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Value Creation Through Joint Venture and Strategic Alliance Formation

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VALUE CREATION THROUGH JOINT VENTURE AND STRATEGIC ALLIANCE FORMATION

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Abstract

This study examines the price reaction to the announcements of joint venture and strategic alliance formation, the main determinants of the partnering firm's choices to enter a specific joint venture and a specific strategic alliance, and the impact of such alliance formation on partnering firms' valuation. The analysis of the price reaction at the announcement of alliance formation indicates that market can distinguish between value creating and non-value creating alliances. I also provide evidence supporting the argument that alliance formation is not a random process. A firm's choice of entering an alliance designed as diversifying or non-diversifying strategy is a result of a complex interaction of external factors and internal needs. Finally, using the change in excess value from the year prior to the year following the alliance formation, I document that alliance formation negatively impacts the valuation of the single segment partnering firms relative to their industry peers, and has no impact on the valuation of multiple segment firms. Thus, single segment firms entering alliances are facing the trade-off between the long-term benefit provided by the alliance and the immediate costs affecting the activity developed in the house.

1. Introduction

Over the last decade joint ventures and strategic alliances have become prevalent in the business environment, both domestic and international. Alliances are "less-than-arm's-length" relationships that facilitate the merging of complementary interests, the sharing of privileged information, and intimate cooperation and collaboration between independent firms. The increasing importance of joint ventures and strategic alliances is also reflected by the attention received in strategic management and business policy theory, as well as in other research disciplines such as (industrial) economics, organization theory, marketing, and finance.

Analysis of wealth effects around joint ventures provides insight into the broader impact of diversification on firm value[1]. There is a general consensus that market reaction upon alliance announcements reflects investors' perception that joint ventures, as hybrid corporate governance mechanisms, are value creating. Empirical studies, including McConell and Nantell (1985), Koh and Venkatraman (1991), Balakrishnan and Koza (1993), Mohanram and Nanda (1998), and Johnson and Huston (2000) show that partner firms on average earn positive and significant abnormal returns when joint ventures are announced, in spite of a high cross-sectional variation. In this study, I find evidence consistent with these studies, and I suggest that the cross-sectional variation in the stock market reaction is partially explained by different market perceptions regarding diversifying versus non-diversifying joint ventures. I classify a joint venture as a diversifying strategy whenever its primary SIC code is not shared by any of the business

[1] Bradley, Desai, and Kim (1988), Mork, Shleifer and Vishny (1990), and Chevalier (2000), among others, provide evidence on market reaction at the announcements of diversifying mergers. For market reactions at the announcements of nondiversifying corporate events, see John and Ofek (1995), Desai and Jain (1999), Krishnaswami and Subramaniam (1999), Dittmar and Shivdashani (2003)

segments of the partnering firms; a non-diversifying joint venture has a primary four-digit SIC code shared by at least one of the partnering firms' business segments. Based on market reaction at the announcement of joint ventures, I argue that non-diversifying joint ventures are value increasing, whereas diversifying joint ventures do not create value.

The second issue I address in this study has to do with the factors that help explain a firm's choice between a diversifying or non-diversifying joint venture. For a sample of firms that have undertaken non-diversifying joint ventures, I analyze the degree of overlap between the alliance activity and one or more of the existing business segments of the parent firms. Thus, I incorporate in my analysis not only the main factors of joint venture formation that have received attention in the alliance literature but also determinants at the division level. Such analysis is motivated by Khanna's (1998) argument that the missing link in understanding why alliances are very difficult to manage and at the same time increasingly popular is the interaction between the alliance activity and the concurrent activities not governed by the alliance:

> "The individual alliance is thus very much embedded in the broader set of activities pursued by the firm (which determine private benefits), an observation similar to Madhok and Tallman's (1998) suggestion that the particular resource that forms the basis of the transaction for the alliance is just part of a broader set of resources available to the partnering firms."

I find that non-diversifying joint ventures are more likely to be formed by firms operating in highly competitive industries and during economic downturns. Such joint ventures are also more likely to be designed as strategies for complex joint ventures. Further, I document that younger firms and firms with higher growth opportunities are forming joint ventures having a high overlap with the activities developed in the house.

Using a sample spanning 1991-1996, I analyze whether joint venture formation favorably affects the valuation of the partner firms relative to their industry counterparts. I use Berger and Ofek's (1995) excess value measure of firm value, and test whether there is a significant change in excess value from the year before to the year after alliance formation. I find that joint venture formation negatively affects the valuation of single segment firms relative to their industry counterparts, while impact on multiple segment firms is statistically insignificant. For the sub-sample of multiple segment firms, I also document an insignificant impact of joint venture formation on the investment efficiency and capital allocation.

The market for external capital is very susceptible to the vagaries of economic conditions, and firms may have to fall back on their internal capital markets in order to realize their investments. Strategic investments like joint ventures, while arms-length contracts, may still have a large impact on internal capital markets as they relocate capital away from internal investment opportunities. Thus, while not explicitly diversifying, joint ventures can implicitly diversify the capital needs of the partner firms and may therefore have the same impact on firm value as explicit diversification strategies.

I follow up with a similar analysis for strategic alliances. Strategic alliances are informal and formal agreements between two or more firms that agree to cooperate in some form of a relationship. Several differences between joint ventures and strategic alliances motivate a separate analysis of strategic alliances on firm valuation. First, as documented in the literature, the initial investment required for the formation of a strategic alliance is, on average, rather small compared to the investment necessary for the formation of a joint venture. It is also more difficult to measure each partner's contribution throughout the life of a strategic alliance, and therefore more difficult to allocate the benefits obtained from such an alliance. Hence strategic

alliances, as evolving relationships, are less formal and more ambiguous. Due to this organizational flexibility, the creation of a strategic alliance may in fact add more value to the partner firms than a joint venture. I study the market reaction at the announcement of strategic alliances and find that the wealth creation around the announcement of strategic alliances is primarily confined to the sub-samples of non-diversifying and technological strategic alliances.

I follow up with the analysis of the main determinants of a firm's choice of forming a diversifying or non-diversifying strategic alliance. As Weston, Mitchell, and Mulherin (2003) note, strategic alliances involve the development of new growth opportunities that will enhance existing core capabilities. Throughout the life of a strategic alliance there is a continuous integration between the existing activities and the evolving redefinition of the firm's capabilities and resources. My analysis indicates that strategic alliances have a short-term negative impact on the valuation of the partnering firms, and this effect is mostly confined to the sub-sample of single segment firms.

The reminder of this study is organized as follows. Chapter 2 presents a review of the extant theoretical and empirical literature on alliances and internal capital allocation around various corporate events. In Chapter 3, I present my testable hypotheses for the sample of joint ventures, define the variables I use to test these hypotheses, and present the methodology. I also present the results of the empirical analyses and the conclusions derived. In Chapter 4, I describe the strategic alliances sample selection criteria, and the testable hypotheses. This chapter also details the methodology, and variables utilized to test the hypotheses. Finally, I present the results and the conclusions derived. A summary of the main findings concludes the study.

2. Literature Review

2.1. Alliances

2.1.1. Streams of research

Kale, Singh and Perlmutter (2000) identify three streams of research emerging from the academic work on business alliances. The first stream focuses on the motivations for alliance formation and includes three rationales: strategic, transaction cost related, and learning related. The second stream examines the choice of governance structure in alliances, while the third one is primarily concerned with the effectiveness and performance of the alliances.

Within the literature on the motives for alliance formation, strategic considerations have been mainly discussed in resource-based theories of strategic management. The resource-based approach is concerned with the management of a firm's resources in a manner that increases the competitive advantage and consequent rents that can be obtained from such resources (Peteraf, 1993). First, an alliance provides a way to appropriate scarce resources when the firm lacks the capability to develop them in-house or when the development of such capabilities is subject to diseconomies of scale, scope, and time as compared to firms that already possess them (Deeds and Hill, 1996). Second, an alliance may provide the necessary mechanism for facilitating exchange of resources, such as rapid product development and flexible innovation capabilities, which are distributed throughout and embedded within the firm itself. Eisenhardt and Schoonhoven (1996) identify two factors that influence alliance formation. First, firms are more likely to form alliances if they are in a vulnerable strategic position and need additional resources. They measure strategic position using the number of competitors, the stage of market

development, and the strategy of the firm. Second, alliance formation is more likely when firms are in strong social positions with a large, experienced and well-connected team management.

Transaction costs provide another rationale for alliance formation and are mainly concerned with the management of transactions in an efficient manner through the least cost form of governance, under the assumption of potential opportunism (Williamson (1985, 1991)). While the early literature on transaction costs was mainly restricted to the choice between markets and hierarchies, later work has extended the analysis by incorporating the choice between intermediate forms of governance. Hennart (1993), however, points out that it is important to distinguish between methods of organization (price system and hierarchy) and economic institutions (market and firms), as there is no one-to-one correspondence between the two. Prices and "hierarchy" are methods used to organize economic activities, while markets and firms are institutions that use one or both methods to achieve that goal.

Learning explanations view alliances as a way to accessing and acquiring critical skills or capabilities from alliance partners. Increased attention paid to the learning motive has led to the identification of several factors affecting the learning process and learning success. Kogut (1988) argues that both equity-based alliances and non-equity contractual agreements facilitate the transfer of tacit know-how and capabilities, while Mowery, Oxley and Silverman (1996) state that equity based governance structures are better suited for learning critical know-how or capabilities.

The second stream of research on alliances focuses on the choice of governance structure. The main argument is that opportunistic behavior is more likely to emerge in an uncertain asset-specific transaction. Therefore, hierarchical mechanisms may restrict opportunism by replacing market mechanisms in organizing a transaction. This argument is central to studies on the choice

between equity-based arrangements conceived as quasi-hierarchies and non-equity arrangements conceived as quasi-markets. According to Williamson (1983), joint ownership better aligns the incentives of both parent firms as shared equity represents an exchange of hostages between parties. Osborn and Baughn (1990) analyze the relationship between the technology life cycle and governance in alliances. Their argument is that early in the technology life cycle, firms might prefer the flexibility of contractual arrangements. Later in the technology life cycle, firms might quasi-internalize the benefits of the cooperation through joint venture arrangements. Madhok and Tallman (1998) argue that governance modes differ in their potential for value creation, where value for the firm can be in the leveraging of internal resources or in the learning of new capabilities.

Performance and effectiveness of the alliances represent the third stream of research in the alliance literature. The evidence that has been provided so far is not only limited but also contradictory. Several problems are encountered when attempting to measure the performance of business alliances. Alliance success can be measured on the project, the relationship, or on the firm level. Osborn and Hagedoorn (1997) point out that while success may be revealed on one level of analysis, results on other levels might reveal the opposite.

Early studies on alliance performance used longevity as an indicator of success of the alliance. However, more recent studies point out that an alliance that has reached its strategic objectives sooner than initially estimated should be considered a success rather than a failure (Gulati, 1998). Another measure of alliance effectiveness is the partners' level of satisfaction with the alliance results. Khanna, et al. (1998) argue that the employment of this indicator might be problematic as the level of satisfaction may be asymmetric with one party considering the alliance successful while the other partner perceives the alliance unsuccessful. Using a sample of

joint venture announcements from 1986 to 1993, Mohanram and Nanda (1998) find that joint ventures tend to be announced when the parent firms' performance is deteriorating, when firms are underperforming in the stock market, or when there is a decline in accounting performance.

Market participants' perception about the effectiveness of joint ventures is partially embedded in price movements at the time of such announcements. The evidence provided by empirical studies on the market reaction at the announcements of joint ventures supports the argument that alliances are value creating corporate events. The next section summarizes some of the relevant studies on this area of research.

2.1.2. Value gains at the announcements of joint ventures formation

McConnell and Nantell (1985) investigated the stock returns of US firms that participated in domestic joint ventures from 1972 to 1979. Using a sample of 136 joint ventures involving 210 firms from different industries, they found that joint venture announcements were, on average, wealth creating for the shareholders of the participating firms. McConnell and Nantell pointed out that the wealth gains from mergers and tender offers could be either from synergy gains that arise from the alliances or possibly from the displacement of less-effective management. However, as the management of the partner firms remains intact after a joint venture has been formed, McConnell and Nantell observed that the most likely source of the wealth gains from joint ventures is the synergy hypothesis.

Using a sample of 239 US firms involved in 175 joint ventures and spanning the years from 1972 to 1986, Koh and Venkatraman (1991) examined the market value impact of domestic joint ventures in the information technology sector. Their results indicate that joint ventures have a greater impact on market value than technology exchanges between firms. They also observed

that marketing alliances, supply agreements, and licensing agreements had no significant impact on market value of firms.

Further analysis of the market reaction indicates that joint ventures that strengthen existing product-market segments or place new products in existing markets are met with significant and positive market reactions, while alliances that develop new customers or enter unrelated product-market segments create no such effects. Balakrishnan and Koza (1993) found that joint venture announcements, for 64 joint ventures spanning 1974-1977, had a lower impact when parent companies were engaged in businesses that were further apart in a technological and managerial sense.

Madhavan and Prescott (1995) analyzed the market reaction at the announcements of joint ventures in different industries. Their sample covered 108 joint ventures over the period 1978-1991. Madhavan and Prescott defined the industry information-processing load as the standard deviation among earnings forecasts made by institutional brokers and found that there was a U-shaped relationship between the degree of information processing required for an investment analyst to understand a joint venture and the venture's perceived impact on parent firms' market value. Johnson and Huston (2000) extended the analysis of market reaction to the announcements of domestic joint ventures by differentiating between horizontal and vertical joint ventures. Their results indicate that partners forming horizontal joint ventures share synergistic gain, while for vertical joint ventures the gain accrues only for suppliers.

2.2. Internal Capital Allocation

2.2.1. Theoretical work

The problem of capital allocation has received widespread attention in the academic world. Two interrelated streams of literature have emerged. The first stream of literature focuses

on the external capital market (the allocation of financing among firms), and the second mainly focuses on allocation of capital within individual firms (internal capital market).

According to Gertner, Scharfstein, and Stein (1994), internal capital markets provide the capital supplier (corporate headquarters) with total and unconditional control rights; this is because the headquarters own the business unit to which capital is allocated. As a consequence, internal capital markets present the advantages of improved monitoring and free asset redeployability. The cost of internal capital allocation is mainly the reduction in unit managers' entrepreneurial incentives as to the use of such funds. Gertner, Scharfstein, and Stein analyze monitoring and entrepreneurial incentives under the assumption that the central headquarters oversee only one division. Analysis of asset redeployability is undertaken assuming that the headquarters finance multiple related business projects. This study constitutes the starting point on the analysis of the authority to reallocate funds within a firm.

Stein (1997) builds on the evidence developed by Grossman and Hart (1986) and Hart and Moore (1990) and argues that the authority to redistribute resources across projects, each with its own managers, distinguishes headquarters from an equally well-informed external provider of capital, such as a bank. Under a two-layer hierarchy, an empire-building manager can create value by shifting funds from the "losers" to the "winners" in so-called "winner-picking" activities. However, Stein does not incorporate any agency problem, as the divisional managers are considered passive.

Matsusaka and Nanda (2002) provide another perspective to the "winner-picking" benefit of integration. In their model, internal capital markets have greater flexibility to redistribute funds because they more often bypass the friction associated with external financing. However, the flexibility created by internal capital markets may also result in two costly effects: i) strategic

disadvantages may be created in product market competition (vulnerability to entry threat) and, (ii) the need for external financing may be reduced, thus increasing the extent to which managers may engage in overinvestment activities.

As opposed to the winner picking models, recent theoretical research argues that internal capital markets can lead to inefficient capital allocation to individual projects or divisions. According to these studies, the central problem associated with internal capital markets is the agency conflict between the CEO and divisional managers.

Following Meyer, Milgrom, and Roberts' (1992) study on influence activities, Scharfstein and Stein (2000) analyze two divisional managers' investment decisions when the managers may invest either in a value maximizing project or in a project that increases the managers' utility but does not improve the firm value. The only link between the two divisions is through the firm's aggregate budget constraint, so that resources not invested in one division must be allocated to the other. By incorporating two levels of agency with three basic agents (division managers, a CEO, and outside investors), Scharfstein and Stein not only capture divisional rent-seeking behavior but also show that the CEO's misaligned incentives are reflected in the allocation of investment. Unlike a principal, the CEO acting as an agent perceives distorted capital allocation as being less costly than additional cash compensation to divisional managers. Therefore, headquarters tilt the capital budget towards the weaker division so as to mitigate the agency problem with divisional managers. In particular, the division with the weaker investment will get more 'extra' resources than the division with the better investment because this makes the weaker division act more cooperatively in joint production with other divisions ("corporate socialism").

Rajan, Servaes, and Zingales (2000) address the same problem of corporate socialism, but in their model the CEO acts on behalf of the shareholders, and the only agency conflict is between the CEO and divisional managers. These authors model two divisions that can each invest in either a "defensive" (bad) project or an "efficient" (good) project. The defensive project does not maximize NPV of the firm but protects the divisions' assets from poaching by other divisions. The CEO's transfer of funds from the divisions with the best investment to the divisions with the worst is consequently designed to prevent the occurrence of conditions under which individual divisions will prefer to invest in the defensive project.

Aside from the direct effect on the ex-post investment efficiency, the authority to reallocate funds from one project to the other has other effects. In Meyer, Milgrom, and Roberts (1992), there are no investment inefficiencies; the only distortions being the wasteful activities of divisional managers so as to obtain a larger share of the capital budget. Meyer, Milgrom, and Roberts predict that such distortionary behavior is more of a problem in divisions with poor prospects and suggest that the firm may be better off divesting such divisions.

Along the same lines, Brusco and Panunzi (2000) argue that even when resources are (ex post) optimally allocated, the possibility of winner picking reduces managerial incentives ex-ante. Hence, the redistribution leads to two opposing effects: it creates value and, at the same time, rent for the manager of the ex-post less profitable division is reduced. Brusco and Panunzi's analysis is built on the assumptions that divisional managers always choose effort independently from each other and that the value of the multi-divisional firm is independent of the ex-ante differences across divisions.

Gautier and Heider (2002) build on the model developed by Stein (1997) by introducing moral hazard and explicit incentive contracting at divisional level. The analysis focuses on the

effect of a well functioning internal capital market operated by value maximizing headquarters on the divisional managers' incentives. Under Gautier and Heider's setting an efficient ex-post internal capital market may not be ex-ante efficient. The ex-post reallocation of resources negatively affects the production process by creating negative effort externalities among divisional managers. As a result, headquarters' policies on compensation and investment should be interrelated. Gautier and Heider predict that, in a multidivisional firm with winner picking, it is more difficult to compensate divisional managers if there is redistribution of resources. An optimal compensation policy must be sensitive to the performance of the strongest division instead of following the performance of the average division.

In contrast, Stein (2001) argues that the authority to reallocate funds may have positive ex-ante effects. The main argument is that divisional managers struggle to provide enough positive, verifiable, information to convince the CEO to provide them a larger share of the capital budget; hence, managers' efforts turn out to be productive, rather than wasteful.

Stein's (2001) model, however, does not allow for monetary incentives and relies entirely on the assumption that the projects are symmetric. Inderst and Laux (2001) relax this assumption by allowing for project asymmetry and include monetary incentives. Their model also allows for contracting on the allocation of funds. Such contracting may yield several potential advantages for firms. First, managerial incentives are improved when divisional capital allocation is sensitive to the productivity of investment. Second, under contracting it may be optimal to bias capital allocation towards one project in order to take into account different incentive effects for different managers. If this capital allocation proves not to be ex-post optimal, it can be renegotiated. While distorted capital allocation increases managers' incentives, they only survive renegotiation in integrated firms.

Inderst and Muller (2002) examine the role of headquarters when internal and external capital markets are tied together. They compare the optimal contracting under “decentralized borrowing” (outside investors and individual project managers) with contracting under “centralized borrowing” (outside investors and headquarters). Centralization provides both benefits and costs. On the one hand, headquarters can use excess liquidity from high cash-flow projects to buy continuation rights for low cash-flow projects, thus relaxing financial constraints on individual divisions. On the other hand, this allows divisional managers to finance investments without returning to the external capital markets. That is, internal capital markets provide headquarters with the ability to create value and, at the same time, headquarters are protected from fully relinquishing the value gains to external investors.

In summary, the question of whether internal capital markets are used for an efficient allocation of capital across division is subject of future inquires. Future studies should consider the role of internal capital markets at the initiation of a cooperative alliance as well as throughout the life of such alliances.

2.2. Empirical evidence

The empirical literature on internal capital market efficiency is a part of a broader body of work as to the impact of diversification on the shareholder value. Most of the evidence, both from domestic data and from other countries, is unfavorable to diversification and especially so in the case of unrelated diversification. According to many studies, the majority of firms involved in unrelated diversification have been valued at a substantial discount relative to focused firms. This notion of a “diversification discount”, first developed by Lang and Stulz (1994) and Berger and Ofek (1995), denotes the difference between the value of a diversified company and the sum of the imputed values of the stand-alone (individual) segments of the

company. The source and interpretation of the diversification discount, known also as “negative excess value”, has been the subject of debate for many scholars.

One of the explanations for the diversification discount, developed in agency cost models, is that the diversification discount is a consequence of investment distortions that arise due to disparity in investment opportunities across divisions. Lamont (1997) found that investment in non-oil divisions of petroleum companies fell when the cash flow of the oil divisions decreased dramatically following the 1986 decline in oil prices. Lamont hypothesized that when the companies were financially constrained, the investments of single divisions became dependent on the success of other divisions operating in unrelated industries, thereby suggesting that diversified firms reallocate capital across divisions. However, Shin and Stulz (1998) found that divisions with better investment opportunities do not necessarily have priority in the allocation of funds. Shin and Stulz interpreted their results as evidence of internal capital markets failing to reallocate resources in an efficient manner. Rajan et al. (2000) found that industry-adjusted investment of higher-q divisions within conglomerates is low compared to the industry-adjusted investment of lower-q divisions and concluded that this difference is driven by cross-subsidization. These authors argue that cross-subsidization is more pronounced when larger divisions have high growth opportunities and those of smaller divisions are lower.

On the other side of the debate, some recent studies have revealed at least two potential sources of bias undermining the previous conclusions. Whited (2001) has argued that Tobin’s *q* is a poor proxy for investment opportunities (observable measures of Tobin’s *q* may diverge substantially from unobservable marginal *q*), and that the replication of some of the previous studies, using measurement error consistent estimators (Erikson and Whited, 2000), shows no evidence for cross-subsidization. Whited has pointed out that if an inaccurate proxy for

divisional investment opportunities is used, cash flow in one division may appear to be a significant explanatory variable for investment in another division simply because the investment opportunities may be correlated across divisions. Chevalier (2000) has shown that investment patterns attributable to value destroying cross-subsidization are apparent in the pairs of merging firms prior to their mergers. Chevalier analyzed the investment policies of a sample of diversifying mergers (i.e., mergers between two firms with no business segments in any common 2-digit SIC codes in the year prior to the merger in which the two merging firms became two divisions of the diversified firm). As the two firms operated independently prior to the merger, no cross-subsidization of investment between the two firms could possibly take place. Chevalier's empirical analysis reveals that one partner firm's cash flow is predicted by the other partner's investment prior to the merger. Targets with lower investment opportunities than the acquirers' appear to appear to have a higher industry adjusted investment expenditures. On the other hand, Fan and Lang (2000) show that two digit SIC-based measures are likely to exclude some instances where two business units are strategically related, for example the oil-refining (SIC 29) and chemical (SIC 28) businesses are classified as unrelated at the two-digit level, when in fact these industries are both vertically related and complementary.

As a result of these critiques, several recent studies have overcome the aforementioned biases by developing new measures of the efficiency of internal capital markets. They have also focused their analyses on specific settings designed to alleviate the measurement errors present in previous studies. For example, Billet and Mauer (2001) examine the link between the excess value and the value of the internal capital market of a diversified firm and develop a measure of internal capital market that separately accounts for subsidies and transfers and the relative efficiency of the resource flows. Furthermore, they condition their measurement on whether the

segments receiving subsidies would be financially constrained as stand-alone firms. Billet and Mauer's results show no reliable statistical evidence that their excess value measure is significantly related to the overall internal capital market measure. Nevertheless, a deeper analysis indicates that efficient and inefficient subsidies to financially constrained segments significantly increase value, while inefficient transfers (dollars flows away from segments having good relative investment opportunities) significantly decrease value. The authors conclude that the key benefit of internal capital markets is the ability to fund good investment opportunities of segments that would be financially constrained if they were stand-alone firms.

Another way to circumvent the methodological critiques of Chevalier (2000) and Whited (2001) is to analyze changes in investment policy around a corporate restructuring event. Gertner, Powers, and Scharfstein (2000) document that the investment behavior of a spun-off division becomes more sensitive to industry q and that this effect is more pronounced for divisions in low-q industries whose investment is sharply cut following the spin-off. Burch and Nanda (2003) relate the value gains from spin-offs to attributes of the diversified firm's internal capital market. Their results show that the improvement in excess value following a spin-off is related to the segments' investment pattern moving closer to those of the stand-alone firms. Ahn and Denis (2003) examine the total impact of the spin-off on investment policy and find that the sample firm invest inefficiently prior to the spin-off and significantly improve investment efficiency following the spin-off. They also find that the increase in the investment efficiency is related to the increase in firm value.

The above-mentioned empirical studies analyze firms' valuation and the efficiency of internal capital markets around either a diversifying or a non-diversifying corporate event. The formation of a business alliance constitutes an ideal empirical setting for the analysis of the

change in discount and efficiency of internal capital allocation, as such alliances are designed as diversifying corporate events for some firms and non-diversifying for others.

My dissertation contributes to the literature in two ways. First, I use a new criterion of classifying alliances into diversifying and non-diversifying strategies. I document that a firm's decision to enter a diversifying or a non-diversifying alliance is not a random process and is the result of a close interaction of internal and external factors. Second, I provide evidence on the immediate impact of an alliance on the firm valuation. Such analysis provides additional evidence on whether diversifying and non-diversifying strategies result in value creation or value destruction.

3. Essay 1:
Impact of Joint Ventures on the Capital Allocation and Efficiency of Internal Investments in Partner Firms

In this essay I examine the impact of the formation of joint ventures on partner firm valuation. I analyze the market reactions at the announcement of joint ventures for a sample spanning 1991 to 1999. I further analyze the main determinants of a firm's choice to enter either a diversifying or a non-diversifying joint venture. Finally, I investigate the immediate impact of the initiation of a joint venture on the valuation of the partner firms relative to their industry counterparts by examining excess values.

3.1. Hypotheses

3.1.1. Valuation effect at the announcement of joint ventures

The extant literature documents differing market reactions at the announcement of corporate diversification events and focus preserving or focus increasing corporate events. It is widely accepted that focus increasing or preserving events are value enhancing, while diversifying changes are met with negative market reactions at the announcement[2]. Recent evidence from the banking sector supports these conclusions as well (DeLong, 2001). Previous empirical event studies unanimously agree that market reaction at the announcement of a joint venture reflects investors' perception that these hybrid forms of corporate governance are value increasing. However, Mohanram and Nanda (1998) posit that despite the favorable average

[2] For details, see Lang and Stulz (1994), Berger and Ofek (1995), Comment and Jarell (1995), John and Ofek (1995), Krishnaswami and Subramaniam (1999), Dittmar and Shivdasani (2003)

effect, cross-sectional variation in the cumulative abnormal returns should be further investigated.

In this study, I define a diversifying joint venture as a joint venture having no degree of overlap with the parent company, i.e. when none of the partner company's business segments shares the same four-digit SIC code with the joint venture. The remaining joint ventures are classified as non-diversifying. As joint ventures are considered hybrid forms of corporate governance that share common characteristics with mergers, I hypothesize that:

H1: *Non-diversifying joint ventures enhance stockholder value upon announcement, while diversifying joint ventures do not create value and they may even destroy value.*

3.1.2. Determinants of a choice of diversifying versus non-diversifying joint ventures

In what follows, I consider several variables that may influence a firm's choice of forming a diversifying or a non-diversifying joint venture. These variables measure the parent firm's industry concentration, economic conditions, complexity of the joint venture, ownership and control, and firm age. Below, I discuss each of these variables in turn and give the main arguments behind their predicted impact on a firms' decision to initiate a specific type of joint venture.

i) Industry Characteristics: One of the central arguments in the industrial organization literature is that a firm's profitability is determined by the degree of concentration in that particular industry. Porter (1980), for example, argues that differences in profitability reflect the differing barriers to entry across industries. According to Kogut (1991), firms facing the decision to enter new markets, and in particular new business not related to their existing activities, may find the initiation of a joint venture a promising start; a joint venture with an incumbent partner firm can be regarded as an acquisition of the right to expand in the future in that specific

industry. However, incumbent firms in profitable and highly concentrated industries may not find joint ventures attractive as such ventures would cost them some market share. Firms in highly competitive industries on the other hand should benefit from sharing scale economies and coordinating joint management, through non-diversifying joint ventures. As well, as suggested by Eisenhart and Schoonhoven (1996), firms in highly competitive industries have vulnerable positions because product differentiation is difficult. Joint venture formation should enable such firms to strengthen their relative position in the market. Based on these arguments, I hypothesize that:

H2a: *Partner firms in highly competitive industries are more likely to form non-diversifying joint ventures.*

ii) Economic conditions: Maksimovic and Phillips (2000) analyzed the asset sales and merger activities of a sample of manufacturing companies from 1974 to 1992. Their results indicate that firms differ in their ability to exploit assets, and that the comparative advantages of firms lie in their main industries One of the main factors influencing asset reallocation outside such firm boundaries is the economic business cycle. In particular, there is clear evidence that fewer assets are reallocated in a recession, presumably reflecting the reduced expectations of profitability outside the firms' most familiar businesses when the economy is weak. Moreover, Coase (1937) argues that internal organization costs are higher the greater the dissimilarity between the activities subject to the transaction and the existing activities developed by the firm. Therefore, I hypothesize that:

H2b: *Diversifying joint ventures are less likely to be formed during a recession.*

iii) Joint venture complexity: Several studies have documented differences between technological and non-technological alliances (Teece, 1986; Balakrishnan and Koza, 1993;

Hagedoorn, 1993; Das, Sen, and Sengupta, 1998). An alliance is classified as technological if the alliance contract involves R&D activities, technology sharing, or product development. Technological alliances are subject to severe moral hazard and adverse selection problems because the true value of the output is difficult to assess accurately. This problem is more pronounced in R&D joint ventures, in which partnering firms must transfer R&D know-how across organizational boundaries. On the other hand, the moral hazard and adverse selection problems are partially mitigated when the partnering firms already conduct activity that at least partially overlaps the joint venture. Therefore, I hypothesize that:

H2c: *Technological joint ventures are more likely to be formed as non-diversifying strategies.*

iv) Ownership and control: It has long been recognized that joint ventures exhibit an intriguing ownership pattern according to which equal or almost equal stakes of the joint venture are allocated to the partner firms. This clustering of ownership around the 50-50 equity allocations contradicts theoretical modeling that calls for optimal asymmetric ownership structures (Darrough and Stoughton, 1989; Belleflamme and Bloch, 2000). Moreover, potential disagreements between partners who possess equal shares of the joint venture may result in permanent legal deadlock.

Recent evidence has shed some light on this puzzle. Hauswald and Hege (2004) show that joint control, 50 plus one share, and outright majority control can coexist in equilibrium and can be optimal depending on the attributes of the partner firms. In particular, equal ownership offers protection against rent-seeking activities when such protection is relevant, 50 plus one share equally splits the returns of the project while allocating control to the company that provides the more valuable resources, and outright majority ownership is optimal when the

partners are very dissimilar. As diversifying joint ventures are more likely to bring together two dissimilar partner firms, I therefore hypothesize that:

H2d: *The partner firm forming a diversifying joint venture is more likely to be granted the outright majority ownership.*

v) Firm's age: Newly formed companies face the critical task of gaining acceptance while protecting their proprietary assets. Accordingly, a young firm may enter into a non-diversifying joint venture for two reasons. First, since partnering with established firms provides a positive signal of product quality, younger firms gain market recognition or legitimacy when entering into an alliance within its core activities (Stuart, Hoang, and Hybels, 1999; Stuart, 2000). Second, younger firms may be controlled by their founders who are less likely to enter new lines of business outside their particular area of expertise (Denis, Denis, and Sarin, 1997). A mature firm with a well-established reputation, on the other hand, is more likely to concentrate its resources on its own core activities and form alliances with firms that support peripheral activities (Stopford and Wells, 1972). Each of these arguments suggests the hypothesis that:

H2e: *A younger firm is more likely to form a non-diversifying joint venture with a high overlap with its core activities, while a mature firm is more likely to form a joint venture within its peripheral activities or even a diversifying joint venture.*

vi) Growth opportunities: According to the resource-based theory of joint ventures, one of the primary driving forces of an alliance formation is a firm's need for resources. As opposed to an acquisition, a joint venture provides the benefits of attaining know-how and capabilities from partner firms while avoiding the cost of acquiring or managing the associated assets (Williamson, 1991). However, for a joint venture to be profitable, the benefit of cost sharing and learning through the joint venture should be higher than the cost of protecting the proprietary

assets within the alliance. The risk of losing proprietary core capabilities and skills increases with the degree of overlap between joint venture's activity and partner firms' core activities. Therefore, I hypothesize that:

H2f: *A firm with high growth options and lower operating performance is more likely to form a non-diversifying joint venture that strongly overlaps with the firm's existing activities.*

vii) Relative efficiency of the focal segment:

For non-diversifying joint ventures, two opposite arguments support the relative efficiency of the focal segment (the segment whose activity is duplicated by the joint venture) as one of the reasons behind joint venture formation.

Stopford and Wells (1972) argue that diversified firms involved in a joint venture on peripheral lines of business do not desire as high a degree of control over these lines as they do for their principal business lines. Mantecon and Chatefield (2004) posit that the formation of some joint ventures constitutes an optimal temporary arrangement designed as the first step towards a future asset sale[3]. Therefore, a firms' choice of creating a non-diversifying joint venture may be linked to the investment efficiency of the firm's focal segment. If a firm fails to operate one of its peripheral activities efficiently, a non-diversifying joint venture may the optimal vehicle towards the complete sale of the weak division at a future date.

Kogut (1988) observes that a joint venture is encouraged if i) "one or both firms desire to acquire the other's organizational know-how" or if ii) "one firm wishes to maintain organizational capability while benefiting from another's current knowledge or cost advantage".

[3] An illustrating example is provided by the formation of a joint venture between Phillips and Whirlpool. In 1989, in an effort to reorganize its diversified operation, Phillips offered its appliance division for sale. While negotiations for a complete asset sale failed, the two companies had reached an agreement to create a joint venture. Whirlpool acquired 53% stake in the appliance business, while Phillips maintained 47 % of the ownership. Two years later, Whirlpool purchased the remaining 47 % of the joint venture.

If the joint venture formation brings together two partners with different abilities in managing assets, a transfer of expertise between the two throughout the joint venture's life is more likely. Therefore, a non-diversifying joint venture provides the partner firms with the opportunity of sharing the necessary expertise in managing assets. As a result, the efficiency of the segment whose activity is duplicated by the joint venture is implicitly improved. Based on these arguments, I hypothesize that:

H2g: *A firm is more likely to form a non-diversifying joint venture with a low degree of overlap when the investment ratio of the focal segment is low.*

3.1.3. Change in excess value around joint venture formation

The third issue I examine in this essay is the effect of a joint venture on the valuation of the partner firms relative to the industry. Lang, Poulson, and Stulz (1994) argue that asset sales are often an expedient financing mechanism when access to external capital is limited. Dittmar and Shivdashani (2003) empirically prove that asset sales relax external financial constraints and allow firms to undertake valuable investments that would otherwise be foregone. They also show that there is a statistical significant change in excess value of the firms divesting some of their assets, as market participants have the ability to recognize their positive effects on the firm as a whole. On the other hand, Gertner et al. (1994) has argued that a diversified firm with an efficient internal capital allocation will avoid transactions in the asset markets ("external liquidation") by redeploying assets internally ("internal liquidation"). According to Shleifer and Vishny (1992), asset sales can lead to low sales prices when firms are operating within depressed industries characterized by a very low liquidity of asset markets. Therefore, diversified firms operating in these industries are more likely to redeploy assets internally rather than divesting them through sales. Joint venture formation thus allows the partner firms to avoid transacting in

the asset markets when market conditions are unfavorable and provides the partner firm the opportunity of sharing the necessary resources for undertaking valuable investments.

However, in some instances valuable resources may be diverted from internal investment opportunities, as firms may have to fall back on their internal capital markets in order to initiate and continue investments in the newly created entity. This problem is exacerbated for single segment firms, as the capital needed for investment is diverted from their only division.

Khanna et al. (1998) have argued that the degree of overlap between alliance scope and partner firm scope determines the amount of resources that firms allocate to learning from their alliance partner Therefore, a joint venture having the same scope as one of the peripheral segments or whenever is designed as a diversifying strategy requires a relatively small amount of investment, and thus impacts internal resources by a lesser extent. Along the same lines, Singh and Mitchell (1996) show that the performance of the business unit involved in the alliance becomes closely related to the change in the strategy of the business partner. Their results show that focal business units face increased risk of dissolution if the collaborative business unit shuts down, is divested, or forms a collaborative relationship with a new partner. One implication of their findings is that, after the alliance formation, the focal business unit becomes more dependent on the strategy developed by the partner and less dependent on the strategy of its partner firm. Thus, hypothesis 3 is stated as follows:

H3: *A joint venture negatively affects the excess value of a single segment firm, and is less likely to have any impact on the excess value of a multiple segment firm.*

3.1.4. Impact of joint ventures on internal capital markets

Using a sample of multiple segment firms, Rajan, Servaes, and Zingales (2000) have documented a positive relationship between an excess value metric, as developed by Berger and

Ofek (1995), and the relative value added by allocation, as measure of investment efficiency of internal capital markets. In other words, the valuation of multiple segment firms relative to their industry partially reflects the efficiency of internal capital markets. The results of Rajan, Servaes, and Zingales have been confirmed by several other empirical studies. One of these studies, Ahn and Denis (2003), shows that a corporate restructuring through a spin-off leads to an improvement in the investment efficiency of a firm from one year prior to one year after the spin-off. They also find a positive change in the excess value of the firm around the time of the announced spin-off and document a positive relationship between changes in excess value and change the overall investment efficiency. The results of Ahn and Denis indicate that firms invest inefficiently prior to the spin-off and the inefficiency is, to at least some degree, eliminated following the spin-off. Using a sample of firms that undertake a business segment divestiture, Dittmar and Shivdasani (2003) report similar empirical findings. Therefore, I hypothesize that:

H4: *There is a positive relationship between the change in excess value and change in investment efficiency for multiple segment firms forming joint ventures.*

3.2. Definitions of Variables for Estimation and Methodology

In this section, I specify the precise variables applied in my empirical estimations and describe the statistical methodology I have used to test the above hypotheses.

3.2.1. Market reaction around joint venture announcements

In order to analyze the market reaction at the announcement of diversifying and non-diversifying joint ventures, I employ an event study methodology analogous to the one used by Dodd and Warner (1983). The abnormal performance for each firm is estimated using a market model that to adjusts for market-wide factors and for risk. For a given firm *j*, the abnormal return

on each of the trading days around the announcement of the joint venture is defined as the predicted error,

$$PE_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j R_{mt}\right),$$

where,

R_{jt} = continuously compounded rate of return to firm *j* at event date *t*,

R_{mt} = continuously compounded rate of return to the CRSP value weighted index at event day *t*

The estimation period for the market model begins on day 155 and ends with day 45 before the day of the announcement. Significance tests performed are based a standardized test statistic constructed so as to determine whether the mean abnormal return is significantly different from zero. The Z-statistic is normally distributed and controls for the number of observations in the estimation period and for the market fluctuations during the event window. The presence of outliers with very large standard deviation is indicated by the average CAR and Z-statistics having opposite signs. I also perform the binomial test to indicate whether the percentage of positive abnormal returns is statistically significant.

3.2.2. A Firm's Choice of Entering a Joint Venture as Diversifying or Non-diversifying Strategy

This section presents the Heckman two-stage selection model, which I apply to first analyze a firm's choice between a diversifying and a non-diversifying joint venture (sample selection). Second, given that a non-diversifying joint venture has been chosen, I study the main factors that explain the degree of overlap between the joint venture and the existing activities developed by the partner firms (substantial analysis).

The equation that determines a firm's choice between a non-diversifying and a diversifying joint venture (sample selection) is:

$$z_i^* = w_i'\gamma + u_i \quad (1)$$

$z_i = 1$ if $z_i^* > 0$ and 0 otherwise;

$$\text{Prob}(z_i = 1 | w_i) = \Phi(w_i'\gamma)$$
$$\text{Prob}(z_i = 0 | w_i) = 1 - \Phi(w_i'\gamma)$$

The regression model (substantial analysis) is:

$$y_i = x_i'\beta + \varepsilon_i \quad (2)$$

where y_i is observed when $z_i^* = 1$. u_i and ε_i have a bivariate normal distribution with zero means and correlation ρ.

$E[y_i | z_i = 1, x_i, w_i] = x_i'\beta + \rho\sigma_\varepsilon \lambda(w_i'\gamma)$, where $\lambda(w_i'\gamma) = \dfrac{\phi(w_i'\gamma)}{\Phi(w_i'\gamma)}$.[4]

The marginal effects of the regressors on y_i consist of two components. The first effect is a direct one on the mean of y_i, which is . The second effect, an indirect one, is the influence on y_i of any independent variable appearing in the probability that z_i^* is positive. This influence is directed through the presence of the independent variable in λ_i.

The full effect of changes in a regressor that appears in both x_i and w_i on y is

$$\frac{\partial E(y_i | z_i^* > 1)}{\partial x_{ik}} = \beta_k - \gamma_k \left(\frac{\rho\sigma_\varepsilon}{\sigma_u} \right) \delta(\alpha_u), \text{ where } \delta_i = \lambda_i^2 - \alpha_i\lambda_i.$$

The first step of Heckman's method is to estimate the probit equation (1) by maximum likelihood to obtain estimates of γ. For each observation in the selected sample it computes $\hat{\lambda}_i = \phi(w_i'\hat{\gamma}) / \Phi(w_i'\hat{\gamma})$ and $\hat{\delta}_i = \hat{\lambda}_i(\hat{\lambda}_i - w_i'\hat{\gamma})$. The second step consists on estimating the β and $\beta_\lambda = \rho\sigma_e$ by least squares regression of y on x and $\hat{\lambda}$. In my analysis, the dependent variable in

[4] For details see Green (2002)

the probit analysis (selection model) is a dummy variable indicating whether or not the firm is entering a joint venture as a non-diversifying strategy. In the second step of the Heckman procedure (substantial analysis), an OLS regression analysis of the firms and divisional characteristics on the degree of overlap between the joint venture activity and the existing business segments of the firm is performed. In this substantial analysis I use the selection bias control factor Lambda as an additional independent variable. This factor reflects the effect of all the unmeasured characteristics, which are related to diversifying/non-diversifying decision; the coefficient of Lambda catches part of the effect of these characteristics that is related to the degree of overlap between the joint venture activity and existing business segments. In summary, the coefficient of Lambda indicates whether there is selection bias and what the direction of this bias is. A significant positive coefficient indicates that firms entering a non-diversifying joint venture have unmeasured characteristics, which are positively related to the degree of overlap between joint venture activity and existing activities undertaken by the partner firm.

The determinants of a firm's decision to form a joint venture as a diversifying versus non-diversifying strategy are as follows: a) *Herfindahl-Hirschman Index* measured as Herfindahl-Hirschman Index= $\sum_{i=1}^{N} \alpha_i^2$, where α_i represents the market share of firm *i* within an industry with N firms; b) *Technology dummy* that takes value 1 if the contract specifies either one or a combination of R&D, technology or product development; c) *GDP* is the real growth in the Gross Domestic Product; d) *Ownership* is an indicator that takes value 1 if the firm has more than fifty percent of the ownership in the joint venture; e) *LnAge* defined as the natural logarithm of the difference between the month when the partner firm appears for the first time on CRSP and the month of the joint venture formation.

The determinants of investment in a non-diversifying joint venture, i.e. a joint venture with the same SIC code with the one of the existing business segments are as follows: a) *LnAge*; b) *Relative efficiency ratio* of the focal segment, i.e. the existing business segment having the same SIC as the joint venture, defined as the difference between the ratio of cash flow and sales for the focal segment and the median ratio of cash flow and sales for the industry divided by the median ratio of cash flow and sales for the industry; c) a growth indicator dummy set to 1 when market-to-book market to book ratio of the firm is higher than 1 and 0 otherwise; d) *Cash flow from operations* is cash flow generated from all operating activities and is measured as a ratio relative to the total assets of the firm; e) *Operating income* is sales minus cost of goods sold and other expenses, before depreciation and amortization, and is measures as a ratio to total assets of the firm. Following Krishnaswami and Subramaniam (1999), I use the ratio of the firms' market value of assets to book value of assets as a proxy for growth options in the firm's investment opportunity set. Market value equals the book value of assets minus the book value of equity plus the market value of equity.

3.2.3. Measure of relative valuation

In measuring the relative valuation of the partner firms I follow Berger and Ofek (1995), and define the excess value as follows:

$$\text{Excess Value} = \log\left(\frac{V}{I(V)}\right), \text{and } I(V) = \sum_{i=1}^{n} Assets_i \times \left[M_i (V/Assets)_{MS}\right] \quad (3)$$

$$\text{Excess Value} = \log\left(\frac{V}{I(V)}\right), \text{and } I(V) = \sum_{i=1}^{n} Sales_i \times \left[M_i (V/Sales)_{MS}\right] \quad (4)$$

where V is the sum of market value of equity and book value of assets less the book value of equity and deferred taxes, *I(V)* is the imputed firm value, $Assets_i$ is the segment *i*'s assets, $Sales_i$ is segment *i*'s sales; $M_i (V/Assets)_{MS}$ and $M_i (V/Sales)_{MS}$ are the assets and sales

multipliers calculated as the median of the single segment firms in the same 3-digit SIC code industry. A negative excess value indicates that the firm is valued at a discount, while a positive value indicates that the firm is valued at a premium. I examine the excess value of the firms that enter into a joint venture in the year before and the year after the joint venture formation.

3.2.4. Measures of internal capital markets' efficiency

I use three proxies to measure the allocation efficiency of the internal capital market. The first measure is the relative value added by allocation (RVA) as initially developed by Rajan et al. (2000).

$$RVA = \sum_{j=1}^{n} S_j \left(q_j - \overline{q}\right)\left(\frac{Capex_j}{S_j} - \frac{Capex_j^{ss}}{S_j^{ss}} - \sum_{j=1}^{n} w_J \left[\frac{Capex_j}{S_j} - \frac{Capex_j^{ss}}{S_j^{ss}} \right] \right) \Big/ FirmSales \qquad (5)$$

where S_j is the sales of the segment j, $\frac{Capex_j^{ss}}{S_j^{ss}}$ is the sales-weighted average ratio of the single segment firms in the same industry as the segment of diversified firm, w_j is the ratio of segment j sales, q_j is the asset-weighted Tobin's q of single segment firms operating in the same three digit SIC industry as segment j, and $\overline{q}$ is the segment sales-weighted q_j's of the firm. S, q_j, and w_j are year prior values. $\frac{Capex_j}{S_j} - \frac{Capex_j^{ss}}{S_j^{ss}}$ is a proxy for transfer made between segments of a diversified firm and is the difference between segment's investment ratio and the sales-weighted average investment ratio of single segment firms in the same industry. $\sum_{j=1}^{n} w_j \left[\frac{Capex_j}{S_j} - \frac{Capex_j^{ss}}{S_j^{ss}} \right]$ reflects the overall funds available to a diversified firm relative to its single segment peers and is subtracted from the industry-adjusted investment ratio in order to correct for potential differences in availability of total capital that should not count as

transfer. Finally, $(q_j - \bar{q})$ categorizes those segments that have above average investment opportunities. In summary, a positive RVA reflects an efficient ICM because capital is transferred to segments with above average investment opportunities; hence the firm invests more than single segment industry counterparts in those segments.

The second measure of the efficiency of internal allocation that I use, as developed initially by Peyer and Shivdasani (2001) is q sensitivity of investment.

$$\sum_{j=1}^{n} Sales_j (q_j - \bar{q}) \left[\left(\frac{Capex}{Sales} \right)_j - \left(\frac{FirmCapex}{FirmSales} \right) \right] \Big/ FirmSales \qquad (6)$$

where *Capex* is the capital expenditures of the segment, *FirmCapex* is the capital expenditure of the firm, q_j is the imputed Tobin's q of segment j and $\bar{q}$ is the segment sales-weighted q_j's of the firm. This measure is positive if a segment with an above average *q* has an investment ratio above the firm's average; hence, *q* sensitivity indicated whether the firm has invested relatively more in the high-*q* segments of the firm and relatively less in the low-*q* segments.

The third measure I use, developed by Peyer (2002), is the cash flow sensitivity. While similar to the q investment sensitivity, the cash flow sensitivity provides the advantage of relying on individual segment information, rather than on imputed values.

$$\sum_{j=1}^{n} Sales_j (cf_j - \bar{c}f) \left[\left(\frac{Capex}{Sales} \right)_j - \left(\frac{FirmCapex}{FirmSales} \right) \right] \Big/ FirmSales \qquad (7)$$

where cf_j is the cash flow to sales ratio and $\bar{c}f$ is the average cash flow to sales ratio of the firm.

Similar to the other two measures, cash flow sensitivity indicates whether the firm has invested relatively more in segments generating higher cash flows and relatively less in segments generating cash flows below the firm's average.

3.3. Results

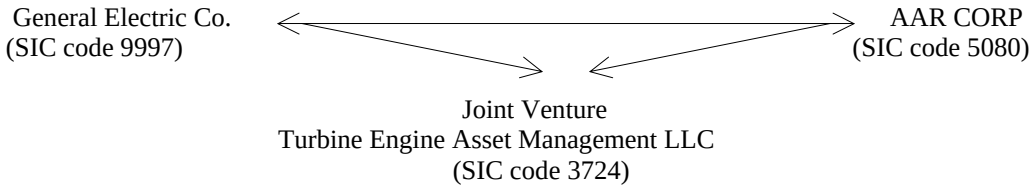
3.3.1. Data and summary statistics

Using a sample spanning 1991-1999, I examine the market reaction to the announcements of joint venture formations, the main determinants of a firm's choice to form a joint venture as a diversifying and non-diversifying strategy and whether joint venture formation favorably affects the valuation of the partner firms relative to their industry counterparts. The list of domestic joint ventures comes from Thompson Financial Security database (SDC- *Joint Ventures/Alliances*). Besides the announcement date and the effective date, the SDC reports other information about the joint ventures, such as: name of the partner firms, main SIC code for the joint ventures and each partner firm, and type of the joint ventures, among others. It also reports a brief description of the activity of the joint venture. In order to test H1 through H2g, I select only joint ventures formed by two publicly traded firms with available financial data on Compustat both at the firm and business segment level one year prior to the joint venture formation. I start with an initial sample of 545 joint ventures formed by publicly traded industrial partner firms. I select only those joint ventures where both firms have financial data on the Compustat Industry Segment file one year before the joint venture formation. This leaves a total of 239 joint ventures initiated by 478 partner firms between 1991 and 1999.

I classify a joint venture as a diversifying corporate strategy when none of partner's business segments share the same four digits SIC code with the primary SIC of the joint venture.

Similarly, a non-diversifying joint venture implies that at least one of the business segments of the partner firm is the same with the one of joint venture.

Figure 1
On June 10, 1997, AAR Corp and General Electric Co formed a joint venture to manufacture and supply turbine engines. The new company, Turbine Engine Asset Management LLC, was to supply CF6-6, -50, and -80A engine parts to aviation customers worldwide. It operates out of Wood Dale, Illinois. Financial details of the agreement were not disclosed.



General Electric Co.		Turbine Engine Asset Management LLC	AAR CORP	
Business segments	SIC code	SIC code	Business segments	SIC code
Aircraft Engine	3724	3724	Industrial services	5080
Major Appliances	3630			
Materials	3089			
Technical products	3845			
Broadcasting	4833			
Financing	6141			
Specialty insurance	6331			
Other	6799			
Power generation	3511			
Industrial products and services	3640			

Figure 1 illustrates an example of a joint venture formation as a non-diversifying strategy for one of the partner firms and as a diversifying strategy for the other. The newly created entity (Turbine Engine Asset Management LLC) has the same primary SIC code with the Aircraft Engine segment of General Electric Co. I classify this joint venture as a diversifying strategy for the AAR CORP and as a non-diversifying strategy for General Electric Co.

Table I presents the annual distribution of the joint ventures. The minimum number of joint ventures formations in the sample is 28 during the year of 1992 and the maximum number is 42 during the year of 1997. Across the years, the annual percentage number of joint ventures is similar for diversifying and non-diversifying sub-samples. Panel B shows the distribution of the

partner firms across industries. There is a high representation of manufacturing firms, accounting for 46.65% of the total sample. However, the distribution of non-diversifying versus diversifying joint ventures across industries is similar.

Table I
The sample consists on 360 firms that initiate joint ventures with no overlap with the concurrent activities (diversifying joint ventures) and 118 firms that initiate joint ventures with overlap with one of the concurrent activities (non-diversifying joint ventures).

Panel A: Partner firms by year

	Diversifying JV		Non-diversifying JV	
Year	N	%	N	%
1991	43	11.94	19	16.10
1992	19	5.28	9	7.63
1993	30	8.33	8	6.78
1994	38	10.56	12	10.17
1995	43	11.94	19	16.10
1996	51	14.17	17	14.41
1997	65	18.06	19	16.10
1998	37	10.28	9	7.63
1999	34	9.44	6	5.08
Total	360	100	118	100

Panel B: Partner firms by industry

	Diversifying JV		Non-diversifying JV	
Industry (2 digit SIC codes)	N	%	N	%
Agriculture, Mining, Constructions (01-17)	38	10.56	20	16.95
Manufacturing (20-39)	172	47.78	51	43.22
Transportation, Communication, Electric, Gas, and Sanitary Service (40-49)	49	13.61	17	14.41
Wholesale and Retail Trade (50-59)	23	6.39	6	5.08
General Services and Others (70-99)	78	21.66	24	20.34
Total	360	100	118	100

Table II shows the means and medians of selected variables and the non-parametric test for differences in means for partner firms entering diversifying and non-diversifying joint ventures.

Table II
The sample consists on 118 firms that initiate non-diversifying joint ventures and 360 firms that initiate non-diversifying joint ventures. Age is the number of months between the first listing of the partner firm on CRSP and the date of the announcement. Market to book ratio is the ratio of the market value to the book value of assets. Research and development is equal to research and development expenditures divided by total sales. Debt ratio is defined as debt over book value of assets where debt is the long-term debt and debt in current liabilities. Cash flow from operations is cash flow generated from all operating activities and is measured as a ratio relative to the total assets of the firm. Operating income is sales minus cost of goods sold and other expenses, before depreciation and amortization, and is measures as a ratio to total assets of the firm. Herfindahl-Hirschman Index is calculated as Herfindahl Index= $\sum_{i=1}^{N} \alpha_i^2$ where α_i represents the market share of firm *i* within an industry with N firms. The last column shows the significance level of Mann-Whitney test for the differences in mean. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

	Non-diversifying Joint Ventures	Diversifying Joint Ventures	*p*-value
Age	283.38 (172.43)	308.39 (206.85)	0.365
Market to Book ratio	1.864 (1.234)	1.917 (1.277)	0.824
Research and Development	1.142 (0.040)	1.352 (0.044)	0.761
Debt ratio	0.260 (0.230)	0.249 (0.231)	0.893
Cash Flow from Operating Activities	0.088 (0.127)	0.112 (0.132)	0.379
Operating Income	0.062 (0.093)	0.070 (0.086)	0.780
Herfindahl-Hirschman Index	0.230 (0.164)	0.273 (0.187)	0.130
Number of firms	118	360	

Firms entering diversifying joint ventures seem to be, on average, more mature, have a higher market to book ratio, and have a lower debt ratio than firms entering non-diversifying joint ventures. However, none one of the differences in their means is statistically significant at

the conventional levels. Because firms are not required to report research and development expenses unless they exceed 1% of the sales, the research and development ratio cannot be calculated for all the firms in the sample. The mean and median for this variable are reported for 72 non-diversifying joint ventures and 234 diversifying joint ventures.[5] The percentage of firms forming a non-diversifying joint venture where they have a minority of ownership is higher than that of firms forming a diversifying joint venture. Out of 118 firms that form a non-diversifying joint venture, only 18 firms (15.25%) have a minority share of ownership in the joint venture compared to 32 firms (8.89%) out of 360 firms for diversifying joint ventures. Although not included in the table, I find a higher proportion of technological joint ventures formed as a non-diversifying strategy than diversifying strategy (52.54% versus 43.33%).

3.3.2. Market reaction around the announcement of joint venture formations

I investigate the market abnormal return for the whole sample of firms entering joint ventures, as well as for the diversifying and non-diversifying joint ventures sub-samples. Consistent with McConnell and Nantell (1985) and all the following event studies investigating the market reaction around the announcement of joint ventures formation, I find statistical significant positive abnormal returns for the whole sample. Table III summarizes the abnormal returns over different time intervals around the date of the announcement. I obtain a significant mean two–day cumulative abnormal return of 1.02% for the event window (-1, 0), and a significant mean five days abnormal return of 1.30% for the event window (-2, +2). The binomial test indicates that the percentage of positive abnormal returns is significant for both event windows (-1, 0) and (-2, +2). The results are consistent with the prediction of Hypothesis 1, namely that the positive market reaction to the announcements of joint ventures formation is

[5] Following Campa and Kedia (2003), I replace all the missing observations with zero and compute the medians for the two sub-samples. The difference remains statistically insignificant at the conventional levels.

confined to the sub-sample of non-diversifying joint ventures. Panel B shows that the announcements of diversifying joint ventures are met with a positive insignificant market reaction. Woolridge and Snow (1990) also document that there is an insignificant market reaction to the announcements of joint ventures as means of expansion in new markets with old products, which already might have been anticipated by investors. Panel C presents the market reaction for the announcements of non-diversifying joint ventures. I document a significant mean two-day cumulative abnormal return of 2.44% for the event window (-1, 0), and a significant mean five-day cumulative abnormal return of 3.52% for the event window (-2, +2).

Table III

Cumulative abnormal returns over selected intervals for a sample of 478 firms that announced joint ventures formation during the period 1991-1999. The sample consists on 360 firms that initiate diversifying joint ventures and 118 firms that initiate non-diversifying joint venture. Joint ventures are identified from the SDC database. Abnormal returns are calculated using the market model parameters estimated over a 155-day period ending 45 days before the announcement date. The CRSP value-weighted index is used in the market model to compute betas. The abnormal returns are cumulated in the intervals. The percentage positive is the ratio of the number of firms with positive abnormal returns to the total number of firms. The generalized sign test is used to test the significance of the percentage of firms with positive abnormal returns. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

Panel A: All Partner firms

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median %	z-statistic	Generalized sign test
-5 to –1	0.39	-0.33	-0.46	48
-2 to +2	1.30	0.14	2.18**	52**
-1 to 0	1.02	0.24	3.21***	53**
+1 to +5	-0.43	-0.31	-1.51*	47

Panel B: Partner firms for diversifying joint ventures

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median %	z-statistic	Generalized sign test
-5 to –1	0.35	-0.10	0.01	50
-2 to +2	0.56	-0.14	0.20	48
-1 to 0	0.55	0.10	1.23	49
+1 to+ 5	-0.41	-0.53	-1.72**	45*

(table III continued)

Panel C: Partner firms for non-diversifying joint ventures

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median%	z-statistic	Generalized sign test
-5 to –1	0.50	-0.91	-0.95	42
-2 to +2	3.52	1.28	4.04***	65***
-1 to 0	2.44	0.64	4.33***	64***
+1 to+ 5	-0.48	0.18	-0.04	52

The abnormal return for the event window (-5, -1) is insignificant suggesting that there is little anticipation of the announcements. The analysis of the abnormal return for the event window (+1, +5) indicates that the market fails to fully capitalize the information contained with the joint venture announcement at the time of the announcement. However, further analysis for the two sub-samples indicates that this effect is confined to diversifying joint ventures. This result provides partial evidence on the puzzle of the negative market reaction following the announcement of alliances[6].

3.3.3 Determinants of a diversifying versus non-diversifying strategic alliance formation

Table IV presents the analysis of the main determinants of a firm's decision to form a non-diversifying or a diversifying joint venture. Furthermore, given the choice of a non-diversifying joint venture the analysis presents the main determinants of the firm's choice of the activity of the joint venture as one of the existing activities, i.e. the degree of overlap between the joint ventures activity and the activities of the existing business segments.

[6] Socher (2004) notes that the negative market reaction following strategic alliances formation is yet to be explained: "Whereas this phenomenon is seen in several event studies, a rational explanation is not found yet."

Table IV

The dependent variable in the selection model is a dummy variable that takes value 1 for non-diversifying joint ventures and 0 otherwise. On the second and third column, the dependent variable is the degree of overlap of the joint venture with one of the existing segments of the partner firm. Herfindahl-Hirschman Index is calculated as Herfindahl-Hirschman Index $= \sum_{i=1}^{N} \alpha_i^2$, where α_i represents the market share of firm *i* within an industry with N firms. GDP is the real growth rate of the Gross Domestic Product. Technology dummy takes value 1 if the contract specifies either one or a combination of R&D, technology or product development and 0 otherwise. Ownership is an indicator that takes value 1 if the firm has more than fifty percent of the ownership in the joint venture LnAge is the natural logarithm of the number of months between the first listing of the partner firm on CRSP and the date of the announcement.. Cash flow from operations is cash flow generated from all operating activities and is measured as a ratio relative to the total assets of the firm. Operating income is sales minus cost of goods sold and other expenses, before depreciation and amortization, and is measures as a ratio to total assets of the firm. The growth dummy is an indicator variable, which is one if the firm is high-growth, and 0 otherwise. Relative efficiency ratio is defined as cash flow at segment level divided by total sales of the segment minus the industry median divided by industry median and is calculated for the segment that has the same SIC code with the that of the joint venture. Number of segments represents the number of segments of the partner firm. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

Regressions	Predicted sign	Selection model (1)	Substantial analysis (1)	Substantial analysis (2)
Constant		0.1043 (0.74)	1.7471 (0.00)	1.7550 (0.00)
Herfindahl-Hirschman Index	-	-0.6255** (0.03)		
GDP	-	-8.9900** (0.03)		
Technology dummy	+	0.2789** (0.03)		
Ownership indicator	-	-0.3463* (0.07)		
LnAge	-	-0.0348 (0.43)	-0.1002*** (0.00)	-0.0978*** (0.00)
Operating Income	-		-0.0001 (0.71)	
Cash flow form operations	-			-0.0555 (0.73)
Growth dummy	+		0.1302** (0.04)	0.1310** (0.04)
Relative efficiency ratio	+/-		0.0475 (0.37)	0.0484 (0.36)
Number of segments	-		-0.0003 (0.22)	-0.0003 (0.22)
LAMBDA			0.513***	0.527***
Total effect of age			-0.007***	-0.013*
Model *p*-value		0.00***	0.00***	0.00***

The dependent variable for the probit model (selection model) is a dummy variable that takes value 1 for partner firms forming non-diversifying joint ventures and 0 otherwise. The dependent variable at the second stage (the OLS analysis) is the degree of overlap between joint venture activity (four digits SIC code) and the activity of existing business segments. The degree of overlap is defined as the ratio of the sale of the focal business segment (the segment with the same SIC code as the primary SIC of the joint venture) and the total sales at the firm level.

The results at the selection model level indicate that non-diversifying joint ventures are less likely to be formed by firm in highly concentrated industries, and during economic downturns. The analysis indicates that partnering firms are more likely to form technological non-diversifying joint ventures, and that they are willing to accept a minority ownership in the newly created entity. Consistent with predictions formulated by hypothesis 2a, the coefficient of Herfindahl-Hirschman Index is negative and significant at 5% level. Therefore, firms in highly competitive industries are willing to form non-diversifying joint ventures in order to preserve their market share. The coefficient of GDP is negative and significant, indicating that asset redeployment outside the firm's boundaries through non-diversifying joint venture formations is less likely during economic expansion. This result is consistent with the implications formulated by Maksimovic and Phillips (1999) for asset sales. Following their argument, my finding that non-diversifying joint ventures are less likely during economic upturns is consistent with the fact that firms are less likely to deploy capacity outside firm's boundaries when growth resumes. The results also indicate that technological joint ventures are more likely to be formed as a non-diversifying strategy in order to minimize the moral hazard and adverse selection problems. Finally, the coefficient of ownership variable is negative and significant at 10% level, a result consistent with the main prediction formulated by hypothesis H2d.

The difference between the two substantial analyses consists of using two different variables that capture firms' operating performance before the joint venture formation. The analysis of the marginal effect of age on the degree of overlap shows that younger firms are more likely to form joint ventures with a high degree of overlap with the existing activities. This result is consistent with the argument that younger firms in search for market recognition form joint ventures in the same line of expertise as their core activities. The coefficient of the growth dummy has the predicted sign and is significant in both substantial analyses. Consistent with hypothesis H2f, this result indicates that firms entering non-diversifying joint ventures are more likely to have investment opportunities that can be profitably integrated with the joint venture. I do not find evidence that firms with a higher performance enter a joint venture with a higher degree of overlap with the existing activities[7]. The coefficients of Operating income and Cash Flow from Operations are statistically insignificants. Also, the coefficient of the relative efficiency of the focal segment has the predicted sign but is insignificant at the conventional levels. This result indicates that, on average, the segments whose activities are duplicated by the activity of the joint venture are managed equally efficient, regardless of the degree of overlap. The coefficient of Lambda is statistically different from zero, indicating that that there are unmeasured characteristics, which make firms choose to enter a non-diversifying joint venture, correlated with the degree of overlap between joint venture activity and existing activities undertaken by the partner firm.

3.3.4 Changes in excess value around joint venture formation

The sample used to test hypotheses H3 and H4 is constructed using a multiple-stage process. I start with the sub-sample of 308 partner firms forming a joint venture during the

[7] Mohanram and Nanda (1998) finds that partnering firms forming joint ventures underperform their industry counterparts

period of 1991 and 1997. First, I exclude firms that do not have financial data available on Compustat, both at the firm and segment level, one year after the joint venture formation. I also exclude any firm that has at least one financial segment or one of its business segments is not assigned an SIC. Second, following the convention in the literature, I exclude any firms where the sum of divisional assets deviates by more than 25% of the firm total assets[8]. This sample cleaning process results in 184 firms that form a joint venture. The restriction of the sample for the period during 1991 and 1997 is motivated by the change in accounting standards in reporting data at the segment level. Information at the segment level follows the regulations of the Financial Accounting Standard Board (FASB) and Securities and Exchange Committee (SEC). In 1997 the Securities and Exchange Committee adopted the Statement of Financial Accounting Standards 131 (SFAS 131) that replaced SFAS 14. Under the SFAS 14, a company was required to report a segment if more than 10 % of assets, sales or profit could be attributed to an industry sector. According to SFAS 14, an industry segment was "a component of an enterprise engaged in providing a product or service or a group of related products and services primarily to unaffiliated customers…for profit". Recognizing that the information released according to SFAS 14 was ineffective, as many diversified firms reported themselves as single segment firms, the FASB replaced the industry segment-reporting standard with the one on the basis of "operating segments". Under the new accounting standard, SFAS 13, a company is required to report financial information on the basis of "operating segments" for which separate financial information is available, the management regularly evaluates how to allocate resources, and assesses performance. More precisely, an operating segment is defined as a component of a business that engages in activities from which it may earn revenues and incur expenses, whose operating results are regularly reviewed by the enterprise's "chief operating decision maker" to

[8] This restriction was imposed by Berger and Ofek (1995) when deriving the excess value measures

make decisions about resources to be allocated to the segment and assess its performance. Finally, an operating segment is a component of the business for which discrete financial information is available. Table V presents the annual distribution of the sub-sample of firms forming joint ventures between 1991 and 1996. The distribution is relatively uniform for the first four years and slightly higher for the years of 1995 and 1996.

Table V
The sample consists on 184 firms that initiated joint ventures between 1991 and 1996 with sufficient data to calculate excess value as defined in Berger and Ofek (1995).

Panel A: Partner firms by year

	All sample		Single segment firms		Multiple segment firms	
Year	N	%	N	%	N	%
1991	29	15.76	15	13.89	14	18.42
1992	25	13.59	17	15.74	8	10.53
1993	28	15.22	10	9.26	18	23.68
1994	22	11.96	17	15.74	5	6.58
1995	38	20.65	21	19.44	17	22.37
1996	42	22.83	28	25.93	14	18.42
Total	184	100	108	100	76	100

Panel B: Partner firms by year

	All sample		Diversifying JV		Non-diversifying JV	
Year	N	%	N	%	N	%
1991	29	15.76	12	24.00	17	12.69
1992	25	13.59	9	18.00	16	11.94
1993	28	15.22	7	14.00	21	15.67
1994	22	11.96	6	12.00	16	11.94
1995	38	20.65	7	14.00	31	23.13
1996	42	22.83	9	18.00	33	24.63
Total	184	100	50	100	134	100

(table V continued)

Panel C: Partner firms by industry

	All sample	
Industry (2 digit SIC codes)	N	%
Agriculture, Mining, Constructions (01-17)	23	12.50
Manufacturing (20-39)	97	52.72
Transportation, Communication, Electric, Gas, and Sanitary Service (40-49)	19	10.33
Wholesale and Retail Trade (50-59)	12	6.52
General Services and Others (70-99)	33	17.93
Total	184	100

Panel A distinguishes between single segment and multiple segments firms, while Panel B distinguishes between firms entering diversifying and non-diversifying joint ventures. Panel C indicates that the distribution of firms across industries follows the same pattern as for the whole sample, with a high representation of firms from manufacturing industries and a low representation of Wholesale and Retail Trade industries.

Table VI presents the mean and median excess value based on asset and sales multiplier of the partner firms in the year before and the year after joint venture formation. The mean excess value before joint venture formation is a statistically significant 0.037 based on asset multiplier and 0.053 based on sales multiplier. Therefore, the partner firms in my sample are valued at 8.89% above the imputed value based on asset multiplier, and 11.29% above the imputed value based on sales multiplier. In the year following the joint venture formation, the average excess value is a statistically insignificant –0.010 based on asset multiplier and –0.021 for sales multiplier. Consistent with the view that joint ventures formation diversifies the capital need of the partner firms, the decrease in excess value from before to after the joint venture formation is statistically significant at 1% level.

Table VI

This table reports excess value based on asset multiplier for the year prior to and the year following the joint ventures formation. The sample consists of 184 firms that initiated a joint venture between 1991 and 1996 with sufficient data to calculate excess value as defined in Berger and Ofek (1995). Panel A reports results for the full sample. Panel B and C examine sub-samples. Median values are reported in parentheses below mean value. The last row of every panel reports the Wilcoxon rank-sum test for the difference in means. . *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

Panel A: All Partner firms

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.037** (0.021)	184	0.052** (0.034)	183
Excess value after	-0.010 (0.000)	184	-0.021 (- 0.021)	182
Difference	0.000***		0.000***	

Panel B: Single segment firms

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.066*** (0.029)	108	0.121*** (0.072)	107
Excess value after	0.000 (-0.001)	108	0.014 (-0.019)	106
Difference	0.000***		0.000***	

Panel C: Multiple segment firms

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.002 (0.005)	76	-0.044 (0.010)	76
Excess value after	-0.025 (0.002)	76	-0.071*** (-0.045)	76
Difference	0.263		0.456	

Panel D: Partner firms forming a non-diversifying joint venture

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.084** (0.040)	50	0.070* (0.049)	49
Excess value after	- 0.011 (0.002)	50	0.009 (-0.020)	49
Difference	0.000***		0.000**	

(table VI continued)

Panel E: Partner firms forming a diversifying joint venture

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.020 (0.010)	135	0.045 (0.028)	134
Excess value after	-0.009 (-0.001)	135	- 0.033 (-0.024)	133
Difference	0.169		0.001***	

I also separate the joint venture partners into two groups based on number of segments. The analysis indicates that the results of a premium before the joint venture formation is confined to the sub-sample of single segment firms While single segment firms are valued at a premium one year before the joint venture formation, the excess value for multiple segment firms is statistically indistinguishable from zero. Moreover, the change in excess value documented for the whole sample seems to be confined to the sub-sample of single segment firms. In the year after the joint venture formation, firms in both sub-samples have a statistically insignificant excess value. Similar results are obtained when using sale multiplier for the sub-sample of single segment firms.

My results are in the same line of arguments with the evidence presented by Berger and Ofek (1995). Their results indicate that the excess value of the multiple segment firms is lower that the excess value for single segment firms. For my sample, this relation still holds, but the magnitude of the excess value that I document for the sample of partnering firms entering a joint venture is higher. However, the analysis performed for the two sub-sample emphasize that joint venture creation is a corporate strategy that results in value destruction and the effect is confined

to the sample of single segment firms. This finding is consistent with the argument that single segment firms lack the benefit of having internal capital markets and the need of financing new investments diverts resources from their core competencies.

I also separate the joint venture partners into partner firms forming a joint venture as a non-diversifying strategy and partner firms entering a diversifying strategy. Panel D shows the excess value based on asset and sales multiplier for the sub-sample of non-diversifying joint ventures. For this sub-sample, the excess value based on asset multiplier is 0.084 and is statistically significant at 5% level. One year after the joint venture formation, partnering firms entering non-diversifying joint ventures are valued at no premium. The decrease in excess value is statistically significant. This result may be driven by the market perception that the duplication of one of the activities undertaken by a firm is a risky strategy, as there is a higher probability that the partnering firm looses proprietary assets through a joint venture formation.

Firms entering diversifying joint ventures are valued at no discount one year before, as well as one year after the joint venture formation. The average impact of a diversifying joint venture formation on the relative valuation of the partnering firm to the industry counterparts is insignificant. This result is consistent with the view that diversifying joint ventures offer the benefits of exploiting economies of scale and scope, while avoiding the cost associated with diversification through an acquisition or a merger.

I further divide the sub-sample of single segment firms entering a joint venture into firms entering non-diversifying joint ventures and firms entering diversifying joint ventures. The results of the analysis presented in both panels of Table VII reinforce the argument that market perceives a non-diversifying joint venture as a risky strategy in terms of the partner firm's ability to protect proprietary assets. In the year prior to the joint venture formation, single segment firms

forming a non-diversifying joint venture are valued at an impressive 13.01% premium. In the year following the joint venture formation, partnering firms are valued at the industry median.

Table VII
This table reports excess value based on asset multiplier for the year prior to and the year following the joint ventures formation. The sample consists of 29 single segment firms that initiated a non-diversifying or a diversifying joint venture between 1991 and 1996 with sufficient data to calculate excess value as defined in Berger and Ofek (1995). Panel A reports results for the full sample. Panel B and C examine sub-samples. The last row of every panel reports the Wilcoxon rank-sum test for the difference in means. . *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

Panel A: Single segment firms entering a non-diversifying joint venture

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.115** (0.049)	29	0.135** (0.072)	29
Excess value after	-0.001 (0.004)	29	0.079 (- 0.012)	28
Difference	0.017**		0.048**	

Panel B: Single segment firms entering a diversifying joint venture

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.047 (0.020)	79	0.116*** (0.071)	78
Excess value after	0.001 (-0.002)	79	-0.008 (- 0.019)	78
Difference	0.121		0.000***	

In summary, the change in excess value around joint venture formation indicates that, on average, these hybrid corporate strategies are value destroying. However the analysis reveals that the effect is mostly confined to single segment firms, in particular single segment firms entering a non-diversifying joint venture. The valuation of the multiple segment firms relative to their industry counterparts is not affected by joint venture formations.

3.3.5. Joint ventures formation: impact on the efficiency of internal capital markets

The analysis of the impact of joint ventures formation on the efficiency of internal capital markets requires a further restriction in the sample by eliminating single segment firms. From the sample of 76 multiple segment firms used for the previous analysis, I exclude 3 firms without sufficient data at the segment level to calculate at least one of the three proxies of the efficiency of capital allocation.

Several studies document a positive relationship between change in investment efficiency and change in excess value around asset sales and spin-offs (Ahn and Denis, 2003; Dittmar and Shivdasany, 2003; Burch and Nanda, 2003).

Table VIII

This table reports the different measure of the allocation efficiency of the internal capital markets for the year prior to and the year following the joint ventures formation. The sample consists of 76 multi-segment firms that initiated a joint venture between 1991 and 1996 with sufficient data to calculate the relative value added by allocation (RVA) as defined in Rajan and Zingales (2000), q sensitivity of investment as defined in Peyer and Shivdasani (2001), and cash flow sensitivity as defined in Peyer (2002). Median values are reported in parentheses below mean values. The last row of every panel reports the Wilcoxon rank-sum test for the difference in means. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

Panel A: Relative value added by allocation (RVA)

	Mean Median	Number of observations
RVA before	0.001 (0.000)	73
RVA after	0.000 (0.000)	73
p-value	0.804	

Panel B: q sensitivity of investment

	Mean Median	Number of observations
q sensitivity of investment before	-0.001 (0.000)	73
q sensitivity of investment after	0.012 (0.000)	72
p-value	0.613	

(table VIII continued)

Panel C: Cash-flow sensitivity of investment

	Mean Median	Number of observations
Cash flow sensitivity of investment before	0.005* (0.000)	73
Cash flow sensitivity of investment after	0.090 (0.004)	72
p-value	0.002***	

The results of the analysis presented in Table VIII are consistent with these studies. In the year prior to joint venture formation, relative value added by allocation, as developed by Rajan, Servaes, and Zingales (2000) is 0.001, insignificantly different than zero. Multiple segment partner firms allocate as much capital to segments with above average investment opportunities as to segment with investment opportunities with below average investment opportunities; hence the firm have the same investment pattern as single segment industry counterparts in those segments. There is no significant change in the year following the joint venture formation, as the difference in means is insignificantly different than zero. This result is reinforced by the analysis using the q sensitivity of investment as developed by Peyer and Shivdasani (2001). Somehow different result is provided by the analysis of cash flow sensitivity of investment, a proxy developed by Peyer (2002). The result indicates that the decrease in investment efficiency is significant around joint ventures formation. However, cash flow sensitivity of investment is only marginally significant one year before the joint venture formation, while insignificant one year after.

3.4. Conclusion

This study provides a re-examination of the market reaction at the announcements of joint ventures formation. Consistent with the evidence found in prior studies, I document that on

average, investors perceive these corporate strategies to be value creating. I further show that joint ventures enhancing value upon announcement can be distinguished from those that do not create value. I divide joint ventures into diversifying and non-diversifying based on the degree of overlap of their activity with concurrent activities undertaken by the partner firms. The analysis reveals that non-diversifying joint ventures are value enhancing, while non-diversifying joint ventures do not destroy value. I also provide evidence that, while there is little anticipation at the announcements of joint ventures, market fails to fully capitalize the information embedded in the announcements for the sub-sample of diversifying joint ventures.

I find that non-diversifying joint ventures are less likely to be formed by partner firms situated in highly concentrated industries, during periods of economic expansion. I also suggest that technological joint ventures are more likely to be formed as non-diversifying strategies and that partner firms entering this type of strategy are more willing to accept a minority shareholder stake in the newly formed entity. Furthermore, the degree of overlap between joint venture activity and concurrent activities undertaken by the partner firms is negatively related to firm's age and positively related to its growth opportunities.

I also find that joint ventures formation negatively impact the valuation of partner firms relative to their industry counterparts. I show that, on average, partnering firms are traded at a premium before the joint venture formation. At the end of the year following the joint venture formation the excess value measure is insignificantly different than zero. However, this result seems to be mostly confined to the sub-sample of single segment firms, specifically to single segment firms initiating a non-diversifying strategy. For the sub-sample of multiple segment firms I find no evidence that joint ventures formation significantly impacts the valuation of the firm or the efficiency of internal capital markets.

4. Essay 2:
Value Creation through Diversifying versus Non-diversifying Strategic Alliance Formations

In this essay I test three main hypotheses related to the impact of strategic alliance formations on partner firms' valuation. First, I analyze the market reaction at the announcements of strategic alliances. Second, I analyze internal and external determinants of a strategic alliance formation as either diversifying or non-diversifying strategy. Third, I examine the impact of strategic alliance formations on firms' valuation during the year following the initiation of the alliance.

4.1. Hypotheses

4.1.1. Market reaction at the announcements of strategic alliance formations

Chan, Kensinger, Keown, and Martin (1997) document positive market reaction at the announcement of strategic alliances formed by US firms. Their sample is spanning 1983-1992 and includes 345 strategic alliances. The magnitude of the abnormal returns is a significant 0.64%, and no evidence of wealth transfer between the partners in the alliance was found. Their results document that the abnormal market reaction is mainly confined to a sub-sample of high-tech firms. Further analysis indicates that firms entering horizontal alliances involving transfer or pooling of technology experienced the highest market reaction (3.54%). They distinguish between horizontal and vertical alliances based on the difference between the three-digit SIC code of the partner firms. Non-horizontal alliances with a main objective of entering new markets experienced a positive abnormal return with a magnitude of 1.45%, while horizontal non-technical and non-horizontal technical alliances were met with no significant market

reaction. Finally, Chan et al. (1997) find that firms that form strategic alliances have superior operating performance relative to their industry counterparts over the five-year period surrounding the alliance formation year.

Das, Sen and Sengupta (1998) investigate the stock price response to the formation of 119 strategic alliances during the period of 1987 and 1991. They classify strategic alliances into technological and marketing alliances. Technological alliances incorporate research and development, technology transfer, and manufacturing, while marketing alliances include distribution, marketing, and customer service. The abnormal returns documented for the whole sample are positive and statistically significant. However, the results were mainly driven by the sub-sample of technological alliances, while marketing alliances had insignificant abnormal returns.

Kale, Dyer, and Singh (2002) provide further insight on the market reaction to the strategic alliance formations by incorporating in the analysis firms' experience in managing strategic alliances. As hypothesized, firms with greater alliance experience experienced higher cumulative abnormal returns than firms without an alliance function. Finally, Kale et al (2002) shows that market reaction is positively related to benefits provided by the alliance, measured by managerial assessments and accounting data.

In this study, I distinguish between diversifying and non-diversifying strategic alliances based on the degree of overlap between the activity of the alliance (four-digits SIC code) and the activities developed by the each partner firm. When there is no such an overlap I classify the alliance formation as a diversifying strategy. Therefore, a strategic alliance formation may be a diversifying strategy for one of the partner firms and a non-diversifying for the other, diversifying strategy for both partner firms or non-diversifying for both partner firms. I also

classify all alliances that have research and development, technology, and manufacturing as technology alliances and others such as marketing, supply, and licensing agreements, as non-technology alliances. Based on this classifications and previous empirical evidence, I hypothesize that:

H1: *Strategic alliances formations are met with positive market reaction around the date of the announcement. Non-diversifying alliances experience a higher market abnormal return than diversifying alliances.*

4.1.2. Firms' choice of entering diversifying or non-diversifying strategic alliances

Firm's decision to enter a specific strategic alliance is not a random process. Koza and Lewin (1996) argue that firm's choice to enter into an alliance can be distinguished in terms of its motivation to exploit an existing capability or to explore for new opportunities. Next section derives the hypotheses explaining a firm's choice of entering a strategic alliance as a diversifying or a non-diversifying strategy.

i) Strategic position: Baum and Oliver (1991) argue that strategic alliances formed by firms in highly competitive industries are providing the partner firms with valuable resources needed to ride out difficult times. Strategic alliances constitute useful arrangement with a purpose of sharing costs, and thus a useful vehicle to ease profit pressure, which are particularly intense in highly competitive industries. However, these benefits are more likely to be higher when strategic alliance is designed as a non-diversifying strategy. Such alliances also help the partnering firms to distinguish themselves from other competitors. Based on the aforementioned arguments, I conjecture that:

H2a: *Firms in highly competitive industries are more likely to form non-diversifying strategic alliances.*

ii) Economic conditions: Eisenhardt and Schoonhoven (1996) stipulate that: " strategic alliance formation is a complex phenomenon involving both strategic and social factors operating within a logic of needs and opportunities for cooperation". One of these factors may also be related to the economic growth/decline at the time of strategic alliance formation. During economic expansion periods, a firm's ability to quickly increase its productive capacity brings the advantage of the first mover, which results in gaining a higher market share. Non-diversifying strategic alliances prove to be a rapid and flexible way of making the necessary adjustment to resources. Firms are also faced with the decision to expand into other markets, as periods of economic booms are characterized by new investment opportunities. Diversifying strategic alliances allows partnering firms to undertake these opportunities, without incurring the effects of instant integration involved in asset purchases or mergers. Therefore, I argue that:

H2b: *Firm's decision of entering a diversifying or a non-diversifying strategic alliance during economic upwards is equally motivated.*

iii) Technological alliances: According to Hagedoorn (1993), technological strategic alliances involve cooperation in upstream value chain activities such as R&D, manufacturing and engineering, whereas non-technological strategic alliances involve cooperation in downstream value chains as sales and distribution. Similar to technological joint ventures, technological strategic alliances are subject to severe moral hazard and adverse selection problems because of the difficulty in assessing the true value of the output. Non-diversifying strategic alliances partially mitigate these problems, as partner firm has previous experience in that particular line of business. Therefore, I hypothesize that:

H2c: *Technological strategic alliances are more likely to be formed as non-diversifying strategies.*

iv) Firm's age: Stuart, Hoang, and Hybels (1999) investigate the extent to which interorganizational networks of young companies affect their ability to acquire the resources necessary for survival and growth. Young firms with high growth opportunities and higher operating performance, whose quality is good but not easily observable, may enter an alliance to enhance its visibility to would-be buyers or suppliers. Along the same lines, Allen and Phillips (2000) and Pablo and Subramaniam (2001) point out that an alliance provides a way to finance growth opportunities without facing the cost of external finance. Strong relationships with prominent firms, not necessarily operating in the same industry, convey the positive evaluation received by young companies from influential organizations. Therefore, a strategic alliance formation acts as an endorsement of the quality of existing activities developed by the young partner firm. Firms with strong strategic position within their industries, usually mature firms, are less likely to form strategic alliances overlapping their existing activities. Their decision to form a strategic alliance is more likely to be undertaken as a first step of entering new markets searching for new growth opportunities. Based on these arguments, I hypothesize that:

H2d: *Younger firm with high growth opportunities are more likely to form a non-diversifying strategic alliances, while mature firms with lower growth opportunities are more likely to form diversifying strategic alliances.*

v) Relative efficiency of the focal segment: Another motive driving the firms' choice of a non-diversifying alliance formation may be linked to the investment efficiency of the segment having the same primary SIC code with that of the strategic alliance. If the management wants to focus the available resources into core activities, and therefore are less willing to invest in peripheral activities, an alliance involving the peripheral divisions may prove to be helpful

because partnering firm may provides valuable expertise and possibly necessary resources. Therefore, I hypothesize that:

H2e: *A firm is more likely to form a non-diversifying strategic alliance with a lower degree of overlap when the investment ratio of the focal segment is low.*

vi) Change in Excess Value around Strategic Alliance Formation: The strategic behavior theory of Kogut (1988) and Jarillo (1989) suggests that firms enter strategic alliances because of long-term strategic consideration, regardless of immediate cost-benefit consideration. Therefore, a strategic alliance that is valuable in the long run need not have a short-term net benefit[9]. Khanna (1998) identifies sources of benefit that accrue to partnering firms entering a strategic alliance. He defines private benefits, as those that accrue to subsets of participants in an alliance while common benefits are defined as those that accrue collectively to all participants. Private benefits are more likely to be appropriated by the leading firm, the partnering firm with the highest investment made in the alliance. He further argues that the degree of overlap between the alliance scope and the scope of the firm determines the amount of resources invested in the alliance. Therefore, firms entering non-diversifying strategic alliances are more likely to further increase their investment immediately after the alliance formation. However, the necessary resources are part of the broader range of resources available to other existing activities developed by firm but not governed by the alliance. Hence, partnering firms trying to derive higher private benefits from the alliance may need to fall back on their internal capital markets to finance sequential investments immediately after the alliance formation. However, an efficient internal capital market may be used to transfer resources from segments with low growth

[9] Chan, Kensinger, Keown, and Martin (1997) find that firms that enter a strategic alliance tend to outperform their industry counterparts when performance measures are considered over an interval of five years around the alliance formation, but perform similarly when performance is measured from the year before to the year after the alliance formation.

opportunities to a better use offered by the strategic alliance. Single segment firms are more likely to be negatively affected, as they lack the flexibility provided by internal capital markets. Market participants may penalize a single segment firm's decision to redistribute the limited resources between the only activity developed in the house and strategic alliance. Thus, hypothesis 5 is stated as follows:

> H3: *There is a negative impact of a strategic alliance on the valuation of the partner firm relative to its industry counterparts. This effect is more likely to be confined to the sub-sample of single segment firms.*

4.2. Variables Definitions and Methodology

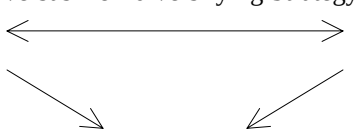
In this section, I define the variables and describe the methodology used to test the hypotheses.

4.2.1. Market reaction at the announcements of strategic alliances

I examine the wealth effects of strategic alliances formation by employing the event-study methodology used by Dodd and Warner (1983). I estimate a market model over 155-day period ending 45 days before the announcement of the alliance. I perform the analysis for the whole sample and for the sub-samples of diversifying and non-diversifying strategic alliances. I classify a strategic alliance as a diversifying corporate strategy when none of partner's business segments share the same four digits SIC code with the primary SIC of the strategic alliance. Similarly, a non-diversifying strategic alliance implies that at least one of the business segments of the partner firm share the same SIC code with that of the strategic alliance. Figure 1 illustrates one example of strategic alliance formation as a diversifying strategy for one of the partners and non-diversifying for the other partner. On January 1st, 1992 Parametric Technology Corp and the Flight system division of United Technology Corp signed an agreement to jointly develop

Parametric's Pro/ Composite CAE application for automated design and manufacture of composite parts. There is a perfect overlap between the SIC code of the strategic alliance and the SIC code of the Mechanical design software business segment of the Parametric Technology Corp. None of the United Technology Corp business segments share the same SIC code with the strategic alliance. Therefore, I classify this strategic alliance as a diversifying strategy for United Technology Corp and as a non-diversifying strategy for Parametric Technology Corp.

Figure 1
Strategic alliance as a Diversifying versus Non-diversifying Strategy



Parent firm 1
UNITED TECHNOLOGY CORP
(SIC code 3724)

Parent firm 2
PARAMETRIC TECHNOLOGY CORP
(SIC code 7372)

Strategic Alliance
(SIC code 7372)

UNITED TECHNOLOGY CORP		Strategic Alliance	PARAMETRIC TECHNOLOGY CORP	
Business segments	SIC code	SIC code	Business segments	SIC code
Power	3724	7372	Mechanical design Software	7372
Automotive	3714			
Flight system	3721			
Building systems	3534			
Other	3674			

4.2.2. Firm's choice of entering a strategic alliance as diversifying or non-diversifying strategy

In order to test hypotheses H2a through H2e, I use the Heckman (1979) two-stage selection model[10]. The main variables used in the analysis are as follows: a) *Herfindahl-*

[10] A detailed description of Heckman two-stage model is presented in Section 3.2.2. of this dissertation

Hirschman Index measured as Herfindahl-Hirschman Index= $\sum_{i=1}^{N} \alpha_i^2$, where α_i represents the market share of firm *i* within an industry with N firms; b) *Technology dummy* that takes value 1 if the contract specifies either one or a combination of R&D, technology or product development; c) *GDP* is the real growth on the Gross Domestic Product; d) *Size* defined as the natural logarithm of the total assets of the firm; e) *Segment investment ratio* is defined as the ratio of capital expenditures to total sales of the focal segment, i.e business segment sharing the same primary SIC code with the strategic alliance ; f) a growth indicator dummy set to 1 when market-to-book market to book ratio of the firm is higher than 1 and 0 otherwise; g) Cash flow from operations is cash flow generated from all operating activities and is measured as a ratio relative to the total assets of the firm; h) Operating return on assets is operating income before depreciation divided by total assets. Following Krishnaswami and Subramaniam (1999), I use the ratio of the firms' market value of assets to book value of assets as a proxy for growth options in the firm's investment opportunity set. Market value equals the book value of assets minus the book value of equity plus the market value of equity.

4.2.3. Measure of relative valuation

In measuring the relative valuation of the partner firms I use the excess value metrics, as initially developed by Berger and Ofek (1995), which compares a firm's value to its imputed value of each of its segments operated as a single segment firms. For each firm, segments are valued using median industry asset and sales multipliers of single segment firms. The imputed value of the firm is the sum of the segment values. Excess value is calculated as the logarithm of

the ratio of firm value to imputed value[11]. Positive excess value indicates that the firm trades at a premium, while negative values are indicative of a premium.

4.3. Results

4.3.1. Data and summary statistics

Using a sample spanning 1991-2000, I examine the market reaction at the announcements of strategic alliances formation, the main determinants of a firm's choice to form strategic alliances as a diversifying and non-diversifying strategy and whether strategic alliances formation favorably affects the valuation of the partner firms relative to their industry counterparts. The list of strategic alliances comes from Thompson Financial Security database (SDC- *Joint Ventures/Alliances*). In order to test H1 through H2e, I select only strategic alliances formed by two publicly traded US firms with available financial data on Compustat both at the firm and business segment level for the year prior to strategic alliance formation. I start with an initial sample of 3106 strategic alliances formed by two publicly traded industrial partner firms. I select only those strategic alliances where both partnering firms have financial data on the Compustat Industry Segment file one year before the alliance formation. This leaves a total of 1637 strategic alliances initiated by 3274 partner firms between 1991 and 2000.

Table I presents the annual distribution of the strategic alliances. The minimum number of strategic alliances formations in the sample is 29 during the year of 1991, involving 58 firms, and the maximum number is 292 during the year of 1997, involving 584 firms. Within the same year there is a similar percentage of non-diversifying and diversifying strategic alliances out of the total for each sub-sample.

[11] For a detailed description of the excess value measure see Section 3.2.3

Table I

The industry refers to the industry of the alliance, i.e. the primary SIC code of the alliance. The sample consists on 2489 firms that initiate diversifying strategic alliances and 785 firms that initiate non-diversifying strategic alliances between 01/01/91 and 12/31/00. All deals are identified using the Security Data Corporation (SDC) *Joint Ventures and Alliances* database.

Panel A: Number of parent firms by year

	Non-Diversifying SA		Diversifying SA	
Year	Number	%	Number	%
1991	9	0.01	49	0.02
1992	77	9.81	299	12.01
1993	72	9.17	290	11.65
1994	95	12.10	289	11.61
1995	106	13.50	314	12.62
1996	102	12.99	254	10.20
1997	160	20.38	424	17.03
1998	70	8.92	208	8.36
1999	64	8.15	250	10.04
2000	30	3.82	112	4.50
Total number of firms	785	100	2489	100

Panel B: Parent firms by industry

		Non-Diversifying SA		Diversifying SA	
SIC	Sector	Number	%	Number	%
0	Agriculture, Forestry, and Fishing	0	0	5	0.20
1	Mining and Construction	5	0.64	15	0.60
2	Manufacturing	110	14.01	437	17.56
3	Manufacturing	199	25.35	1074	43.15
4	Transportation and Communication	34	4.33	138	5.54
5	Wholesale and Retail Trade	26	3.31	118	4.74
7	Lodging and Entertainment	405	51.59	666	26.76
8	Services	5	0.64	32	1.29
9	Public Administration	1	0.13	4	0.16
	All sectors	785	100	2489	100

(table I continued)

Panel C: Alliances by industry

		Non-Diversifying SA		Diversifying SA	
SIC	Sector	Number	%	Number	%
0	Agriculture, Forestry, and Fishing	0	0	6	0.24
1	Mining and Construction	6	0.76	12	0.48
2	Manufacturing	106	13.5	272	10.93
3	Manufacturing	199	25.35	639	25.67
4	Transportation and Communication	32	4.08	96	3.86
5	Wholesale and Retail Trade	31	3.95	495	19.85
7	Lodging and Entertainment	406	51.72	786	31.62
8	Services	5	0.64	149	5.99
9	Public Administration	0	0	34	1.37
	All sectors	785	100	2489	100

Panel B shows the industry distribution of the partner firms. There is a high representation of manufacturing and lodging and entertainment firms, accounting for almost 72% of the total sample. Similar distribution is shown in Panel C, where the difference between partner firms is made based on the industry of the alliance.

Table II presents data descriptive for partner firms entering diversifying and non-diversifying strategic alliances. Firms entering diversifying strategic alliances are on average more mature, have a lower market to book ratio, and a higher debt ratio than firms entering non-diversifying strategic alliances. The difference in research and development ratio is also significantly different from zero at 1% level, indicating that firms forming a non-diversifying

strategic alliance are more research intensive than those forming diversifying strategic alliances.[12]

Table II

The sample consists on 2489 firms that initiate diversifying strategic alliances and 785 firms that initiate non-diversifying strategic alliances. Size is the natural logarithm of the total assets of the firm. Market to book ratio is the ratio of the market value to the book value of assets. Research and development is equal to research and development expenditures divided by book value of assets. Debt ratio is defined as debt over book value of assets where debt is the long-term debt and debt in current liabilities. Cash flow from operations is cash flow generated from all operating activities and is measured as a ratio relative to the total assets of the firm. Operating return on assets is operating income before depreciation divided by total assets. Herfindahl Index is calculated as Herfindahl Index=$\sum_{i=1}^{N} \alpha_i^2$ where α_i represents the market share of firm *i* within an industry with N firms. The last column shows the Wilcoxon rank-sum test and the Median Two-Sample test. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

	Non-diversifying Strategic alliances	Diversifying Strategic alliances	*p*-value
Size	5.958	6.772	0.000***
	(5.789)	(6.807)	0.000***
Market to Book	5.217	3.857	0.000***
	(3.052)	(2.264)	0.000***
Research and Development	0.161	0.132	0.000***
	(0.128)	(0.103)	0.000***
Debt ratio	0.122	0.158	0.000***
	(0.044)	(0.117)	0.000***
Cash flow from Operating Activities	0.061	0.043	0.000***
	(0.105)	(0.149)	0.022**
Operating return on assets	0.097	0.086	0.007***
	(0.156)	(0.088)	0.187
Herfindahl Index	0.144	0.236	0.000***
	(0.062)	(0.186)	0.000***
Number of firms	785	2489	

[12] Firms are required to report research and development expenses when they exceed 1% of the total sales. Following Campa and Kedia (2003), I replace all the missing observations with zero and compute the means for the two sub-samples. The difference remains statistically significant at the conventional levels.

The statistical significant difference in Herfindahl–Hirschman index variable indicates that partner firms forming diversifying strategic alliances are from industries with a higher concentration than those forming non-diversifying strategic alliances. Although not reported in the table, the analysis indicates that the percentage of technological non-diversifying strategic alliances is higher than the percentage of technological diversifying strategic alliances.

4.3.2. Market reaction around the announcement of strategic alliance formations

I investigate the market abnormal return for the sample of firms entering strategic alliances, and I present the results for the two sub-samples of diversifying and non-diversifying strategic alliances. I further divide the diversifying and non-diversifying strategic alliances in technological and non-technological sub-samples. Consistent with the main prediction of hypothesis H1, I find statistical significant positive abnormal returns for the whole sample.

Table III summarizes the abnormal returns over different time intervals around the date of the announcement. I obtain a significant mean two –day cumulative abnormal return of 1.16% for the event window (-1, 0), and a significant mean three-day abnormal return of 0.99 % for the event window (-1, +1). Consistent with predictions made by Hypothesis H1, Panel B and C show that the market reaction is higher at the announcements of non-diversifying strategic alliances than at the announcements of diversifying strategic alliances. The analysis of the market reaction for the sub-samples of technological alliances reveals that most of the positive market reaction is confined to non-diversifying technological strategic alliances. This result is consistent with the evidence presented by Chan, Kensinger, Keown, and Martin (1997) and Das, Sen and Sengupta (1998).

Table III

Cumulative abnormal returns over selected intervals for a sample of 3274 firms that announced strategic alliances formation during the period 1991-2000. The sample consists on 785 firms that initiate diversifying strategic alliances and 2489 firms that initiate non-diversifying strategic alliances. Strategic alliances are identified from the SDC database. Abnormal returns are calculated using the market model parameters estimated over a 155-day period ending 45 days before the announcement date. The CRSP value-weighted index is used in the market model to compute betas. The abnormal returns are cumulated in the intervals. The percentage positive is the ratio of the number of firms with positive abnormal returns to the total number of firms. The Wilcoxon rank test is used to test the statistical significance of median abnormal returns. **$,** *, **, and *** represent significance at 10%, 5%, 1%, and 0.1% levels, respectively.

Panel A: All Parent firms

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median	z-statistic	Wilcoxon rank test
-1 to 0	1.16	0.64	9.73***	3.814***
-1 to +1	0.99	0.54	6.69***	2.107**
-20 to +5	0.76	0.39	1.65*	-2.882

Panel B: Parent firms for diversifying strategic alliances

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median	z-statistic	Wilcoxon rank test
-1 to 0	0.90	0.21	6.89***	3.287***
-1 to +1	0.69	0.13	4.03***	1.313*
-20 to +5	0.63	0.32	0.91	-2.978

Panel C: Parent firms for non-diversifying strategic alliances

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median	z-statistic	Wilcoxon rank test
-1 to 0	1.98	0.50	7.58***	2.888***
-1 to +1	1.97	0.72	6.47***	2.608***
-20 to +5	1.15	0.67	1.74*	-1.189

Panel D: Parent firms for non-diversifying, non-technological strategic alliances

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median	z-statistic	Wilcoxon rank test
-1 to 0	0.97	0.39	2.043**	0.130
-1 to +1	1.37	0.52	3.038***	0.759
-20 to +5	-0.53	-0.29	0.896	-1.389

(table III continued)

Panel E: Parent firms for non-diversifying, technological strategic alliances

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median	z-statistic	Wilcoxon rank test
-1 to 0	2.48	0.55	7.589***	3.641***
-1 to +1	2.26	0.84	5.780***	2.880***
-20 to +5	1.99	0.96	1.501*	-0.649

Panel F: Parent firms for diversifying, non- technological strategic alliances

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median	z-statistic	Wilcoxon rank test
-1 to 0	0.70	0.22	3.742***	2.443***
-1 to +1	0.53	0.23	2.298***	1.110
-20 to +5	0.81	0.68	0.694	-1.718

Panel G: Parent firms for diversifying, technological strategic alliances

Interval	Cumulative abnormal returns for the sample			
	Mean%	Median	z-statistic	Wilcoxon rank test
-1 to 0	1.07	0.19	5.913***	2.639***
-1 to +1	0.82	0.08	3.366***	0.949
-20 to +5	0.49	0.09	0.364	-2.777

4.3.3. Firm's choice between diversifying and non-diversifying strategic alliance

Table IV presents the results of the analysis of the firms' choice of a diversifying or non-diversifying strategic alliance. Furthermore, given the choice of a non-diversifying strategic alliance the analysis presents the main determinants of the degree of overlap between the strategic alliance activity and existing activities developed in the house by the partner firm. I conduct this analysis by using Heckman two-stage model.

The dependent variable for the probit model (selection model) is a dummy variable that takes value 1 for partner firms forming non-diversifying strategic alliances and 0 otherwise.

Table IV

The dependent variable in the selection model is a dummy variable that takes value 1 for non-diversifying strategic alliances and 0 otherwise. On the second and third column, the dependent variable is the degree of overlap of the strategic alliance with one of the existing segments of the parent firm. Herfindahl-Hirschman Index is calculated as Herfindahl-Hirschman Index=$\sum_{i=1}^{N} \alpha_i^2$, where α_i represents the market share of firm *i* within an industry with N firms. GDP is the real growth rate of the Gross Domestic Product. Technology dummy takes value 1 if the contract specifies either one or a combination of R&D, technology or product development and 0 otherwise. Size is the natural logarithm of the total assets of the firm. Cash flow from operations is cash flow generated from all operating activities and is measured as a ratio relative to the total assets of the firm. Operating return on assets is operating income before depreciation divided by total assets. The growth dummy is an indicator variable, which is one if the firm is high-growth, and 0 otherwise. Segment investment ratio is defined as capital expenditures at segment level divided by total sales of the segment and is calculated for the segment that has the same SIC code with the that of the strategic alliance. Number of segments represents the number of segments of the parent firm. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

PANEL A

Regressions	Predicted sign	Selection model (1)	Substantial analysis (1)
Constant		-0.356 (0.01)	1.192 (0.00)
Herfindahl Index	-	-1.696*** (0.00)	
GDP	+/-	4.826 (0.10)	
Technology dummy	+	1.294*** (0.00)	
Size	-	-0.074*** (0.00)	-0.010*** (0.00)
Cash flow form operations	+	0.434*** (0.00)	0.024 (0.39)
Growth dummy	+	0.121** (0.02)	0.015 (0.26)
Segment investment ratio	+		0.001** (0.04)
Number of segments	-		-0.092** (0.01)
LAMBDA			-0.071** (0.01)
Total effect of age			-0.013 (0.11)
Total effect of Cash flow			0.044 (0.57)
Total effect of Growth dummy			0.020 (0.57)
Number of firms		3274	785

(table IV continued)
PANEL B

Regressions	Predicted sign	Selection model (2)	Substantial analysis (2)
Constant		-0.394 (0.00)	1.192 (0.00)
Herfindahl Index	-	-1.734*** (0.00)	
GDP	+/-	4.877* (0.09)	
Technology dummy	+	1.292*** (0.00)	
Size	-	-0.066*** (0.00)	-0.009*** (0.00)
Operating return on assets	+	0.261** (0.01)	0.022 (0.38)
Growth dummy	+	0.120** (0.02)	0.015 (0.26)
Segment investment ratio	+		0.001** (0.04)
Number of segments	-		-0.093** (0.01)
LAMBDA			0.072** (0.01)
Total effect of age			-0.012 (0.11)
Total effect of Operating return			0.033 (0.62)
Total effect of Growth dummy			0.020 (0.56)
Number of firms		3274	785

The dependent variable at the second stage (the OLS analysis) is the degree of overlap between strategic alliance activity (four digits SIC code) and the activity of existing business segments. The degree of overlap is defined as the ratio of the sale of the focal business segment (the segment with the same SIC code as the primary SIC of the strategic alliance) and the total sales at the firm level. The results at the selection level model indicate that firms in highly

competitive industries are willing to form non-diversifying strategic alliances in order to preserves their market share. The coefficient of GDP is positive but marginally significant, indicating that diversifying and non-diversifying strategic alliances are equally likely to be formed during economic expansion. The results also indicate that technological strategic alliances are more likely to be formed as a non-diversifying strategy in order to minimize the moral hazard and adverse selection problems. The coefficients of growth dummy and cash flow from operations are positive, and the coefficient of size is negative, indicating that young companies forming non-diversifying strategic alliances are trading growth opportunities and a relatively superior financial position for market recognition. The analysis reveals remains unchanged when operating return on assets is used instead of cash flow from operations.

Substantial analysis indicates that size, growth opportunities and performance measures are not related to the degree of overlap between the alliance activity and the existing activities. Consistent with hypothesis H2e, the coefficient of the segment investment ratio of the focal segment has the predicted sign and is highly significant at the conventional levels. This result indicates that the degree of overlap is positively related to the investment ratio. Therefore, partially consistent with Stopford and Wells (1972), my result indicates that strategic alliances overlapping peripheral segments duplicate business segments in which the management has made low level of investment. The coefficient of Lambda is statistically significant than zero in both analyses.

4.3.4. Changes in excess value around strategic alliance formation

The sample used to test hypotheses H3 is constructed using a multiple-stage process. I start with the sub-sample of 1956 publicly traded partner firms forming strategic alliances during 1991-1997. First, I exclude firms that do not have financial data available on Compustat, both at

the firm and segment level, one year after the strategic alliance formation. I exclude any firm that have at least one financial segment or when one of its business segments is not assigned an SIC. Second, following the convention in the literature, I exclude any firms where the sum of divisional assets deviates by more than 25% of the firm total assets. This sample cleaning process results in 898 firms. The restriction of the sample for the period during 1991 and 1997 is motivated by the change In 1997 the Securities and Exchange Committee adopted the Statement of Financial Accounting Standards 131 (SFAS 131) that replaced SFAS 14[13].

Table V
This table reports excess value based on asset multiplier for the year prior to and the year following the strategic alliance formation. The sample consists of 898 firms that initiated a strategic alliance between 1991 and 1996 with sufficient data to calculate excess value as defined in Berger and Ofek (1995). Panel A reports results for the full sample. Panel B and C examine sub-samples. The last row of every panel reports the *p*-value for the Wilcoxon rank-sum test for the difference in means. . *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

Panel A: All Partner firms

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.082*** (0.053)	898	0.164*** (0.103)	898
Excess value after	0.039*** (0.011)	898	0.057*** (0.017)	898
Difference	0.000***		0.000***	

Panel B: Single segment firms

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.088*** (0.061)	784	0.205*** (0.151)	784
Excess value after	0.041*** (0.007)	784	0.083*** (0.036)	784
Difference	0.000***		0.000***	

[13] Detailed description of SFAS 131 and SFAS 14 is available at http://www.sec.gov/rules/proposed/33-7549.htm

(table V continued)

Panel C: Multiple segment firms

	Excess value based on asset multiplier	Number of observations	Excess value based on sale multiplier	Number of observations
Excess value before	0.042 (0.018)	114	-0.114*** (0.122)	114
Excess value after	0.022 (0.021)	114	-0.120*** (0.101)	114
Difference	0.445		0.000***	

Table V presents the mean and median excess value based on asset and sales multiplier of the partner firms in the year before and the year after strategic alliance formation. The mean excess value before strategic alliance formation is a statistically significant 0.082 based on asset multiplier and 0.164 based on sales multiplier. Therefore, the partner firms in my sample are valued at 20.78% above the imputed value based on asset multiplier, and 45.88% above the imputed value based on sales multiplier. In the year following the strategic alliance formation, the average excess value is a statistically significant 0.039 based on asset multiplier and 0.057 for sales multiplier. I perform a similar analysis for the two sub-samples of single segment and multiple segment firms. The analysis indicates that the premium documented before the strategic alliance formation for the whole sample is confined to the sub-sample of single segment firms. Single segment firms forming strategic alliances are traded at a premium of almost 15% before the strategic alliance formation and 11% after the alliance formation. The decrease in excess value for this sub-sample is statistically significant and indicates that single segment firms are negatively affected by the lack of having an efficient internal capital market. In contrast, the excess value measure for the multiple segment firms is statistically indistinguishable from zero, both before and after the alliance formation. On one hand, no change in excess value for multiple segment firms may reflect the fact that strategic alliance formation is a step further in

maintaining a relatively good valuation compared to industry counterparts. On the other hand, one should consider the size of the investment required for the strategic alliance as compared to the size of the partner firm that initiates it. It may also be the case that, on average, required investment for strategic alliance initiation is smaller than other types of investment undertaken by a multiple segment firm.

The analysis of the change in excess value calculated using sales multiplier shows that single segment firms are traded at an impressive premium, both before and after the year of alliance formation, while multiple segment firms are traded at a discount. However, the decrease in excess value based on sales multiplier is statistically significant only for single segment firms. My results support the evidence presented by Berger and Ofek (1995). In their study, the excess value of the single segment firms is higher than the excess value of the multiple segment firms. However, the magnitude of the excess value that I document for the sample of partnering firms is higher, both for diversifying and non-diversifying strategic alliances

In summary, the change in excess value around strategic alliance formation indicates that the potential long-term benefit expected from the alliance comes at an immediate cost, which results in value destruction. However, the analysis reveals that the effect is mostly confined to single segment firms. The valuation of the multiple segment firms relative to their industry counterparts is not affected by strategic alliance formations.

4.4. Conclusion

This study analyses the market reaction at the announcements of strategic alliances formation. Consistent with previous findings, I document that on average, investors perceive these corporate strategies to be value creating. I divide strategic alliances into diversifying and non-diversifying based on the degree of overlap of their activity with concurrent activities

undertaken by the partner firms, and further for each of the two sub-samples in distinguish between technological and non-technological strategic alliances. The analysis reveals that most of the positive abnormal returns are confined to the sub-sample of technological non-diversifying strategic alliances.

I find that diversifying strategic alliances are less likely to be formed by younger firms with high growth opportunities and good operating performance, situated in highly competitive industries. I also suggest that technological strategic alliances are more likely to be formed as non-diversifying strategies. Furthermore, the degree of overlap between strategic alliance activity and concurrent activities undertaken by the partner firms is positively related to the investment ratio of the focal segment.

I also find that strategic alliances formation negatively impact the valuation of partner firms relative to their industry counterparts. However, this result seems to be mostly confined to the sub-sample of single segment firms.

5. Concluding Remarks

This study analyses the market reaction at the announcements of alliances formation, firm's choice of entering an alliance as a diversifying or non-diversifying strategy and the immediate impact of the alliance formation on the valuation of the partnering firms relative to their industry counterparts.

In Chapter 3, I conduct the analysis on a sample of publicly traded firms initiating 239 joint ventures between 1991and 1999. Consistent with previous evidence in the literature, I find that joint venture announcements are met, on average, with a positive market reaction. The results also indicate that joint ventures creating value upon announcements can be distinguished from those that do not create value. The positive wealth effect around the announcements is confined to the sub-sample of non-diversifying joint ventures.

I also show that a firm's decision to enter a joint venture designed as a diversifying or a non-diversifying strategy is motivated by the interaction of industry- and firm-specific factors. Non-diversifying joint ventures are more likely to be formed by firms operating in highly competitive industries, during economic downturns, and are designed as appropriate strategies for complex joint ventures. The degree of overlap between the joint venture activity and existing activities developed by the partnering firm is higher for younger firms and for firms with higher growth opportunities.

I also analyze the short run impact of joint venture formation on the valuation of the partnering firms. I use a sample of 184 publicly traded firms initiating a joint venture between 1991 and 1996. I document that the joint venture formations negatively impacts the valuation of

the partnering firms, and the effect is confined to the sub-sample of single segment firms. I further show that for the sub-samples of multiple segment firms there is no significant change in the excess value around the joint venture formations. Moreover, the efficiency of capital allocation across different segments remains unaltered after the joint venture formation.

The focus of Chapter 4 is the analysis of three major hypotheses for a sample of firms forming strategic alliances. The first hypothesis predicts that, on average, market participants perceive strategic alliances as value creating corporate events. Within the second set of hypotheses I make predictions about the impact of various factors on a firm's choice of forming a diversifying or non-diversifying strategic alliance.

I conduct my analysis using a sample of 1,638 strategic alliances formed between 1991 and 2000 by publicly traded industrial firms. The magnitude of the market reaction at the announcements of strategic alliance formation is comparable with previous evidence documented in the literature. My results also support the argument that the highest price reaction is confined to partner firms entering technological, non-diversifying strategic alliances.

The results of the analysis of the second set of hypotheses reveal that a firms' decision to enter a strategic alliance, designed as either a diversifying or a non-diversifying strategy, is a result of a complex interaction of external conditions and internal needs. Non-diversifying alliances are mainly formed by partnering firms positioned in highly competitive industries, during periods of recession, and are designed as the appropriate strategy for complex alliances. Consistent with learning argument, the degree of overlap between the activity of the strategic alliance and the existing activities developed in the house in determined by relative efficiency of the focal segments.

In Chapter 4 I also study the short-term impact of strategic alliances formation on the valuation of the partnering firms relative to their industry counterparts. Using a sample of 898 firms initiating strategic alliances between 1991 and 1996, I document that potential long-term benefit provided by strategic alliances comes at an immediate cost incurred during the year following the alliance formation. The negative effect is exclusively confined to the sub-sample of single segment firms.

In summary, this study shows that alliances formation, as hybrid forms of governance, is a result of an interaction of external factors and internal conditions. Market participants have the ability to distinguish between alliances that create value and those that do not create value. The decrease in the valuation of the partner firms after the alliance formation demonstrates that the long-term benefits provided by entering an alliance comes at an immediate cost.

A possible direction for future research would be the extension of the analysis presented in this manuscript to the cross-border alliances. Future research in this area should also focus on the examination of different financial arrangements made by partnering firms in raising the necessary capital at the initiation and throughout the life of the alliance.

References

Agrawal, A., J. Jaffe, and G. Mandelker, 1992, The post-merger performance of acquiring firms: A re-examination of an anomaly, *Journal of Finance*, 47, 1605-1621.

Ahn, S. and D. Denis, 2003, Internal Capital Markets and Investment Policy: Evidence from Corporate Spinoffs, *Journal of Financial Economics*, Forthcoming

Allen, J. and G. Phillips, 2000, Corporate Equity Ownership, Strategic Alliances and Product Market Relationships, *Journal of Finance*, 55, 2791-2815.

Anand, B. and T. Khanna, 2000, Do firms learn to create value? The case of alliances, *Strategic Management Journal*, 21, 295-315

Balakrishnan, S. and M. P. Koza (1993), 1993, Information asymmetry, adverse selection and joint ventures: Theory and Evidence, *Journal of Economic Behavior and Organization*, 20, 99-117

Bellaflamme, P. and F. Bloch, 2000, Optimal Ownership Structures in Asymmetric Joint Ventures, Working Paper, Queen Mary and Westfield College

Berger P. and E. Ofeck, 1995, Diversification's Effect on Firm Value, *Journal of Financial Economics*, 37, 39-65

Billett, M. and D. Mauer, 2001, Cross-subsidies, External Financing Constraints, and the Contribution of the Internal capital Market to Firm Value, *Review of Financial Studies*, Forthcoming.

Bradley, M., Desai, A., Kim, E.H., 1988, Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics*, 21, 3–40.

Burch T. and V. Nanda, 2003, Divisional diversity and the Conglomerate Discount: Evidence from Spin-offs, *Journal of Financial Economics*, 69-98

Campa, J. and S. Kedia, 2002, Explaining the diversification discount, *Journal of Finance*, 57,1731-1762

Chan, S.H., J.W. Kensinger, A. J. Keown, J.D. Martin, Do Strategic alliances create value?, *Journal of Financial Economics*, 46, 199-221

Chevalier, J. A., 2000, What do we know about cross-subsidization? Evidence from the investment policies of merging firms, Working paper, University of Chicago

Coase, R., 1937, The Nature of the Firm, Economics, 4, 386-405

Comment, R. and G. Jarrell, 1995, Corporate focus and stock returns, *Journal of Financial Economics,* 37, 67-87.

Daley, L., V. Mehrotra, and R. Sivakumar, 1997, Corporate focus and value creation: Evidence from spin-offs, *Journal of Financial Economics*, 45, 257-281.

Das, S., P.K. Sen, and S. Sengupta, 1998, Impact of Strategic Alliances on Firm Valuation, *Academy of Management Journal*, 41, 27-41

Deeds, D.L. and W.L. Hill, 1996, Strategic alliances and the rate of new product development: An empirical study of entrepreneurial biotechnology firms, *Journal of Business Venturing*, 11, 41-55.

DeLong, G.L., 2001, Stockholder Gains from Focusing versus Diversifying Bank Mergers, *Journal of Financial Economics*, 59, 221-252

Denis, D.J., and B. Thothadri, 1998, Internal capital markets, growth opportunities, and the valuation effects of corporate diversification. Working Paper, Purdue University

Denis, D., Denis D.J., and A. Sarin, 1997, Agency problems, equity ownership and corporate diversification, *Journal of Finance*, 52, 135-160

Desai, H. and P. Jain, 1999, Firm performance and focus: long-run stock market performance following spinoffs, *Journal of Financial Economics*, 54, 75-101.

Dittmar, A. and A. Shivdasani, 2003, Divestitures and divisional investment policies, forthcoming, *Journal of Finance,* 58, 2711-2744

Dodd, P. and J. Wagner, 1983, On corporate governance: a study of proxy contests. *Journal of Financial Economics* 27, 401-438.

Erikson, T. and T. Whited, 2000, Measurement error and the relationship between investment and *q*. *Journal of Political Economy*, 108, 1027-1057

Fan, J.P.H., and L. H. P. Lang, 2000, The measurement of relatedness: An application to corporate diversification, *Journal of Business*, 73, 629-660.

Gautier, A. and F. Heider, 2002, What Do Internal Capital Markets Do? Incentives vs. Redistribution, Financial Markets Group, London School of Economics.

Gertner, R., E. Powers, and D. Scharfstein, 2003, Learning about Internal Capital Markets from Corporate Spin-offs, *Journal of Finance*, 2479-2056.

Gertner, R., D. Scharfstein and J. Stein, 1994, Internal versus External Capital Markets, *The Quarterly Journal of Economics,* 109, 1211-1230.

Ghosh, A., 2001, Does operating performance really improve following corporate acquisitions? *Journal of Corporate Finance*, 7, 151-178.

Graham, J., M. Lemmon, and J. Wolf, 2002, Does corporate diversification destroy value?, *Journal of Finance*, 695-720.

Green, W. H., 2002, Econometric Analysis, Prentice Hall, Upper Saddle River, New Jersey

Grossman, S., and O. D. Hart, 1986, The cost and benefit of ownership: A theory of vertical and lateral integration, *Journal of Political Economy*, 94, 691-719.

Gulati, R., 1998, Alliances and Networks, *Strategic Management Journal*, 19, 293-317.

Hart, O. D., and J. Moore, 1990, Property rights and the nature of the firm, *Journal of Political Economy*, 98, 1119-1158.

Hauswald R. and U. Hege, 2004, Ownership and Control in Joint ventures: Theory and Evidence, Working paper, University of Maryland

Healy, P., K. Palepu, and R. Ruback, 1992, Does corporate performance improve after mergers?, *Journal of Financial Economics*, 31, 135-176.

Heckman, J., 1979, Sample Selection Bias as a Specification Error, *Econometrica*, 47, 153-161

Hennart, J.F., 1993, Explain the swollen middle: Why most transactions are a mix of "market" and "hierarchy", *Organizational Science*, 4, 529-547

Inderst, R., and H., Mueller, 2002, Internal vs. external financing: An optimal contracting approach, *Journal of Finance*, forthcoming.

Inderst, R., and C. Laux, 2001, Incentives in Internal Capital Markets: Capital Constraints, Competition, and Investment Opportunities, University of Mannheim, Working paper

Kale, P., H., Singh, and H. Perlmutter, 2000, Learning and protecting of proprietary assets in strategic alliances: building relational capital, *Strategic Management Journal*, 21, 217-237

Khanna, T., 1998, The scope of the alliances, *Organization Science*, 9, 340-355

Khanna, T., R. Gulati and N Nohria, 1998, The Dynamics of Learning Alliances: Competition, Cooperation and Relative Scope, Startegic Management Journal, 19, 193-210

Kogut, B., 1988, Joint ventures: Theoretical and empirical perspectives, *Strategic Management Journal*, 9, 319-332.

Kogut, B., 1989, The Stability of Joint ventures: Reciprocity and Competitive Rivalry, *Journal of Industrial Economics*, XXXVIII, December

Koh, J., and J. Venkatraman, 1991, Joint Venture Formations and Stock Market Reactions: An Assessment in the Information Technology Sector, *Academy of Management Journal*, 34, 869-892.

Krishnaswami, S. and V. Subramaniam, 1999, Information asymmetry, valuation, and the corporate spin-off decision, Journal of Financial Economics, 53, 73-112.

Lamont, O, 1997, cash Flow and Investment: Evidence from Internal Capital Markets, *Journal of Finance*, 52, 83-109.

Lamont, O., and C. Polk, 2002, Does diversifications destroy value? Evidence from the industry shocks, *Journal of Financial Economics*, 63, 51-77.

Lang, L. and R. Stulz, 1994, Tobin's q, Corporate Diversification, and Firm Performance, *Journal of Political Economy*, 102, 1248-1280.

Lerner, J., H. Shane, and A. Tsai, 2003, Do equity financing cycles matter? Evidence from biotechnology alliances, *Journal of Financial Economics*, 67, 411-446

Linn, S. and J. Switzer, 2001, Are cash acquisitions associated with better postcombination operating performance than stock acquisitions?, *Journal of Banking and Finance***,** 25, 1113-1138.

Lummer, S. L. and J. J. McConnell, 1990, Stock Valuation Effect of International Joint Ventures". *Pacific-Basin Capital Market Research*, 531-546

Madhavan, R., and J. Prescott, 1995, Market value impact of joint ventures: The effect of industry information-processing load, *Academy of Management Journal*, 38, 900-915

Madhok, A., and S.B. Tallman, 1998, Resources, transactions and rents: Managing value through interfirm collaborative relationships, *Organizational Science*, 9, 57-83

Mantecon, T. and R. Chatefield, 2004, Joint Ventures as Two Stage Asset Sales, Working Paper, University of Nevada, Las Vegas

Matsusaka, J., and V. Nanda, 2002, Internal Capital Markets and Corporate Refocusing, *Journal of Financial Intermediation*, 11, 176-211.

McConnell, J.J., and T.J. Nantell, 1985, Corporate combinations and common stock returns: The case of joint ventures, *Journal of Finance*, 40, 519-536.

McGahan, A. and B. Villalonga, 2003, Does the value generated by acquisitions, alliances and divestitures differ? Forthcoming *Strategic Management Journal*

Meyer, M., P. Milgrom, and J. Robert, 1992, Organizational prospects, influence costs, and ownership changes, *Journal of Economics and Management Strategy,* 1, 9-35.

Mohanram, P. and A. Nanda, 1998, When do Joint Ventures Create Value?, Working Paper, Harvard Business School

Morck, R., A. Shleifer, and R. Vishny, 1990, Do managerial objectives drive bad acquisitions, *Journal of Finance*, 45, 31-48.

Mowery, D.C., J.E. Oxley and B.S.Silverman, 1997, Strategic Alliances and Interfirm Knowledge Transfer, *Strategic Management Journal*, 17, Winter Special Issue, 77-92

Osborn, R.N., and C.C. Baughn, 1990, Forms of interorganizational governance for multinational alliances, *Academy of Management Journal*, 33, 503-519

Osborn, R. N. and J. Hagedoorn, 1997, The institutionalization and evolutionary dynamics of interorganizational alliances and networks, *Academy of Management Journal*, 40, 261-278

Pablo, E. and V. Subramaniam, 2002, Diversification Discount when Pooling Complementary Assets: Evidence form Strategic Alliances, Working Paper, Tulane University.

Peteraf, M., 1993, The cornerstones of competitive advantage: A resource-based view, *Strategic Management Journal*, 14, 3, 179-192

Peyer, U.C., 2002, Internal and External Capital Markets, Working Paper, Department of Finance INSEAD.

Rajan, R., H. Servaes, and L. Zingales, 2000, The Cost of Diversity: The Diversification Discount and Inefficient Investment, *Journal of Finance*, 55, 35-80.

Robinson D.T., 2001, Strategic Alliances and the Boundaries of the Firms, Working paper, Columbia University

Scharfstein, D. and J. Stein, 2000, The Dark Side of Internal Capital Markets: Divisional rent Seeking and Inefficient Investment, *Journal of Finance*, 55, 2537-2564.

Schlingemann, F., R.M. Stulz, R. A. Walking, 2002, Divestitures and the liquidity of the market for corporate assets, *Journal of Financial Economics*, 64, 117-144

Shleifer, A., and R.W. Vishny, 1992, Liquidation values and debt capacity: a market equilibrium approach, *Journal of Finance*, 47, 1343-1366

Singh, K. and W. Mitchell, 1996, Precarious Collaboration: Business Survival after Partners Shut Down or Form New Partnerships, *Strategic Management Journal*, 17, 99-115

Shin, H.-H., and R. M. Stulz, 1998, Are Internal Capital Markets Efficient?, *Quarterly Journal of Economics*, 113, 531-552.

Socher C., 2004, Does Partnering Pay-off? -Stock Market Reaction to Strategic Alliance Announcements in Germany, Working Paper, University of Munich

Stein, J.C., 1997, Internal Capital Markets and the Competition for Corporate Resources, *Journal of Finance*, 52, 111-133.

Stein, J.C., 2001, Information Production and Capital Allocation: Decentralized vs. Hierarchical Firms, HBS working paper

Stopford, J. and L. Wells, 1972, Managing the Multinational Enterprise, Basic Books, New York

Stuart, T.E., H. Hoang, and R.C. Hybels, 1999, Interorganizational endorsements and the performance of entrepreneurial ventures, *Administrative Science Quarterly*, 44, 315-349

Stuart, T.E., 2000, Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry, *Strategic Management Journal*, 21, 791-811

Williamson, O.E., 1983, Credible commitments: Using hostages to support exchange, *American Economic Review*, 73, 519-535

Williamson, O.E., 1991 Comparative economic organization: The analysis of discrete structural alternatives, *Administrative Science Quarterly*, 36, 269-296

Weston, J. F., L.M. Mitchell, and J.H. Mulherin, 2003, *Takeovers, Restructuring, and Corporate Governance*, Pearson Prentice Hall, New Jersey

Whited, T., 2001, Is it Inefficient Investment that Causes the Diversification Discount?, *Journal of Finance*, 5, 1667-1691

Woolridge, J. R. and C.C. Snow, 1990, Stock Market Reaction to Strategic Investment Decisions, *Strategic Management Journal*, 11, 353-363

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