which are ultimately a source of firm value and equity holder wealth. Although directly testing this proposition is beyond the scope of this dissertation, the theory and results provided here suggest that the risk-reduction motive of corporate diversification can be beneficial to equity holders, to the extent that stakeholders’ firm-specific investments are important in firm operations.
Future research can extend the work here to directly test the positive performance effect of diversification, given the degree to which a firm relies on its stakeholders’ firm-specific investment.

Although the argument made in this dissertation suggest the positive performance effect of corporate diversification through risk reduction, this might seem to be at odds with the well-known empirical evidence of “diversification discounts”. Over the last decade, a number of studies have examined the relationship between diversification and firm value. These studies have generally found a “diversification discount” ranging from around 10 to 40% (Lang and Stulz (1994), Berger and Ofek (1995), Rajan, Servaes, and Zingales (2000), Denis, Denis, and Sarin (1997)), using various measures of performance, samples, and time periods.

However, a few recent papers question the finding of a diversification discount. For example, Campa and Kedia (1999) point out that firm diversification is an endogenous choice, therefore the issue of self selection bias needs to be considered in examining the diversification discount. Villalonga (2000) addresses the self-selection problem by matching diversified firms and single-segment firms on their propensity scores. Both studies found that not only does the diversification discount disappear, there is also evidence that diversified firms are traded at a premium. Some other efforts are made to further show the positive effect of diversification by using richer data. For example, Maksimovic and Phillips (1999) gather census information on manufacturing plants at over 50,000 firms and find investment patterns that contradict the claim that internal capital markets are inefficient. In a more recent study, Jandik and Makhija (2000)
document the ‘atypical’ diversification practices of electric utilities. They found that unlike other firms, electric utilities increased their diversification and gained from it over the period of 1980-1992.

While the debate about whether there is a diversification “discount” or “premium” probably will still go on, the relationship between diversification and overall firm performance itself may not help us much in understanding exactly what has contributed to the value change. It may well be that both positive (e.g. synergy gain and the rationale provided in this paper) and negative effects (e.g. agency motive and inefficient internal capital markets) are at work simultaneously. This dissertation can be considered one of the efforts that help us understand how one specific element (i.e., change in the level of firm-specific asset investment due to risk reduction) contributes to the value change from diversification, and how firm diversification interacts with the use of financial hedging. The dissertation suggests that the “diversification discount” will be smaller (or the “diversification premium” will be larger) for firms that operate in environments where firm-specific asset investments are relatively more important for their operations.

5.2 Corporate Governance

The fact that in Essay three I find support for both the stakeholder and agency theory based motive for firms to reduce risks through diversification carries implications for research on corporate governance. It implies that when the degree to which a firm depends on its stakeholders’ firm-specific investment is high, managers’ self interest behavior may not always be such a bad thing. Thus managers’ tendency to diversify or
engage in other risk management mechanisms, to the extent that they also induce other stakeholders to engage in more firm-specific investments, may actually be consistent with the benefit of equity holders. Research on corporate governance can take this into account: to the extent that shareholders can harness the self-interest tendencies of managers and make them line up with some aspects of shareholder value maximization, the cost of setting up compensation contracts and monitoring mechanisms of corporate governance may be reduced.

5.3 Traditional Stakeholder Theory

This dissertation also contributes to research on stakeholder theory. Since Freeman (1984), much of the literature in stakeholder management is from the normative realm, which argues that firms should attend to the interests of all their stakeholders—not just their stockholders. A common theme among these scholars is that firms should treat stakeholders as “ends” (e.g., Boatright, 1994; Clarkson, 1995; Goodpaster, 1991), implying that moral principles should drive stakeholder relations. However, this argument is not supported by empirical research (Berman, et.al., 1999). More recent development in stakeholder theory moves on to an instrumental view, which links "means" and "ends" (Jones, 1995). A fundamental assumption is that the ultimate objective of corporate decisions is marketplace success, and stakeholder management is a means to that end. However, in addition to the inconsistent results in research that linking corporate social performance with financial performance (e.g. Donaldson & Preston, 1995), in general, instrumental stakeholder theorists stop short of exploring specific links.
between cause (stakeholder management) and effect (corporate performance) in detail (Jawahar & McLaughlin, 2001). The stakeholder analysis in this dissertation is consistent with the instrumental view of stakeholder theory, since it implies that a firm will have better performance if the firm/its manager strategically manages stakeholders (by reducing risks for them and thus inducing more firm-specific investments). Thus, this dissertation contributes to this literature in that it provides more specific links between stakeholder management and corporate strategy and performance.

5.4 Internal Capital Markets

Lastly, the ideas developed in this dissertation also have important implications for research on internal capital markets. Recent work in finance suggests that internal capital markets are, on average, inefficient, in the sense that firms continue to invest in poorly performing businesses beyond the point that the external capital market would have continued investing (Lamont, 1997; Shin and Stulz, 1998; Rajan, Servaes, and Zingales, 2000). Several explanations for this apparent inefficiency have been developed in the literature. For example, some have argued that managers have more information about poorly performing businesses than external capital markets, are allocating capital in a way that exploits this informational advantage, and thus internal capital markets only appear to be inefficient (Williamson, 1975). Some have argued that this pattern of over-investment reflects a tendency towards the escalation of commitment (Staw, 1981), a cognitive bias that leads managers in firms to increase their investment in a failing course of action. Still others have argued that this inefficiency is a manifestation of traditional
agency problems and can be best remedied by changes in corporate governance (Rajan, Servaes, and Zingales, 2000).

To some extent, the argument developed in this dissertation suggests that this apparent "inefficiency" may, in fact, be consistent with interests of equity holders. In diversified corporations, financial distress first manifests itself in the individual businesses a firm operates in. If these businesses were free standing, this financial distress could lead to their economic bankruptcy. However, in a diversified corporation, if cash flow generated by well performing businesses is used to support the operations of an under-performing business, such support reduces the probability of a business going bankrupt compared to what would have been the case if it was a freestanding entity.

On the other hand, however, combining two businesses under one roof does not automatically solve stakeholders’ investment incentive problem. First, a diversified firm can often liquidate one division’s assets or sometimes even sell off some under-performing divisions. Second, there might opportunity costs associated with resources used for cross-subsidization. Although reallocating resources to cross-subsidize a under-performing division can increase its stakeholders’ incentive to engage in more firm-specific investments, the firm may also forego the opportunity to use these resources somewhere else that leads to potential higher efficiency.

Thus the degree to which diversification changes stakeholders’ incentive to make firm-specific investments will be dependent on how resources are allocated in internal capital markets. Reexamining the resource allocation role of internal capital markets by
incorporating stakeholder investment incentives is determined to be a very important future research area.
REFERENCES


