EFFECTS OF DIVERSIFICATION AND MARKET POWER ON FIRM VALUE IN THE ASIAN EMERGING MARKETS

By

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ABSTRACT

Abstract of thesis title: Effects of Diversification and Market Power on Firm Value in the Asian Emerging Markets submitted by Thomas King Ha Wu for the degree of Doctor of Business Administration at The Hong Kong Polytechnic University in December 2005.

The role of diversification in management and corporate finance has always tickled the minds of academia and CEOs alike. While U.S.-based studies have found that there is a diversification discount, recent research has provided some contradictory alternative explanations and findings. The benefits and costs of diversification and its role are even more opaque for the emerging markets. As globalization increases, there is a yearning for more in-depth knowledge on diversification as firms become more international in scope. While managers would like a better framework to analyze the effects of diversification, investors and shareholders would like a more formal and objective way to measure the value added through diversification in the emerging markets. The existence and use of market power have not received much academic interest due to its more subjective nature and the difficulty in objective measurement.

Using a multiplier approach on 1,818 firms in 10 Asian emerging markets to evaluate the effects of diversification and market power on firm value, we found a v-shaped relationship between diversification and excess firm value;

we also found positive relationship between excess firm value and the interactive term between diversification and market power.

For diversification, we found that single segment firms have higher excess firm values and all multi-segment firms are associated with lower excess firm values. We hypothesize that the strong and profitable firms remain focused while the less successful firms pursue diversification as strategic alternative. However, once firms diversify, the benefits of diversification outweigh its costs and the discount found is reduced as multi-segment firms increase their level of diversification. As a result, a skewed v-shape function between excess firm value and diversification is observed.

For market power, we found positive relationship between excess firm value and the interactive term between diversification and market power. We hypothesize that while market power can be used by itself to increase firm value, its highest benefit comes from the leveraging of market power to new or other existing segments as firm diversify. This extension of market power to new segments can come in the form of tying arrangements, bundling, foreclosure from vertically integrating suppliers, or subsidize of one segment by another either as a predatory maneuver or as protection of an infant industry investment.

We conclude that diversification and market power can be beneficial for firms in the emerging markets due to different institutional environments that firms

face; in particular, they can help firms overcome market inefficiencies and failures that are prevalent in the emerging markets.

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CHAPTER 1: INTRODUCTION

The purpose and benefits of diversification have been the focus of research for many years because they provide insights into the strategic thinking of management.

While benefits from diversification include economies of scale and scope, synergistic benefits, lower transaction costs, and provision of internal capital markets, costs from diversification include increased difficulty to manage, inefficient allocation of resources, and agency problems. The current finding for firms in the developed markets is that the cost of diversification outweighs its benefits resulting in lower firm value. The findings on the effects of diversification on firm values in the emerging markets are inconclusive and it was suggested that institutional differences account for the results being observed. These institutional differences include financial markets and operating conditions that are less efficient with more market failures, and differing political, cultural, and historical environments from which firms must adapt to.

Market power has not been the topic of many research due to the difficulty of measurement and the prevalent anti-trust measures in the developed markets which make market power less relevant. But existing research suggest that market power should help firm performance and increase firm value,

especially in the emerging markets in which market inefficiencies and failures are more common.

Research that looks at firms and markets found that firms are more likely to emulate conglomerate structures in the emerging markets. However, the reasons why firms prefer to diversify and maintain a conglomerate structure in these markets are not well researched. In addition, there is also little research being performed on the effectiveness of using market power to overcome market inefficiencies and failures that are prevalent in the emerging markets.

The understanding of the effects of diversification and market power on firm value in the emerging markets is useful for academic and practical reasons. For academic purposes, this study highlights the effects of institutional differences on how firms structure themselves to adapt to their environments. For management and shareholders, this study provides input to their strategic evaluation and valuation process.

There are certain limitations for this research study. This research study is based on information reported by firms to the Worldscope database, and there exist selection and self-reporting issues amongst others. In addition, there are other potential explanatory variables that might not have been included in this research study that could affect firm value, diversification, or market power. In terms of measurement of variables, the current measurement schemes for excess firm value, diversification, and market power are proxies that might not represent their actual counterparts.

This dissertation is organized as follows. Chapter 2 provides the theoretical framework on diversification and market power on firm values. Chapter 3 provides the literature review on diversification and market power in both developed and emerging markets. Chapter 4 provides details of how the data is compiled and what variables are used in the analysis. Chapter 5 provides the results of the univariate and multivariate analysis for this research study. Decompositional analysis is also provided in this chapter to segregate the variables and their effects on firm valuation. Chapter 6 provides the results of the robustness tests for the multivariate analysis. Chapter 7 discusses the findings, strengths and weaknesses, and potential topics for future research.

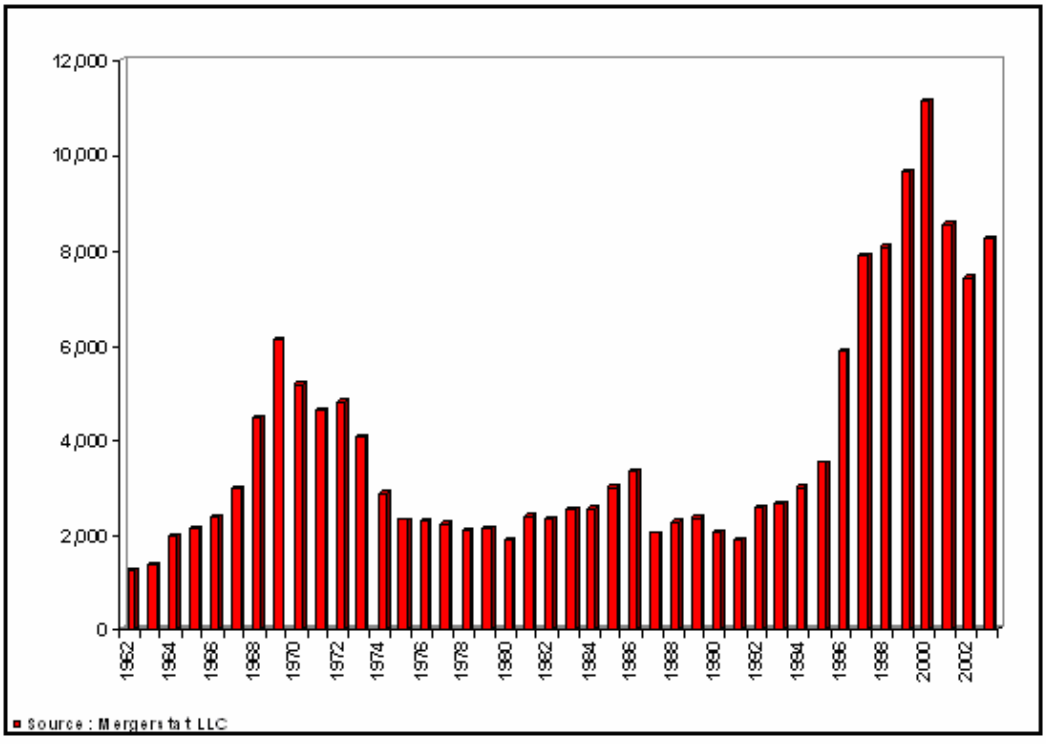
CHAPTER 2: THEORETICAL FRAMEWORKS

We will discuss the theoretical frameworks on diversification and market power in this chapter.

2.1 DIVERSIFICATION

Since the 1950s, there has been a steady increase in diversification in the U.S. with the resulting merger wave of the 1950s and 1960s culminating to its climaxed in 1969 with over 6,100 transactions; as Figure 1 shows below, the same level of merger activities are not to be experienced again until close to 30 years later.

Figure 1 Number of US and Cross Border M&A Transactions



Several environmental reasons were believed to have caused this frantic pace of merger activities during this time. The tough U.S. antitrust measures were believed to have restrained growth and firms diversified into other industries (La Porta, Lopez-de-Silanes et al. 1998). The antitrust inquiry of IBM in the mid-1960s and the antitrust law suits leading to the breakup of AT&T into the Baby Bells in 1984 illustrated the tough stance that the U.S. Department of Justice placed on businesses. Advances in communications and computing technologies, together with production and operational improvements, enabled firms to take advantage of economies of scale and scope by drastically improving their efficiency and effectiveness and allowed them to diversify without losing control (Simon 2001). In the more recent decades, the world economy has become more globalized as the emerging markets evolved into both a production and consumer base for firms in the developed markets. To capitalize on these growth potentials in the emerging markets, firms diversified internationally as strategic moves to position themselves to capture the benefits from these changes.

Some firm-specific reasons also intensified the trend in diversification. As the goods, services, and financial markets became more integrated, firms diversified to derive economies of scale and synergistic benefits. Some firms diversified to fully utilize their firm-specific assets or to leverage off their comparative advantages. Firms with declining demands of their products also diversified in search of growth opportunities to avoid a downward spiral in

their firm values. Other firms diversified as a result of their management's personal desire to manage larger firms.

Five theoretical frameworks and their underpinning on the rationale behind diversification are discussed in this chapter. Due to the complexity and scope of this topic, each framework provides interlocking pieces of the jigsaw to the diversification puzzle. The theoretical frameworks include (a) internalization of firm assets, (b) efficiency gains and synergistic benefits, (c) transaction cost theory, (d) internal capital markets theory, and (e) market inefficiencies and failures. These theoretical frameworks are discussed below in Section 2.1.1 to 2.1.5.

2.1.1 Internalization of Firm Assets

Caves (1971) proposed a resource-based view that firms diversify to internalize assets that they possess. He proposed that firms have valuable information-based or firm-specific assets that have increasing returns to scale but are difficult to sell and impossible to share with external parties. These assets are likely to be intangible in nature like superior production or marketing skills, management expertise, research and development investments, and customer goodwill. Under this internalization theory of synergy (Denis, Denis et al. 2002), firms will internalize these assets to fully utilize their potential through industrial or global diversification. As a result, diversification is expected to be more prevalent at firms with substantial intangible or firm-specific assets.

Several research studies have found support for the internalization of assets by linking intangible or firm-specific assets to increased firm value from diversification, especially in an international context. Morck and Yeung (1991) found that international diversification has no impact on firm value unless it is enhanced by research and development and advertising spending which are proxies for intangible assets (tangible expertise and customer goodwill). They (Morck and Yeung 1992) also found that firms with information-based assets experience positive announcement returns on foreign acquisition announcements. Feinberg and Phillips (2003) examined how internal resources affect firm growth and found that firm-specific resources and assets like knowledge assets, access to finance, and organization capital, are public goods that can be transferred and used throughout the firms at little costs. Using 8,428 foreign affiliates of 864 U.S. multinational corporations in 41 countries from 1983 to 1996, they found that firms with firm-specific assets can use these resources to effectively expand internationally. These research findings support the hypothesis that firms can increase their values through diversification by internalizing their intangible or firm-specific assets.

2.1.2 Efficiency Gains and Synergistic benefits

The efficiency gains and synergistic benefits framework is also based on the resource-based view that firms can benefit from diversification by using their resources more efficiently or differently. Diversification provides firms with the flexibility to respond to changes in relative prices, differences in tax codes,

and other institutional differences. Both the economies of scale and scope and synergistic benefits arise from usage of common resources of the firm described as operating advantages by Lewellen (1971). He (Lewellen 1971) suggested that there can be efficiency gains through economies of scale, increased sales through more comprehensive product lines, complementary research and technological expertise that can be shared amongst new products, and managerial abilities leading to greater administrative efficiency. These benefits are also more pronounced when they arise from related rather than unrelated diversification because more skills and resources can be shared and used in related markets or products (Rumelt 1974).

From an efficiency perspective, benefits of diversification include economies of scale and scope, synergistic benefits, higher debt capacity and tax shield from interest, lower borrowing cost, lower taxes, and overcoming the asymmetric tax treatment of gains and losses.

2.1.2.1 Economies of Scale and Scope

Firms can diversify to take advantage of production, operational, and managerial related benefits from economy of scale or scope. Economies of scale is the expansion of output of existing products and economies of scope is the expansion to related products while using existing production and other firm infrastructures (Weston 1970; Chandler 1977).

To take advantage of economies of scale, firms can expand production, spread their fixed costs over a larger number of units produced, and reduce their unit production costs. Semi-fixed costs, like administrative or utility costs, increase at a reducing scale as production increases, and the managerial costs of managing firms are also spread over larger number of units produced. In addition, firms that order in large quantities can often extract better prices or terms for their input from their suppliers. Many corporate mergers are consummated based on expectation of cost savings from the reduction of expenses that are duplicated.

To take advantage of economies of scope, firms can expand to related products of which they can utilize their existing production facilities, distribution networks, and marketing plans to produce and market at a lower cost than new entrants. By having related products readily available, firms can expand their sales base by capturing customers from firms that sell related products. Managerial time required to manage the new products is lower as managers can apply their existing expertise and experience to these related products. Teece (1980) extended Williamson's work on vertical integration to the applications of economies of scope through diversification by postulating that the principal difference between vertical integration and diversification is simply the types of transactions being internalized. He concluded that while the benefits of economies of scope are not in itself a sufficient reason to diversify, diversification is required to capture scope economies when the production of two or more products require input from a proprietary knowledge base or some specialized indivisible assets within the firm.

Economies of scale and scope and reputation spillover can also be applied to non-manufacturing based products or applications. Nayyar (1993) argued that even firms in the service industries can benefit from economy of scope by diversifying into related services. There are also reputation spillovers when service firms expand to related products to take advantage of existing brand names and awareness (Nayyar 1990).

Economies of scale and scope can extend to overseas markets as well. Domestic firms can increase production and market the same products outside of the local markets. International firms can expand to related products using their existing distribution channels and management expertise.

2.1.2.2 Synergistic Benefits

Synergy enables firms to obtain more output in total than the sum of the output of their separate parts. Synergy also provides firms with the ability to tackle tasks that cannot be performed separately by each division. For some businesses, certain size or scope of business offerings must be achieved to compete effectively with their peers. For example, Northrop Grumman's acquisition of TRW Inc. in December 2002 enabled it to win a US$4.5 billion Pentagon contract over Boeing Co. and Lockheed Martin Corp. which they were not able to do as separate entities before the merger (Palmeri 2004). In other cases, customers demand integrated services offerings that firms must provide. Firms generally bundle tax reporting services with accounting and

auditing services because the information needed are complementary and it would be inefficient for different parties to perform these tasks separately.

Synergistic benefits can also arise from cost reduction or resource sharing in many parts of the operation. Common expenses like administrative costs and rent expense can be shared among divisions. Synergistic gains can also be expected in many mergers from modifications to the production, logistic, or communication systems. Unused production materials or wastage from one process can be used as input to another process, resulting in lower disposal, transportation, acquisition, and time costs. Many of the current petrochemical plants, oil refineries, and steel plants are fully integrated to realize these synergistic benefits. Unused capacity in human and physical capital can also be more fully utilized. Provided that the segments have imperfectly correlated demand, production functions, and cash flow streams, diversification can provide synergistic benefits from a reduction of business and financial risks.

Other possible synergistic gains come from the firms' ability to efficiently combine resources in the product, labor or financial markets. With operations in different product or geographical markets, diversified firms can increase operating flexibility by responding to changes in business conditions more effectively (Denis, Denis et al. 2002). International firms can reduce earnings fluctuations by having non-correlated demand and cost conditions from operations around the world. The exposure to exchange rate fluctuations is also reduced when firms operate in different markets.

2.1.2.3 Higher Debt Capacity and Tax Shield from Interest

Merger gains can be operating or financial in character (Lewellen 1971). While economies of scale and scope and synergistic gains are operational in nature, there can be financial gains from diversification. Lewellen's (1971) financial theory of corporate diversification suggested that there are financial benefits for diversification regardless of managerial, production and operational characteristics. He suggested that as long as segments have imperfectly correlated cash flows, the overall firm can benefit from diversification because combining segments with different cash flow characteristics reduces the overall variability of total firm cash flow. Cash shortfall experienced by one unit can be partially mitigated by excess cash produced in another segment of the firm, and the overall variability of the firm cash flow is reduced. From creditors' perspective, this reduction in cash flow variability reduces the probability of a cash shortfall that can trigger default provisions in their loan contracts. As the default risk of the firm decreases, the lenders and creditors would be willing to provide a higher aggregate limit on lending to the firm than to the total of each separate segment together. As lending limit is increased, the firm can utilize this increase leverage to increase the tax benefits of having higher interest payment. As long as interest payments are tax deductible, this tax shield from interest will be available and beneficial for the firms. Ghosh and Jain (2000) found support for higher financial leverage from increase in debt capacity after mergers. They examined firms after mergers and found that their financial leverage are

significantly increased and it is positively correlated with announcement market-adjusted returns.

2.1.2.4 Lower Borrowing Cost

Diversified firms can reduce their borrowing costs for several reasons. First, firms can reduce the variability of total firm cash flows which reduces their insolvency and bankruptcy risks, and lowers their borrowing costs as their credit profile improves. Second, diversified firms that are larger in size and more international in scope can access the global capital markets and raise capital in countries with the lowest cost (Denis, Denis et al. 2002). Third, Lewellen (1971) made the distinction between lender diversification and borrower diversification. There is an asymmetric treatment of claims in that lenders only participate in a fixed amount of cash flow in the borrowers' firms which is the amount of the indebtedness and its interest; when the borrowing firms perform well, the excess cash flow accrue only to their equity holders. Lender diversification refers to lenders holding a portfolio of single segment firms as borrowers in its portfolio. But since these are independent firms, there is no cross-subsidization and the lenders will need to assume the full risk of default in all of these firms. On the other hand, the risk to the lenders is lowered if the borrower is diversified because profitable segments might subsidize the poorly performing segments within the borrower firms. Hence, lenders benefit when subsidization occurs within the borrowing firms (Lewellen 1971). Given lenders' preference for borrower diversification, they might award lower borrowing rates to diversified borrowers.

2.1.2.5 Lower Taxes

When firms diversify internationally to different tax jurisdictions, they can lower their overall tax payments by using transfer pricing to shift taxable income to jurisdictions with lower tax rates. Shin and Park (1999) found that tax liabilities are lower for diversified chaebols in Korea when compared to domestic firms, and Desai, Foley et al. (2004) also found that multinational firms adjust their composition of debt to take advantage of varying tax rates in different jurisdiction.

2.1.2.6 Asymmetric Tax Treatment of Gains and Losses

Majd and Myers (1987) suggested that there are benefits from diversification due to the asymmetric tax treatment of gains and losses. When firms have taxable income, taxes must be paid to the tax authorities; when they have taxable losses, taxes are not refunded. Instead, losses are carried back or forward to offset the firms' taxable income in other years, raising the possibility that they will expire unused. Firms with tax losses carry forward also lose the time value of money as interest are not earned on the accrued carry forward balances. In diversified firms, the benefits of taxable losses can be realized immediately because the losses from one segment can offset taxable income of another segment and reduce the current taxes payable.

2.1.3 Transaction Cost Theory

According to the transaction cost theory proposed by Coase (1937) and Williamson (1985) firms incur various costs in their dealings with external parties. These transaction costs include search cost, selection cost, evaluation cost, set up cost, contracting cost, actual transaction cost, ongoing monitoring cost, closing cost, and opportunity cost from missed opportunities from foregoing alternative choices. The initial costs in selecting the counterparties arose because there is information asymmetric and firms must evaluate which counterparties they should transact with. Ongoing monitoring is also needed because counterparties can still take advantage of the firm once the relationship is established. If a firm can internalize these contractual relationships by acquiring the counterparties through diversification, many of these transaction costs can be avoided or minimized. With these functions internalized, search cost can be reduced, monitoring is easier, and internal disciplinary measures and sanctions can be used to minimize behavior that deviate from expectation.

In the emerging markets where information asymmetry are more severe and market inefficiencies more prevalent, the transaction costs can be especially high because the legal and contractual frameworks are not as developed. As a result, firms diversify to internalize external transactions in order to reduce transaction costs (Khanna and Palepu 2000). Consistent with this view, Coase (1937) and Williamson (1985) also suggest that the optimal firm structure depends on its institutional context (Khanna and Palepu 2000).

2.1.4 Internal Capital Markets Theory

External capital is generally more expensive than internally generated funds because of information asymmetric. External parties do not have all the information of the firms, and they will place a higher price on their capital to account for this risk (Lins and Servaes 2002). To access lower cost capital efficiently, firms diversify to establish their own internal capital markets to replicate the functions of external capital markets by pooling and allocating resources among their segments. Resources can be redirected from divisions with high cash flow but low investment opportunities to divisions with low cash flow but high investment opportunities, and firms can undertake value increasing investments without having to access the higher cost external capital markets. As a result, the transaction costs of issuing securities to external parties and the cost of overcoming information asymmetry can be reduced.

Many research studies have found the existence of internal capital markets. Using a sample of 26 oil firms from 1985 to 1986, Lamont (1997) found that the capital expenditure of the non-oil subsidiaries are significantly reduced when the cash flow of the oil segment are lowered due to significant oil price decline. His findings supported the existence of the internal capital markets and their resource allocation function. Hubbard and Palia (1999) also found that the allocation functions of the internal capital markets can be beneficial for firms. Examining 392 bidder firms from 1961 to 1970 in an event study,

they found that diversifying acquisitions generally earn positive abnormal returns and that the reason for the positive abnormal returns is due to the provision of an internal capital markets in the absence of well-developed and information efficient external capital markets in the 1960s. Campello (2002) examined the internal capital markets in financial conglomerates by comparing the responses of small subsidiaries of large banks and independent banks to monetary policies and found that the internal capital markets relax the credit constraints faced by smaller bank affiliates and lessen the impact of Fed policies on bank lending activities.

Not only does the internal capital markets allow firms to bypass the more costly external capital markets, it also enables firms to monitor and allocate their internal resources and assets more efficiently (Stein 1997) and avoid underinvestment problems (Myers 1977; Stulz 1990). Gertner, Scharfstein et al. (1994) presented a framework that incorporated internal capital markets with headquarters having the ownership to residual benefits over the firms' assets. This ownership aspect leads to better monitoring because headquarters can accrue more residual benefits from increased monitoring. More efficient asset redeployment and enhanced firm value can also be achieved because poorly performing assets can be redeployed or combined with better performing assets of other projects.

2.1.5 Market Inefficiencies and Failures

Based on the portfolio theory of finance, which assumes that there is no information asymmetry and all market participants are rational and make the optimal investment decisions, there is an optimal portfolio of diversified investments of which all investors would hold (Sharpe 1964, Lintner 1965). Without friction, diversification is easier and cheaper to achieve at the shareholder level and all firms should be focused. However, many market inefficiencies, imperfections, and failures make diversification at the firm level beneficial for shareholders. Diversification at the firm level might be beneficial for shareholders because firms can have larger investment opportunity sets, mitigate market failures, and accrue and exercise market power for firm gains.

2.1.5.1 Larger Investment Opportunity Set for Firms

Due to market inefficiencies, imperfections, and failures, there are benefits for diversification at the firm level under certain conditions. First, ordinary investors might not have the time, resources, or the ability to analyze the firms under consideration for investment. Second, there is information asymmetric and management of firms has more information than external parties. If the investment is made by firms in the same industry, the information asymmetry is reduced. In addition, it would be more efficient for management to evaluate potential firms on behalf of all its shareholders. Third, actual synergistic benefits and cost savings can only be realized at the firm level by the merging

of the operations and not by the buying of the equity at the portfolio level. Fourth, the set of possible investment alternatives might be bigger for firms than investors. Finance theories assume that all firms can be purchased by private investors on a proportional basis. However, privately held firms are not accessible to individual investors and investments in these firms can only be achieved by acquisition or merger with other firms. Firms might also be in a better position to diversify overseas, especially in the emerging markets, than individual investors as many investment opportunities are only available to large firms and not to individual private investors. For example, many emerging countries opened up their key industries to established firms from the developed countries to take advantage of technology and knowledge transfer. Private or individual foreign investors would most likely be precluded from investing in these key industries. Using 2,570 firm-year observations between 1985 and 1993, Bodnar and Weintrop (1997) found that foreign earnings changes have significantly higher positive associations with annual excess return measures of the firm due to the greater opportunities for future growth that successful foreign operations provide.

2.1.5.2 Mitigate Market Failures

Corporate diversification can mitigate certain failures and inefficiencies in the product, labor, and financial markets in the developed and emerging markets when the institutional frameworks are not well-established.

In developed markets, there might be pockets of inefficiencies of which firms must overcome. Fluck and Lynch (1999) developed a theory of mergers and divestitures that explain why firms diversify and then divest their divisions. They hypothesized that firms, due to inefficiencies in the financial and venture capital markets, diversified to finance marginally profitable projects as stand-alone projects. Mergers allow these projects to survive a period of distress until their profitability improves and the financing synergy ends and the acquirers divest the assets. Their model can also account for why mergers are value increasing for the combined firms, but at the same time it is discounted when compared to its focused peers. It is value increasing for the combined firms because positive net present value projects are financed and continued, but the combined firms are discounted because these positive net present value projects are only marginally profitable. They also conjectured that diversification does not destroy value, it is the low value of the marginally profitable projects being included that causes the discount.

According to Khanna and Palepu (1997) and Khanna and Rivkin (2001), diversification in the emerging markets can mitigate market failures and inefficiencies through several means. First, diversified firms can overcome market failures for transactions that are not consummated due to weak institutions for trade, contract enforcement, and information asymmetries. Second, diversified firms can develop their own internal capital markets for resource allocation and transact internally between units to reduce transaction costs. Third, diversified firms can use their established brand name and awareness to take advantage of reputation spillovers where new products are

introduced. The reputation spillover can also be used to improve trust for contractual enforcement for external trades and technology transfers. Fourth, reputable diversified firms are also more able to recruit and train capable managers. Diversified firms can also move its management talent around to where they can use their talent best, resulting in more efficient use of human resources. Fifth, diversification can reduce information gap and asymmetric in emerging markets due to lack of reliable financial reporting and limited analyst following. Sixth, diversified firms can cultivate political connections and favors and use these favors within the firm where it can produce the most benefits. Seventh, diversified firms can also protect its “infant industry” when entering new market by subsidizing the new unit with resources from other segments. Eighth, social relationships are institutionalized in many emerging markets and diversified firms are used to achieve goals like institutional legitimacy, political power and social fitness.

Five theoretical frameworks were discussed above, (a) internalization of firm assets, (b) efficiency gains and synergistic benefits, (c) transaction cost theory, (d) internal capital markets theory, and (e) market inefficiencies and failures. The existing literature and their findings on diversification is discussed in the next chapter.

2.2 MARKET POWER

Based on the structural hypothesis, Donsimoni, Geroski et al. (1984) proposed that the structure of the market and the industry determines the

performance of the firms. Structure of the market and the industry include features like number and size of buyers and sellers, entry conditions, product characteristics, nature of competition, and market conditions. Jacquemin (1972) indicated that different forms of conducts by firms can produce gradual changes in the structure of the industries, resulting in changes in the competitiveness of firms in the industries. Changes in the industry itself can also cause the competitiveness of firms to change within an industry. There are two avenues by which firms can increase their competitiveness.

First, firms can increase their competitiveness through providing customers with superior and / or more cost effective products or services that they want. It can be in the form of producing superior products, special features or functions, exceptional distribution systems, well known brand name, low cost production, or superior service. In this case, the competitiveness is derived in a legitimate way and the change can be measured by increased profitability or returns to the firms. We would define this type of competitiveness as market based competition. The characteristics that determine the competitiveness of firms were summarized by Porter (1980) into his five forces model which classified these characteristics into five categories which include industry competition, supplier power, buyer power, substitute products, and potential entrants. Industry competition refers to the intensity of rivalry amongst existing competitors within the industry and it is affected by the number of firms in the industry, the level of product differentiation and brand identification, and the cost structure of firms. Supplier power refers to the bargaining power of a firm’s suppliers and it is affected by supplier concentration, switching costs,

and the uniqueness of the input product. Buyer power refers to the bargaining power of the firms' customers and it is affected by the number and size of buyers, their purchase quantity, and their price sensitivity. Substitute products refer to other products that compete directly with the firm or products that customers can easily use to replace the firm's product. Potential entrants refer to the barrier to entry of which new firms need to overcome to enter the business and it is affected by the cost of entry, brand loyalty, and the existence of patents.

Second, firms can increase their competitiveness by utilizing anti-competitive conducts that make the business environment less favorable to existing and potential competitors. These predatory practices include restrictive agreements, price discrimination, foreclosure from vertically integrating suppliers, exclusive dealing and full-line forcing, resale price maintenance, predatory pricing or selling below cost to drive out competition, and monopolistic leverage through tying arrangements to exploit dominant position in one market to expand to another market (Comanor 1967; Jacquemin 1972). In addition, Nalebuff (2004) proposed that firms with market power in multiple goods can use bundling as a credible strategy to deter rivals from entering these markets. The gain to the firm from using the bundling strategy as a deterrent measure is also much greater than its use for price discrimination purposes because the overall revenue reduction is lower for the firm. Stigler (1964) showed that the benefits of collusion by an oligopoly that lead to profit maximization strategies is dependent on the number of members in the oligopoly and their relative size. Fee and Thomas (2004) termed it

monopolistic collusion hypothesis and predicted that in a horizontal merger, firms in the same industry would benefit and suppliers and customers would suffer because the firms can collude more easily after the merger by reducing output and raising prices to monopoly level.

For the emerging markets, Palepu (1985) offered several motives for diversification relating to market power and anti-competitive behavior. First, a diversified firm can use the profits generated from one segment to subsidize a predatory pricing scheme in another existing or a new industry. After driving out the competitors, the diversified firm can raise prices and earn monopoly profits. Second, a diversified firm can collude with other firms that compete with the firm in various markets simultaneously. Third, a diversified firm can engage in reciprocal buying with other large firms in order to squeeze out smaller competitors. For example, the US$6.8 billion acquisition of DirectTV by Rupert Murdoch's News Corp. in December 2003 will provide News Corp. with incremental market power because of its control on both the content and distribution channels of broadcasting (Grover and Lowry 2004). Fourth, large diversified firms can more easily put up or overcome barriers to entry to its advantage. The barriers to entry can range from cross-subsidization or reciprocity arrangement described above to reputational or sunk costs requirement (McAfee, Mialon et al. 2004), and lobbying for more stringent entry requirements for new firms.

We would define these types of non-market competitive behavior as exercise of market power for the purpose of this research study. Competitiveness

derived from market power is more difficult to measure for two reasons; it is difficult to specify and define exactly what constitute market power in a firm, and it is difficult to precisely measure the effects of market power on all affected parties. First, it is very difficult to specify and define what market power is because it can be derived from various sources, it is situation dependent, and it changes over time as industry evolves. For example, the use of market share or concentration ratio can be used to measure market power for general industries but it would be less accurate to measure market power for industries that involve more customization or design; the use of market share can be used to proxy the market power of automobile manufacturers but it would not proxy the market power of fashion design firms well. Second, it is even more difficult to establish that market power has been exercised and to measure its effects on all the relevant parties. Firms having the characteristics of having market power might not have exercised it, and it would be hard to prove that they did. It is also difficult to differentiate and classify firm actions into competitive and anti-competitive actions. Even when the exercise of market power is certain, it is difficult to measure its effects on all relevant parties because its effects are intertwined with other business decisions within the general environment. For example, the costs of subsidy by a loss leader are often transferred internally to make measurement difficult.

For this research, segment Herfindahl concentration index adjusted for industry and firm sales is used as a proxy for market power of firms because it can be easily and objectively measured. In addition to segment Herfindahl concentration index, market share has also been used as a proxy for market

power in other research study (Donsimoni, Geroski et al. 1984) and is also used by some government agencies to evaluate market power for their anti-trust actions. As a result, we will utilize four market power measurements which use firm concentration ratio, market share, and a ranking system as proxies for market power. These four market power measurements will be discussed in more details in Section 4.4.2 Market Power.

CHAPTER 3: LITERATURE REVIEW

This chapter reviews prior studies on diversification and market power and their research findings. For diversification, the nature of research closely follows its development in the corporate environment, and we will discuss the research studies in a rough chronological order. We will first discuss research studies on early diversification efforts in Section 3.1, the trend of refocusing on the firms' core businesses in Section 3.2, the findings of diversification discounts in Section 3.3, international diversification in Section 3.4, measurement errors in Section 3.5, endogeneity factors in Section 3.6, and diversification in the emerging markets in Section 3.7. For market power, there are much less research being performed on this topic due to its more ambiguous definition and difficulty of measurement. We will discuss the findings of research studies on market power in Section 3.8. Then we will discuss and elaborate on the goal of this research study on diversification and market power in the emerging markets in Section 3.9.

3.1 EARLY DIVERSIFICATION

With the merger wave of the 1950s and 1960s, scholars were interested in the rationale behind the diversification that led to these mergers, its characteristics, and its associated costs and benefits.

Research studies that examined early diversifications found that diversified firms outperform the market in general. Firms benefited from diversification due to efficiency improvements or the ability to overcome some existing market failures. Matsusaka (1993) examined the stock market response to acquisition announcements during the merger wave of the 1960s and found that the acquiring shareholders benefited from the diversifying acquisitions when the bidders retained the target firms' management to exploit synergistic benefits. Schoar (2002), using detailed plant-level information from the Longitudinal Research Database to determine total factor productivity, found that conglomerates are more productive than stand-alone firms at a given point in time and that diversified firms actually add value to the plants that they acquire. Using horizontal mergers, Fee and Thomas (2004) and Shahrur (2005) found that improved productive efficiency and higher buying power over suppliers are sources of gains to firm value in horizontal mergers. Krishnan, Joshi et al. (2004) proposed that firms use mergers as a strategic tool to facilitate product mix configurations by reconfigure their product mix towards higher margin products.

Other research studies that examined different types of diversification found that related diversification is more beneficial to firm value than unrelated diversification. Lewellen (1971) indicated that efficiency and synergistic benefits from diversification should arise mostly in intra-industry or related mergers. Rumelt (1974) proposed that related diversification affects value more positively than unrelated diversification because skills and resources can be used in related markets. The general conclusion was that related

diversification performs better than conglomerate or unrelated diversification due to the use of similar skills and resources, economies of scope and effects of reputation spillover (Berger and Ofek 1995).

Financial benefits were also identified as benefits of diversification. Lewellen (1971) proposed that diversified firms have higher debt capacities because of the imperfectly correlated earnings and cash flow of various divisions in a diversified firm. The higher debt capacities lead to higher tax benefits and increased firm value. Desai, Foley et al. (2004) found that multinational firms adjust their composition of debt between their affiliates to take advantage of varying tax rates between jurisdictions.

Diversification was also found to provide internal capital markets when external capital markets are not as developed and efficient as today's. Hubbard and Palia (1999) found that diversifying acquisitions generally earn positive abnormal returns, and the highest bidder returns were earned when financially unconstrained buyers acquired constrained target firms in their event study of 392 bidder firms from 1961 to 1970. They also found that the bidders generally retain the target firm's management, suggesting that management may have provided company-specific operational information, and the bidder provided capital budgeting expertise. They hypothesized based on their findings that the reason for the positive abnormal returns is due to the provision of an internal capital markets in the absence of well-developed and information efficient external capital markets in the 1960s. Using about 3,700 U.S. multinational firms with 30,000 affiliates operating in

over 150 countries in 1982, 1989, and 1994, Desai, Foley et al. (2004) also found affiliates of multinational firms borrow more from their parents as a substitute for more costly external capital alternatives.

Research studies have also focused on the timing of merger activities which appears to occur in waves like frequency. Lambrecht (2004) modeled corporate merger activities as strategic investment decisions under uncertainty using continuous-time real options approach and game theory concepts. He found that gains from mergers motivated by economies of scale are positively correlated to product market demand and causing mergers to happen in procyclical patterns. Rhodes-Kropf and Viswanathan (2004) found that merger activities are correlated with market valuations, and market overvaluation increases the probability of mergers occurring. Harford (2005) found that economic, regulatory, and technological shocks drive industry merger activities, but whether these activities develop into merger waves depends on the availability of sufficient capital liquidity presumably to fund the transactions.

Based on these research studies, it appears that diversification in the U.S. in the 1950s and 1960s were beneficial to firms as operational and other advantages were derived from related diversification, and internal capital markets were developed to overcome inefficiencies in the external capital markets.

3.2 REFOCUS ON THE CORE BUSINESSES

Started in the 1970s, conglomerates began to divest their investments in other firms and re-focus on their core businesses. Using Compustat database of U.S. firms from 1978 to 1989, Comment and Jarrell (1995) found a trend of refocusing among U.S. firms since the 1980s. Research by Matsusaka (1993) and Morck, Shleifer et al. (1990) found a change in market sentiment towards diversification from positive reaction in the 1960s to neutral in the 1970s to negative in the 1980s. The accounting standard requiring disclosure of segment data under FASB No. 14 and SEC Regulation S-K required firms to report segment information for fiscal years ending after December 15, 1977 made the study of diversification much easier.

Most scholars agree that the relative costs and benefits of diversification changes over time due to internal or external factors, but the increased corporate focus is consistent with shareholder wealth maximization efforts because there was a positive relation between stock returns and focus increases. Andrade and Stafford (2004) investigated the economic role of mergers over time by comparing mergers and internal investments at the industry and firm levels. They found that mergers play a dual economic role by allowing firms to increase their capital base in response to good growth prospects and facilitating industries to contract in response to negative industry shocks. They found that excess capacity drove industry consolidation through mergers in the 1970s and 1980s, but near capacity and high profitability in the 1990s caused the intense merger activities. Chang and Yu

(2004) provided an explanation for the life cycle of diversification strategies based on the benefits and costs of diversification using the allocative information perspective for information flowing from the capital markets to firms' management. The benefit of diversification comes from reduced liquidity discount when shareholders expect less informed trading because less information on the diversified firms are likely to be collected. The cost of diversification is a less informative stock price for managers to allocate resources. The benefit and cost vary with the means and variances of the net present values of the investment opportunities of the firms' divisions, and merger and spinoffs are the results of firms responding to these changes.

Scholars put forth many reasons for the trend towards refocusing after the previous decades of diversification and conglomeration. Some scholars hypothesized that the relaxation of antitrust enforcement in the early 1980s reduced the incentives of firms to diversify into non-regulated businesses. Martin and Sayrak (2003) hypothesized that the improvements in informational efficiency of external capital markets have diminished the historical advantages of the diversified organization which led to a decline in diversification. Other researchers found that asset sales from re-focusing were a source of liquidity for firms in financial distress. Schlingemann, Stulz et al. (1999) examining a sample of 168 firms between 1978 and 1994 that focus by divestiture and found support for the financing hypothesis of focusing of which firms divest assets to relax financing constraints facing the firms. Other researchers proposed that another reason for asset sales is the willingness to overpay by bidding firms that have large free cash flows. Lang, Stulz et al.

(1991) found bidders with high free cash flow and poor investment opportunities suffer significant negative returns when acquisitions are announced.

From the perspective of corporate governance and the market of corporate control, some scholars suggested that the re-focusing are forced reversals of prior diversification mistakes due to active market for corporate control in the 1980s. Jensen (1993) proposed that it is the enhanced corporate governance practices that led firms to re-focus. Using a sample of 1,513 diversified firms from 1984 and 1987, Berger and Ofek (1996) found that firms with greater value losses are more likely to be taken over, indicating supporting for the market of corporate control. They also found that the firms with the largest value loss from diversification are more likely to be acquired by LBO firms which will subsequently “bust up” the acquired firms into stand-alone firms.

Scholars used two approaches to investigate the refocusing of firms. One approach uses event studies on spinoffs to study the effects of corporate refocus (and implicitly diversification) on firm values by examining the share price reactions to the unexpected announcements. MacKinlay (1997) provides a discussion on the use of event studies and Appendix I provides a discussion and comparison of divestitures, equity carve-outs, and spinoffs. The other approach compares the market values of diversified firms to their theoretical values determined using single-segment firms as benchmarks.

In general, research studies on the refocusing of diversified firms using the event studies approach or the firm value comparison point to diversification discounts of 10% to 15% during the 1980s and 1990s. Using a sample of about 16,000 observations from Compustat between 1986 and 1991, Berger and Ofek (1995) found that there is an average firm value loss of 13% to 15% due to diversification. Using a multiplier approach to determine the imputed value of diversified firms, they also found that the loss in value is considerably less for related diversifications which are consistent with previous research findings.

3.3 DIVERSIFICATION DISCOUNT

Both event studies on spinoffs and firm value comparison point to the existence of diversification discounts. Many reasons were proposed to explain for the diversification discounts which include increased difficulty to manage and negative synergies, inefficient allocation of resources in the internal capital markets, agency problems, and information asymmetry.

3.3.1 Increased Difficulty to Manage and Negative Synergies

As firms became larger and more diversified, they became increasingly difficult to manage. Diversification can increase the costs of management and operation of the firm due to the expertise required and the creation of negative synergies.

3.3.1.1 Management Expertise Requirements

Management expertise is required to manage a large firm with multi-product segments. As firms become more diversified and larger in size, it becomes more difficult for management to monitor and manage because each division has their own product, market, and customer characteristics and profiles. Managers of diversified firms must have the knowledge, ability, time and focus to manage these different divisions, products, markets, and customer bases. Management expertise for all industry segments are required to properly evaluate opportunities, investment, and performance within each segment. Without the required expertise, management might make suboptimal decisions resulting in firm value reduction. Khanna and Palepu (2000) found that the central office of diversified groups can make suboptimal decisions due to difficulty of acquiring expertise in a variety of industries at the same time.

Research studies generally found that increase in operating focus results in increase in firm values because managers can focus on areas of their expertise, supporting the Corporate Focus Hypothesis. Daley, Mehrotra et al. (1997) found that only cross-industry spinoff announcements produce significant positive excess returns of 4.3% after accounting for firm size, industry, and pre-spinoff performance. Using 85 spinoff announcements in the U.S. between 1975 and 1991, a five year window, and return on assets of the continuing and spunoff entities before and after the transactions, they found that the value creation comes from operating performance improvements for

cross-industry spinoffs. In addition, the operating performance improvement is found only in the continuing rather than the spunoff entity, providing empirical support for the corporate focus hypothesis in that the spinoffs create value by removing unrelated businesses and allowing the managers to focus their attention on the core operations of which they are most suitable of managing. Desai and Jain (1999) found that focus-increasing spinoffs produce significantly larger announcement period and long-run abnormal returns than non-focus-increasing spinoffs. Using 155 spinoffs between 1975 and 1991, they found that the announcement period abnormal returns are 2.28% higher and three year holding period excess returns are 47.70% higher for focus-increasing than non-focus-increasing spinoffs. They also found evidence of direct association between change in focus and operating performance because only focus-increasing firms experienced improvements in operating performance. Both of these research studies illustrated that limited management time to oversee all operations and managers being spread too thin can contribute to firm value reduction.

3.3.1.2 Negative Synergies

Negative synergies can arise in diversified firms through operating and external contracting inefficiencies, increased costs to communicate and monitor, and higher costs for internal contracting. Diversity can also negatively affect a firm's human capital by limiting the ability of the strong divisions to hire or retain top talent when weak divisions are perceived to harm the overall firm performance or employee morale (Burch and Nanda 2003).

Operating and External Contracting Inefficiencies. In a firm, all tasks have their own optimal scale economy; at the segment level in diversified firms, there will be divisions operating at their non-optimal levels resulting in negative synergies being created. Schipper and Smith (1983) proposed that there may be diseconomies of scale by combining dissimilar assets within a firm. Research have also found that negative synergies can adversely affected firm value. Using a sample of 321 divestitures between 1986 and 1988, John and Ofek (1995) found support for the focus hypothesis which hypothesize that the elimination of negative synergies between the divested assets and the remaining assets should lead to better performance for the remaining assets of the firm after the divestiture. They found that asset sales lead to improvement in the operating performance of the seller's remaining assets in each of the three years following the asset sale. This improvement in operating performance occurs in firms that increased their focus, and these firms also experience larger announcement stock returns. Hite and Owers (1983) also found announcement period positive average excess returns of 7%. Using 123 spinoffs by 116 firms between 1963 and 1981, they found that the gains are consistent and partially explained by the contracting efficiency explanation in which a spinoff allows the parent and subsidiary to specialize in contracts in which they have a comparative advantage.

Increased Costs to Communicate and Monitor. Administratively, large globally diversified firms are more complex due to their geographical and product diversity involved, and the costs of communications and logistics arrangements will be higher. Harris, Kriebel et al. (1982) proposed that this

complexity will lead to higher costs of coordinating corporate policies. Communication problems between corporate head office and division managers will arise in the process of goal setting, performance evaluations, and developmental directions, leading to higher costs of communication and information asymmetry. Myerson (1982) proposed that this asymmetric information between corporate headquarters and divisional managers in multi-segment firms will impose incremental costs on the firms. Bodnar and Weintrop (1997) suggested that it would be more difficult to monitor managerial decision making in a complex, globally diversified firm.

Higher Costs for Internal Contracting For Performance Motivation. There might also be inefficiencies in firms' internal contracting with employees on their performance evaluations. Firms generally design their evaluation and compensation system based on the nature of the firm and the industry to better align incentives to the contribution by employees. However, diversified firms are involved in different industries with varying operating characteristics and requirements. As a result, it is more difficult to design effective performance evaluation, compensation, and incentive systems to provide proper incentives for motivational purposes. Based on the Incentive Alignment Hypothesis, a focused firm can better align its incentives system to motivate its managers (Aron 1988, Rotemberg and Saloner 1994). Research referenced by Ahn and Denis (2004) of Palia and Ye (2002) also found support for the convergence-of-interest hypothesis by finding that the misallocation of resources is reduced when divisional managers have a higher proportion of shares in options. Their findings imply that spinoffs can better

align managerial incentives by allowing firms to recontracting properly with managers of the firm.

3.3.2 Inefficient Allocation of Resources

While diversified firms can form internal capital markets to access lower cost internal capital for better resource allocation, the internal capital markets can also lead to inefficient allocation of resources. Berger and Ofek (1995) found that cross-subsidy of poorly performing segments by other segments of a diversified firm is a source of value loss that causes the diversification discount. In addition to inefficient investment and allocation of resources, diversified firms also maintain divisions that should be dissolved. Lewellen (1971) highlighted the potential resource allocation inefficiencies by pointing out that underperforming segments might continued to exist in a diversified firm due to subsidies from other segments. In this section, the inefficient allocation of resources discussed arose from non-agency related issues.

Research found that resources are not allocated efficiently in the internal capital markets. Examining the capital allocation of a sample of 165 diversified conglomerates in 1979, Scharfstein (1998) found that divisions in high-q manufacturing industries tend to invest less than their stand-alone industry peers, while divisions in low-q manufacturing industries tend to invest more than their stand-alone industry peers. This “socialism” in capital allocation (underinvesting in divisions with relatively good investment opportunities and overinvesting in divisions with relatively poor investment opportunities) in

which investment tends to get equalized across divisions is particularly pronounced in a conglomerates' small divisions. Shin and Stulz (1998) also found that there are active internal capital markets, but it is not as efficient as theorized and divisions are treated alike despite having differing level of investment opportunities. Using segment information from Compustat from 1980 to 1992, they found that while investment by segments of diversified firms depend on the cash flow of the firms' other segments, it is significantly less than they depend on their own cash flow. They also found that in highly diversified firms segments' investments depends less on their own cash flows than they would if they were stand-alone firms.

Other research studies found that resource allocation improved after focus-increasing spinoffs at both the parent and the spunoff unit levels. Using 278 divestitures of 235 firms between 1983 and 1994, Dittmar and Shivdasani (2003) found that the remaining segments of the post-spinoff parent firms that under-invest relative to single segment firms display increased investment levels after the divestiture, while segments that over-invest experience declines in investment. This increase in segment investment efficiency leads to a reduction in diversification discount and a cumulative abnormal return of 3.4% for the divestiture announcement period. While Dittmar and Shivdasani (2003) found increased investment efficiency at the parent level, Gertner, Powers et al. (2002) found investment efficiency improvements at the spunoff unit level. Examining the investment behavior of 160 spunoff firms before and after the spinoff between 1981 and 1996 to understand how the allocation of capital changes when divisions are spunoff, they (Gertner, Powers et al. 2002)

found that spinoffs may improve the allocation of resources because investment is distorted in the internal capital markets of these firms. They found that the spunoff firms' investments are significantly more sensitive to measures of investment opportunities after the spinoffs. Spinoffs tend to cut investments in low q industries and increase investment in high q industries in spunoff firms that are unrelated to the parents', thereby increasing the investment efficiency at the spinoff unit level.

Other research studies linked the improvement in capital allocation efficiency to increase in firm values. Studying 106 spinoffs between 1981 and 1996 of multisegment firms in the U.S. with information from the SDC Mergers and Acquisitions Database and the CRSP, Ahn and Denis (2004) found that the firms experienced a substantial discount in each of the three years preceding the spinoff announcements. They used the relative investment ratio (RINV) and relative value-added (RVA) measure from Rajan, Servaes et al. (2000) to investigate how firms invest in their high-q segments relative to their low-q segments. They found that the firms are valued at a discount because they invest less in their high q segments than do their single-segment peers before the spinoffs, supporting the inefficient investment hypothesis. Consistent with the finding of Rajan, Servaes et al. (2000), they also found that there are higher investment inefficiencies in firms with a wide dispersion in segment investment opportunities as measured by the dispersion in segment q values. After the spinoffs, there are significant improvements in measures of investment efficiency and the diversification discount is eliminated. In addition, the changes in excess value around the spinoffs are positively related to

changes in measures of investment efficiency, indicating that diversified firms allocate investment funds inefficiently and breaking up the conglomerate through spinoffs can create value by improving investment efficiency. As a result, they concluded that the internal capital markets of diversified firms do not allocate resources efficiently and spinoffs can increase value of diversified firms by improving their investment efficiency. McNeil and Moore (2005) investigated the linkage between changes in firm value and changes in capital allocation efficiency resulting from dismantling internal capital markets via spinoffs and found that excess firm value increases following spinoffs and these changes in excess firm value are positively related to changes in capital allocation efficiency. Using 153 spinoff events between 1980 and 1996, they found little systemic misallocation of capital to divested divisions before spinoffs and instances of inefficient investment are mainly those of subsidizing low-q divisions. They also found that spinoff announcement returns are greater when the parent allocates capital to the spunoff unit in a less efficient manner, and that divested divisions' capital expenditures move towards industry levels after spinoff regardless of their relative investment opportunities.

Inefficient allocation of management efforts are also found in diversified firms. Schoar (2002), using detailed plant-level information from the Longitudinal Research Database to determine total factor productivity, found productivity premium of 7% at the plant-level but a diversification discount of 10% at the firm value level. She found evidence that there is a "new toy" effect in that firms that diversify experience a net reduction in productivity because while

the acquired plants increase productivity, the incumbent plants suffer as management shift their attention to the newly acquired segment. She also found suggestive evidence that the discrepancy between productivity and firm value may arise because conglomerates dissipate rents in the form of higher wages to their workers. The “new toy” effect and higher wages cause the observed discount in firm value despite the higher productivity at the plant level.

Research studies discussed above examined the efficiency of investment allocation using spinoff studies and an evaluation of firms’ investment allocations. Most studies found that firm values increase after focus-increasing spinoffs or that spinoffs are used as a mechanism to prevent or reduce inefficiencies or subsidies. Studies that examined investment allocation efficiency also found improvements after divisions are spunoff.

Inderst and Muller (2003) modeled the optimal financial contracting between centralized firms and the external capital markets and found that there are costs to centralized contracting and internal capital markets. In centralized contracting, firms can use high cash flow projects to buy continuation rights for low cash projects via their internal capital markets. This enables the firms to make greater repayments which would relax financing constraints ex ante. However, firms can also choose to pursue follow-up investments without returning to the capital markets in the future since they have their own internal capital markets. This makes it more difficult for investors to discipline the firms

and investors would tighten financing constraints, making it a cost for centralized contracting.

In his study of internal capital markets in financial conglomerates, Campello (2002) found that the investment inefficiencies of the internal capital markets are caused by frictions between the conglomerate headquarters and the external capital markets.

3.3.3 Agency Problems

Jensen and Meckling (1976), Jensen (1986) and Jensen (1993) proposed that there is an agency cost, with firm shareholders as principals and managers acting as their agents, associated with having separate ownership and control due to information asymmetry. Two issues arise from information asymmetry. First, there is the moral hazard problem in which agents act on their own best interest instead of the principals'. The information asymmetry makes it more difficult for the shareholders to detect moral hazard behavior by the managers. Second, there is the adverse selection problem in which the information imbalance makes it difficult for shareholders, investors and outsiders to make rational investment decisions based on the firm's and manager's performance.

Research studies have found that diversification discount can be caused by agency problems leading to misalignment of interest between managers and shareholders, poor allocations of resources resulting in cross-subsidization,

and limitations of the firm's corporate governance structure to curb expropriation problems.

3.3.3.1 Misalignment of Interest

The agency costs from the separation of owners and managers and the misalignment of their interest can manifest through several means. The agency cost hypothesis predicts that managers diversify when they can derive private benefits that exceed their private costs. First, diversification may benefit managers because of the power and prestige associated with managing a larger firm (Jensen 1986, Stulz 1990). Click and Harrison (2000) found an international diversification discount of between 8.6% and 17.1% for U.S. corporation between 1984 and 1997 caused by managers engaging in empire building exercise to the detriment of shareholders. Second, Jensen and Murphy (1990) hypothesized that managerial compensation is related to firm size and managers diversify to increase firm size and compensation. Third, Shleifer and Vishny (1989) hypothesized that managers diversify into industries of which they are knowledgeable to make themselves indispensable under the entrenchment hypothesis. Fourth, Amihud and Lev (1999) argued that managers use diversification to reduce their personal and employment risk with the firm because of their undiversified personal portfolio. Fifth, Jensen (1986) asserted that managers of firms with unused borrowing capacity and free cash flow tend to undertake value-decreasing investments. As firms become bigger in size with diversification, there will be more cash flow under the managers' control.

Research studies generally provided strong support for the agency cost hypothesis. Using a sample of 326 U.S. acquisitions between 1975 and 1987, Morck, Shleifer et al. (1990) found that the returns of the bidding firms are lower when their firms diversify, buys growth, and when their managers have poor performance records. They suggested that managerial objectives may drive acquisitions that reduce bidding firms' value. Research by Denis, Denis et al. (1997) also provided strong support for the agency cost hypothesis. Using a sample of 933 firms in 1984, they found that the level of diversification is significantly negatively related to managerial and outside blockholders equity ownership. They also found that agency problems are responsible for firms maintaining value-reducing diversification strategies and market disciplinary actions are forcing firms toward refocusing on their core businesses because they found that decreases in diversification is associated with external corporate control threats like block purchases and acquisition attempts, financial distress, and management turnover. They found that firms that increased focus between 1985 and 1989 had negative excess value during each of the three years preceding the changes in diversification. They concluded that agency problems are responsible for firms maintaining value-reducing diversification strategies and the general increase in focus in the 1980s can be attributed to increase monitoring associated with the market for corporate control. Aggarwal and Samwick (2003) developed a contracting model between shareholders and managers which incorporates both the desire for managers to reduce their personal risk and the desire to capture private benefits. They found that diversification is positively related to

managerial incentives, and managers diversify their firms in order to derive private benefits rather than to reduce their risk exposure to the firm.

For the emerging markets, Kim (2004) developed a model of business groups in the emerging markets in which banks cannot accurately distinguish between good (high productivity) and bad (low productivity) borrower firms. Hence, it provides low productivity and risk-averse firms incentives to form business groups in order to obscure its performance with other group members from the banks' scrutiny, to dilute information to the banks, and to maximize the probability of a full bailout (or minimize the probability of liquidation). Since the banks cannot isolate the low productivity firms within business groups, its only course of action is to bailout the whole business group in order not to risk eliminating the high productivity firms in the business group. A moral hazard problem arose once management form business group for this purpose. Analyzing 133 Thai firms that went public between 1987 and 1993, Kim, Kitsabunnarat et al. (2004) found a curvilinear relationship between managerial ownership and performance. They found that firms with low and high levels of managerial ownership exhibited positive relationship between managerial ownership and firm performance which supports the alignment-of-interest hypothesis. They also found that firms with intermediate levels of managerial ownership experienced negative relationship between managerial ownership and firm performance which supports the entrenchment hypothesis. Claessens, Djankov et al. (2002) also found support for the entrenchment hypothesis when they found that firm value decreases when the control rights of the largest shareholders exceed their cash flow rights.

3.3.3.2 Inefficient Resource Allocation

Agency problem can also affect the efficiency of resource allocation in the internal capital markets leading to sub-optimal allocation and subsidy of poorly performing divisions. Diversity cost hypothesis predict that when there are large diversity in investment opportunities between firm divisions, agency problems might be aggravated due to intra-firm rent-seeking activities resulting in inefficient allocation of resources. It can result in lobbying effects by divisional managers that lead to value losses irrespective of investment policy positions (Burch and Nanda 2003).

Scharfstein and Stein (2000) developed a two-tier agency model that shows how rent-seeking behavior of divisional managers can raise their bargaining power and extract preferential capital budgeting allocations from the CEOs, who are agents themselves. As managers of low investment opportunity divisions have more time and lower opportunities costs to engage in rent-seeking activities, the internal capital markets will likely be allocating resources inefficiently because a socialistic allocation will result in which weaker divisions get subsidized by stronger divisions.

Using Compustat segment data, Wulf (2000) found that influence activities and signal distortion by division managers leads to inefficient resource allocation in the internal capital market. She found that division managers engage in costly rent-seeking activities to distort private information about relative investment opportunities in order to skew capital budgets in their favor.

The findings suggest that influence activities by division managers play a role in the investment behavior of multi-divisional firms and these influence activities might cause greater investment distortions.

Rajan, Servaes et al. (2000) studied the effects of internal power struggles on the allocation of resources between divisions of a diversified firm and found that the efficiency of the allocation process depends on the diversity of resources and opportunities that each division faces. They assumes in their influence cost model that division managers can engage in high NPV projects whose results can be shared by other divisions and low NPV projects whose results can only be claimed by the originating divisions. When all divisions have similar level of resources and opportunities, divisional managers are willing to undertake the high NPV projects because other divisions will have good results as well and that they would not need to share their results with others. On the other hand, when divisions face dissimilar resources and opportunities, some divisions will be very successful and some divisions will perform poorly each period. In this case, division managers are more likely to select low NPV projects whose results are only available to its own divisions because they do not want to share their benefits with the poorly performing divisions. As all division managers only invest in low NPV projects, the firm value decreases. Hence, their model suggest that whether a segment receives or makes transfers in a diversified firm depends not so much on its opportunities (proxied for by Tobin's q) as on its size-weighted opportunities, and the way these are dispersed across segments in that firm.

3.3.3.3 Limitations of Corporate Governance

Agency problems can also place limitations on the firms' corporate governance structure and their ability to prevent expropriation. Managers may maintain diversification strategy despite shareholder wealth reduction, as Denis, Denis et al. (1997) found in their research study that agency problems are responsible for firms maintaining value-reducing diversification strategies and the general increase in focus in the 1980s can be attributed to increase monitoring associated with the market for corporate control.

In addition, managers will reduce diversification only if pressured to do so by external or internal monitoring mechanisms. Agency costs can be reduced through market discipline by the managerial labor market, product market competition, or the market for corporate control (Jensen and Ruback 1983, Denis, Denis et al. 1997, Denis, Denis et al. 2002).

In the emerging markets where corporate governance policies are not as well-developed, many research studies have found evidence of expropriation activities. Using 398 firms from Indonesia, Korea, Malaysia, the Philippines, and Thailand, Mitton (2002) found that corporate governance related firm-level variables had a strong impact on firm performance during the Asian financial crisis of 1997 to 1998. He found that high disclosure quality, outside ownership concentration, and focused firms are significantly associated with better stock price performance, suggesting that expropriation of minority shareholders might occur in environment of inadequate shareholder legal protection. Shin and Park (1999) found that cross-subsidies in Korean

chaebols allowed majority shareholders to take advantage of minority shareholders by taking on negative NPV project in order for another chaebol firm to receive the benefits of which the minority shareholders are not entitle to.

Research studies also found that the pyramid corporate holding structure commonly used in the emerging markets allowing management to retain larger control rights than cash flow rights and facilitate expropriation activities. Using 1995 information of over 1,000 firms from the Worldscope database of seven emerging markets (Hong Kong, India, Indonesia, Malaysia, Singapore, South Korea, and Thailand), Lins and Servaes (2002) found that there is a 15% diversification discount for firms that are part of the industrial group, and they concluded that the diversification was used for the expropriation of minority shareholders. They also found that diversified firms with ownership concentration of between 10% and 30% experience discount of 16%, and the discount is most severe when management control rights substantially exceed their cash flow rights. Their findings lend support to the expropriation theory in that management will expropriate from minority shareholders because they have enough power to exploit minority shareholders but do not bear the full cash flow consequences of their actions. Lins (2003) also found that firm values are lower when managements' control rights exceed their cash flow rights and that large non-management control rights blockholdings are positively related to firm values. Using a sample of 1,433 firms from 18 emerging markets, they found that both of these effects are significantly more pronounced in countries with low shareholder protection, indicating the

existence of agency problem. They concluded that agency problem can be reduced by external shareholder protection mechanisms and large non-management blockholders can act as a partial substitute for the missing institutional governance mechanisms.

3.3.4 Information Asymmetry

Within the information asymmetry context, the level of diversification affects the amount and types of information available to the market. There are two opposing views on the effect of diversification on information asymmetry and firm value.

One view proposes that diversified firms have higher information asymmetry because of the more severe adverse selection problem. In diversified firms, different industries are involved, useful information might be obscured by the consolidation process in financial reporting, and there might be interactions between divisions that make comparison with other firms difficult. Under this view, increased focus reduces information asymmetry because useful private information are released sooner (Huson and MacKinnon 2003). Using 118 spinoff transactions between 1979 and 1993, Krishnaswami and Subramaniam (1999) found that firms that engage in spinoffs have higher level of information asymmetry pre-spinoff compared to their peer firms and the information asymmetry problems decrease significantly after the spinoff. They found significant positive two-day cumulative abnormal return of 3.15% and a significant positive relationship between information asymmetry and the

level of abnormal return. They also found that firms with higher growth opportunities and firms in need of external capital show a higher propensity to engage in spinoff prior to their capital raising activities. Their findings support the information hypothesis that spinoff enhances firm value because it mitigates the adverse selection problem from information asymmetry of the firm about the profitability and operating efficiency of different divisions.

The opposing view is that diversified firms have lower information asymmetry because the bundling of claims on individual assets into composite claim reduces informed traders' informational advantage. Diversification can provide information benefits by making total firm valuation errors smaller because valuation errors across segments are imperfectly correlated. Focus-increasing spinoffs will increase the informational disparity between uninformed and informed traders and a permanent increase in information asymmetry may result (Huson and MacKinnon 2003). Using 84 spinoffs between 1984 and 1994, Huson and MacKinnon (2003) studied the informational effects of spinoffs and found that the idiosyncratic volatility increases after the focus-increasing spinoffs. They interpret this increase in activities of informed traders as an indication of the increased asymmetric information from the focus-increasing spinoffs that provide informed traders with more advantages over uninformed traders. They concluded that the increased transparency after spinoffs actually benefits informed traders more because it makes their firm-specific knowledge more valuable. Hadlock, Ryngaert et al. (2001), using a sample of 641 equity issues from 1983 to 1994, also found that equity issues by diversified firms are received less negatively than issues by focused

firms, suggesting that diversification reduces information asymmetry. Clarke, Fee et al. (2004) compared a sample of average diversified firms with a similarly constructed portfolio of stand-alone firms chosen to approximate the segments of the diversified firms. They found that the diversified firms have less severe asymmetric information problems and concluded that greater diversification is not on average associated with increased information asymmetry.

3.4 INTERNATIONAL DIVERSIFICATION

As most research studies focused on the effects of industrial diversification by U.S. firms, some researchers studied the effects of international diversification on U.S. firms and the effects of diversification in other developed countries.

Research studies on international diversification of U.S. firms yielded contradictory findings. Using a sample of over 24,522 firm year observations of 4,722 U.S. firms from 1987 to 1993, Bodnar, Tang et al. (1997) found international diversification premium of 2.2% but industrial diversification discount of 5.4%. They concluded that both international and industrial diversification must be controlled for in research studies of diversification because it will increase the discount found in industrial diversification if they are examined separately. Click and Harrison (2000) found international diversification discount of between 8.6% and 17.1% using 42,529 firm year observations of U.S. corporations between 1984 and 1997; and this discount is caused by the large but low return investment in assets required for

international diversification. Two subsequent research studies on international diversification by U.S. firms found contradictory results due to differences in sample selection criteria. Using 34,200 firm-year observations of U.S. firms between 1984 and 1997, Denis, Denis et al. (2002) found discount of 20% for industrial diversification, 18% for global diversification, and 32% for both industrial and global diversification. They found substantial increase in the extent of global diversification and it is not used by firms to replace industrial diversification. They also found that global diversification is positively correlated with industrial diversification at firm level, meaning global diversification complements rather than substitute industrial diversification. While Denis, Denis et al. (2002) found significant firm value discount for industrial and international diversification, Bodnar, Tang et al. (2003) found a small premium using a similar firm sample. Using over 28,000 firm-year observations from over 6,000 U.S. corporations between 1984 and 1998, they found a diversification premium of 3.5% and that this premium was positively related to the breadth of the multinational network and varied over time with the level of exchange rate. Compared to the research performed by Denis, Denis et al. (2002), there are two methodological differences. First, the minimum size of firms to be included in this sample is increased from US$20 million to US$40 million. Bodnar, Tang et al. (2003) hypothesized that a lower minimum firm size will include too many small firms of which many might not be internationally diversified and distorts the relative valuation measures. Second, the firm size control variable also affected the results. In this study, sales was used to proxy for firm size because they hypothesized that it was a

more appropriate proxy than total assets which was used in the Denis, Denis et al. (2002) study.

Research studies on diversification in other developed markets highlighted the importance of institutional frameworks and other local differences on the effect of diversification on firm values. Lins and Servaes (1999) used information on over 1,300 German, Japanese, and UK firms from the Worldscope database in 1992 and 1994 and found no significant diversification discount in Germany, 10% in Japan, and 15% in the UK. They found that concentrated ownership by insiders enhances firm value in Germany, and only firms with strong links to an industrial group have a diversification discount in Japan. They concluded that the effect of diversification on firm value is different across countries due to differences in institutional environment and nature of corporate governance structure. Fauver, Houston et al. (2004) examined the effect of industrial and international diversification on firm value using Worldscope information on over 3,000 firms from Germany, the United Kingdom, and the U.S. from 1991 to 1995. They found that industrial diversification reduces firm value in the UK and the U.S. but not in Germany. They also found that international diversification reduces firm value of multinational firms relative to firms operating only in the domestic market in the U.S. only but not in the UK or Germany. They interpret their results to suggest that the value of international diversification depends in part on where the company is headquartered and / or where its products are sold. With international diversification not affecting firms in Germany or the UK, they hypothesize that either the relative costs of international diversification is

smaller for European firms as the European market is more integrated, or that there are some other factors that explain the relatively poor performance of U.S. multinationals in terms of international diversification.

The general conclusion of these research studies on international diversification is that its effects on firm values are similar when compared to the U.S. based studies. More importantly, these studies highlighted the significance of the effects of interactions between institutional frameworks and local structural factors on diversification and firm value.

3.5 MEASUREMENT ERROR

Studies that highlight potential measurement error are one of the more recent developments in the study of diversification. There are three potential sources of measurement errors: the source of data, sample selection, and measurement errors.

3.5.1 Source of Data

Most diversification studies used information databases like Standard & Poor's Compustat and Thomson's Worldscope as their data source. Although these information databases are some of the most comprehensive sources of data for research purposes, measurement errors can still exist. Using the Business Information Tracking Series (BITS) census database that covers the

whole U.S. economy at the establishment level between 1989 and 1996, Villalonga (2004a) investigated the effect of segmentation on the diversification discount. First, he used the Compustat segment classification on his sample and found diversification discount of 18%; using the same sample but a more thorough diversification classification based on BITS, he found diversification premium of 28%. He hypothesized that the diversification discount found in previous studies are due to the use of segment data in Compustat database as diversified firms are classified as single-segment firms and the calculation of the industry benchmark using single-segment firms is affected. Potential errors like appropriateness of use, self-selection bias, and self-reporting bias can be introduced into the research process from the data source.

3.5.1.1 Appropriateness of Use

Appropriateness of use can introduce errors into the research process because information was not collected specifically for the purpose of diversification studies. As a result, information in the database might be aggregated or classified inappropriately for this type of research. In his research, Nayyar (1992) found that external measure of diversification based on SIC classification is drastically different from the actual level of diversification within the firm. The disparity between the potential and actual level of diversification and the segments' relatedness mainly arose from the firms' inability to realize the benefits of diversification. Andrade and Stafford (2004) cited that more than one-third of firms on the CRSP and Compustat databases do not match at the two-digit SIC code level. Hyland (1999) also

found that not all Compustat segment changes represent economic events. He found that only 72% of the diversifications indicated by the Compustat database are actual economic events and the remainders are noise or errors in measurements. He found that 5.4% of the change does not agree with the annual report, 6.7% list segment breakout in years that are different from the annual reports, and 22.5% are reporting changes that are non-economic events.

The use of database segment information can also introduce errors to the measurement of relatedness or level of diversification in the research process. Using a subjective approach to determine relatedness for their research study, Gertner, Powers et al. (2002) found that businesses with different two-digit SIC codes can actually be related. Scharfstein (1998) also found limitations in using SIC codes to classify segments' relatedness. He found that segments in different two-digit SIC codes can produce related products or services, have vertical connections, or horizontal relatedness.

In addition, there are limited numbers of segment classification available in these databases which might result in an over-aggregation of segment information and an underestimation of the firms' diversification when the actual number of segments exceeds the classifications available in the databases. Using establishment level data, Villalonga (2004a) found that 43% of the single-segment firms identified in Compustat are actually diversified businesses. In addition, over 21% of firms have more than ten business units which is the maximum number of segments possible within Compustat. As a

result, there is a misclassification of diversified firms as single-segment firms and an underestimation of the extent of diversification. Lins and Servaes (2002) also found transcription corrections necessary when they compare the SIC codes to the business descriptions. They found that Worldscope's coverage for emerging market firms is poor before 1994 and only large companies are included in the database. Some researchers argued that the segment information from these databases are systematically biased in favor of finding a diversification discount.

3.5.1.2 Self-selection Bias

Self-selection bias is introduced into the database when certain types of firms are more prone to report their information and subsequently included as part of the database. For example, private firms that do not access the external capital markets are generally not included in the database. High growth firms that turned to the private equity market for capital are also excluded. Lins and Servaes (2002) found that only large companies in the emerging markets are included in the Worldscope database before 1994.

3.5.1.3 Self-reporting Bias

Self-reporting bias arose because the information in the database are provided by the firms and management had considerable flexibility in how these information is reported. Some researcher found that Compustat distorts the extent of the diversification discount because segment accounting standards allow managers to group together different industries into one

segment. Villalonga (2004b) reported that segments are sometimes aggregated and inconsistently reported between firms and some industries are fundamentally composed of segments of diversified segments. Schoar (2002) found that Compustat severely understated the true extent of conglomeration for the manufacturing firms in her study. Compustat's segment level data also allows firms to reorganize their segments over time, and Shin and Park (1999) found that firms allocate overhead costs and assets arbitrarily among segments and inconsistently from year to year.

3.5.2 Sample Selection

Survivor bias and selection bias can introduce sample selection error into the research process.

3.5.2.1 Survivor Bias

Survivor bias is introduced when only certain types of firms remain in the sample. For diversification studies, divisions of diversified firms might have a greater likelihood of survival than single segment firms. When single segment firms underperform, the firms will need to obtain resources to continue operation, hence subject itself to the scrutiny of the capital providers in the market. As a result, single segment firms have a greater possibility of going out of business because it has no readily available alternative source of internal financing other than cash flow from its own operation. On the other hand, underperforming segments of diversified firms can obtain internal

resources to continue operation and bypass the requirement for external scrutiny when obtaining resources. Since underperforming single segment firms are less likely to survive, the single segment firms in the database over-represent the above-average performers while the diversified firms contain underperforming segments that might reduces their performance, resulting in a discount for the diversified firms (Schoar 2002).

3.5.2.2 Selection Bias

Selection bias is introduced when only certain types of firms are selected as sample for the study, and it is particularly relevant in acquisition or spinoff event studies because firms that experienced spinoff might be different from those that do not require such corporate action. Graham, Lemmon et al. (2002) hypothesized that selection bias might be introduced because only the poorly performing firms with discounted firm values are acquired. Denis, Denis et al. (1997) found that firms that increased focus between 1985 and 1989 had negative excess value during each of the three years preceding the changes in diversification, while diversified firms that did not increase focus had excess values that did not differ significantly from zero. Their findings point to the potential selection bias for the study of refocusing using spinoff because the sample of refocusing firm might be different from the group of diversified firms that do not require such action.

The selection bias can be best depicted by the studies on focus and information asymmetry by Hadlock, Ryngaert et al. (2001) and Krishnaswami and Subramaniam (1999). Using a similar population of firms, they arrived at

opposite conclusions with the use of different sample selection process. Hadlock, Ryngaert et al. (2001) found that diversification can alleviate information asymmetry problem while Krishnaswami and Subramaniam (1999) found that spinoff can reduce information asymmetry problem. Their research reached different conclusions despite using a similar population of firms because Hadlock, Ryngaert et al. (2001) looks at diversified firms that have chosen not to separate their assets but Krishnaswami and Subramaniam (1999) studied firms that have chosen to spinoff their units (Huson and MacKinnon 2003).

3.5.3 Measurement Errors

Measurement errors in research studies can be caused by inaccurate measurement of firm value, violation of the homogenous firm assumption, and the improper use of Tobin's q as measure of firm value or investment opportunities.

3.5.3.1 Inaccurate Measurement of Firm Value

Inaccurate measurement of firm value arose from the use of book value for debts in the firm value calculations. Instead of the market value of debt, the book value is used because of availability and representative concerns. The market values of non-tradable debts are difficult to establish, and the market price might not represent actual market value for bonds that are illiquid or

seldom traded. As the level of diversification changes, the firms' risk level and discount rates also change; as a result, the value of the debt changes.

As firms diversify, the default risk of the debt is reduced and the value of the debt should increase. Several studies examined the changes in the value of the debt as firms diversify and found evidence of wealth transfer between equity holders and debt holders. Using a sample of 3,901 bonds from target and acquiring companies from 940 transactions between 1979 and 1997, Billett, King et al. (2004) found that target bondholders can earn positive mean excess return of 1.09% during the announcement period, providing support for the increase in bond values when the overall firm risks are changed. Based on 18,898 firm-year observations of 2,856 firms between 1988 and 1999, Mansi and Reeb (2002) found that the diversification discounts found in previous research studies represent the risk effects of diversification. They proposed the risk-reduction hypothesis of corporate diversification by formulating equity value as options on remaining value of the firms after other capital providers. Diversification reduces firm risk and lower volatility which reduces the value of the equity options. But this reduction in value of the equity options is offset by an increase in value of the debt due to lower risk. There is a transfer of wealth from shareholders to bondholders but the total firm value remains unchanged. Previous research studies have used the book value of debt and that might underestimate the value of the firm, causing the diversification discount found in previous research.

As firms increase focus, the default risk is increased and the value of the debt should decrease. Maxwell and Rao (2003) found evidence of wealth transfer from bondholders to stockholders using 80 spinoffs between 1976 and 1997. They found that bondholders suffer significant negative abnormal returns of 88 basis points during the month of the spinoff announcements and the magnitude of the losses is a function of the loss in collateral in the spunoff subsidiary and the level of the financial risk of the parent firms. While the aggregate value of the firms increased from the spinoffs, they found that the bondholder losses are small relative to the gains of the stockholders and they concluded that some of the increase in value to stockholders is due to wealth transfer from bondholders. Consistent with this findings, Parrino (1997) found that there was a wealth transfer from the bondholders to the shareholders in the focus-increasing spinoff of the Marriott Corporation in 1993.

3.5.3.2 Violation of Homogenous Firm Assumption

Measurement errors are also introduced to the research process when the assumption of homogenous firms is violated. It is implicitly assumed that all firms are homogenous on average and diversified firms are made up of single-segment firms. However, research studies have found evidence of heterogeneity among firms that segments of multi-segment firms are dissimilar to their corresponding single segment counterparts. The dissimilarities could be due to different growth potential, cash flow patterns and risk levels, and investment opportunity sets between firms.

Research studies have found that firms that diversify are different even before the diversifying transactions. Graham, Lemmon et al. (2002) examined 356 acquisitions between 1980 and 1995 and found announcement return of 3% for the combined firm being offset by the 10% firm value discount of the acquired firm resulting in a 7% reduction in excess value for the combined firms after the merger. They concluded from the announcement return event study that the market does not view the acquisition as value destroying, but that the acquired firms are discounted due to poor performance prior to being acquired which causes the discount in the merged firms. They concluded that the target firms are systematically different from other single segment firms in their industry such that the use of single-segment firms as benchmarks for the imputed value calculation will overstate the diversification discount. They also found that the diversification discount can be accounted for by the discount of the acquired firm and that diversification itself does not contribute to any firm value loss.

Lamont and Polk (2001) hypothesized that diversified firms have different values from comparable portfolios of single segment firms due to differences in future cash flows or future returns; in particular, a diversified firms with high expected return relative to single-segment firms will have a low value and a discount, and firms with premium will have low subsequent returns. Using 14,962 observations for 2,390 diversified firms from 1979 to 1997, Lamont and Polk (2001) performed variance decomposition for the cross-sectional distribution of value of diversified firms and found that firms with discounts have higher subsequent returns. They found that about 54% of the cross-

sectional variation in excess value is due to variation in expected future cash flows, with the remainder due to variation in expected future returns and to covariation between cash flows and returns. They concluded that the discounted firm values found in diversified firms are due to their higher discount rate for future cash flows and not from value loss due to diversification.

Chavelier (2000) investigated the validity of the measurement for cross-subsidization in previous studies by examining the investment behavior of firms prior to their diversifying mergers and found systematic differences between the investment opportunities of conglomerates and stand-alone firms. Using a sample of firms that undertake diversifying mergers between 1980 and 1995, she found investment patterns that the literature has attributed to cross-subsidization between divisions are apparent in the pairs of merging firms prior to their mergers. She found that one merger partner's cash flows are predictive of the other partner's investment prior to the merger. She proposed that some of the cross-subsidization investment patterns may be caused by systematic differences in investment opportunities and the relatedness of divisions of diversified firms can result in interpretation of cross-subsidization behavior despite their absence in reality. Maksimovic and Phillips (2002) also found that single segment and conglomerate firms do not face the same investment opportunities, and plants in the larger segments of conglomerate firms are more efficient than plants in the smaller segments.

Other research studies found that each firm is different due to different management abilities, resource availability, and comparative advantages at the firm level. Using detailed plant-level data for manufacturing plants from 1974 to 1992 from the Longitudinal Research Database, Maksimovic and Phillips (2001) found that most transactions for assets result in increases in production efficiency and they facilitate the redeployment of assets from firms with a lower ability to exploit them to firms with higher ability. They found that the growth by conglomerates' divisions is consistent with a simple profit-maximizing model with scarce managerial or organizational ability as firms make selective acquisitions that can optimize their productivity functions. Their findings suggest that firms have differing levels of ability to exploit assets and they have comparative advantages in some of their industries. The market for corporate assets facilitates the redeployment of assets from firms with a lower ability to exploit them to firms with a higher ability. However, firms might acquire low productivity peripheral divisions and operate them until they are sold to more efficient buyers when the industry experience a positive shock and the demand for these divisions are higher. Complementary to this study, they (Maksimovic and Phillips 2002) found that each firm has their own comparative advantage and diversified firms might be in an optimal condition despite being traded at a discount due to these inter-firm differences.

3.5.3.3 Tobin's q as Proxy For Firm Value

The use of Tobin's q as a measure of firm value or investment opportunities might introduce measurement errors. Whited (2001) argued that the diversification discount previously found was caused by the use and the

assumption of Tobin's q as a good proxy for investment opportunities. He argued that Investment opportunities should be measured by marginal q, which is an unobservable quantity. It is defined as the firm manager's expectation of the present discounted value of the future marginal product of capital. However, observable measures of Tobin's q, like market to book ratio, may diverge substantially from unobservable marginal q. Market-to-book ratio of Tobin's q calculation deviates from marginal q due to three assumptions that are often violated. First, marginal q is equal to average q. This assumption will only hold if there is perfect competition and linearly homogeneous technology. Imperfect competition will causes average q to exceed marginal q, and nonconstant returns to scale can bias average q. Second, average q must equal to Tobin's q, but market inefficiencies or information asymmetry may cause the manager's valuation of capital to diverge from the market valuation. Third, the market-to-book ratio must equal to Tobin's q, and it will only hold if all the firm's assets are capital goods and if the market values of the firm's liabilities are equal to their book value. Using Compustat firm information from 1993 to 1998, he found no evidence of inefficient allocation of investment, and diversification discount found is caused by measurement error and of the correlation between investment opportunities and liquidity. He also found that only about 25% of the variation in the market-to-book ratio is due to true marginal q.

3.6 ENDOGENOUS FACTORS

Another recent development in the study of diversification on firm value is that endogenous factors might account for both the decision to diversify and the diversification discount. In other words, the discount is not the result of diversification but both are caused by or associated with other endogenous factors. King, Dalton et al. (2004) use meta-analysis with both stock and accounting measures of post-acquisition performance from 93 empirical studies with 852 effect sizes and a sample size of over 200,000, they found that acquiring firms' performance does not positively change as a function of their acquisition activity. Their results indicate that unidentified and unspecified variables may explain significant variance in post-acquisition performance, suggesting the need for additional theory development. They conjecture that a better understanding of the conditions under which acquisitions make sense as a path to superior performance is needed because their research results indicated that post-acquisition performance is moderated by unspecified variables. Denis, Denis et al. (2002) also found endogenous factors that can partially explain the industrial and global diversification discount found in their analysis. Using 34,200 firm-year observations of U.S. firms between 1984 and 1997, they included firm fixed effects in the multivariate analysis to control for endogenous factors and found that the explanatory power of the regression substantially increased, implying the existence of endogenous factors.

Other researchers found that firms decide to diversify because of worsening prospects in their own industries. The reduction in opportunities in their industry caused low growth and resulted in the firm value discounts. As a result, these firms diversified to explore more profitable opportunities in other industries. These research studies generally found that diversified firms are maximizing shareholder value by operating efficiently and optimally in a profit maximizing manner and the diversification efforts did not enlarge the firm value discounts. Nevertheless, the firm values were still discounted despite operating optimally in a shareholder value maximizing manner. Hyland (1999) found that diversifying firms have slightly worse financial performance, have more free cash available, and have not engaged in as much research and development as compared to focused firms in the same industry. He hypothesized that less competitive firms diversify to other industries to buy growth or to maintain current status. Using the predicted values from a probit model of a firm's decision to diversity, Villalonga (2004b) found that diversified firms trade at a discount before the merger. He concluded that diversification does not cause the discount; it is low performance of firms prior to the merger that causes the diversification discount. Gomes and Livdan (2004) provided a general dynamic model of optimal behavior indicating that firms diversify only when they become relatively unproductive in their current activities with productivity loss, and this endogenous selection accounts for the lower value of the diversified firms. They showed that diversification allows a firm to explore better productive opportunities while taking advantage of synergies are consistent with the maximization of shareholder value. Their model predicts that diversified firms have lower Tobin's q than focused firms despite

being diversified are optimal and there is no inefficiency within the firm. Despite the fact that conglomerates operate efficiently and that diversification clearly adds value to the firm, their model is able to rationalize the diversification discount. Since diversification is optimal, firm value cannot be reduced due to diversification, and the model points to the endogenous selection mechanism as the cause of the discount.

Campa and Kedia (2002) hypothesized that the documented diversification discount is not caused by diversification but endogenous factors of the diversification decision. A firm's choice to diversify is likely to be a response to exogenous changes in the firm's environment that also affect firm value. The characteristics of firms that diversify may also cause firms to be discounted and a proper evaluation of the effect of diversification on firm value should take into account the firm-specific characteristics that bear both on firm value and on the decision to diversify. Controlling for the endogeneity of the diversification decision requires identifying variables that affect the decision to diversify while being uncorrelated with firm value. Using 8,815 firms and 58,965 firm-year observations from Compustat between 1978 and 1996 and taken into account observed firm characteristics and firm fixed effects, they found that the diversification discount disappears.

Villalonga (2004a) found that diversification affects industry segments differently. Using the Business Information Tracking Series (BITS) census database that covers the whole U.S. economy at the establishment level between 1989 and 1996, he investigated the effect of segmentation on the

diversification discount and found that manufacturing firms derive lower benefits from diversification than other industries because of its higher discount and lower premium when compared to other sectors.

Previous studies on diversification discount had implicitly assumed that single segment and conglomerate firms have similar ability to compete and exploit market opportunities, and that there is no comparative advantages between firms. However, research have found that diversification discount is caused endogenously by differences in the underlying firm and managerial abilities, and individual segment level productivity. Maksimovic and Phillips (2002) studied over 50,000 firms between 1974 and 1992 using plant level data and found that conglomerate firms do allocate resources efficiently in a profit maximizing manner. They were able to study the productivity of each segment individually together with the opportunities that each segment faces and found that growth and investment are related to fundamental industry factors and individual segment level productivity. They found that diversification discount is caused by endogenous factors and the optimal number and size of industry segments a firm operates depends on its comparative advantage across industries as firms that are very productive have higher opportunity costs of diversifying. Positive demand shocks also affect segments differently dependent on its productivity. A conglomerate will shift resources to the segment of which it has comparative advantage in production after a positive demand shock. It might appear that the conglomerate is subsidizing one segment with another as found in other researches. However, since they are able to evaluate the investment opportunity set that each segment faces, they

were able to conclude that resources are actually going to segments with the most comparative advantages from those that are comparatively disadvantaged.

3.7 DIVERSIFICATION IN THE EMERGING MARKETS

As the world economies are becoming more globalized, more and more firms are expanding overseas into the emerging markets for both their capacities as manufacturers and consumers. Firms face very different sets of political, economical, legal, cultural, and business environment in the emerging markets (La Porta, Lopez-de-Silanes et al. 1998, La Porta, Lopez-de-Silanes et al. 1999, La Porta, Lopez-de-Silanes et al. 2000b, La Porta, Lopez-de-Silanes et al. 2000a), which interact with the firms' internal characteristics to necessitate new sets of strategies. While most of the existing diversification research focuses on firms in the U.S. or developed markets, effects of diversification on firm value in the emerging markets is rarely being examined. Previous research studies on diversification in the developed markets have generally found diversification discounts indicating higher costs than benefits, inefficient allocation of resources with the internal capital markets, and agency problems. Although there are recent evidence of measurement errors and endogeneity factor explanation, diversification discount appears to be the most accepted view of diversification on firm value. However, research studies of effects of diversification in the emerging markets have produced inconsistent results. While Claessens, Djankov et al. (1999) found that diversification has negative effect on firm value in Asia, they suggested that

the inclusion of Japanese firms that belong to industrial groups in the sample might have skewed their results. Other research on diversification in the emerging markets found that diversification helps firms overcome market inefficiencies and failures. Discounts are found but it arose mainly from the risk of expropriation. Different institutional structures and levels of market efficiencies have also resulted in different effects of diversification on firm values.

The main source of differences in the emerging markets mainly comes from their different institutional environment and market inefficiencies and failures.

The institutional environment in the emerging markets is different from those of the developed markets due to different historical, cultural, political, and economical background. Each market has their own set of natural endowment with which they develop, together with the political landscape, can vastly affect the nature of firms operating in each market. For example, the political structure and the natural endowment of Indonesia has created a wealth gap in which a small number of “have’s” control all the resources of the market while the majority of “have not’s” are living in poverty. Cultural differences also play a role in how firms are structured. For example, diversified firms are sometimes used in the more family-oriented Asia Pacific to allocate family resources among heirs. The importance of the family relationship, cross-holding and pyramid structure of equity, and placement of related parties into the organizations are used to reduce monitoring and agency problems within the diversified family entity. In their study of 2,980 firms in nine East Asian

countries, Claessens, Djankov et al. (2000) found that more than half of these firms have extensive family control through pyramid structures and cross-holding. The importance of the family unit also raises the reputational effects of the “family name” which serves as another monitor of agency problem for external parties. The less developed financial and capital markets in Asia Pacific also encourage diversification in order to develop internal capital markets for resource allocation purposes.

Emerging markets are generally characterized by more severe market imperfections, undeveloped or under-developed capital markets for access to capital, weaker disclosure and reporting requirements, less effective corporate governance mechanisms, poorly developed market for corporate control, and high transaction costs (La Porta, Lopez-de-Silanes et al. 1998, La Porta, Lopez-de-Silanes et al. 2000b). Research have found evidence that diversification can help firms overcome these market inefficiencies and failures. Using more than 8,000 firms from 35 countries between 1991 and 1995, Fauver, Houston et al. (2003) found that the effect of diversification on firm value is related to the level of capital market development, international integration, and legal systems. They found negative relationship between value of diversification and capital markets development and integration. They found significant diversification discount for countries with well-developed and internationally integrated capital markets, but diversification premium or no discount for countries where capital markets are less developed and segmented from international capital markets. They also found diversification discounts in countries where the legal system is of English origin which

provides the most protection to capital providers. In addition, they found diversification discount for firms in economically developed countries but diversification premium for firms in low per-capita GNP emerging markets. They concluded that the optimal organizational structure may be very different for firms operating in emerging markets than they are for firms operating in more developed and internationally integrated countries. All of their findings are consistent with the benefits of diversification outweighing its costs in markets where inefficiencies exist to a larger degree.

Using a panel of over 10,000 firms from 1991 to 1996 from the Worldscope database, Claessens, Djankov et al. (1998) examined the efficiency of investment and firm value by diversified firms in nine East Asian countries (Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand). They used the inter-industry commodity flow data in the U.S. input-output table as a benchmark to measure vertical and complementary diversification. They found that firms in more developed countries are successful in vertically integration with lower cost, and firms in less developed countries are more successful in complementary diversification. Their findings also suggest that internal capital markets play a more important role in less developed countries despite the internal capital markets' propensity to misallocate capital.

Feinberg and Phillips (2003) examined how internal resources affect international firm growth. They found that firm-specific resources can be used to grow across affiliates of network with minimum resources competition

between divisions. In addition, they also found that firm growth is affected by host-market financial market development. They found that affiliate growth in countries with less developed financial markets requires more headquarter resources and allocative trade-off.

Beck, Demirguc-Kunt et al. (2005) found that smaller firms are most constrained by financial, legal, and corruption obstacles in the 54 countries in his research study.

Other researchers focused on the effects of diversification in certain countries. Khanna and Palepu (2000) studied the performance of affiliates of diversified Indian business groups using both accounting and stock market measures. Using 1,309 firms, they found no evidence of diversification discount for Indian firms belonging to a business group but a quadratic relationship in that firm performance initially decline with group diversification, but subsequently increase once group diversification exceeds a certain level. They also found that affiliates of the most diversified business groups outperform unaffiliated firms. Their research suggests that the most diversified business groups add value by replicating the functions of institutions that are missing in the emerging market. They suggested that the different findings are not only affected by differences in the institutional context but also by differences in organization structure in that diversified firms in the U.S. own a collection of lines of business, while firms affiliated with Indian business groups are owned by distinct set of shareholders. The different ownership structure makes Indian firms less acceptable to inefficient allocation of resources and makes

them more similar to the LBO structure in the U.S. Shin and Park (1999) studied Korea's chaebols using 317 manufacturing firms from the Korea Investors Service Line between 1994 and 1995 and found that chaebol firms' investment decisions are independent of their own operating cash flow while investments of non-chaebol firms are significantly sensitive to their own operating cash flow. A chaebol firm's investment is significantly related to the growth opportunities but that of a non-chaebol firm is not. A chaebol firm's investment is significantly affected by the cash flow of other firms within the same chaebol even though they are independent legal entities. These findings point to the existence of an internal capital market in a Korean chaebol and it reduces the financing constraints of the chaebol.

3.8 MARKET POWER

There are relatively few empirical research studies on market power because of the difficulty in measuring it objectively and reliably. Most prior research studies have hypothesized or found that market power can be beneficial for firm values or the competitiveness of firms. Lewellen (1971) suggested that there are opportunities for firms to enhance their sales positions through diversification by augmenting monopoly power. Sullivan (1974) found that more powerful firms, as measured by market concentration and entry barriers, earned a higher return on their equity as measured by net income to shareholders' equity. He also found that financial leverage does not increase with the more powerful firms. The level of entry barrier is a subjective evaluation of information from various sources. Lambrecht (2004) also found

that market power strengthens the firms' incentive to engage in merger activities in addition to the synergistic incentive. On the other hand, some research have found little evidence of benefits from market power; we hypothesize that it is due to the antitrust legislation and avenue available to sort redress that was being established in the developed countries beginning in the mid-1960's. Using the Herfindahl-Hirschman index to measure concentration as proxy for market power, Kim and Singal (1993) found that mergers in the airline industry caused significant increase in airfares which was the result of higher concentration after the merger. With less choice amongst travelers, the airlines can raise airfares with their increased market power.

Eckbo (1983) set out to test the collusion hypothesis which predicts that as firms merge, they can increase the probability of successful collusion with rival producers and earn abnormal returns. Under the collusion hypothesis, rival firms should also experience positive abnormal returns because they will also benefit from the probability of successful collusion. On the other hand, the predatory pricing theory predicts that mergers will lead to monopolistic price war between the merged firms and their rivals because the merged firms can engage in predatory pricing with their larger size and economies of scale, resulting in negative abnormal returns for rivals at the time of the proposal announcements. Using a sample of 259 horizontal and vertical mergers in the mining and manufacturing industries in the U.S., he found that the evidence does not support the collusion hypothesis by testing for abnormal returns of

rival firms when mergers were announced. In addition, his findings also did not support the predatory pricing theory.

Fee and Thomas (2004) also tested for monopolistic collusion using event studies with announcement of horizontal mergers, predicting that rival firms would experience positive announcement returns because of higher collusion possibilities. They also tested for evidence to support the productive efficiency hypothesis and the buying power hypothesis, which predict that firm value changes are due to higher production efficiency or higher buying power respectively. Using Herfindahl index to measure concentration and market power, he found that the source of gains in horizontal mergers came from improved productive efficiency and buying power instead of collusion with rival firms.

Kanatas and Qi (2003) found that universal banks that both lend and underwrite can exert market power over their client firms due to informational scope economies as they have all the information available to them. Their research is based on the assumption that scope economies on information do exist and market power is derived which benefits the firm. However, no other benefits or costs from the combination of lending and underwriting businesses were incorporated. The economies of scope is also limited on information only while we are defining market power in a more generalized and encompassing manner. Foster (1989) also examined the spreads that underwriting syndicates received after the implementation of Rule 415 shelf registration and he found that the syndicates did exert market power in order to receive

part of the benefits from this change. Both the Kanatas and Qi (2003) and the Foster (1989) research assumed that market power was the factor that caused the benefits to accrue to the firms, but market power itself was not defined or quantified within the studies. For the Asian markets, Weinstein and Yafeh (1998) found that Japanese banks were able to exercise market power over borrowing firms that have close bank-firm relationship and expropriated most of the benefits from the better access to capital for these borrowing firms. However, the market power of the Japanese banks were not measured but implied through the use of a control variable to indicate the existence of close bank-firm relationship.

Contrary to the developed markets, firms in the emerging markets can accrue and exercise market power more easily for private gains. Firms can also accrue market power by becoming “too large to fail.” In certain countries, large firms account for a sizable percentage of the market’s employment and output. In these situations, there are potential agency problems in that managers will make risky decisions that provide private benefits while the government is expected to absorb the costs of bailouts to avoid large scale social disruptions and discontent. The burden of the bailout is shared by all the citizens of the market as the government is providing the funds to bail out the firm (Kim 2004). While it may be difficult for focused firms to become very large due to market size and demand limitations, an initially focused firm can expand its importance and criticalness to the local economy by expansion into other industries. Hence diversification and growth can be used by these firms to achieve a “too large to fail” purpose.

In terms of measuring market power, some variation of market share measurement, like Herfindahl index or concentration ratio was used as proxy for market power (Donsimoni, Geroski et al. 1984, Porter 1980) in most cases. Donsimoni, Geroski et al. (1984) also discussed the use of the Lerner index of monopoly power which examines the difference between price and marginal cost. He also pointed out the difficulty of using the Lerner index of monopoly power to measure performance at the industry level because it would also depend on the distribution of power within the industry for each firm. Jacquemin, de Ghellinck et al. (1980) pointed out that engagement in international trade by small open economies can severely reduce the validity of concentration ratio as proxy for market power. They suggested the ability to use anti-competitive behaviors like collusion or price discrimination as measurement for market power. Sullivan (1974) used market concentration and entry barriers as proxies for market power. However, the entry barriers were determined subjectively based on discussions with knowledgeable person and secondary information sources, and as a result, lowering the quality for consistency and the ability to use this measure on a larger data sample set.

3.9 THE RESEARCH GOAL

The main goal of this research study is to shed some light on the effects of diversification and market power on firm values in the emerging markets due to these markets' different institutional environment and structural frameworks.

In the emerging markets, the institutional environment is less developed and market inefficiencies are common and prevalent. In this study, we hypothesize that diversification and market power can provide incremental value to firm valuation if diversification and market power allow firms to (1) overcome market inefficiencies and failures, (2) maintain internal capital markets for resource allocation purposes, and (3) pursue profitable growth opportunities. It is assumed here that while diversification and market power also provide firms in the developed markets with the same benefits, they are not high enough to overcome the costs associated with diversification and market power because the frequency and severity of market inefficiencies and failures are not high enough. On the other hand, market inefficiencies and failures are much more common in the emerging markets, and the benefits of diversification and market power are being utilized to a much greater extend.

3.9.1 Overcome Market Inefficiencies and Failures

Diversification and market power can provide incremental firm value in the emerging markets because they can help firms overcome market failures and inefficiencies.

Khanna and Palepu (1997) and Khanna and Rivkin (2001) asserted that diversification can be beneficial for firms in the emerging markets because it can (a) facilitate contract enforcement, (b) reduce information asymmetries, (c) help recruit and retain higher quality personnel, (d) establish brand name and awareness by taking advantage of reputation spillovers, (e) cultivate and use

political connection and favors to further firm benefits, and (f) engage in “infant industry” protection or predatory pricing schemes with subsidies from other segments.

Palepu (1985) offered several motives for accruing of market power relating to diversification. First, a diversified firm can use the profits generated from one segment to subsidize a predatory pricing scheme in another existing or a new industry. Second, a diversified firm can collude with other firms that compete with the firm in various markets simultaneously. Third, a diversified firm can engage in reciprocal buying with other large firms in order to squeeze out smaller competitors. Fourth, large diversified firms can more easily put up or overcome barriers to entry for its advantage.

3.9.2 Internal Capital Markets

When the external capital market is not well-developed, there are benefits to diversification because it provides an internal mechanism for resource and capital allocation within the firms.

3.9.3 Diversification to Pursue Profitable Growth Opportunities

While previous research studies used U.S. based firms, the size of the local market is less of a concern because of the U.S.’s larger total market size. Firms in the U.S. can generally continue to achieve growth by focusing on

their existing product markets and not reach their saturation point. However, markets in the emerging markets are much smaller and local firms can easily reach their full growth potential if they are only local in scope. Research have found that less competitive firms or firms that have limited growth tend to grow through diversification into other industries. Hyland (1999) investigated firms which are focused and then became diversified to find out why firms diversify in the first place by examining firms at the point in time when they diversified. Using 173 observations between 1978 and 1992 from the Compustat database, they found evidence that diversifying firms have slightly worse financial performance, have free cash available, and have not engaged in as much research and development as compared to focused firms in the same industry. He hypothesized that in order for less competitive firms to grow or to maintain their current status, they must buy growth in areas outside of where they are currently operating. Maksimovic and Phillips (2002) also pointed out that as a firm's growth within an industry diminishes, it can limit its growth within the industry and diversify into other industries. The optimal number and size of industry depends on its comparative advantage across industries, and the organization and managerial abilities affect the firms' comparative advantage.

3.9.4 Why This Goal

The effects of diversification and market power on excess firm value in the Asian emerging markets is important from an academic, management, equity holder, and corporate governance perspectives.

From the academic perspective, the findings from this research can contribute to the existing pool of knowledge on diversification and market power in the emerging markets. More recent research has found conflicting evidence on the effect of diversification on firm value in the emerging markets. Findings from this research can provide further input into this knowledge pool and points to potential future research in this topic.

From the management perspective, the findings from this research can assist management in their evaluation of strategic alternatives. As the world economies are becoming increasingly globalized, management is faced with build or buy decisions as their operations expand across national borders. Demand on faster turnaround and accelerated rate of obsolescence requires management to either build and expand quickly or buy an existing operation. The level of diversification is also related to the extent of outsourcing put into effect by the firms. Outsourcing can be considered a form of divestiture and refocus of operation except single processes are divested instead of a whole segment of business. Findings from this research can help management evaluate the international resource allocation decisions.

From the equity holder perspective, the findings from this research can be used as input to their valuation process. Investors are faced with the question of whether to diversify at the portfolio level or at the firm level; that is, investors can diversify at the portfolio level by buying focused firms in different industries or investors can purchase equity in diversified firms. These

decisions are becoming more difficult to make because as the international investment markets have become more efficient and accessible, investors are faced with exploding number of choices and the need to evaluate these choices. Shareholders also have a need to understand the actions of management. Findings from this research can help equity holders evaluate the relative costs and benefits of diversification at the firm level as input to their investment decisions.

From the corporate governance perspective, there have been several major blow-up and fraud cases in the developed markets, like Enron, Tyco, Pamalet and Worldcom, in which the lack of transparency is mentioned as one of the factors behind the perpetuation of the wrongdoings. In many cases, acquisitions and divestitures are used to manage earnings, beautify accounting numbers, or to cover up hideous activities. In the emerging markets, appropriation by controlling shareholders is relatively common. We would like to highlight the importance of transparency and accountability for corporate governance purposes despite the benefits of the use of diversification and market power in corporate strategies.

CHAPTER 4: DATA ANALYSIS

The main goal of this research study is to further the knowledge of the effects of diversification and market power on firm values in the Asian emerging markets.

4.1 DATA COMPILATION

The data compilation process begins by identifying and selecting a source of data from which firm factors can be collected. The firms in the data set is then screened and selected for statistical analysis.

4.1.1 Data Source

The first step in the data compilation process is to identify and select a source of data for statistical analysis. There are various secondary sources of informational databases available from firms like Thomson Financial, Standard & Poor's, and Datastream. Standard & Poor's Compustat is a very commonly used database for diversification studies on U.S. based firms; Thomson Financial's Worldscope is a very commonly used database used for diversification studies within an international context.

For this research, Thomson Financial's Worldscope database is used for several reasons. First, it is one of the most comprehensive publicly available databases for firms in both the developed and emerging markets. Worldscope

covers over 21,000 firms in 57 countries. Second, Worldscope's information on international firms is relatively comprehensive when compared to other databases and it contains most of the firm factors that are required for this research. Third, Worldscope was used in most of the previous research studies on diversification in the emerging markets. We will compare the results of this study to previous research studies for validation purposes and Worldscope is used for consistency purposes.

For this study, the January 2003 CD ROM version of the Worldscope database is used. Started in January 2004, the Worldscope database has migrated to an online format and the CD ROM version is no longer available. While the online version is updated continuously and hence can provide more up-to-date information, we have elected to use the latest CD ROM version available because it is more suitable to "freeze" the time at which the data is obtained. The online version is updated continuously, making it difficult to duplicate or verify the information retrospectively. Table 1 below lists the firm factors that are being retrieved from the Worldscope database for each firm in the sample.

Table 1 Firm Factors Retrieved From the Worldscope Database

Nature of Information	Information [1]	
Firm Level Information	▪ Firm name ▪ Firm number ▪ Firm country ▪ Business description	▪ Ticker symbol ▪ Exchange ▪ Year of reporting ▪ Inactive status
Segment Level Information	▪ Product segment information on sales and capital expenditure	▪ SIC codes ▪ Geographical segment information on sales
Financial Information	▪ Investment in associated companies ▪ Total assets ▪ Short term debt and current portion of long term debt ▪ Long term debt ▪ Non-equity reserve ▪ Minority interest ▪ Preferred shares ▪ Common shares ▪ Capital surplus ▪ Retained earnings ▪ Treasury ▪ Stockholders' equity ▪ Market value of firm	▪ Current year and previous year sales ▪ Operating income ▪ Net income ▪ Report date share prices ▪ Report date exchange rates ▪ Consolidation treatment information ▪ Dividend per share ▪ Annual EPS ▪ Book value per share ▪ Cash flow per share ▪ Price earning ratio ▪ Price to book ratio ▪ Price to cash flow ratio
Ownership Information	▪ Common shares outstanding ▪ Officers	▪ Closely held common shares ▪ Ownership

[1] All firm factors are retrieved from the Worldscope database CD disk dated January 2003, and they are used without any modification or change to the data itself.

4.1.2 Data Selection and Screening

The initial set of firm factors obtained from the Worldscope database was screened according to selection criteria that are generally consistent with previous diversification studies as described below. The results of the univariate analysis are provided in Chapter 5.

First, developing countries in the Asia Pacific listed in Worldscope are selected. The markets selected for this research are China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Australia and New Zealand are not included because their institutional structures are fairly well developed and they are generally considered as developed markets. Hong Kong and Singapore are included despite their more advanced economic developmental status because they have not achieved the general recognition of being a developed country.

Second, relevant information of all firms in the selected markets are downloaded from the Worldscope database. Table 1 above lists all firm factors that are downloaded. Foreign currencies are translated to U.S. dollar at the exchange rate of the reporting date.

Third, inactive and delisted firms are excluded.

Fourth, firms without all the data available for this research are excluded. In particular, firms that do not provide product or geographical segment information are excluded.

Fifth, firms with 50% or more of their revenue derived from financial services (SIC 6000 to SIC 6999) are excluded. Firms in the financial industry have different capital structure and operating characteristics. Since operating income before interest is used as the profitability control variable, inclusion of financial services firms will skew the results of the statistical analysis.

Sixth, SIC categories with less than three single-segment firms are excluded because the benchmark median sales multiplier cannot be meaningfully measured. The SIC categories are calculated on a regional basis because there are insufficient number of firms in many SIC categories on a market basis to produce adequate and meaningful benchmarks for this research. SIC categories are also calculated on a regional basis on the reasonable assumption that there is trade between these markets.

Seventh, other steps are performed to ensure data integrity. The firms' SIC classifications are compared to the business descriptions and necessary amendments are made to ensure that the SIC classifications and the allocations are consistent with actual firm activities. More details of the SIC classification is available in Appendix II Standard Industrial Classification Code. The sum of the product segment sales and geographical segment sales are also compared with the reported total sales and firms whose sums are 10% above or below the reported total sales are excluded to avoid potential recording or measurement errors. Firms with inconsistent data, like different reporting dates, different dates for segment information and financial information, for example, are also excluded.

Eighth, firms with missing SIC sales multiplier for any segment are excluded because these firms cannot be valued properly.

Ninth, outliers are excluded as they can distort the sample data with their extreme values. The following outlier criteria are used and firms are excluded if they meet any of one of these criteria: (a) excess firm value of over 30, (b) leverage of over 200%, (c) growth opportunities of over 500%, (d) profitability of over -200% or 100%, (e) sales growth of over -100% or 600%.

Tenth, firms with total assets of less than US$20 million and firms with total sales of less than US$3 million are excluded.

Table 6 in Chapter 5 provides details on the number of firms excluded from the selection process for each market.

4.2 MULTIVARIATE DATA ANALYSIS

The effects of diversification and market power on firm value can be determined by studying the relationship between diversification and market power and excess firm value. Excess firm value can be determined by comparing the actual firm value to the theoretical or imputed firm value. For this research study, we will use a multiplier approach to determine excess firm values for the multivariate analysis.

The statistical software package SPSS is used to perform the statistical analysis to determine the association and the significance between excess firm value (the dependent variable) and factors that are hypothesized to be associated with the amount of excess firm value in the emerging markets

within the context of diversification and market power (the independent variables). These factors include the level of diversification, the level of market power, the interactive term between diversification and market power, firm control variables, and market control variables. Since the multiplier approach calculates the imputed value of the segments using benchmarks derived from firms in the same 3 digit SIC segments, no industry adjustments are needed. However, market control variables are used to take into account market differences in the analysis. Ordinary least square regressions are performed using the firm data set collected from the Worldscope database as described in Section 4.1.2 Data Selection and Screening.

4.3 FIRM VALUE INDICATOR – DEPENDENT VARIABLE

Excess firm value ("EFV") is the dependent variable in this research and we will use a multiplier approach to determine excess firm value. The multiplier approach to measure excess firm value was proposed by Berger and Ofek (1995) and it was used in many subsequent diversification research studies. This approach assumes that multi-segment firms are composites of multiple single-segment firms. Single segment firms are classified by SIC categories and a capital-to-sales multiplier ("sales multiplier") is computed for each firm. The median sales multiplier for single segment firms in each SIC category is assigned to be the benchmark for valuation of other segments in that SIC category. Using the sales multipliers and the segment sales, the imputed values of multi-segment firms' segments can be calculated. The imputed values of the multi-segment firms are the sum of the imputed values of all

their segments. The market values of the multi-segment firms are compared to their imputed values. If the market value of a multi-segment firm is higher (lower) than the sum of its imputed segment values, then there is evidence of association between higher (lower) firm value and diversification.

Three multipliers were used in the Berger and Ofek (1995) research paper, the capital-to-sales multiplier ("sales multiplier"), the capital-to-total assets multiplier ("asset multiplier"), and earnings before interest and tax "EBIT" multiplier ("EBIT multiplier"). For this research, only the sales multiplier is used due to the lower availability of information on total assets and EBIT at the segment level from the Worldscope database. For the calculation of peer firms, a segment is defined at the three digit SIC category level.

The procedure to calculate the excess firm value using the multiplier approach is as follows:

1. Based on the selection criteria discussed in Section 4.1.2 Data Selection and Screening, a set of firms with all the relevant data is selected and screened for this study.
2. Single segment firms are isolated and their sales multipliers (firm market value / sales) are calculated. Firm market value is calculated as the sum of the market value of common equity, the book value of preferred shares, the book value of indebtedness, and the book value of non-equity reserve. Sales is the total sales of the single segment firm. The sales multiplier gives a multiple of the firm's value to its sales.

3. Firms with sales multipliers of less than 0.25 or over 50 are excluded as they are likely to be experiencing unusual circumstances to have such extreme sales multipliers. In previous research studies, observations with sales multiplier of less than 0.25 or over 4 were excluded. For this research study, the maximum threshold for the sales multiplier is increased to 50 times because of the emergence of internet related firms with inherent medium multiples of 20 to 30.
4. The remaining single segment firms are sorted by SIC categories on a regional basis and then by their sales multiplier.
5. For each 3 digit SIC category, the medium sales multiplier is selected as the benchmark. SIC categories with less than three single segment firms are excluded. The benchmark sales multipliers for each SIC categories are used to determine the imputed or theoretical value of the multi-segment firms' segments. Multi-segment firms' total imputed values ("firm imputed values") are the sum of the firms' segment imputed values.
6. Excess firm value is calculated as the ratio of actual firm market value (market value of common equity, book value of preferred shares, book value of indebtedness, and book value of non-equity reserves) to the imputed value of the firm.
7. For the regression analysis, the nature logarithm of excess firm value is used to reduce potential skewness and standardize the excess firm values.

The natural logarithm of excess firm value ("lnEFV") under the multiplier approach is calculated as:

$$lnEFV = ln\left(EFV\right)$$

$$= ln\left(\frac{\text{firm market value}}{\text{firm imputed value}}\right)$$

Where

$$\text{Firm market value} = MV_E + BV_P + BV_D + BV_{NER}$$

MV_E = market value of the firm's common equity,

BV_P = book value of the firm's preferred stock,

BV_D = book value of the firm's indebtedness,

BV_{NER} = book value of the firm's non-equity reserve, and

firm imputed value = sum of the imputed values of the firm's segments,

$$\text{Firm imputed value} = \sum_{i=1}^{n} S_i * \left(Ind_i \left(V / S_i\right)\right)$$

n = total number of segments in segment i's firm

S_i = segment i's sales

Ind_i (V / S_i) = sales multiplier for the median single-segment firm in segment i's segment.

The multiplier approach and the excess firm value are calculated such that the value of EFV above (below) one indicates that the market value of the firm is

higher (lower) than its imputed firm value, implying that the market values diversification and / or market power because it provides certain benefits for the firms. The statistical analysis will regress the level of diversification and market power against the level of excess firm value to determine if there is an association between diversification and market power and excess firm value.

4.4 EXPLANATORY VARIABLES – INDEPENDENT VARIABLES

Several explanatory variables are used in the multivariate analysis to determine their association with excess firm value ("EFV"). The explanatory variables used are level of diversification, the level of market power, and their interactive term. Firm control variables are used to control for firm specific factors and they include firm size, financial leverage, growth opportunities, and profitability. Market control variables are used to control for market specific factors.

4.4.1 Diversification at the Firm Level

The segment Herfindahl index based on sales of all segments in each firm ("DIVERS") is used to measure the level of diversification at the firm level because it takes into account the number of segments and the contribution of sales from these segments to the firms. DIVERS can vary between zero and one; the closer it is to one, the more concentrated are the firm's sales within

fewer segments and the more focused its operation. A single segment firm will have DIVERS of one.

Assuming that each firm k has a total of n firm segments i, the level of diversification at the firm level for firm k ("DIVERS $_k$") is calculated across n firm segments within firm k as the sum of the squares of all the segment i's sales, S_i, as a proportion of the square of total sales of firm k:

$$DIVERS_k = \sum_{i=1}^{n} S_i^2 \Big/ \left(\sum_{i=1}^{n} S_i \right)^2$$

diversification at the firm level for firm k

sum of the squares of all the segment's sales in firm k

square of the total sales of firm k

with

$DIVERS_k$ = the level of diversification at the firm level for firm k

S_i = sales of firm segment i

n = the total number of firm segments within firm k

$\sum_{i=1}^{n} S_i$ = sum of sales of all firm segments in firm k (total sales of firm k)

The number of segment is used as an alternative measure of diversification, and segments with different 3 digit SIC code are considered separate segments. The variable "NumSeg" is used to measure the number of segments of each firm, and it is calculated as:

NumSeg = 8 – number of segments

The Worldscope database provides for a maximum of eight segments for each firm, and the calculation of NumSeg uses eight to subtract the actual

number of segments in order to reverse the sign of this variable so that its scaling is consistent with that of DIVERS. As a result, both DIVERS and NumSeg indicate higher focus with higher values. The Pearson correlation between these two variables is 0.798, and Spearman's rho correlation is at 0.937, both significant at 0%.

We have prepared an illustration of how the measurements for the level of diversification and market power are calculated using a simplified set of firms. Table 2 below provides the information on the sample firms and the calculation of DIVERS and NumSeg for this set of firms.

Table 2 Illustrative Example – DIVERS and NumSeg

This table provides the basic information of the firms for the illustration. There are four firms - Alpha, Beta, Etta, and Zeta. There are four segments - ABC, DEF, GHI, and JKL. Alpha is in all the segments, Beta and Etta are in three segments, and Zeta is in two segments. Segment sales, total firm sales, and segment sales as percentage of total firm sales are provided. The calculation of level of diversification at the firm level ("DIVERS") which is based on the segment Herfindahl and NumSeg is provided, and the calculation of DIVERS and NumSeg is included below this table.

Firm	Segments	Segment Sales	% of Total	DIVERS [1]	NumSeg [2]
Alpha	ABC	100	36%		
Alpha	DEF	90	32%		
Alpha	GHI	70	25%		
Alpha	JKL	20	7%		
Firm Total		280	100%	0.30	4
Beta	DEF	50	20%		
Beta	GHI	80	32%		
Beta	JKL	120	48%		
Firm Total		250	100%	0.37	5
Etta	ABC	10	4%		
Etta	GHI	200	80%		
Etta	JKL	40	16%		
Firm Total		250	100%	0.67	5
Zeta	DEF	300	91%		
Zeta	GHI	30	9%		
Firm Total		330	100%	0.83	6

[1] Definition of DIVERS can be found in Section 4.4.1
DIVERS of Firm Alpha is calculated as: $(100^2 + 90^2 + 70^2 + 20^2) / 280^2 = 0.30$
DIVERS of Firm Beta is calculated as: $(50^2 + 80^2 + 120^2) / 250^2 = 0.37$
DIVERS of Firm Etta is calculated as: $(10^2 + 200^2 + 40^2) / 250^2 = 0.67$
DIVERS of Firm Zeta is calculated as: $(300^2 + 30^2) / 330^2 = 0.83$

[2] Definition of NumSeg can be found in Section 4.4.1
NumSeg of Firm Alpha is calculated as: 8 - 4 = 4
NumSeg of Firm Beta is calculated as: 8 - 3 = 5
NumSeg of Firm Etta is calculated as: 8 - 3 = 5
NumSeg of Firm Zeta is calculated as: 8 - 2 = 6

4.4.2 Market Power

Market power is the ability of a firm to earn abnormal excess profits due to its influence over its customers, suppliers, and competitors. The identification of the use of market power is very difficult because its exercise is often subtle and masked within the framework of other actions. The effects or the results of the use of market power on firm value are also very difficult to quantify because the effectiveness of the action is hard to measure and its effect on firm value often indirect. While previous research have used market share and the level of barrier to entry to measure market power, the determination of the level of barrier to entry will necessarily inject a high level of subjectivity to the process. As a result, we will use suitably modified variations of market share measurements to serve as proxies for market power in our multivariate analysis because of their objectivity. To avoid missing any special angle on the effect of market power on excess firm value, we will use four proxy measurements of market power; they are Market Power Index ("MPI"), Market Power Index by Industry ("MPI_{IND}"), Market Power Index by Market Share ("MPI_{MS}"), and Market Power Index by 75% Tiering ("MPI_{TIER75}"). MPI and MPI_{IND} are calculated based on the Herfindahl index which measures the concentration of the industry, MPI_{MS} is calculated based on the market share of the firms, and MPI_{TIER75} is calculated based on a scoring system which identifies firm segments that are considered powerful in their segments.

4.4.2.1 Market Power Index

The first market power measurement Market Power Index ("MPI") is calculated using the Herfindahl index ("SEGCONCENT") weighted by segment sales (to account for the firm segment's position within the segment itself) and firm sales (to account for the firm segment's contribution to its firm). The segment is defined at the 3 digit SIC code at the regional level and total segment sales is the sum of all the firm segments' sales in each 3 digit SIC category.

Assuming that there are a total of J firms k in the sample data set, and each firm k has a total of n firm segments i, the concentration of firms at the segment level ("SEGCONCENT $_i$") is calculated as the sum of the squares of all firm segment i's sales in this SIC segment, $S_{i,k}$, as a proportion of the square of total sales of all other firm segments in the SIC segment:

$$SEGCONCENT_i = \sum_{k=1}^{J} S_{i,k}^2 \Big/ \left(\sum_{k=1}^{J} S_{i,k} \right)^2$$

- $SEGCONCENT_i$: concentration of firms at the segment level for segment i
- $\sum_{k=1}^{J} S_{i,k}^2$: sum of the squares of all the firm segment's sales in the SIC segment
- $\left(\sum_{k=1}^{J} S_{i,k} \right)^2$: square of the total sales of all the firm segments in the SIC segment

with

$SEGCONCENT_i$ = concentration of firms at the segment level for segment i

$S_{i,k}$ = sales of firm k in segment i

$\sum_{k=1}^{J} S_{i,k}$ = sum of sales of all firm segments in segment i (total sales of segment i)

J **=** the total number of firm segments in segment i

Table 3 below illustrates the calculation of SEGCONCENT using sample firm information from the previous section.

Table 3 Illustrative Example – SEGCONCENT

This table provides the basic information of the firms based on Table 2. There are four firms - Alpha, Beta, Etta, and Zeta. There are four segments - ABC, DEF, GHI, and JKL. Alpha is in all the segments, Beta and Etta are in three segments, and Zeta is in two segments. Firm segment sales, total segment sales, and firm segment sales as percentage of total segment sales are provided. The calculation of level of segment concentration at the segment level ("SEGCONCENT") which is based on the segment Herfindahl is also provided, and the actual calculation is included below this table. All numbers are rounded.

Segments	Firm	Firm Segment Sales	% of Total	SEGCONCENT [1]	Tier 75 [2]
ABC	Alpha	100	91%		1
ABC	Etta	10	9%		2
Industry Total		110	100%	0.83	
DEF	Alpha	90	20%		2
DEF	Beta	50	11%		2
DEF	Zeta	300	68%		1
Industry Total		440	100%	0.52	
GHI	Alpha	70	18%		2
GHI	Beta	80	21%		2
GHI	Etta	200	53%		1
GHI	Zeta	30	8%		2
Industry Total		380	100%	0.36	
JKL	Alpha	20	11%		2
JKL	Beta	120	67%		1
	Etta	40	22%		2
Industry Total		180	100%	0.51	

[1] Definition of SEGCONCENT can be found in Section 4.4.2
SEGCONCENT of segment ABC is calculated as: $(100^2 + 10^2) / 110^2 = 0.83$
SEGCONCENT of segment DEF is calculated as: $(90^2 + 50^2 + 300^2) / 440^2 = 0.52$
SEGCONCENT of segment GHI is calculated as: $(70^2 + 80^2 + 200^2 + 30^2) / 380^2 = 0.36$
SEGCONCENT of segment JKL is calculated as: $(20^2 + 120^2 + 40^2) / 180^2 = 0.51$

[2] Definition of MPI Tier75 can be found in Section 4.4.2
Firm segments with sales of 75% or above of the largest firm in the same segment is given a Tier 1 rating. Otherwise, firm segments are given a Tier 2 rating.

The SEGCONCENT is then weighted by segment and firm sales to derive at the level of market power for each firm segment. The two firm specific adjustments are used to weight: (a) the firm segment's position vis-à-vis other firms' segments in the same SIC segment, and (b) the segment's contribution to total sales of its own firm. The weighting is required because SEGCONCENT is a measure of the concentration of sales at the segment

level and it is the same for all firms within a segment. However, each firm segment has varying level of importance within their segment. For example, segment ABC in Table 3 shows two firms, Alpha and Etta, both of which have segments within this industry and the market concentration measure SEGCONCENT is 0.83 for both firms. However, each firm segment has varying level of importance within their segment. Alpha has 91% while Etta has 9% of the market share in this segment; and Alpha should be considered the more powerful firm of the two. As a result, SEGCONCENT is weighted by each firm segment's market share to account for its importance and power within the overall segment. In addition to segment market share, the market power of the firm segment is also dependent on how important this firm segment is in terms of contribution to total firm sales. For example, Alpha's segment ABC has 91% of the total ABC market, but it only makes up 36% of the total sales of Alpha. Hence Alpha management would also need to focus their attention on the other three segments because they contribute 64% of Alpha's total sales. On the other hand, Zeta's segment DEF only has 68% of the segment market share, but this segment makes up 91% of the total sales of Zeta. Hence Zeta's management would need to pay very close attention to segment DEF because it makes up over 90% of Zeta's total sales despite "only" having a 68% market share in this segment. The above examples illustrated why the segment concentration ratio SEGCONCENT has to be weighted for both segment and firm sales; they adjust SEGCONCENT to reflect the firm segment's importance in terms of the total segment and also in terms of contributions to the firm itself.

Assuming that there are a total of J firms k in the SIC segment, and each firm k has a total of n firm segments i. The Market Power Index for firm k ("MPI $_k$") is calculated as:

$$MPI_k = \sum_{i=1}^{n} (SEGCONCENT_i \times (S_{i,k} / \sum_{k=1}^{J} S_{i,k}) \times (S_{i,k} / \sum_{i=1}^{n} S_i))$$

- $SEGCONCENT_i$: concentration of firms at the segment level for segment i
- $S_{i,k} / \sum_{k=1}^{J} S_{i,k}$: proportion of firm k's segment sales to the total sales of the SIC segment (weight of firm segment within the overall segment); $\sum_{k=1}^{J} S_{i,k}$ = total sales of all firm segments in the SIC segment
- $S_{i,k} / \sum_{i=1}^{n} S_i$: proportion of firm k's segment sales to the total sales of firm k (weight of firm segment within firm k); $\sum_{i=1}^{n} S_i$ = total sales of all firm segments in firm k
- $\sum_{i=1}^{n}$: sum of each firm segment's concentration at segment level weighted by (1) the segment's sales as a proportion of the total sales of the segment, and (2) the segment's sales as a proportion of the total sales of firm k
- MPI_k: Market Power Index of firm k

with

MPI_k = the Market Power Index of firm k

$SEGCONCENT_i$ = concentration of firms at the segment level for segment i

$S_{i,k}$ = sales of firm k in segment i

n = the total number of firm segments within firm k

J = the total number of firm segments in segment i

$\sum_{k=1}^{J} S_{i,k}$ = sum of sales of all firm segments in segment i (total sales of segment i)

$\sum_{i=1}^{n} S_i$ = sum of sales of all firm segments in firm k (total sales of firm k)

Table 4 below provides the information for the calculation of Market Power Index ("MPI"), Market Power Index by Industry ("MPI $_{IND}$"), Market Power Index by Market Share ("MPI $_{MS}$") and Market Power Index by 75% Tiering ("MPI $_{TIER75}$") for our sample firms. For MPI, it can range from zero to one. MPI

would have a value of one for a segment with only one single segment firm; the SEGCONCENT is one, multiply by the segment market share of one, and then multiply by the firm share of one being a single segment firm. Generally, MPI is a relatively small number of between zero and one and closer to zero because it is a product of three positive numbers that are less than one. MPI_{IND}, MPI_{MS} and MPI_{TIER75} will be discussed in the coming sections.

Table 4 Illustrative Example – Market Power Measurements

This table provides the basic information of the firms for the illustration. There are four firms - Alpha, Beta, Etta, and Zeta. There are four segments - ABC, DEF, GHI, and JKL. Alpha is in all the segments, Beta and Etta are in three segments, and Zeta is in two segments. Segment sales, total firm sales, and segment sales as percentage of total firm sales are provided. SEGCONCENT and Segment Market Shares are calculated in Table 3. Firm Shares is the percentage of total firm sales that each segment contributes to the total firm sales. All numbers are rounded.

Firm	Seg	Seg Sales	% of Total	SEGCO -NCENT [1]	Industry Market Share [2]	Firm Shares [3]	MPI [4]	MPI_{IND} [5]	MPI_{MS} [6]	MPI_{TIER75} [7]
Alpha	ABC	100	36%	0.83	91%	36%	0.2710	0.7588	0.3247	1
Alpha	DEF	90	32%	0.52	20%	32%	0.0342	0.1063	0.0657	2
Alpha	GHI	70	25%	0.36	18%	25%	0.0166	0.0666	0.0461	2
Alpha	JKL	20	7%	0.51	11%	7%	0.0040	0.0562	0.0079	2
Firm Total		280	100%				0.3258	0.9880	0.4444	1
Beta	DEF	50	20%	0.52	11%	20%	0.0118	0.0590	0.0227	2
Beta	GHI	80	32%	0.36	21%	32%	0.0244	0.0761	0.0674	2
Beta	JKL	120	48%	0.51	67%	48%	0.1620	0.3374	0.3200	1
Firm Total		250	100%				0.1981	0.4726	0.4101	1
Etta	ABC	10	4%	0.83	9%	4%	0.0030	0.0759	0.0036	2
Etta	GHI	200	80%	0.36	53%	80%	0.1522	0.1903	0.4211	1
Etta	JKL	40	16%	0.51	22%	16%	0.0180	0.1125	0.0356	2
Firm Total		250	100%				0.1732	0.3786	0.4602	1
Zeta	DEF	300	91%	0.52	68%	91%	0.3221	0.3543	0.6198	1
Zeta	GHI	30	9%	0.36	8%	9%	0.0026	0.0285	0.0072	2
Firm Total		330	100%				0.3247	0.3828	0.6270	1

[1] SEGCONCENT is a measure of concentration of firms using Herfindahl index at the segment level. SEGCONCENT is between zero and one with higher values indicating higher segment concentration. It is a segment level measurement so that it applies to all firms within a segment. It is based on calculation shown in Table 3.
[2] Industry market share is the percentage of the firm segment's sales to the total segment sales in the same 3 digit SIC code segment. This is used to gauge the importance of the firm within the segment. The calculation is provided in Table 3.
[3] Firm shares is the percentage of the firm segment's sales to the total firm sales. This is used to gauge the importance of the segment within its own firm. It is calculated in a previous column in this table.
[4] Market Power Index (MPI) is calculated as SEGCONCENT * Segment Market Share * Firm Shares.
[5] Market Power Index by Industry (MPI_{IND}) is calculated as SEGCONCENT * Segment Market Shares.
[6] Market Power Index by Market Share (MPI_{MS}) is calculated as Segment Market Share * Firm Shares.
[7] Market Power Index by 75% Tiering (MPI_{TIER75}) is calculated as the sum of the total of segments within a firm that has a Tier 1 rating.

4.4.2.2 Market Power Index by Industry

The second market power measurement Market Power Index by Industry ("MPI $_{IND}$") is also based on SEGCONCENT but it is only sales weighted by segment. It assumes that each firm will maximize its return on any segment regardless of its sales contribution to the total firm; hence management will put proportionally more efforts into high market share segments regardless of the segments' contribution to total firm sales. It also assumes that there are interactive effects between the segments so that a segment which generates a small proportion of sales might be an important segment because it generates revenue and profits for other firm segments. In addition, the contribution to profitability of each segment is not always positively correlated with the amount of sales for that segment. The only shortcoming of this market power measurement is its over-estimation of the market power of multi-segment firms because it is a simple sum of the segment market power and it is not scaled by the firms' sales. Hence, a firm with ten small segments of market power of 0.10 each is calculated to have market power index of one which will be the same as a pure monopoly firm which also have a market power index of one.

Assuming that there are a total of J firms k in the SIC segment, and each firm k has a total of n firm segments i. Market Power Index by Industry for firm k ("MPI $_{IND\ k}$") is calculated as:

$$MPI_{IND\ k} = \sum_{i=1}^{n} \left(SEGCONCENT_i * \left(S_{i,k} / \sum_{k=1}^{J} S_{i,k} \right) \right)$$

- $MPI_{IND\ k}$: Market Power Index by Industry of firm k
- $\sum_{i=1}^{n}$: sum of each firm segment's segment concentration at segment level weighted by the segment's sales as a proportion of the total sales of the segment
- $SEGCONCENT_i$: concentration of firms at the segment level for segment i
- $S_{i,k}$: proportion of firm k's segment sales to the total sales of the SIC segment (weight of firm segment within the overall segment)
- $\sum_{k=1}^{J} S_{i,k}$: total sales of all firm segments in the SIC segment

with

$MPI_{IND\ k}$ = the Market Power Index by Industry of firm k

$SEGCONCENT_i$ = concentration of firms at the segment level for segment i

$S_{i,k}$ = sales of firm k in segment i

n = the total number of firm segments within firm k

J = the total number of firm segments in segment i

$\sum_{k=1}^{J} S_{i,k}$ = sum of sales of all firm segments in segment I (total sales of segment i)

Table 4 above provides the calculation of MPI $_{IND}$ for the sample firms. MPI $_{IND}$ can range from zero to one. MPI $_{IND}$ would have a value of one for a segment with only one firm; the SEGCONCENT is one, and it is multiply by the segment market share of one. Generally, MPI $_{IND}$ is a small number between zero and one because it is a product of two positive numbers that are less than one.

4.4.2.3 Market Power Index by Market Share

The third market power measurement Market Power Index by Market Share ("MPI $_{MS}$") uses a firm segment's market share within the total segment as a proxy of market power, and each segment's market share is sales weighted to total firm sales to account for its contribution to total firm sales. The use of market share as proxy for market power will incorporate a firm's market share without taking into account the number and size of other firms in the same segment.

Assuming that there are a total of J firms k in the SIC segment, and each firm k has a total of n firm segments i. Market Power Index by Market Share for firm k ("MPI $_{MS\,k}$") is calculated as:

$$MPI_{MS\,k} = \sum_{i=1}^{n} \left(\left(S_{i,k} \Big/ \sum_{k=1}^{J} S_{i,k} \right) * \left(S_{i,k} \Big/ \sum_{i=1}^{n} S_{i} \right) \right)$$

- $S_{i,k}$: proportion of firm k's segment sales to the total sales of the SIC segment (weight of firm segment within the overall segment)
- $\sum_{k=1}^{J} S_{i,k}$: total sales of all firm segments in the SIC segment
- $S_{i,k}$: proportion of firm k's segment sales to the total sales of firm k (weight of firm segment within firm k)
- $\sum_{i=1}^{n} S_{i}$: total sales of all firm segments in firm k
- $\sum_{i=1}^{n}$: sum of each firm segment's sales as a proportion of the total sales of the segment multiplied by the firm segment's sales as a proportion of the total sales of firm k
- $MPI_{MS\,k}$: Market Power Index by Market Share of firm k

with

$MPI_{MS\,k}$ = the Market Power Index by Market Share of firm k

$S_{i,k}$ = sales of firm k in segment i

n = the total number of firm segments within firm k

J = the total number of firm segments in segment i

$\sum_{k=1}^{J} S_{i,k}$ = sum of sales of all firm segments in segment i (total sales of segment i)

$\sum_{i=1}^{n} S_i$ = sum of sales of all firm segments in firm k (total sales of firm k)

Table 4 above provides the calculation of MPI_{MS} for the sample firms. MPI_{MS} can range from zero to one. MPI_{MS} would have a value of one for a segment with only one single segment firm; the market share of 100% is multiplied by the segment's contribution to the firm which is 100% for single segment firms. Generally, MPI_{MS} is a small number between zero and one because it is a product of two positive numbers that are less than one.

4.4.2.4 Market Power Index by 75% Tiering

The fourth market power measurement Market Power Index by 75% Tiering ("MPI_{TIER75}") uses a tiering system to rank each firm segment relative to the firm segment with the highest sales within their 3 digit SIC category. Each firm segment is considered a Tier 1 firm segment if its sales is 75% or more of the sales of the largest firm segment in the SIC category on a regional basis. Firm segments with sales which are less than 75% of the sales of the largest firm segment are considered Tier 2 segments. For example, if the largest firm segment in a segment has sales of $100, then any firm segment with sales of

$75 (75% of $100) or higher will be considered a Tier 1 firm. It is based on the general assumption that the few largest firms in a segment have the most market power because of their larger market share. For each firm, each Tier 1 segment is given a score of 1 in MPI $_{TIER75}$. So a higher Tiering Index means that the firm has more segments that have high market power in their respective segments. The higher the Tiering Index, the higher overall market power the firm has because it can leverage its market power in one segment to other existing segments or to new segments. The only circumstance in which the tiering system might not provide an accurate market power measurement is when there are many firms of about equal size in a competitive segment. If all the firms in a segment are about the same size and their sales are at least 75% of the sales of the largest firm, then all the firms will be assigned a Tier 1 rating. In an oligopoly market, the assignment of Tier 1 rating to all the firms would be an accurate description of the market power situation; however, in a truly competitive market, all the firms in the segment would not have any market power despite their rating as Tier 1 firm. For our sample data set, we have reviewed the results of the tiering system and did not find segments in which there are all similarly sized firms all with rating of Tier 1.

Table 3 above provides the tiering results for each segment for our sample firms and it is used as input to Table 4 above. Table 4 provides the total tiering score for each of our sample firm, and in that illustration, all firms have a tiering score of one, indicating that each firm has one segment which is in a strong market power position within their segments. Firms will get a MPI $_{TIER75}$

of zero if none of its segment has market share that is above 75% of the segment's largest firm; and firms will get a maximum of eight if all eight of its segments have market share that is above 75% of the segment's largest firm. Since the Worldscope database limits segment reporting to a maximum of eight segments, eight would be the maximum value attainable by MPI_{TIER75} and MPI_{TIER75} can range between zero and eight.

Table 5 provides the Pearson correlation and the Spearman's Rho correlation for the four market power measurements. All of the market power measurements are correlated with each other at statistically significant levels.

Table 5 Correlations Between Market Power Measurements

The Pearson correlations and nonparametric Spearman's Rho correlations are calculated based on the market power measurements as described in Section 4.4.2. SPSS statistical software was used. All numbers are rounded.

	MPI	**MPI_{IND}**	**MPI_{MS}**	**MPI_{TIER75}**
MPI	1.000 (0.000)	0.677 (0.000)	0.880 (0.000)	0.540 (0.000)
MPI_{IND}	0.972 (0.000)	1.000 (0.000)	0.566 (0.000)	0.510 (0.000)
MPI_{MS}	0.928 (0.000)	0.896 (0.000)	1.000 (0.000)	0.699 (0.000)
MPI_{TIER75}	0.397 (0.000)	0.402 (0.000)	0.428 (0.000)	1.000 (0.000)

MPI = Market Power Index
MPI_{IND} = Market Power Index by Industry
MPI_{MS} = Market Power Index by Market Share
MPI_{TIER75} = Market Power Index by 75% Tiering
= Pearson correlations between variables
= Nonparametric Spearman's Rho correlations between variables

4.4.3 Interactive Term Between Diversification and Market Power

In addition to the direct effects of diversification and market power, excess firm value is also affected by the interaction between diversification and market power. From a theoretical perspective, we expect a positive relationship between the interaction of market power and diversification and excess firm value because the benefits of market power can be most readily be extracted when the firm diversifies. Firms with market power can practice predatory practices like price discrimination, foreclosure from vertically integrating suppliers, exclusive dealing, predatory pricing or selling below cost to drive out competitors, and tying arrangement or bundling when expanding to other segments (Comanor 1967; Jacquemin 1972; Nalebuff (2004)). To capture the interactive effects of diversification and market power, we will use the interactive variable “DIVERSMPI” and it is calculated as:

$$DIVERSMPI = (1 / DIVERS) \times MPI$$

DIVERS is a measurement of the level of diversification and it ranges between zero and one, with one indicating highest focus. As a result, the reciprocal of DIVERS will have higher values when a firm is diversified. When multiplied by MPI, we expect the product to have positive association with excess firm values because the higher the level of diversification and market power, the easier it is to “leverage” the market power to other segments for abnormal returns to the firm.

4.4.4 Firm Control Variables

Firm-specific factors should be controlled in the multivariate analysis to account for firm differences due to managerial and resource differences. Firm size, financial leverage, growth opportunities, and profitability are controlled for in the multivariate analysis. These control variables are consistent with previous research studies on diversification (Berger and Ofek (1995), Bodnar, Tang and Weintrop (1997, 2003), Campa and Kedia (2002), Denis, Denis and Yost (2002), Fauver, Houston and Naranjo (2003), Lins and Servaes (1999)).

4.4.4.1 Firm Size

The nature of operation, capital structure, and resource availability are different between small and large firms. The natural logarithm of total sales in millions of U.S. dollars (“FirmSize”) is used to control for firm size differences.

4.4.4.2 Financial Leverage

Financial leverage affects the level of the firms’ financial risk by committing fixed resources each period for repayment. Financial leverage also magnifies the profits and losses of a firm. Book value of debt to total assets (“FinLev”) is used to control for different levels of financial leverage of the firms.

4.4.4.3 Growth Opportunities

Firms face varying levels of growth opportunities due to firm specific differences like location or customer base differences. Firm value is also affected by the amount of resources being invested to cultivate future growth. Capital expenditure to sales is used to control for differences in growth opportunities ("GrowOpp") between firms. The use of capital expenditure to proxy for growth opportunities is based on the assumption that firms grow by buying equipment to expand (i.e. through internal generic growth). However, this control variable cannot capture growth through investments in intangible assets like research and development, advertising, and development of customer goodwill.

4.4.4.4 Profitability

Profitability affects the amount of resources and strategic alternatives available for management. Operating income to sales ("Profit") is used to control for differences in firm profitability. While earnings before interest and tax (EBIT) was used in many U.S.-based studies, we will use operating income as it is more suitable for emerging markets because non-operating items can distort the firms' EBIT.

4.4.5 Market Control Variables

The ten markets in the sample all have their own market specific differences due to different cultural, historical, geographical, political, and economical factors. Market control variables ("MktDum $_1$" to "MktDum $_9$") are used to control for these differences between the markets.

CHAPTER 5: RESULTS OF DATA ANALYSIS

We will first present the findings of the univariate analysis of the firms in the sample and details of their descriptive statistics are provided. Multivariate analysis is then performed to determine the effects of diversification and market power on excess firm value.

5.1 UNIVARIATE ANALYSIS

The selection of firms through the selection process is outlined in Section 5.1.1 Sample Selection, the descriptive statistics of the firms in the sample data set is provided in Section 5.1.2 Descriptive Statistics, and the correlation relationship between the variables is provided in Section 5.1.5 Correlation Between Variables.

5.1.1 Sample Selection

Table 6 below summaries the selection of firms from the Worldscope database using the selection criteria as described in Section 4.1.2 Data Selection and Screening. There were a total of 5,046 firms in the sample before any selection criteria were applied; after the selection process, a total of 1,818 firms remain in the sample data set for the multivariate analysis. The selection criteria removed between 55% to 65% of firms from the initial data set for most markets except for India and the Philippines of which over 70% of

firms were removed. For India, many firms were excluded due to total segment sales not matching reported firm sales; for the Philippines, many firms were excluded due to missing information and being finance related firms. Firms from three markets, Hong Kong, Korea, and Malaysia, made up about 52% of the number of firms in the total sample data set; while four other markets, China, India, Indonesia, and the Philippines, made up just about 19% of the number of firms in the total sample data set.

Table 6 Selection Process of the Sample Data Set

The table below outlines the number of firms in the initial Worldscope database CD dated January 2003 before the sample selection process as described in Section 4.1.2. Then the number of firms being excluded from the sample selection process and their reason for exclusion are summarized. All numbers are rounded.

	China	Hong Kong	India	Indonesia	Korea	Malaysia	Philippines	Singapore	Taiwan	Thailand	Total
Number of firms from Worldscope	244	898	380	271	802	844	208	491	504	404	5,046
Less (not mutually exclusively):											
Inactive or no longer traded	9	22	32	5	86	20	21	44	88	20	347
Missing information	56	96	34	36	45	117	61	40	52	52	589
No segment information available	57	58	46	9	226	132	31	11	161	14	745
Segment sales not match total sales	3	39	128	7	9	47	2	21	2	20	278
Finance related firms	10	179	18	59	84	142	68	62	68	83	773
Actual firms excluded due to above reasons [1]	118	339	221	99	388	374	132	142	293	151	2,257
Subtotal	126	559	159	172	414	470	76	349	211	253	2,789
Less firms with segments without sales multiplier	33	160	35	49	58	130	17	97	35	45	659
Less outliers [2]	6	29	3	5	5	13	1	3	-	1	66
Less firms with total assets under US$20 million and total sales under US$3 million	-	50	16	28	14	44	10	36	-	48	246
Number of firms in sample	87	320	105	90	337	283	48	213	176	159	1,818
% of original from Worldscope	36%	36%	28%	33%	42%	34%	23%	43%	35%	39%	36%
% of total sample	5%	18%	6%	5%	19%	16%	3%	12%	10%	9%	100%

[1] The total number of firms excluded due to above reasons is not the sum of the number of firms excluded for each reason because firms might satisfy more than one of the exclusion criteria at the same time.
[2] Details of criteria for outliers are provided in Section 4.1.2 Data Selection and Screening.

5.1.2 Descriptive Statistics

The sample consists of 1,818 firms from the ten markets of China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Single segment firms make up 62% (1,135 firms) and multi-segment firms make up 38% (683 firms) of the total firms. Table 7 provides the descriptive statistics of the variables of the sample firms after the selection criteria. Independent sample t-tests are also performed to test the difference in the means between the single segment and multi-segment firms.

Table 7 Descriptive Statistics and Significance Test of Difference of Sample Data Set

This table provides descriptive statistics of firms in the sample data set after the sample selection process as described in Section 4.1.2. There are 1,818 firms from ten countries in the sample data set. SPSS statistical software was used. All numbers are rounded.

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	1,818	1.323	0.929	1.496	16.468	0.030	16.498	0.517	0.929	1.494
	Single	1,135	1.331	0.965	1.472	16.457	0.041	16.498	0.564	0.965	1.475
	Multi	683	1.311	0.831	1.535	13.309	0.030	13.339	0.453	0.831	1.542
	Diff		0.019								
	Sig		0.792								
lnEFV	All	1,818	-0.105	-0.074	0.863	6.323	-3.520	2.803	-0.660	-0.074	0.402
	Single	1,135	-0.072	-0.036	0.827	6.005	-3.202	2.803	-0.573	-0.036	0.389
	Multi	683	-0.161	-0.185	0.917	6.111	-3.520	2.591	-0.791	-0.185	0.433
	Diff		0.089								
	Sig		0.032								
DIVERS	All	1,818	0.846	1.000	0.216	0.824	0.176	1.000	0.675	1.000	1.000
	Single	1,135	0.994	1.000	0.019	0.099	0.901	1.000	1.000	1.000	1.000
	Multi	683	0.601	0.584	0.163	0.722	0.176	0.898	0.490	0.584	0.733
	Diff		0.394								
	Sig		0.000								
MPI	All	1,818	0.00761	0.00137	0.024	0.452	0.00000	0.45170	0.000	0.001	0.005
	Single	1,135	0.0092	0.0017	0.0274	0.4517	0.0000	0.4517	0.0004	0.0017	0.0069
	Multi	683	0.0050	0.0012	0.0153	0.2021	0.0000	0.2021	0.0003	0.0012	0.0038
	Diff		0.0041								
	Sig		0.000								
DIVERSMPI	All	1,818	0.0094	0.0018	0.03272	0.80	0.00	0.80	0.0005	0.0018	0.0068
	Single	1,135	0.0092	0.0017	0.0276	0.4517	0.0000	0.4517	0.0004	0.0017	0.0069
	Multi	683	0.0098	0.0020	0.0398	0.7997	0.0000	0.7997	0.0006	0.0020	0.0067
	Diff		-0.0006								
	Sig		0.751								
Total Assets	All	1,818	528	115.80	2,361	55,598	20	55,618	54	116	319
	Single	1,135	430	109	1,863	52,699	20	52,719	50	109	287
	Multi	683	690	128	3,007	55,598	20	55,618	59	128	382
	Diff		-260								
	Sig		0.02								
Total Sales	All	1,818	286	79	1,119	35,294	3	35,297	35	79	201
	Single	1,135	281	84	832	15,368	3	15,371	36	84	212
	Multi	683	296	73	1,477	35,294	3	35,297	35	73	179
	Diff		-15								
	Sig		0.81								
FirmSize	All	1,818	4.497	4.366	1.352	9.349	1.123	10.472	3.558	4.366	5.301
	Single	1,135	4.537	4.429	1.354	8.478	1.163	9.640	3.574	4.429	5.359
	Multi	683	4.430	4.295	1.347	9.349	1.123	10.472	3.549	4.295	5.185
	Diff		0.108								
	Sig		0.100								
FinLev	All	1,818	0.281	0.247	0.241	1.832	0.000	1.832	0.089	0.247	0.415
	Single	1,135	0.275	0.236	0.240	1.832	0.000	1.832	0.077	0.236	0.415
	Multi	683	0.291	0.265	0.242	1.755	0.000	1.755	0.115	0.265	0.413
	Diff		-0.016								
	Sig		0.183								
GrowOpp	All	1,818	0.096	0.041	0.190	3.710	0.000	3.710	0.016	0.041	0.091
	Single	1,135	0.094	0.039	0.201	3.710	0.000	3.710	0.016	0.039	0.091
	Multi	683	0.099	0.044	0.195	2.051	0.000	2.051	0.017	0.044	0.090
	Diff		-0.005								
	Sig		0.605								
Profit	All	1,818	0.017	0.050	0.254	2.806	-1.974	0.832	-0.012	0.050	0.116
	Single	1,135	0.037	0.056	0.234	2.806	-1.974	0.832	0.006	0.056	0.122
	Multi	683	-0.017	0.039	0.281	2.473	-1.957	0.517	-0.054	0.039	0.105
	Diff		0.055								
	Sig		0.000								

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of diversification based on segment Herfindahl index
MPI = Market Power Index
DIVERSMPI = interactive term between diversification and market power
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales

Excess firm value (“EFV”) is a measure of premium or discount that the market is giving to the valuation of the firm. EFV of above one indicates that the market is valuing the firm above its imputed or theoretical value and vice versa. The median (mean) EFV is 0.965 (1.331) for single segment firms and 0.831 (1.311) for multi-segment firms. Statistically, the difference in mean of 0.019 between the EFV of single and multi-segment firms is insignificant. Both single and multi-segment firms have higher mean EFV than medium EFV, indicating possible outliers on the high side.

DIVERS is used to measure the firms’ level of diversification. The mean DIVERS of single segment firms is 0.994 and not one because firms with DIVERS of 0.90 or above is considered as single segment firms for this study, which is consistent with prior research and, reduces the mean value of DIVERS. The median (mean) DIVERS of multi-segment firms is 0.584 (0.601).

Market power index (“MPI”) is the segment and firm sales weighted segment Herfindahl index and it is used as a proxy for market power. The median (mean) MPI of single and multi-segment firms are 0.00166 (0.00915) and 0.00119 (0.00504) respectively, and the mean MPI of single segment firms is statistically significantly higher than multi-segment firms’ MPI.

The interactive term between diversification and market power (“DIVERSMPI”) is used to measure the ability of diversified firms to leverage their market power to other segments. The median (mean) DIVERSMPI of single and

multi-segment firms are 0.0017 (0.0092) and 0.0020 (0.0098) respectively. The difference in means of DIVERSMPI between single and multi-segment firms are not statistically significant.

Total assets are the total assets of the firms in million U.S. dollar. Both the medium and mean total assets of multi-segment firms are larger than those of single segment firms, and the difference is statistically significant.

Total sales are the total sales of the firms in million U.S. dollar. The mean sales of multi-segment firms are larger than total sales of single segment firms; however, the medium sales of single segment firms are higher indicating either large outliers or many small single segment firms with low total sales.

Financial leverage is higher for multi-segment firms with median (mean) value of 26.5% (29.1%) versus a median (mean) of 23.6% (27.5%) for single segment firms. It is consistent with Lewellen (1971) financial theory of corporate diversification and the findings of Ghosh and Jain (2000) that diversified firms are able to maintain a higher leverage because of their more stable cash flow. However, the mean difference of leverage between single and multi-segment firms of 1.6% is statistically insignificant.

GrowOpp is a proxy for growth opportunities that firms face. Multi-segment firms have slightly higher growth opportunities although the mean difference is not statistically significant.

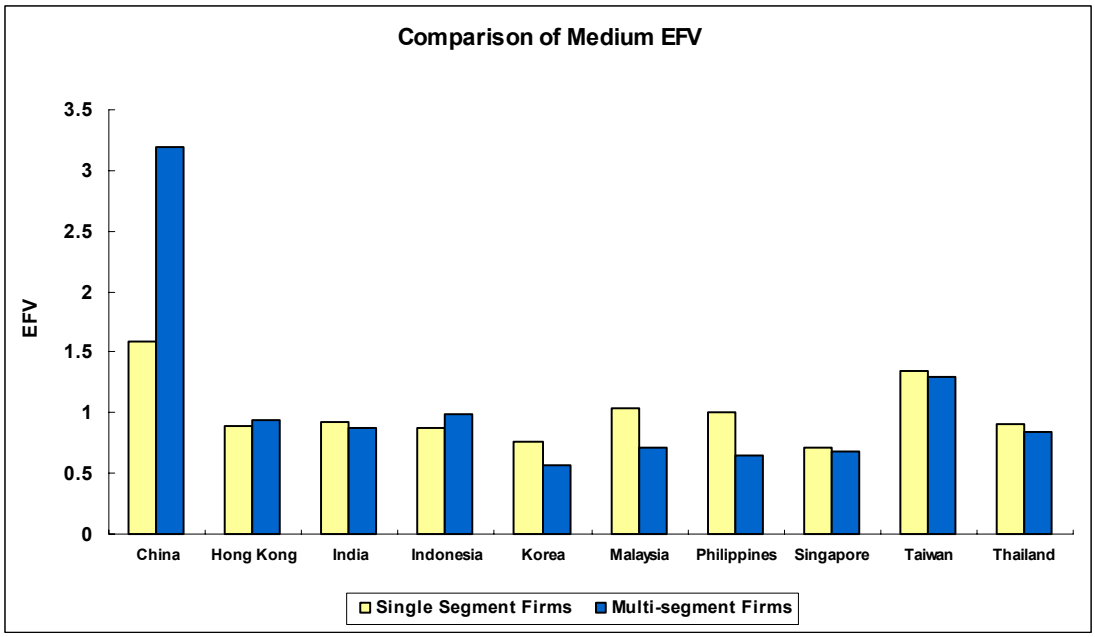
Single segment firms are more profitable than multi-segment firms, with median (mean) profitability of 5.6% (3.7%) and 3.9% (-1.7%) respectively. The mean difference in profitability between single and multi-segment firms of 5.5% is statistically significant. There might be large negative outliers for multi-segment firms and they skewed the mean values of profit to negative profitability.

5.1.3 Inter-market Comparison

5.1.2 Descriptive Statistics provides a summary of the descriptive statistics for the firms in the sample data set. Although a cross-sectional view of all the firms is very important, the characteristics of firms in each market should not be downplayed. In this section, we will provide a market by market comparison of the descriptive statistics and our view on the rationale behind these observations. The descriptive statistics of each market is provided in Appendix III Descriptive Statistics by Country.

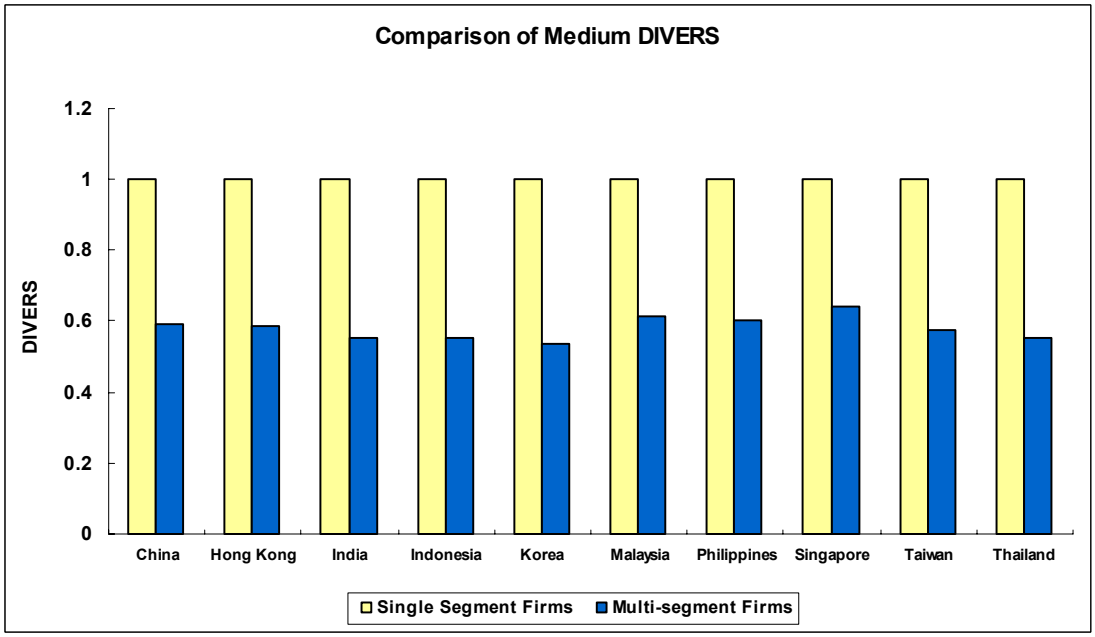
Excess Firm Value. The median excess firm values for all markets are less than one except for China and Taiwan. This indicates some evidence of a benchmark selection issue in that the median single segment firms used as benchmark for the sales multiplier calculation might be higher than the “true” value, resulting in a discount even for other single segment firms. The mean EFV is also higher than the median EFV for all countries indicating the existence of large outliers.

Figure 2 Comparison of Medium Excess Firm Value



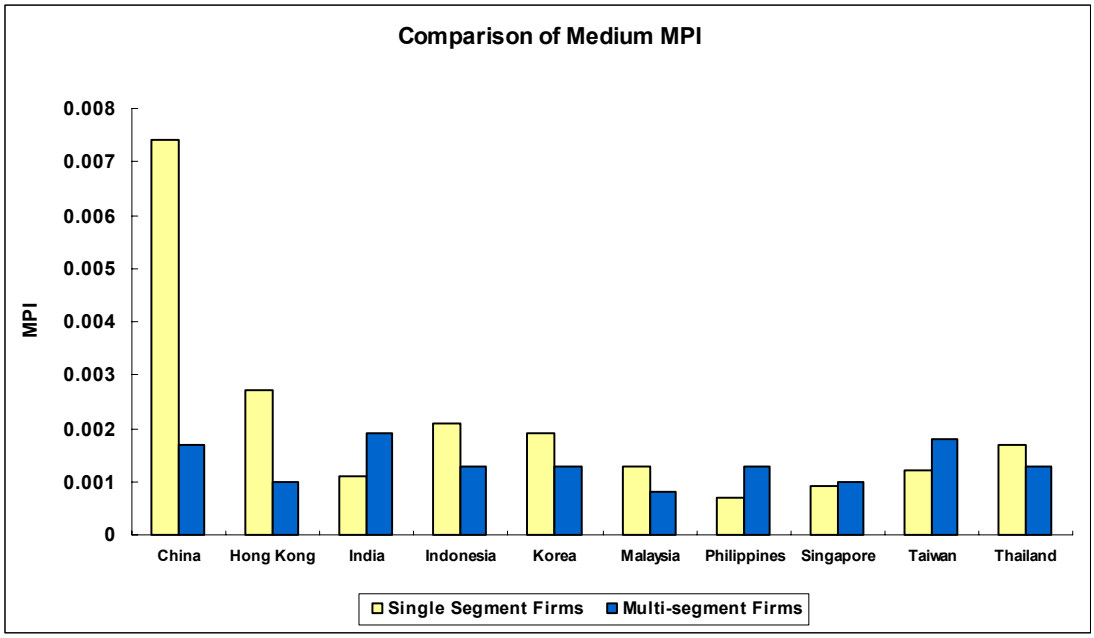
Level of Diversification. The average DIVERS is 0.58 and it is relatively constant across all markets in this sample data set; it indicates that the level of diversification is relatively consistent across these ten markets.

Figure 3 Comparison of Level of Diversification



Level of Market Power. Single segment firms in China and Hong Kong have a significantly higher median level of market power when compared to the multi-segment firms. The market power of single segment firms in China is especially high, reaching over 0.007. These are single segment firms in coal mining, aluminum and cooper extraction firms of which there are few competitors within the ten emerging markets of this research study.

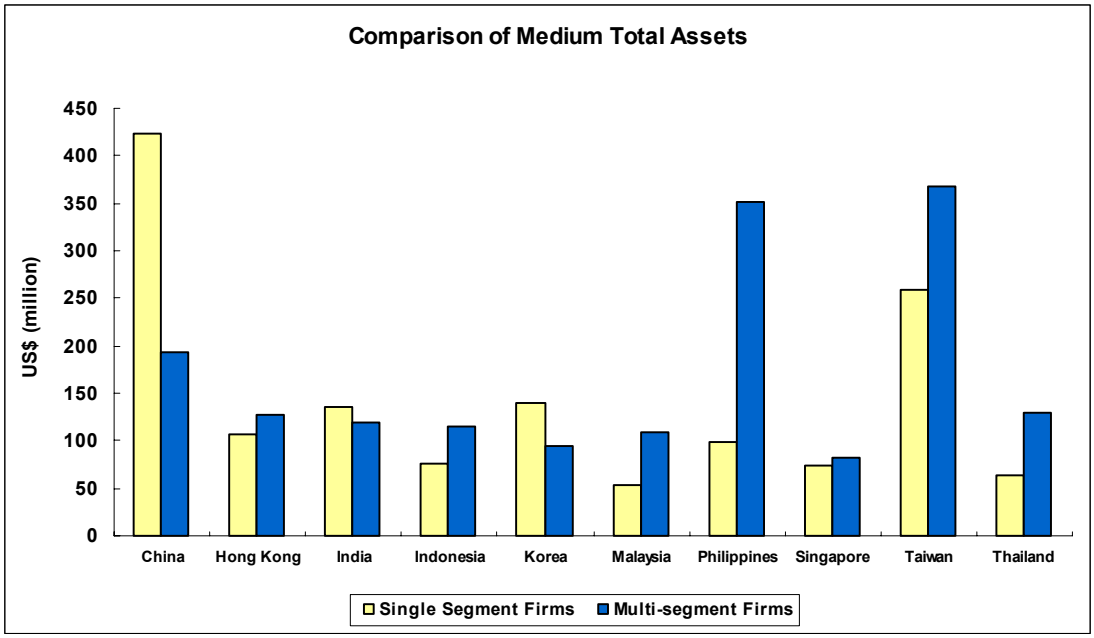
Figure 4 Comparison of Level of Market Power



Total Assets. While it is generally assumed that multi-segment firms have higher total assets, it is found to be true except for China and Korea. The median total asset of the single segment firms in China is 119% larger than the median total assets of the multi-segment firms; for Korea, it is 48% larger. For China, many of the large single segment firms are in the airline, extraction, and power generation industries. For Korea, the large single segment firms

are in the power generation industry or are major firms within Korean chaebols. For the remaining markets, the median multi-segment firm has total assets that are on average 62% higher than the median total assets of their single segment counterparts. As Figure 5 below shows, the medium total assets of single and multi-segment firms in China and Taiwan are relatively larger in terms of total assets than the other markets. For Taiwan, many of the large firms are in the electronics and semiconductor industries.

Figure 5 Comparison of Medium Total Assets

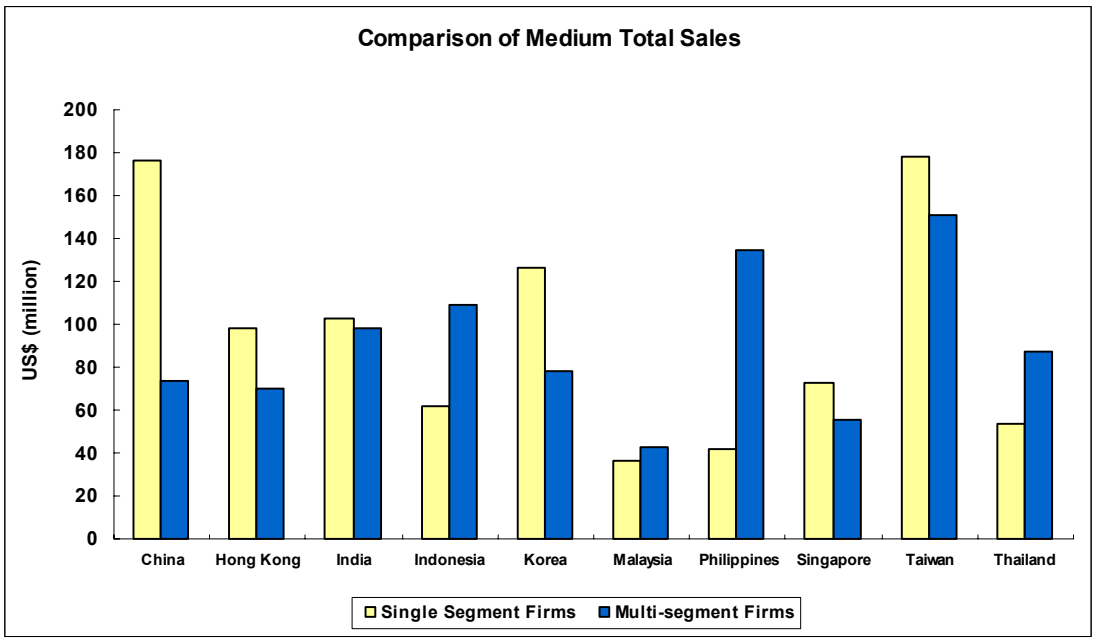


Total Sales. The medium sales of single segment firms in China, Hong Kong, India, Korea, Singapore, and Taiwan are higher than their multi-segment counterparts as indicated by Figure 6 below. For Hong Kong, Korea, and Singapore, the mean sales of single segment firms is lower than the mean sales of multi-segment firms while the median sales shows opposite results,

indicating either of a large number of firms with low level of sales or a few very large outliers in these three markets.

For India, the mean total assets and total sales for single segment firms are larger than the multi-segment firms' mean while their median level is lower. This indicates that there are some very large sized single segment outlier firms in terms of total assets and total sales or there are large numbers of smaller multi-segment firms.

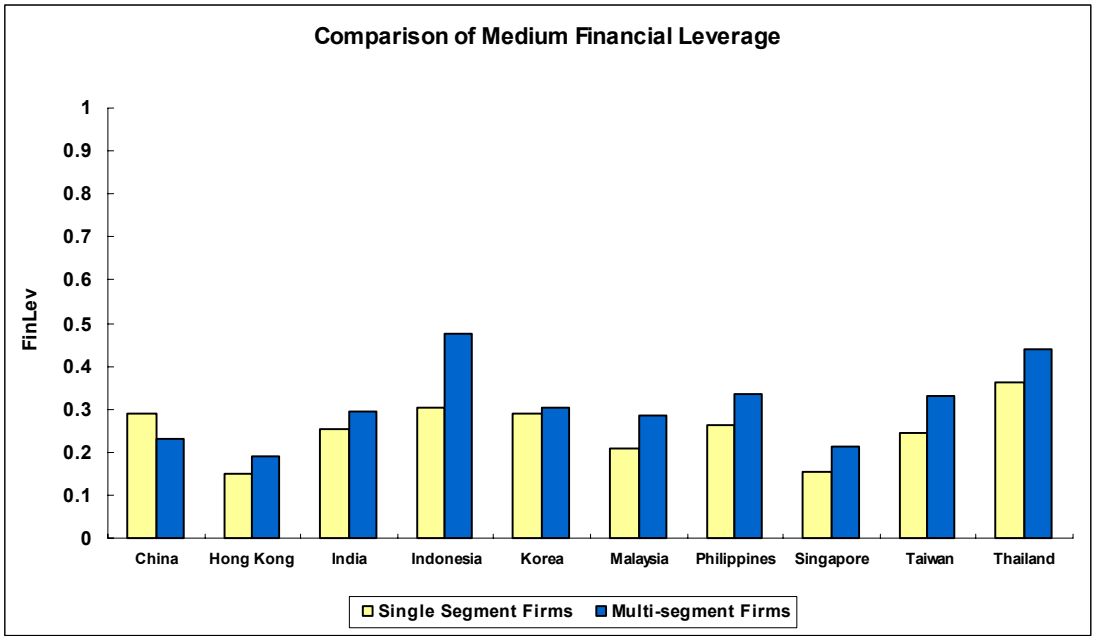
Figure 6 Comparison of Medium Total Sales



Financial Leverage. As indicated in Figure 7 below and consistent with Lewellen's financial theory of corporate diversification, the multi-segment firms has higher level of median leverage than single segment firms, indicating a higher use of leverage for all markets except China. However, since China's

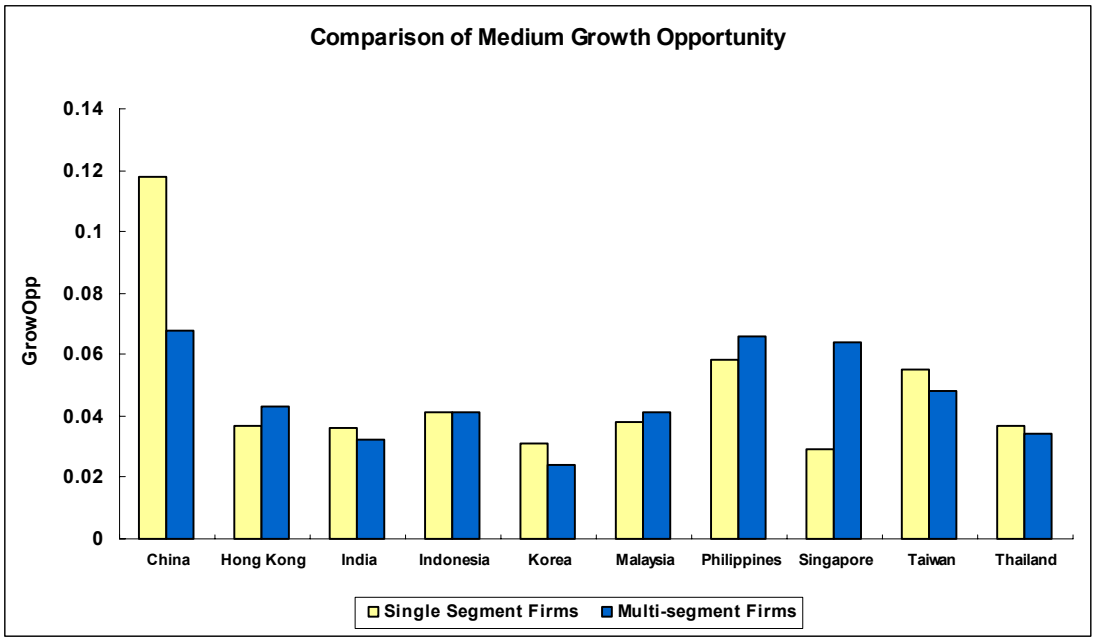
credit market is planned and not entirely market driven, there is a probability of non-market based allocation of credit.

Figure 7 Comparison of Medium Financial Leverage



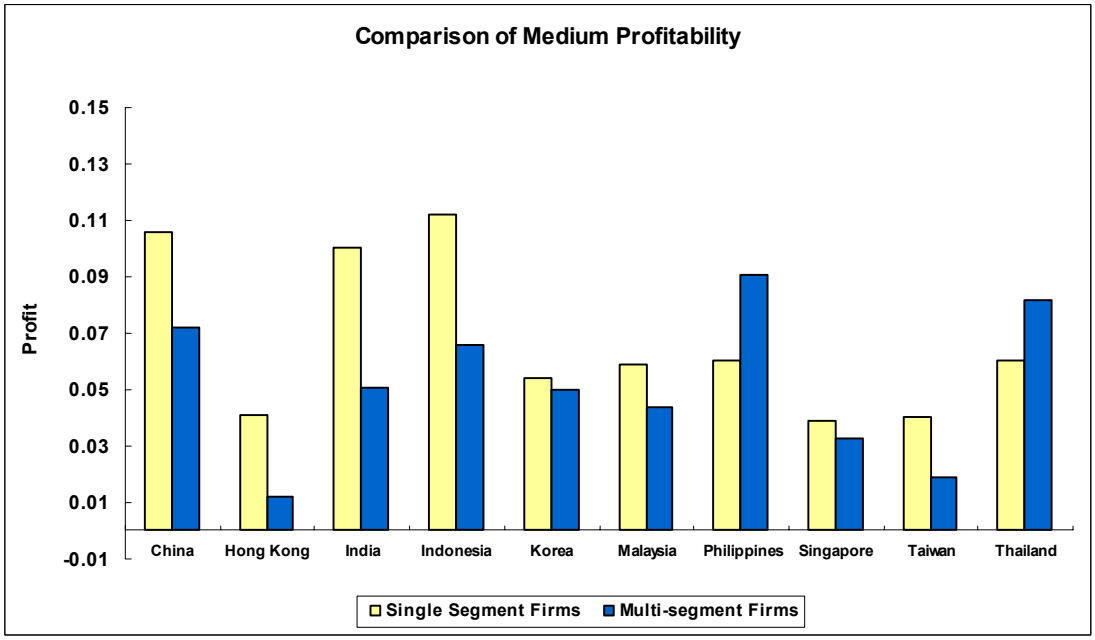
Growth Opportunity. The growth opportunity measure is relatively consistent between markets except for China, which has single segment firms having a median growth opportunity measurement of close to 12%. We hypothesize that it is due to the large capital investment requirement for firms in China.

Figure 8 Comparison of Medium Growth Opportunity



Profitability. In all the markets except the Philippines and Thailand, the single segment firms achieve higher medium profitability than the multi-segment firms.

Figure 9 Comparison of Medium Profitability

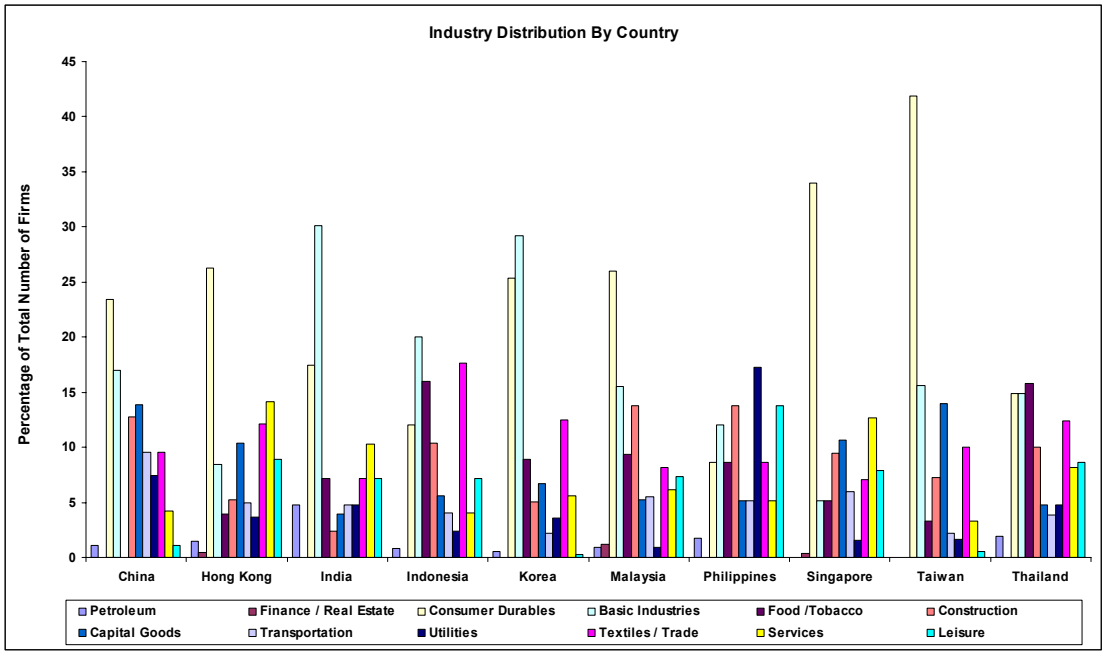


5.1.4 Country Specific Effects

Each of the ten markets also has their own industrial characteristics due to different types and levels of natural endowment, historical and economic development, and political infrastructures. Figure 10 below outlines the distribution of industries into twelve categories of firms based on the SIC classification system devised by Campbell (1996). The nature of each SIC classification and the SIC classification system devised by Campbell can be found in Appendix II Standard Industrial Classification Code. Appendix III Descriptive Statistics by Country provides the descriptive statistics of each market from which some general characteristics of the markets can be found.

We have performed regression analysis on a market by market basis, but results are inconclusive due to inadequate number of firms in some markets and domination by some firms in some markets.

Figure 10 Distribution of Industries as Percentage of Total Number of Firms



Petroleum. Most markets have only several firms in the petroleum industry due to the industry's requirement for large scale production and capital commitment.

Consumer durables. Most markets in the sample set have firms that focus on manufacturing and production for the developed markets. The percentage of firms that engage in consumer durables range from 9% in the Philippines to a high of 42% in Taiwan, signifying the significance of these industries in the region.

Basic industries. In markets other than Hong Kong and Singapore, there are many firms that engage in basic industries like mining, paper, metals, and chemicals which reflect these markets' more resource abundant nature.

Services. Hong Kong and Singapore has relatively higher percentage of firms in the service industry from their more developed economies that can sustain more service-oriented firms. The service orientation of Hong Kong and Singapore might also be caused by the physical size of these two markets and their relative lack of natural endowment.

5.1.5 Correlation Between Variables

Table 8 below provides the Pearson correlations and the nonparametric Spearman's Rho correlations of the variables.

Table 8 Correlations Between Variables

The Pearson correlations and nonparametric Spearman's Rho correlations of the variables are calculated based on the sample data set of 1,818 firms from ten countries selected based on the sample selection process as described in Section 4.1.2. SPSS statistical software was used. All numbers are rounded.

	EFV	lnEFV	DIVERS	MPI	DIVER SMPI	Total Sales	Firm Size	FinLev	Grow Opp	Profit
EFV	1.000 (0.000)	0.810 (0.000)	-0.003 (0.911)	-0.036 (0.126)	-0.026 (0.276)	-0.031 (0.189)	-0.170 (0.000)	0.130 (0.000)	0.271 (0.000)	-0.098 (0.000)
lnEFV	1.000 (0.000)	1.000 (0.000)	0.040 (0.089)	-0.034 (0.144)	-0.020 (0.389)	-0.014 (0.563)	-0.184 (0.000)	0.211 (0.000)	0.242 (0.000)	-0.083 (0.000)
DIVERS	0.064 (0.007)	0.064 (0.007)	1.000 (0.000)	0.069 (0.003)	-0.052 (0.026)	-0.043 (0.068)	0.007 (0.754)	-0.055 (0.020)	-0.014 (0.542)	0.089 (0.000)
MPI	-0.103 (0.000)	-0.103 (0.000)	0.079 (0.001)	1.000 (0.000)	0.872 (0.000)	0.348 (0.000)	0.332 (0.000)	-0.014 (0.537)	-0.027 (0.244)	0.078 (0.001)
DIVERSMPI	-0.112 (0.000)	-0.112 (0.000)	-0.070 (0.003)	0.985 (0.000)	1.000 (0.000)	0.621 (0.000)	0.347 (0.000)	0.001 (0.949)	-0.018 (0.442)	0.071 (0.003)
Total Sales	-0.185 (0.000)	-0.185 (0.000)	0.028 (0.226)	0.555 (0.000)	0.551 (0.000)	1.000 (0.000)	0.485 (0.000)	0.047 (0.047)	0.025 (0.294)	0.062 (0.009)
FirmSize	-0.185 (0.000)	-0.185 (0.000)	0.028 (0.226)	0.555 (0.000)	0.551 (0.000)	1.000 (0.000)	1.000 (0.000)	0.050 (0.033)	-0.072 (0.002)	0.273 (0.000)
FinLev	0.188 (0.000)	0.188 (0.000)	-0.039 (0.093)	0.076 (0.001)	0.085 (0.000)	0.091 (0.000)	0.091 (0.000)	1.000 (0.000)	0.010 (0.675)	-0.143 (0.000)
GrowOpp	0.244 (0.000)	0.244 (0.000)	-0.025 (0.283)	-0.085 (0.000)	-0.080 (0.001)	-0.041 (0.079)	-0.041 (0.079)	-0.047 (0.047)	1.000 (0.000)	-0.169 (0.000)
Profit	0.073 (0.002)	0.073 (0.002)	0.122 (0.000)	0.139 (0.000)	0.122 (0.000)	0.177 (0.000)	0.177 (0.000)	-0.194 (0.000)	0.178 (0.000)	1.000 (0.000)

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of diversification based on segment Herfindahl index
MPI = Market Power Index
DIVERSMPI = interactive term between diversification and market power
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales
= Pearson correlations between variables
= Nonparametric Spearman's Rho correlations between variables

Based on both the Pearson and Spearman's Rho correlations, lnEFV is significantly correlated with the firm control variables. lnEFV is negatively correlated with Profit under Pearson but not under Spearman's Roh correlation indicating that there might exist large negative outlier under Profit, which is consistent with the observation of Profit in the descriptive statistics. lnEFV is also significantly correlated with DIVERS and MPI with the

Spearman's Rho correlation. DIVERS is correlated with MPI indicating positive relationship between being focused and market power. MPI is negatively correlated with lnEFV meaning that having high market power reduces excess firm value.

5.2 MULTIVARIATE ANALYSIS

Multivariate analysis using excess firm value as dependent variable and level of diversification, market power, the interactive term between diversification and market power, firm control variables, and market control variables as independent variables is performed. The regression equation is:

$$
\begin{aligned}
lnEFV = {} & a + b_1\,DIVERS + b_2\,MPI + b_3\,DIVERSMPI \\
& + b_4\,FirmSize + b_5\,FinLev + b_6\,GrowOpp + b_7\,Profit \\
& + b_8\,MktDum_1 + b_9\,MktDum_2 + b_{10}\,MktDum_3 \\
& + b_{11}\,MktDum_4 + b_{12}\,MktDum_5 + b_{13}\,MktDum_6 \\
& + b_{14}\,MktDum_7 + b_{15}\,MktDum_8 + b_{16}\,MktDum_9 + \varepsilon
\end{aligned}
$$

The alternative measurements of diversification, NumSeg, and market power, MPI_{IND}, MPI_{MS}, and MPI_{TIER75}, are also investigated. Table 9 below provides the results of the regression analysis.

Table 9 Results of Multivariate and Decompositional Analysis

The table below provides the results of the regression analysis using the various measures of diversification and market power. lnEFV is the dependent variable in the regression analysis. Decompositional analysis is used to segregate the results of the regression analysis. All numbers are rounded.

							Decompositional Analysis							
							Effects of diversification		Effects of market power			Effects of diversification and market power		
	Reg 0	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	All firms (Reg 6)	Multi-segment (Reg 7)	Single segment (Reg 8)	Multi-segment (Reg 9)	All firms (Reg 10)	Multi-segment (Reg 11)	Multi-segment (Reg 12)	All firms (Reg 1)
Intercept	-0.087 (0.480)	-0.118 (0.340)	-0.337 (0.034)	-0.134 (0.273)	-0.113 (0.373)	-0.096 (0.438)	-0.141 (0.245)	0.012 (0.959)	0.194 (0.059)	0.113 (0.564)	0.131 (0.145)	0.213 (0.357)	0.205 (0.378)	-0.118 (0.340)
DIVERS	0.221 (0.020)	0.280 (0.001)		0.284 (0.001)	0.311 (0.001)	0.276 (0.001)	0.237 (0.005)	-0.128 (0.493)				-0.151 (0.415)	-0.133 (0.486)	0.280 (0.001)
NumSeg			0.067 (0.000)											
MPI	1.868 (0.019)	-2.177 (0.155)	-0.286 (0.819)						0.896 (0.276)	8.993 (0.000)	2.032 (0.011)	9.047 (0.000)	7.452 (0.104)	-2.177 (0.166)
DIVERSMPI / Interact		3.409 (0.003)	1.430 (0.027)	0.852 (0.034)	1.222 (0.003)	0.090 (0.092)							0.687 (0.692)	3.409 (0.003)
MPI $_{IND}$				-0.200 (0.805)										
MPI $_{MS}$					-0.745 (0.170)									
MPI $_{TIER75}$						0.057 (0.628)								
Firm Control														
FirmSize	-0.171 (0.000)	-0.177 (0.000)	-0.171 (0.000)	-0.173 (0.000)	-0.187 (0.000)	-0.180 (0.000)	-0.159 (0.000)	-0.142 (0.000)	-0.183 (0.000)	-0.192 (0.000)	-0.173 (0.000)	-0.194 (0.000)	-0.194 (0.000)	-0.177 (0.000)
FinLev	0.918 (0.000)	0.918 (0.000)	0.924 (0.000)	0.918 (0.000)	0.918 (0.000)	0.922 (0.000)	0.913 (0.000)	0.954 (0.000)	0.895 (0.000)	0.975 (0.000)	0.898 (0.000)	0.967 (0.000)	0.968 (0.000)	0.918 (0.000)
GrowOpp	0.822 (0.000)	0.815 (0.000)	0.813 (0.000)	0.815 (0.000)	0.814 (0.000)	0.813 (0.000)	0.822 (0.000)	1.188 (0.000)	0.565 (0.000)	1.178 (0.000)	0.821 (0.000)	1.175 (0.000)	1.175 (0.000)	0.816 (0.000)
Profit	0.159 (0.036)	0.161 (0.034)	0.157 (0.039)	0.159 (0.036)	0.161 (0.033)	0.165 (0.029)	0.154 (0.042)	0.117 (0.338)	0.211 (0.031)	0.154 (0.203)	0.170 (0.025)	0.155 (0.201)	0.157 (0.196)	0.151 (0.034)
MktDum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,818	1,818	1,818	1,818	1,818	1,818	1,818	683	1,135	683	1,818	683	683	1,818
R ^{2}	0.249	0.253	0.252	0.253	0.253	0.253	0.247	0.282	0.257	0.299	0.246	0.300	0.300	0.253
F-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of diversification based on segment Herfindahl index
NumSeg = number of segments
MPI = Market Power Index
DIVERSMPI = interactive term of DIVERS and MPI
MPI $_{IND}$ = Market Power Index by Industry
MPI $_{MS}$ = Market Power Index by Market Share
MPI $_{TIER75}$ = Market Power Index by 75% Tiering
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales
MktDum = use of market control variables

Reg 0 = regression analysis using diversification ("DIVERS") and Market Power Index ("MPI")
Reg 1 = regression analysis using DIVERS, MPI, and their interactive term ("DIVERSMPI")
Reg 2 = use of NumSeg in place of DIVERS
Reg 3 = use of MPI IND in place of MPI
Reg 4 = use of MPI MS in place of MPI
Reg 5 = use of MPI TIER 75 in place of MPI
Reg 6 = effects of diversification with all firms
Reg 7 = effects of diversification with multi-segment firms only
Reg 8 = effects of market power with single segment firms only
Reg 9 = effects of market power with multi-segment firms only
Reg 10 = effects of market power with all firms
Reg 11 = effects of diversification and market power with multi-segment firms only
Reg 12 = effects of diversification, market power, and their interactive term with multi-segment firms only

The multivariate analysis using DIVERS, MPI, and their interactive term DIVERSMPI to measure diversification and market power, together with firm control variables and market control variables, is represented by Reg 1 and it achieved an R^2 of 25.3% and significant F-test of 0%. The histogram of errors

from the regression (not shown) proximate normal distribution meaning the normality of error term is satisfied. Excluding the market control variables, the regression's condition index (CI) is 2.227 (not shown) indicating that the problem of multicollinearity is not significant. A plot of standardized residual against standardized dependent variable (not shown) shows no obvious pattern indicating that the problem of heteroscedasticity is not significant. The regression result in Durbin-Watson d test of 1.855 (not shown) indicates that the problem of autocorrelation is not significant.

Looking at Reg 0 which include DIVERS and MPI, there is significant positive relationship between DIVERS and MPI and lnEFV, meaning the more focused the firm or the higher the market power, the higher the excess firm value. There is significant negative relationship between FirmSize and lnEFV, indicating that the higher the total sales, the lower the excess firm value. There is significant positive relationship between lnEFV and FinLev, GrowOpp, and Profit, meaning that the higher the financial leverage, the higher the opportunities for growth from capital investment, or the higher the profitability, the higher the excess firm value. To summarize the results of this analysis, higher excess firm value is associated with small and focused firms with high market power, leverage, growth opportunities, and profitability. The finding that focused firms are associated with higher excess firm value is consistent with the findings of many research studies on diversification in the developed markets (Berger and Ofek 1995; Denis, Denis et al. 1997; Desai and Jain 1999; Click and Harrison 2000; Schoar 2002; McNeil and Moore 2005).

When the interactive term between DIVERS and MPI (“DIVERSMPI”) is added to the analysis (Reg 1), we still find being focused to be associated with higher excess firm value. However, the interactive term DIVERSMPI has replaced MPI as the variable that is significantly associated with higher excess firm value, and market power by itself is associated with lower excess firm value. Market power could be associated with lower excess firm value due to management having too much market power and growing complacent with the firms’ performance, or it could be due to the risk of being investigated by the authorities for having too much power over other competitors in the segment. DIVERSMPI is associated with higher excess firm value possibly due to the firms’ ability to leverage its market power from one segment to another. Similar to Reg 0, higher excess firm value is associated with smaller firms with higher financial leverage, higher growth opportunities, and higher profitability. The variables used in Reg 1 will be further evaluated in the decompositional analysis to determine their effects on excess firm value.

The regression analysis using NumSeg instead of DIVERS as measurement of diversification, which is represented by Reg 2, produced very similar results statistically. The regression analysis using other measurements of market power, MPI_{IND}, MPI_{MS}, and MPI_{TIER75}, all produced very similar statistical results. The regression results of using MPI_{IND}, MPI_{MS}, and MPI_{TIER75}, represented by Reg 3, Reg 4, and Reg 5 respectively in Table 9 all found very similar statistical results; they all found that the more focused the firm and the higher the ability of the firm to leverage its market power to other segments, the higher the excess firm value.

Based on the multivariate analysis on this data sample set, we found that (1) diversified firms and market power, when treated independently, are associated with lower excess firm value, (2) diversified firms with market power are able to leverage their market power across segments and are associated with higher excess firm value, and (3) smaller firms, higher financial leverage, higher growth opportunities, and higher profitability are associated with higher excess firm value. In other words, smaller focused firms and diversified firms with market power that can leverage that market power across segments have the highest excess firm value within our sample. We have prepared a decomposition analysis to explore further some characteristics of the firms in the sample data set. These characteristics include single and multi-segment firms, level of capital markets development of the markets in which the firms are based, nature of firm ownership, growth prospect of the segments, and manufacturing versus non-manufacturing firms. Additional robustness tests are performed and results provided in Chapter 6.

5.3 DECOMPOSITION ANALYSIS

The previous multivariate analysis found that diversification and market power are related to lower excess firm value when analyzed separately, but related to higher excess firm value on an interactive basis, we can gain further insights into the effects of diversification and market power on excess firm value when we isolate characteristics of the sample firms. These characteristics include single and multi-segment firms, the level of capital

markets development of the markets in which the firms are based, nature of firm ownership, the growth prospect of the segments, and manufacturing versus non-manufacturing firms.

5.3.1 Single And Multi-Segment Firms

Since the multiplier approach assumes that segments of multi-segment firms are similar to their single segment counterparts, we can use this assumption to test the effects of diversification and market power on excess firm value on separate basis and gain additional insights into how they affect excess firm value of single and multi-segment firms.

Using a decompositional approach, we have segregated the firms in the sample data set into single and multi-segment firms, and multivariate analyses are performed to isolate the effects of diversification and market power on excess firm value for these firms. Details of the decompositional approach are discussed below, and the results of the decomposition are presented in Table 9 above under the heading Decompositional Analysis.

Effects of diversification. The first regression analysis of the decompositional analysis ("Reg 6") tries to isolate the effects of diversification on excess firm value by excluding market power in the analysis. Regression analysis is performed on excess firm value and level of diversification, firm control variables, and market control variables on all firms. The effects of diversification on excess firm value can be determined and compared to

previous research results. The second regression analysis (“Reg 7”) refines the sample by using only multi-segment firms. Single segment firms are by definition not affected by diversification, but they could have an effect on excess firm value when they are included in the sample. This regression analysis is used to isolate the effect of diversification on multi-segment firms only to determine if the relationship found for the full sample also holds for multi-segment firms. With the exclusion of single segment firms, this regression analysis on multi-segment firms (“Reg 7”) can provide insights into the effects of diversification on firms that are already diversified.

The results of Reg 6 and Reg 7 are provided in Table 9 above under the heading of “Effects of diversification.” The results of Reg 6 show that diversification is associated with lower excess firm value when all firms in the sample data set are used for the analysis. However, diversification is associated with higher excess firm value (although statistically insignificant) when multi-segment firms are examined by themselves in Reg 7. It provides some evidence that diversification does not affect excess firm value on a linear basis. Instead of a continuum of higher discount from single segment firms to firms with two and then more segments, it appears that there is a v-shaped relationship between diversification and excess firm value. Single segment firms have higher excess firm value than multi-segment firms, but once firms diversify and incur the diversification discount, the discount decreases with further increased in diversification. This finding is consistent with the Khanna and Palepu (2000) study of Indian firms in which they found firm performance initially decline with diversification but subsequently increase

once diversification exceeds a certain level. The observed result could be caused by the market giving single segment firms higher excess firm value or a discount is associated with all diversified firms, although this discount is reduced when diversified firms continue to diversify into other segments.

Effects of market power. While the previous two regression analysis try to determine the effect of diversification on excess firm values, the three regression analysis in this section ("Reg 8," "Reg 9," and "Reg 10") try to determine the effect of market power on excess firm values without the effects of diversification. Three regression analysis are performed; they are excess firm value and level of market power, firm control variables, and market control variables on single segment firms only (Reg 8), multi-segment firms only (Reg 9), and then on all firms (Reg 10). Since single segment firms are not affected by the effects of diversification, the effect of market power on excess firm value can be isolated and measured when the sample only includes single segment firms. Then regression analysis is performed on multi-segment firms (Reg 9) and on all firms (Reg 10). By performing the multivariate analysis on mutually exclusive subset of the sample, i.e. single and multi-segment firms (Reg 8 and Reg 9), we can isolate and identify the differing effects of market power on excess firm value for single and multi-segment firms.

The results of Reg 8, Reg 9, and Reg 10 are provided in Table 9 above under the heading of "Effects of market power." The results of Reg 8 show that the level of market power of single segment firms is positively associated with

excess firm value, although at a statistically insignificant level. The negative relationship between firm size and excess firm value also exist. Hence for single segment firms, the higher their market power and the smaller the firm, the higher the excess firm value. It could be interpreted as single segment firms with higher market power being able to extract abnormal profits from their customers and suppliers. It could also be interpreted as single segment firms being less valuable when they grow bigger in size because there is a higher risk of management deciding to diversify into other businesses. When only multi-segment firms are examined (Reg 9), market power is found to have a large and significant positive relationship with excess firm value. When all firms in the sample data set are used (Reg 10), market power is also found to have significant relationship with excess firm value. This is similar to the findings of the regression analysis on the effects of diversification (Reg 6 and Reg 7) in which multi-segment firms are affected differently than single segment firms. For market power, its effects on excess firm value of single segment firms are positive but statistically insignificant; but its effects on excess firm value of multi-segment firms are significantly large and positive.

Effects of diversification and market power. Regression analysis is performed on excess firm value and level of diversification, level of market power, firm control variables, and market control variables to determine the direct effects of diversification and market power on excess firm value. Two regression analyses are performed, first with diversification and market power as independent variables for multi-segment firms only (“Reg 11”). Then the interactive term DIVERSMPI is added to the regression analysis (“Reg 12”).

The results of these two regression analysis (Reg 11 and Reg 12) are provided in Table 9 above under the heading “Effects of diversification and market power.”

When both diversification and market power are analyzed together with multi-segment firms only (Reg 11), it was found that being diversified and having high market power are associated with higher excess firm value; although the association between diversification and excess firm value is at a statistically insignificant level. The finding is consistent with Reg 7 in which multi-segment firms generally have lower excess firm values when compared to single segment firms, but the discount in excess firm value for multi-segment firms is reduced with further diversification. This finding is consistent with Jandik and Makhija (2005) which found that electric utility firms that diversified traded at a premium of 8% because diversification provided new investment opportunities for the excess cash generated by the utilities, allowed a more optimal distribution of investment, and prevented the firms from overinvestment in their core business. Market power is found to have a large and significant association with higher excess firm value for multi-segment firms in Reg 11.

In Reg 12, diversification, market power, their interactive term, firm control variables, and market control variables were used in the regression analysis for multi-segment firms only. We found that diversification is associated with higher excess firm value at a statistically insignificant level. We also found market power and the interaction between diversification and market power to be positively associated with higher excess firm value. When we compare the

results of the regression analysis for multi-segment and all firms (Reg 12 and Reg 1), we found that the results are consistent with single segment firms having higher excess firm value and higher market power. DIVERS has a negative coefficient for multi-segment firms meaning diversification increases excess firm value, but has a positive coefficient for all firms; as a result, we hypothesize that there is a v-shape function between diversification and excess firm value. MPI is positively associated with excess firm value with multi-segment firms, but negatively associated with excess firm value with all firms; we hypothesize that the negative association between MPI and excess firm value arose because the market power of single segment firms are relative higher which is consistent with the descriptive statistics in Table 7.

We can summarize the findings of the above decompositional analysis as follows.

For the effects of diversification on excess firm value, (a) There are single segment firms with high excess firm value that might have skewed the results of the diversification analysis; as a result, the level of diversification is found to be negatively related to excess firm value when all firms are evaluated, but positively related to excess firm value when multi-segment firms are evaluated by themselves. (b) A related implication is that multi-segment firms generally have lower excess firm value than single segment firms; that is, there is a discount in excess firm value for multi-segment firms. (c) Single segment firms experience a reduction in excess firm value when they become multi-segment firms, but diversification reduces this discount amongst multi-segment firms.

(d) We hypothesize that there is a v-shaped relationship between diversification and excess firm value in which single segment firms and highly diversified multi-segment firms are associated with higher excess firm value, i.e. there is a v-shape relationship between diversification and excess firm value. The lowest excess firm value is associated with multi-segment firms that are lightly diversified. (e) The positive relationship between DIVERS and lnEFV in Reg 6 indicates that the excess firm value of single segment firms is on average higher than the excess firm value of the highly diversified multi-segment firms, which is consistent with the descriptive statistics in Table 7.

For the effects of market power on excess firm value, (a) Market power is associated with higher excess firm value, and this association is particular strong and significant for multi-segment firms. (b) The positive relationship between MPI and lnEFV in Reg 10 indicates that market power has greater influence on firm value for highly diversified firms than single segment firms.

For the effects of diversification and market power on excess firm value, (a) there is still a v-shape relationship between diversification and excess firm value. (b) The interaction between diversification and market power is significant (interactive term DIVERSMPI in Reg 5), meaning firms can leverage their market power across new or existing segments in a way that is significantly beneficial for firm value. (c) There is positive and significant association between market power and excess firm value in Reg 9 and Reg 10 when only market power is included in the analysis, but this relationship becomes statistically insignificant when the interactive term DIVERSMPI is

included (Reg 12 and Reg 5) indicating that market power is associated with excess firm value through diversification. That is, market power is associated with higher excess firm value due its ability to create excess firm value through the diversification process.

We hypothesize that the following reasons account for the above observations. Most firms start out as single segment firms. Those firms with high growth or profitability will continue to operate as single segment firms because there are still ample opportunities for profits, resulting in the observation of high excess firm value associated with single segment firms. However, three types of firms will pursue diversification. First, single segment firms that are not performing well within their industries (Denis, Denis et al. 1997) or firms in sunset industries will diversify in order to capture external growth potentials (Graham, Lemmon et al. 2002; Gomes and Livdan 2004). Some of these single segment firms might not survive the more intense competition if they do not diversify (Schoar 2002). Second, even successful single segment firms will start to experience reduced growth rate due to industry maturity or from having limited potential future growth with their own high market share (Hyland 1999); these firms will also turn to diversification to continue growth. Third, firms with agency problem in which management diversify in order to extract private benefits for themselves (Jensen and Meckling 1976; Jensen 1986; Morck, Shleifer et al. 1990; Jensen 1993; Burch and Nanda 2003). As a result, only the strong, high growth and profitable single segment firms remain focused in their businesses, while the weaker or problematic firms choose to diversify. This is consistent with the survivor bias argument that Schoar (2002)

put forth which might result in a built-in bias to value multi-segment firms at a discount because of the abnormally strong single segment firms which are used as valuation benchmarks. However, once these firms diversified, they find that the benefits of diversification outweigh their cost and there is positive contribution to firm value. This is consistent with the research of Schoar (2002), Fee and Thomas (2004), and Shahrur (2005) which found that conglomerates are more productive and have higher buying power over suppliers. As these diversified firms grow to become larger in size and have accrued certain level of market power, they find that they are able to leverage their market power to new or existing segments, further enhancing the benefits of diversification.

5.3.2 Capital Markets Development

In the multivariate analysis, market control variables are used to account for differences between the markets which are not accounted for by the other independent variables. Despite the cultural, geographical, and historical differences between markets, the level of capital markets development might play a critical role amongst the markets because it affects the availability and allocation of resources in several ways. First, the level of capital market development might play a role on the requirement to develop an internal capital market for resource allocation purposes; i.e. for markets with less developed capital markets, firm value might increase if an internal capital market is developed to supplement the less efficient external equity and debt markets. Second, political stability and the level of corruption also play a role on the effect of diversification and market power on excess firm value. Khanna and Palepu (1997) and Khanna and Rivkin (2001) asserted that diversification can be beneficial for firms in the emerging markets because it can (a) facilitate contract enforcement, (b) reduce information asymmetries, (c) help recruit and retain higher quality personnel, (d) establish brand name and awareness by taking advantage of reputation spillovers, (e) cultivate and use political connection and favors to further firm benefits, and (f) engage in “infant industry” protection or predatory pricing schemes with subsidies from other segments. Due to its potential effect on the benefits of diversification and market power, we have included the level of capital markets development into our multivariate analysis together with the market control variables to determine their effects on excess firm value.

We have utilized and incorporated five measures of capital markets and economic system development into our Capital Markets Development measurement ("CMD"). These five capital markets and economic system development measurements are:

1. Equity Debt Index ("EDI"). The EDI is the sum of two ratios, the equity market capitalization to GDP ratio and the private debt to GDP ratio. The equity market capitalization to GDP ratio is calculated as the ratio of the total market capitalization of all listed firms in a market to its GDP, and the private debt to GDP ratio is calculated as the ratio of the credit provided by commercial and deposit-taking banks to the private sector to GDP. Research studies that have utilized this measurement of capital markets development include La Porta, Lopez-de-Salinas et al. (1997), Feinberg and Phillips (2003), and Fauver, Houston et al. (2003). Both ratios are calculated and published by the World Bank, and the relevant data are downloaded from World Bank's World Development Indicators database for all the markets except Taiwan. For Taiwan, the GDP and private debt amounts are provided by the Asian Development Bank, and the market capitalization is provided by the Taiwan Stock Exchange Corporation. All information is dated as of the end of 2002.

2. Transparency International Index ("TI"). This is an index developed by Transparency International on the level of corruption and transparency in doing business in a market and it is one of the most commonly used proxies for the level of corruption in research studies. The index has a ranking score

between 0 and 100, with higher score indicating less corruption and higher transparency.

3. Natural logarithm of GDP per capita ("lnGDP/Cap"). GDP per capita measures the average income of the population and is a proxy for economic development. Research study that have utilized this measurement of capital markets development include Fauver, Houston et al. (2003).

4. EIU Riskwire rating ("EIU Risk"). EIU Riskwire is an overall risk score indicating the riskiness of doing business in a market and many factors are taken into account in its formulation. The rating ranges between 0 and 100, with higher score indicating higher risk. We have standardized the EIU Riskwire score by resetting the index as (100 – EIU Riskwire overall score) / 10 so that higher score indicate lower risk in order to be consistent with the other measurements.

5. Institute for Management Development World Competitiveness rating of competitiveness ("IMD"). The IMD rates each market according to various measures for competitiveness, and the score ranges between 0 and 100 with higher score representing higher competitiveness. We have standardized the IMD measurement by dividing the original score by 10 so that it ranges between zero and ten.

All of these measures are proxies for the level of economic and political development of these markets. Based on these five measurements, we

calculated the CMD for each market to be the average of the five measurements. Table 10 below shows the actual value of the measurements and the CMD for each market. Table 11 provides the Pearson correlations and the Spearman's Rho correlations between these measurements.

Table 10 Capital Markets Development Measurements

This table provides a summary of the five economical and political ratings for the markets in the sample data set. CMD is a variable derived from the five ratings and it is calculated as the average of the five ratings. All numbers are rounded.

	EDI	TI	lnGDP/Cap	EIU Risk	IMD	CMD
China	2.03	3.40	8.52	5.80	7.07	5.36
Hong Kong	4.31	8.00	10.27	7.90	8.58	7.81
India	0.84	2.80	7.97	6.10	6.30	4.80
Indonesia	0.76	2.00	8.07	3.90	3.81	3.71
Korea	1.69	4.50	9.79	7.70	6.22	5.98
Malaysia	2.85	5.00	9.10	7.10	7.59	6.33
Philippines	1.10	2.60	8.43	4.90	4.97	4.40
Singapore	2.02	9.30	10.07	8.40	8.90	7.74
Taiwan	2.44	5.60	10.06	7.50	7.95	6.71
Thailand	1.52	3.60	8.91	6.10	6.82	5.39

EDI = equity market capitalization and private debt to GDP ratio
TI = Transparent International index
lnGDP/Cap = Natural logarithm of GDP per capita
EIU Risk = EIU Riskwire rating
IMD = Institute for Management Development World Competitiveness rating
CMD = Capital Markets Development index calculated as the average of EDI, TI, lnGDP/Cap, EIU Risk, and IMD.

Table 11 Correlations Between Capital Markets Development Measurements

This table provides the Pearson correlations and nonparametrics Spearman's Rho correlations between the five measurements of economic and political development for each market. All numbers are rounded.

	CMD	EDI	TI	lnGDP/Cap	EIU Risk	IMD
CMD	1.000 (0.000)	0.787 (0.000)	0.959 (0.000)	0.885 (0.000)	0.890 (0.000)	0.930 (0.000)
EDI	0.844 (0.000)	1.000 (0.000)	0.667 (0.000)	0.648 (0.000)	0.548 (0.000)	0.724 (0.000)
TI	0.963 (0.000)	0.731 (0.000)	1.000 (0.000)	0.822 (0.000)	0.817 (0.000)	0.880 (0.000)
lnGDP/Cap	0.937 (0.000)	0.691 (0.000)	0.900 (0.000)	1.000 (0.000)	0.887 (0.000)	0.702 (0.000)
EIU Risk	0.835 (0.000)	0.496 (0.000)	0.872 (0.000)	0.919 (0.000)	1.000 (0.000)	0.782 (0.000)
IMD	0.878 (0.000)	0.718 (0.000)	0.915 (0.000)	0.737 (0.000)	0.675 (0.000)	1.000 (0.000)

CMD = Capital Markets Development index
EDI = equity market capitalization and private debt to GDP ratio
TI = Transparent International index
lnGDP/Cap = Natural logarithm of GDP per capita
EIU Risk = EIU Riskwire rating
IMD = Institute for Management Development World Competitiveness rating
= Pearson correlations between variables
= Nonparametric Spearman's Rho correlations between variables

To determine how capital markets development affects the benefits and costs of diversification and market power on excess firm value, we will use both a continuous and discrete scale to measure the level of capital markets development. For both of these scales, we hypothesize that the lower the level of capital markets development, the more valuable is diversification and market power and vice versa.

For the continuous scale, we use three interactive variables to capture the effects of capital markets development and diversification and market power. DIVERSCMD is used to measure the interaction between the level of capital markets development and diversification; MPICMD is used to measure the interaction between the level of capital markets development and market power. DIVMPICMD is used to measure the interaction between the level of capital markets development and the interactive effects of diversification and

market power. The calculation of DIVERSCMD, MPICMD, and DIVMPICMD are adjusted for the orientation of the measurements for the multivariate analysis so that we are testing for positive relationships between these variables to excess firm value. These three variables are calculated as:

$$DIVERSCMD = 1 / (CMD * DIVERS)$$

$$MPICMD = (1 / CMD) * MPI$$

$$DIVMPICMD = (1 / CMD) * DIVERSMPI$$

CMD is a measurement of capital markets development and the lower the score, the less developed the capital markets. DIVERS measures the level of diversification and the lower the score, the more diversified the firm. MPI measures the level of market power and the higher the score, the higher the market power. DIVERSMPI measures the interactive effects of diversification and market power and the higher the score, the higher the interactive effects. For DIVERSCMD, CMD is multiplied by DIVERS. In this case, the less developed the capital markets, the more beneficial is diversification; hence low value CMD and low value DIVERS should be associated with high excess firm value. As a result, DIVERSCMD is calculated as the reciprocal of the product of CMD and DIVERS so that the lower the product of CMD and DIVERS, the higher the value of DIVERSCMD. For MPICMD and DIVMPICMD, one is divided by CMD first so that the less developed the capital market, the higher the value of 1 / CMD. Then this is multiplied by MPI and DIVERSMPI so that less developed capital markets and high market power and the interactive effects are tested against high excess firm value in the multivariate analysis.

The regression equation is:

$$\begin{aligned} lnEFV = {} & a + b_1\, DIVERSCMD + b_2\, MPICMD + b_3\, DIVMPICMD \\ & + b_4\, FirmSize + b_5\, FinLev + b_6\, GrowOpp + b_7\, Profit \\ & + b_8\, MktDum_1 + b_9\, MktDum_2 + b_{10}\, MktDum_3 \\ & + b_{11}\, MktDum_4 + b_{12}\, MktDum_5 + b_{13}\, MktDum_6 \\ & + b_{14}\, MktDum_7 + b_{15}\, MktDum_8 + b_{16}\, MktDum_9 + \varepsilon \end{aligned}$$

For the discrete measurement of capital markets development, we will separate the ten markets into two groups: low capital markets development markets ("CMDL") and high capital markets development markets. CMDL is a control variable with a value of one for the five markets which have the lower half of the CMD scores based on Table 10 above; these markets include China, India, Indonesia, the Philippines, and Thailand. The remaining five markets, which are considered high capital markets development markets, are Hong Kong, Korea, Malaysia, Singapore, and Taiwan. Using the discrete measurement of capital markets development, we are testing for the following hypotheses. In markets with less developed capital markets, diversification, market power, and their interactive effects are associated with higher excess firm value. In markets with more developed capital markets, focus is associated with higher excess firm value and market power is expected to be less important for firm valuation.

To check for the effects of diversification and market power in markets with less developed capital markets, we use DIVERSCMDL, MPICMDL, and DIVMPICMDL they are defined as follow:

$$DIVERSCMDL = 1 / (CMDL * DIVERS)$$

$$MPICMDL = CMDL * MPI$$

$$DIVMPICMDL = CMDL * DIVERSMPI$$

DIVERSCMDL checks for the relationship between the inverse of DIVERS and excess firm values; in other words, is diversification associated with higher excess firm values in markets with less developed capital markets? MPICMDL checks for the relationship between market power and excess firm values in markets with less developed capital markets; that is, is market power associated with higher excess firm values in markets with less developed capital markets? DIVMPICMDL checks for the relationship between the interactive effects of diversification and market power and excess firm values in markets with less developed capital markets; that is, is the interactive effects of diversification and market power associated with higher excess firm values in markets with less developed capital markets?

While DIVERSCMDL, MPICMDL, and DIVMPICMDL will capture the effects of diversification and market power on excess firm value in markets with less developed capital markets, DIVERS, MPI, and DIVERSMPI will capture the effects of diversification and market power on excess firm value in markets with more developed capital markets.

The regression equation is:

$$\begin{aligned} lnEFV = {} & a + b_1\,DIVERS + b_2\,MPI + b_3\,DIVERSMPI \\ & + b_4\,DIVERSCMDL + b_5\,MPICMDL + b_6\,DIVMPICMDL \\ & + b_7\,FirmSize + b_8\,FinLev + b_9\,GrowOpp + b_{10}\,Profit \\ & + b_{11}\,MktDum_1 + b_{12}\,MktDum_2 + b_{13}\,MktDum_3 \\ & + b_{14}\,MktDum_4 + b_{15}\,MktDum_5 + b_{16}\,MktDum_6 \\ & + b_{17}\,MktDum_7 + b_{18}\,MktDum_8 + b_{19}\,MktDum_9 + \varepsilon \end{aligned}$$

Table 12 below shows the results of multivariate analysis for the continuous and discrete scale measurement of capital markets development. Based on the continuous scale of capital markets development, our data indicates that diversification and market power are associated with lower excess firm value. However, we do find a positive and statistically significant relationship between the interactive effects of diversification and market power and excess firm values, indicating that firms can benefit from the leverage of market power to other segments in markets with less developed capital markets. Our results on the interactive effects of diversification and market power support the hypothesis that market power and diversification helps firms overcome inefficiencies and failures in less developed capital markets, hence associated with higher excess firm values. Our results are also consistent with the findings by Khanna and Palepu (1997) and Khanna and Rivkin (2001).

Based on the discrete scale of capital markets development, we found that being focused and the interactive term of diversification and market power are associated with higher excess firm value in markets with more developed capital markets. It is consistent with our earlier findings of higher excess firm values associated with focused single segment firms and highly diversified

multi-segment firms. For markets with less developed capital markets, we found that the interactive term of diversification and market power are associated with higher excess firm value. We hypothesize that firms with higher market power can diversify more profitably by leveraging their market power across segments resulting in higher excess firm values.

In both the continuous and discrete scale of capital markets development, the interactive term of diversification and market power, DIVERSMPI, is found to be consistently and statistically significantly associated with higher excess firm value in markets with both high and low level of development. As a result, it appears that the ability to leverage market power to new or existing segments is one of the important factors for firm valuation in the emerging markets.

Table 12 Regression Results With Capital Markets Development Measurements, Firm Ownership Variables, Market Growth Variables, and Non-manufacturing Variables

The table below provides the results of the regression analysis using the various measure of diversification and market power. Decompositional analysis is used to segregate the results of the regression analysis. lnEFV is the dependent variable in the regression analysis. All numbers are rounded.

	Captial Markets Development		Firm Ownership		Industry Growth	Non-man / Man
	Continuous	Discrete	Continuous	Discrete	Growth of Local Markets	Non-man / Man
Intercept	0.266 (0.008)	-0.223 (0.246)	-0.150 (0.248)	-0.123 (0.331)	-0.116 (0.347)	0.104 (0.568)
DIVERS		0.335 (0.001)	0.279 (0.001)	0.280 (0.001)	0.279 (0.001)	0.058 (0.718)
MPI		-1.676 (0.310)	-2.223 (0.157)	-2.189 (0.164)	-2.369 (0.139)	0.199 (0.929)
DIVERSMPI / Interactive		2.906 (0.013)	3.423 (0.003)	3.413 (0.003)	3.645 (0.002)	2.328 (0.085)
DIVERSCMD	-0.597 (0.007)					
MPICMD	-13.486 (0.175)					
DIVMPICMD	21.532 (0.003)					
DIVERSCMDL		0.092 (0.597)				
MPICMDL		-15.621 (0.021)				
DIVMPICMDL		13.971 (0.012)				
ShCloPer			0.064 (0.419)			
ShCloPerH				0.012 (0.849)		
DIVERSSaGr					0.000 (0.666)	
MPISaGr					0.017 (0.519)	
DIVMPISaGr					-0.017 (0.512)	
DIVERSNMan						-0.285 (0.097)
MPINMan						-4.505 (0.188)
DIVMPINMan						2.560 (0.329)
Firm control						
FirmSize	-0.176 (0.000)	-0.179 (0.000)	-0.178 (0.000)	-0.177 (0.000)	-0.177 (0.000)	-0.177 (0.000)
FinLev	0.914 (0.000)	0.919 (0.000)	0.926 (0.000)	0.919 (0.000)	0.915 (0.000)	0.919 (0.000)
GrowOpp	0.817 (0.000)	0.817 (0.000)	0.817 (0.000)	0.816 (0.000)	0.819 (0.000)	0.817 (0.000)
Profit	0.165 (0.029)	0.165 (0.029)	0.156 (0.040)	0.160 (0.036)	0.161 (0.034)	0.161 (0.034)
MktDum	Yes	Yes	Yes	Yes	Yes	Yes
N	1,818	1,818	1,818	1,818	1,818	1,818
R^2	0.252	0.256	0.253	0.253	0.253	0.255
F-value	0.000	0.000	0.000	0.000	0.000	0.000

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of DIVERSfication based on segment Herfindahl index
MPI = Market Power Index
DIVERSMPI = interactive term of DIVERS and MPI
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales
MktDum = use of market control variables
ShCloPer = percentage of shareholding by majority shareholders
ShCloPerH = percentage of shareholding by majority shareholders with above medium level of ownership
DIVERSCMD = interactive variable for DIVERS and CMD
MPICMD = interactive variable for MPI and CMD
DIVMPICMD = interactive variable for DIVERS/MPI and CMD
DIVERSCMDL = interactive variable for DIVERS and low CMD
MPICMDL = interactive variable for MPI and low CMD
DIVMPICMDL = interactive variable for DIVERS/MPI and low CMD
DIVERSCMDH = interactive variable for DIVERS and high CMD
MPICMDH = interactive variable for MPI and high CMD
DIVERSSaGr = interactive variable for DIVERS and SaleGrow
MPISaGr = interactive variable for MPI and SaleGrow
DIVERSNMan = interactive variable for DIVERS and Non-manufacturing firms
MPINMan = interactive variable for MPI and Non-manufacturing firms
DIVERSMan = interactive variable for DIVERS and Manufacturing firms
MPIMan = interactive variable for MPI and Manufacturing firms

5.3.3 Firm Ownership and Agency Problems

Firm ownership can come in several forms. Firm ownership can come externally in the form of diverse individual shareholders, institutional investors with professional managers which include mutual funds and employee funds, and majority external non-related shareholders. Firm ownership can also come internally in the form of majority ownership by founder or founder family, majority ownership by founder manager, or partial ownership by management. The existence and nature of majority ownership can greatly affect how firms are managed because it plays a key role in the extent of agency problems that firms face and remedial measures that are available.

Agency problem is expected to be more pronounced under certain circumstances. When ownership is diverse and management has small equity stakes, managers might make decisions that provide them with more private benefits. When a firm is run by majority owner-manager, they can easily divert benefits for their own gain to the detriment of minority shareholders. For owner manager or firm management, the relationship of their level of

ownership and extent of agency problem is less clear cut. There are arguments for both the convergence-of-interest hypothesis and the expropriation hypothesis (Lins and Servaes 2002). The convergence-of-interest hypothesis predicts that with ownership shares by management, the interest of managers would converge or align with the shareholders, which is to increase firm value through proper investments. The expropriation hypothesis predicts that managers will expropriate firm assets for their own benefits when they control the firm. Most research has found a non-linear relationship between firm ownership concentration and firm value (Fauver, Houston et al. 2003). At ownership level of less than 10%, convergence-of-interest hypothesis appears to hold, neutral relationship between 10% and 30%, and expropriation hypothesis to hold with shareholding above 30%.

Agency problem is expected to be less pronounced under certain circumstances. When there are non-management majority owners in the form of external blockholders like institutional investors or external majority shareholders, agency problem is expected to be less pronounced because the cost of monitoring management and firm performance are lowered when the share ownership is concentrated and ineffective management has a larger negative impact on concentrated owners than normal diverse owners (Lins 2003). Research on ownership in the emerging markets also found that cash flow rights and voting rights can divert and this diversion can affect how firms are managed (Claessens, Djankov et al. 2000; Claessens, Djankov et al. 2002).

We have use the closely held shares information from the Worldscope database to determine the effects of ownership concentration on firm value. Two sets of ownership concentration scale is used, the continuous and discrete scale. The continuous scale ownership concentration measurement is the percentage of shares that is being held by related persons ("ShCloPer"). The discrete scale ownership concentration measurement separates the sample into two subsamples with the medium insider ownership level as the dividing line. Firms with insider ownership level above the medium are considered high ownership level ("ShCloPerH").

The regression equations for the continuous and discrete scale of ownership concentration measurement are:

$$\begin{aligned} InEFV = {} & a + b_1\,DIVERS + b_2\,MPI + b_3\,DIVERSMPI + b_4\,ShCloPer \\ & + b_5\,FirmSize + b_6\,FinLev + b_7\,GrowOpp + b_8\,Profit \\ & + b_9\,MktDum_1 + b_{10}\,MktDum_2 + b_{11}\,MktDum_3 \\ & + b_{12}\,MktDum_4 + b_{13}\,MktDum_5 + b_{14}\,MktDum_6 \\ & + b_{15}\,MktDum_7 + b_{16}\,MktDum_8 + b_{17}\,MktDum_9 + \varepsilon \end{aligned}$$

$$\begin{aligned} InEFV = {} & a + b_1\,DIVERS + b_2\,MPI + b_3\,DIVERSMPI + b_4\,ShCloPerH \\ & + b_5\,FirmSize + b_6\,FinLev + b_7\,GrowOpp + b_8\,Profit \\ & + b_9\,MktDum_1 + b_{10}\,MktDum_2 + b_{10}\,MktDum_3 \\ & + b_{12}\,MktDum_4 + b_{13}\,MktDum_5 + b_{14}\,MktDum_6 \\ & + b_{15}\,MktDum_7 + b_{16}\,MktDum_8 + b_{17}\,MktDum_9 + \varepsilon \end{aligned}$$

The regression results with ShCloPer and ShCloPerH are included in Table 12 above. We found statistically insignificant relationship between firm ownership and excess firm value in both the continuous and discrete

measurement of firm ownership. The effect of DIVERS, MPI, and DIVERSMPI on excess firm value is very similar to the findings of the previous results. While ownership data from the Worldscope database provides insider ownership and management information, the information is inadequate to unlock the veils of pyramid structures and indirect shareholdings that are commonly found in the sample markets. The use of holding companies, the pyramid method of corporation shareholdings for indirect control, and use of trust for large block of shareholdings make ownership information opaque. In Section 7.5 Suggestions for Future Research we recommend the incorporation of more detailed ownership information in the analysis in order to take into account the full effects of ownership on firm values in the context of diversification and market power.

5.3.4 Growth of Local Markets

Emerging markets generally have much smaller potential markets due to a smaller pool of customers. As firms grow, the incremental costs of gaining additional market share become higher. Firms might find that growth and profitability can be achieved more cost effectively if they diversify into other industries or other geographical locations. Maksimovic and Phillips (2002) discussed firms' tendency to diversify into other industries as its growth within its own industry diminishes. Hyland (1999) also investigated firms that buy growth in areas outside of where they are currently operating in order to grow or to maintain their current status. Comanor (1967), Lewis (1983), and Riordan (1998) also discussed the benefits to firms of increased market power

through preemptive vertical and horizontal integration and diversification. The lower the segment growth, the higher excess firm value that can result from diversification. Growth rate of the local segment ("SaleGrow") is proxied by changes in total sales of the firm from the previous year. We have prepared interactive terms using sales growth and diversification, market power, and the interaction between diversification and market power ("DIVERSSaGr," "MPISaGr," and "DIVMPISaGr" respectively) and they are defined as:

$$DIVERSSaGr = 1 / (SaleGrow \times DIVERS)$$

$$MPISaGr = 1 / (SaleGrow) \times MPI$$

$$DIVMPISaGr = 1 / (SaleGrow) \times DIVERSMPI$$

For DIVERSSaGr, we are testing for lower growth rate and diversification being associated with higher excess firm values. As we expect low sales growth and low value of DIVERS being associated with higher excess firm values, we used the reciprocal of the product of SaleGrow and DIVERS for the analysis. For MPISaGr and DIVMPISaGr, we expect low growth rate and high market power and high interactive term to be associated with higher excess firm values; therefore, we used the product of the reciprocal of SaleGrow and MPI and DIVERSMPI for the analysis.

The regression equation is:

$$\begin{aligned} lnEFV = {} & a + b_1\,DIVERS + b_2\,MPI + b_3\,DIVERSMPI \\ & + b_4\,DIVERSSaGr + b_5\,MPISaGr + b_6\,DIVMPISaGr \\ & + b_7\,FirmSize + b_8\,FinLev + b_9\,GrowOpp + b_{10}\,Profit \\ & + b_{11}\,MktDum_1 + b_{12}\,MktDum_2 + b_{13}\,MktDum_3 \\ & + b_{14}\,MktDum_4 + b_{15}\,MktDum_5 + b_{16}\,MktDum_6 \\ & + b_{17}\,MktDum_7 + b_{18}\,MktDum_8 + b_{19}\,MktDum_9 + \varepsilon \end{aligned}$$

Table 12 above provides the regression results using DIVERSSaGr, MPISaGr and DIVMPISaGr. Sales growth is found to have very minimal and statistically insignificant interactive effects with diversification and market power on excess firm values. We hypothesize that although limited growth is a good reason for the pursue of a diversification strategy, it does not play a major role as an explanatory variable based on our sample firms. Our use of cross-sectional data based on one year could also render the change in total sales less meaningful because it could be affected by other short term effects.

5.3.5 Manufacturing And Non-Manufacturing Industries

Villalonga (2004a) and Schoar (2002) hypothesized that diversification affects industry segments differently when they found that manufacturing firms derive lower benefits from diversification than non-manufacturing industries because manufacturing industries experienced higher discount and lower premium. Manufacturing firms might be more capital intensive and the manufacturing process more systematic such that synergistic benefits are more difficult to derive. In terms of market power, non-manufacturing firms might also derive

more benefits from having market power because they can use it to explore other diverse business opportunities. To determine the effects of diversification and market power on excess firm values for non-manufacturing firms, we used control variables identifying non-manufacturing firms ("NManDum") as interactive terms in the regression analysis:

$$DIVERSNMan = (1 - DIVERS) * NManDum$$

$$MPINMan = MPI * NManDum$$

$$DIVMPINMan = DIVERSMPI * NManDum$$

We would like to determine if non-manufacturing firms can derive higher benefits from diversification and market power, so we use the reciprocal of DIVERS with NManDum. For the interactive term with DIVERSMPI, we would like to determine if diversification and market power is associated with higher excess firm value for non-manufacturing firms. While DIVERSNMan, MPINMan, and DIVMPINMan will capture the effects of diversification and market power on excess firm value for non-manufacturing firms, DIVERS, MPI, and DIVERSMPI will capture the effects of diversification and market power on excess firm value for manufacturing firms.

The regression equations for non-manufacturing firms and manufacturing firms are:

$$\begin{aligned} InEFV = {} & a + b_1\, DIVERS + b_2\, MPI + b_3\, DIVERSMPI \\ & + b_4\, DIVERSNMan + b_5\, MPINMan + b_6\, DIVMPINMan \\ & + b_7\, FirmSize + b_8\, FinLev + b_9\, GrowOpp + b_{10}\, Profit \\ & + b_{11}\, MktDum_1 + b_{12}\, MktDum_2 + b_{13}\, MktDum_3 \\ & + b_{14}\, MktDum_4 + b_{15}\, MktDum_5 + b_{16}\, MktDum_6 \\ & + b_{17}\, MktDum_7 + b_{18}\, MktDum_8 + b_{19}\, MktDum_9 + \varepsilon \end{aligned}$$

Table 12 above provides the regression results using control variables to identify non-manufacturing firms. Contrary to the findings of Villalonga (2004a), we found that diversification is significantly associated with lower excess firm value for non-manufacturing firms; that is, being focused is significantly associated with higher excess firm value for non-manufacturing firms. Market power and the interactive effect of diversification and market power have insignificant effects on excess firm value for non-manufacturing firms. For manufacturing firms, diversification and market power independently do not have significant effects on excess firm value. However, the interactive term of diversification and market power is significantly associated with higher excess firm value. We hypothesize that manufacturing firms that diversify are able to achieve economies of scale and scope to an extent that they can use their larger size and market power to extract better terms from their suppliers and customers, resulting in the significant association of the interactive term and excess firm value.

CHAPTER 6: ROBUSTNESS TESTS

Robustness tests are used to verify the results of the statistical analysis by checking if variables are internally valid (internal validity), plausible explanatory independent variables are not missed, and results are generalizable to other firms outside of the firm data set (external validity).

The following robustness tests are performed in this section: (a) increase of minimum firm size in terms of total assets from US$20 million to US$40 million, (b) use of 2 digit SIC category for firm imputed value, diversification and market power calculation, and (c) isolate differences in consolidation requirements between markets by excluding firms that might have consolidation issues as shown in their financial reporting.

6.1 HIGHER MINIMUM FIRM SIZE

In most research studies on diversification, researchers have found that the medium and mean excess firm values are quite different, meaning that there is skewness in the sample. In addition, both Berger and Ofek (1995) and Denis, Denis et al. (1997) found positive excess firm value when using the medium multipliers but slight negative firm value when using the mean multipliers. These findings suggest that there can be small numbers of outliers on the high side to skew the mean value upwards and hence producing a negative excess value. It also means that there can be relatively many firms

with low value when the medium value is used as that would skew the medium value downwards.

More significantly, this skewness in firm characteristics has produced some interesting but contrasting results. Denis, Denis et al. (2002) found discount of 20% for industrial diversification, 18% for global diversification, and 32% for both industrial and global diversification while Bodnar, Tang et al. (2003) found a diversification premium of 3.5% using a similar sample of firms. Bodnar, Tang et al. (2003) found that the diversification discounts became a diversification premium when firms with total of assets of less than US$40 million are excluded and total sales are used as proxy for firm size instead of total assets. Bodnar, Tang et al. (2003) hypothesized that a lower minimum firm size will include too many small firms of which many might not be internationally diversified and distorts the relative valuation measures. Based on this observation, we excluded firms with total assets of less than US$40 million in this robustness test. When firms with total firm size under US$40 million are excluded from the sample, 300 firms are excluded and the total number of firms is reduced to 1,518 from 1,818. Table 13 below shows the results of the multivariate analysis and they are very similar to the results of the earlier sample.

Table 13 Regression Analysis Using Higher Firm Size

The table below provides the results of the regression analysis using a minimum firm size of US$40 million in total assets. Decompositional analysis is used to segregate the results of the regression analysis. lnEFV is the dependent variable in the regression analysis. All numbers are rounded.

			Decompositional Analysis – Minimum of US$40 million							
			Effects of diversification		Effects of market power			Effects of diversification and market power		
	Min US$20mm	Min US$40mm (Reg 13)	All firms (Reg 14)	Multi-segment (Reg 15)	Single segment (Reg 16)	Multi-segment (Reg 17)	All firms (Reg 18)	Multi-segment (Reg 19)	Multi-segment (Reg 20)	All firms (Reg 13)
Intercept	-0.118 (0.340)	-0.036 (0.798)	-0.063 (0.646)	0.010 (0.969)	0.331 (0.010)	0.156 (0.468)	0.225 (0.039)	0.229 (0.362)	0.218 (0.388)	-0.036 (0.798)
DIVERS	0.280 (0.001)	0.311 (0.001)	0.257 (0.005)	-0.087 (0.661)				-0.110 (0.573)	-0.083 (0.681)	0.311 (0.001)
MPI	-2.177 (0.166)	-2.374 (0.134)			0.830 (0.323)	8.579 (0.000)	1.860 (0.021)	8.617 (0.000)	6.459 (0.160)	-2.374 (0.134)
DIVERSMPI / Interactive	3.409 (0.003)	3.434 (0.003)							0.932 (0.592)	3.434 (0.003)
Firm Control										
FirmSize	-0.177 (0.000)	-0.175 (0.000)	-0.155 (0.000)	-0.131 (0.000)	-0.186 (0.000)	-0.183 (0.000)	-0.168 (0.000)	-0.185 (0.000)	-0.185 (0.000)	-0.175 (0.000)
FinLev	0.918 (0.000)	0.928 (0.000)	0.924 (0.000)	0.971 (0.000)	0.912 (0.000)	0.983 (0.000)	0.903 (0.000)	0.975 (0.000)	0.977 (0.000)	0.928 (0.000)
GrowOpp	0.816 (0.000)	0.820 (0.000)	0.828 (0.000)	1.198 (0.000)	0.560 (0.000)	1.186 (0.000)	0.829 (0.000)	1.184 (0.000)	1.184 (0.000)	0.820 (0.000)
Profit	0.161 (0.034)	0.143 (0.098)	0.137 (0.114)	0.078 (0.563)	0.192 (0.092)	0.119 (0.375)	0.155 (0.072)	0.120 (0.371)	0.123 (0.358)	0.143 (0.098)
MktDum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,818	1,518	1,518	589	929	589	1,518	589	589	1,518
R^2	0.253	0.267	0.261	0.298	0.273	0.315	0.260	0.316	0.316	0.267
F-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of diversification based on segment Herfindahl index
MPI = Market Power Index
DIVERSMPI = interactive term of DIVERS and MPI
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales
MktDum = use of market control variables

Reg 13 = regression analysis using diversification, market power, and interactive term with all firms
Reg 14 = effects of diversification with all firms
Reg 15 = effects of diversification with multi-segment firms only
Reg 16 = effects of market power with single segment firms only
Reg 17 = effects of market power with multi-segment firms only
Reg 18 = effects of market power with all firms
Reg 19 = effects of diversification and market power with multi-segment firms only
Reg 20 = effects of diversification and market power and their interaction with multi-segment firms only

Decomposition analysis is used to evaluate the effects of diversification and market power on this data sample of firms with total assets of over US$40 million and the results are provided in Table 13 above. While diversification is associated with lower excess firm value for the whole sample, the relationship is positive but statistically insignificant when only multi-segment firms are used. Market power is found to be positively associated with excess firm value, and the association is strong and significant with multi-segment firms only.

The combined effects of diversification and market power are very similar to the sample of firms with total sales of over US$20 million. Our interpretation of our earlier findings also applies here in that single segment firms have higher excess firm values than multi-segment firms and there is a v-shaped relationship between diversification and excess firm value. In addition, we found that firms that diversify and leverage their market power to new or existing segments are associated with higher excess firm value.

6.2 TWO DIGIT SIC CLASSIFICATION

The sales multiplier and the multivariate analysis classified industries based on 3 digit SIC categories and firm segments under a different 3 digit SIC code are considered different segment. For robustness test, a 2 digit SIC classification is used for the sales multiplier calculation, diversification and market power measurements. At the 3 digit SIC level, many SIC categories did not have sales multiplier as there were less than 3 firms in the categories and there were inadequate firms available to determine the median value for the sales multiplier. At the 2 digit SIC level, the sample size increased from 1,818 firms to 2,309 firms because many previously excluded firms are now included as sales multipliers for all their segments are now available. On the downside, the shortcoming of using 2 digit SIC classification is the risk of including many unrelated or barely related industries into the same SIC category and assuming that they are the same type of industries. Details of the SIC categories is provided in Appendix II Standard Industrial Classification

Code. Table 14 below provides the results of the regression analysis using 2 digit SIC categories.

Table 14 Regression Results Using Two Digit SIC Categories

The table below provides the results of the regression analysis using SIC classification at the 2 digit level. Decompositional analysis is used to segregate the results of the regression analysis. lnEFV is the dependent variable in the regression analysis. All numbers are rounded.

			Decompositional Analysis – 2 Digit SIC Level							
			Effects of diversification		Effects of market power			Effects of diversification and market power		
	3 digit SIC	2 digit SIC (Reg 21)	All firms (Reg 22)	Multi-segment (Reg 23)	Single segment (Reg 24)	Multi-segment (Reg 25)	All firms (Reg 26)	Multi-segment (Reg 27)	Multi-segment (Reg 28)	All firms (Reg 21)
Intercept	-0.118 (0.340)	-0.009 (0.934)	-0.023 (0.836)	0.047 (0.785)	0.243 (0.014)	0.024 (0.873)	0.156 (0.053)	0.058 (0.737)	0.058 (0.738)	-0.009 (0.934)
DIVERS	0.280 (0.001)	0.177 (0.026)	0.171 (0.029)	-0.046 (0.708)				-0.047 (0.702)	-0.040 (0.753)	0.177 (0.026)
MPI	-2.177 (0.166)	10.472 (0.322)			2.507 (0.151)	2.697 (0.483)	2.750 (0.090)	2.713 (0.480)	6.857 (0.621)	10.472 (0.322)
DIVERSMPI / Interactive	3.409 (0.003)	-8.239 (0.456)							-5.800 (0.756)	-8.239 (0.456)
Firm Control										
FirmSize	-0.177 (0.000)	-0.191 (0.000)	-0.185 (0.000)	-0.156 (0.000)	-0.216 (0.000)	-0.160 (0.000)	-0.190 (0.000)	-0.160 (0.000)	-0.160 (0.000)	-0.191 (0.000)
FinLev	0.918 (0.000)	0.976 (0.000)	0.972 (0.000)	0.924 (0.000)	1.026 (0.000)	0.931 (0.000)	0.960 (0.000)	0.928 (0.000)	0.928 (0.000)	0.976 (0.000)
GrowOpp	0.816 (0.000)	0.953 (0.000)	0.959 (0.000)	1.278 (0.000)	0.716 (0.000)	1.270 (0.000)	0.956 (0.000)	1.269 (0.000)	1.270 (0.000)	0.953 (0.000)
Profit	0.161 (0.034)	0.256 (0.000)	0.252 (0.000)	0.151 (0.144)	0.342 (0.000)	0.156 (0.132)	0.262 (0.007)	0.157 (0.131)	0.157 (0.131)	0.256 (0.000)
MktDum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,818	2,309	2,309	1,059	1,250	1,059	2,309	1,059	1,059	2,309
R^2	0.253	0.286	0.285	0.277	0.314	0.278	0.284	0.278	0.278	0.286
F-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of diversification based on segment Herfindahl index
MPI = Market Power Index
DIVERSMPI = interactive term of DIVERS and MPI
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales
MktDum = use of market control variables

Reg 21 = regression analysis using diversification, market power, and interactive term with all firms
Reg 22 = effects of diversification with all firms
Reg 23 = effects of diversification with multi-segment firms only
Reg 24 = effects of market power with single segment firms only
Reg 25 = effects of market power with multi-segment firms only
Reg 26 = effects of market power with all firms
Reg 27 = effects of diversification and market power with multi-segment firms only
Reg 28 = effects of diversification, market power, and interactive term with multi-segment firms only

Table 14 above provides the decomposition analysis of the multivariate analysis using two digit SIC categories. A similar v-shaped relationship is found between excess firm value and diversification in which single segment firms and highly diversified firms are associated with higher excess firm value. We have also found that market power is positively associated with higher

excess firm value; however, the effect is not as strong or as statistically significant as the earlier sample. Contrary to our earlier findings, we found negative association between excess firm value and the interaction term of diversification and market power, although at statistically insignificant levels. We hypothesize that most of the earlier observed associations between variables have became statistically insignificant within the two digit SIC context due to the inclusion of too many disparate industries within each SIC category.

6.3 CONSOLIDATION STANDARDS

Each market has their own set of accounting standards and reporting requirements. The differences in standards introduce an element of incompatibility to our valuation process since many of our input are based on accounting based financial information. Consolidation requirement is one of the differences between markets that might have a large impact on our analytics because a diversified firm might be shown as several single-segment firms if they are not required to consolidate their operations. To isolate the effects of consolidation standards between markets, we excluded firms that are not consolidated, firms that have a threshold level of investments in associated companies or minority interest income, and firms that have a threshold level of minority interest. For investments in associated companies, minority interest income, and minority interest, we have used an exclusion threshold of 10% of total sales or assets.

Consolidation standards can distort the sales multipliers in three ways. First, when consolidation is not required, the sales multipliers will be inflated. The sales multipliers will be inflated because the market value of the parents will include the value of their fractional ownership of the subsidiaries while the sales amounts do not include the subsidiaries' sales. This sales multiplier inflation will only affect the parent firms. In addition, the number of single segment firms will be inflated because subsidiaries that should be consolidated are not. Second, even if consolidation is required, partially-owned subsidiaries are not consolidated if certain ownership thresholds are not met. In this case, the sales multipliers will also be inflated. The sales multipliers will be inflated because the market value of the parents will include the value of their fractional ownership of the subsidiaries while the sales amounts do not include the subsidiaries' sales. Third, when consolidation is required and partially-owned subsidiaries are consolidated, the sales multipliers might still be affected. In this case, the sales multipliers will be deflated because while the market value of the parents will only include the value of their fraction ownership of the subsidiaries, 100% of the subsidiaries' sales are included as parents' sales. To account for differences in consolidation and reporting requirements in the three cases described above, we excluded firms with investments in associated companies or minority interest which is above 10% of total assets, and firms with minority interest income which is above 10% of total sales. The number of firms in the sample data set was reduced by 699 firms from 1,818 to 1,119 firms. Table 15 below provides the regression for this subset of firms.

Table 15 Regression Results With Consol10 Excluded

The table below provides the results of the regression analysis after exclusion of firms with over 10% of consolidated assets, minority interest, and minority income out of their respective totals. Decompositional analysis is used to segregate the results of the regression analysis. lnEFV is the dependent variable in the regression analysis. All numbers are rounded.

			Decompositional Analysis – 10% Consolidation Excluded							
			Effects of diversification		Effects of market power			Effects of diversification and market power		
	All firms	Excld 10% consolid (Reg 29)	All firms (Reg 30)	Multi-segment (Reg 31)	Single segment (Reg 32)	Multi-segment (Reg 33)	All firms (Reg 34)	Multi-segment (Reg 35)	Multi-segment (Reg 36)	All firms (Reg 29)
Intercept	-0.118 (0.340)	-0.095 (0.563)	-0.126 (0.433)	-0.060 (0.848)	0.101 (0.445)	-0.016 (0.955)	0.045 (0.698)	0.165 (0.607)	0.159 (0.622)	-0.095 (0.563)
DIVERS	0.280 (0.001)	0.158 (0.177)	0.130 (0.258)	-0.253 (0.315)				-0.281 (0.260)	-0.272 (0.289)	0.158 (0.177)
MPI	-2.177 (0.166)	-1.212 (0.476)			0.824 (0.350)	7.828 (0.005)	1.579 (0.066)	7.951 (0.004)	7.302 (0.175)	-1.212 (0.476)
DIVERSMPI / Interactive	3.409 (0.003)	2.379 (0.063)							0.283 (0.888)	2.379 (0.063)
Firm Control										
FirmSize	-0.177 (0.000)	-0.153 (0.000)	-0.137 (0.000)	-0.115 (0.000)	-0.157 (0.000)	-0.165 (0.000)	-0.150 (0.000)	-0.166 (0.000)	-0.166 (0.000)	-0.153 (0.000)
FinLev	0.918 (0.000)	0.905 (0.000)	0.899 (0.000)	0.857 (0.000)	0.891 (0.000)	0.886 (0.000)	0.892 (0.000)	0.860 (0.000)	0.861 (0.000)	0.905 (0.000)
GrowOpp	0.816 (0.000)	0.763 (0.000)	0.771 (0.000)	1.227 (0.000)	0.521 (0.000)	1.197 (0.000)	0.765 (0.000)	1.193 (0.000)	1.193 (0.000)	0.763 (0.000)
Profit	0.161 (0.034)	0.172 (0.057)	0.162 (0.074)	0.075 (0.620)	0.196 (0.087)	0.127 (0.399)	0.172 (0.057)	0.120 (0.428)	0.121 (0.425)	0.172 (0.057)
MktDum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,818	1,119	1,119	405	714	405	1,119	405	405	1,119
R^2	0.253	0.229	0.224	0.247	0.232	0.260	0.226	0.262	0.262	0.229
F-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of diversification based on segment Herfindahl index
MPI = Market Power Index
DIVERSMPI = interactive term of DIVERS and MPI
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales
MktDum = use of market control variables

Reg 29 = regression analysis using diversification, market power, and interactive term with all firms
Reg 30 = effects of diversification with all firms
Reg 31 = effects of diversification with multi-segment firms only
Reg 32 = effects of market power with single segment firms only
Reg 33 = effects of market power with multi-segment firms only
Reg 34 = effects of market power with all firms
Reg 35 = effects of diversification and market power with multi-segment firms only
Reg 36 = effects of diversification, market power, and their interaction with multi-segment firms

Table 15 above provides the results of the decompositional analysis. While diversification is found to have the same association with excess firm value as the earlier sample, they are all statistically insignificant indicating that its effects are much weaker. We hypothesize that the firms excluded in this robustness test on consolidation standards are the highly diversified multi-segment firms because they would most likely meet the exclusion criteria set for this test. The interactive term between diversification and market power is

positively associated with higher excess firm value, indicating multi-segment firms leveraging their market power to new or existing segments.

CHAPTER 7: DISCUSSIONS AND IMPLICATIONS

In this chapter, we will first discuss our findings of this research and our interpretation of the results. We will also discuss the strengths and the weaknesses of this research and the potential contributions that our findings can provide to the current pool of knowledge on the effects of diversification and market power on firm values. Finally, we will discuss potential future research that can build on the findings of this and previous studies to further our understanding of these topics.

7.1 DISCUSSION AND INTERPRETATION OF RESULTS

The purpose of this research is to gain further knowledge on the effects of diversification and market power on firm value within the context of the emerging markets in Asia Pacific. Previous research studies on developed markets have generally concluded that diversification reduces firm value as its costs outweigh its benefits. These costs include increased difficulty to manage, agency costs, and inefficient allocation of resources; while benefits include economies of scale and scope, synergistic benefits, and the provision of an internal capital market. Market power has not been as thoroughly researched as diversification, but it is generally thought to provide benefits to firm value.

Within the context of the emerging markets, there are more market inefficiencies and failures of which firms must overcome to succeed. We

hypothesize in this research that diversification and market power enables firms to more easily overcome these market inefficiencies and failures, and as a result, should provide firms with additional benefits which should increase firm value.

Using 1,818 public firms from ten emerging markets in Asia Pacific (China, Hong Kong, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand) extracted from the Worldscope database, we utilized the multiplier approach to determine the effects of diversification and market power on firm value. The multiplier approach was first used by Berger (1995) and the medium sales to capital ratio of single segment firms were used as valuation benchmarks for segments of the multi-segment firms. Using this sales multiplier, the theoretical values of the multi-segment firms are determined. The effects of diversification and market power can be determined by comparing the market value of multi-segment firms to their theoretical value. If the market value of multi-segment firm is higher than its theoretical value, it is assumed that diversification and market power have provided incremental value to this firm and hence there are more benefits than costs to this firm. On the other hand, if the market value of the firm is lower than its theoretical value, then it is assumed that it is caused by diversification and market power having higher costs than benefits to the firm.

Using the multiplier approach on our sample, we found a v-shaped relationship between diversification and excess firm value. Firms have higher excess firm value if they are single segment firms or if they are highly

diversified; firm value of multi-segment firms are generally lower than firm value of single segment firms, but this discount is reduced when multi-segment firms continue to diversify; hence, firms that are lightly diversified are associated with lower excess firm value. We also found a positive relationship between excess firm value and the interaction of diversification and market power. Firms that can leverage their market power to new or existing segments are associated with higher excess firm value.

We found that single segment firms are very different from multi-segment firms in our sample data set. The general finding is that diversified firms have lower excess firm value than single segment firms. However, the level of diversification does not affect excess firm value once a firm is diversified. We hypothesize that the discount found on multi-segment firms is not caused by the diversification but is a pre-condition for the strategic decision to diversify. We hypothesize that while successful single segment firms remain focused on their businesses, the less successful single segment firms turn to diversification as a strategy to increase firm value. The effect is two fold. First, the successful single segment firms that remain focused will skew the median sales multiplier upwards resulting in a build-in discount for multi-segment firms. Second, the less successful single segment firms that decide to diversify already carry a discount in their firm value even before they begin the diversification process. Multi-segment firms are also associated with lower excess firm value due to the potential issue of agency problem. As a result, higher excess firm value is associated with single segment while lower excess firm value is associated with multi-segment firms. However, the effect of

diversification on excess firm value changes once firms are diversified. We found that diversification is associated with higher excess firm value provided the firm is already multi-segmented. Hence, less successful single segment firms with lower excess firm value diversify as a strategic decision to search for opportunities in other segments. Initially, these firms will experience the greatest discount on excess firm value. But once these firms are diversified, excess firm values increase with increased diversification because the benefits outweighs the costs of diversification.

For market power, we found that excess firm value is positively associated with the interactive term between diversification and market power. We hypothesize that market power is increasingly beneficial for multi-segment firms as they diversify because they can leverage their market power over the new business segments.

7.2 STRENGTHS OF THIS RESEARCH STUDY

This research has several strengths. First, the use of the multiplier approach in the valuation of firms is one of the most utilized approach for the study of diversification. Second, we have utilized several measurements of market power to cover several perspectives with which market power is defined. Third, we have incorporated an interactive term of diversification and market power in our analysis to capture interactions between these two variables. Fourth, we use a decompositional analysis to segregate the effects of diversification

and market power for a better understanding of their effects on excess firm value.

7.3 LIMITATIONS OF THIS RESEARCH STUDY

This research study has two limitations. The first limitation relates to the availability and quality of the data. The second limitation relates to the validity of how the variables are measured.

The first limitation relates to the availability and quality of the data. Since the Worldscope database only provides information of publicly traded firms, private firms are not included (Lins and Servaes 2002). There are also potential problems with self-reporting, self-selection, timeliness, and survivor and selection bias issues as discussed in Chapter 3. The reporting requirements of each market are also different and some markets suffered a disproportional loss of firms from lack of data required for this research.

Information used for valuation purposes like the market value of debt is not readily available to determine total firm value. This might play a role in this research because many research studies have found that there is a transfer of wealth from equity holders to debt holders as a firm diversify because of lower default risk for the firm and vice versa (Parrino 1997; Mansi and Reeb 2002; Maxwell and Rao 2003; Billett, King et al. 2004). The use of book value of debt and preferred shares as proxies for their market value might

underestimate the total market values of the multi-segment firms resulting in a bias towards finding a discount.

Another limitation is our use of a cross-sectional sample might also introduce errors due to temporal effects of events that affect all firms in the region or in a market. For example, a fair amount of information on the firms in our sample is based on the 2002 fiscal year. This might introduce the effects of the 911 terrorist attack or the avian flu into the reported results of firms in our sample. A logical next step in future research of this type would be to expand the sample data set into a longitudinal data panel which would include more firm year observations of this set of firms. There are several benefits from the use of longitudinal data panel that can overcome some of the limitations in this search study. There will be more firm year observations available for each market for more meaningful market based statistical analysis. The issue of having regional events that affects all markets can be lessened. The use of longitudinal data panel can also reduce the problem of endogenuity because we would be able to investigate whether firms that diversify are different and trace events that lead to their decision to diversify.

Inability to differentiate the effects of ownership and divergence between cash flow and control rights on agency problem is another limitation of this research study. The nature and structure of ownership, and information on cash flow and control rights can be compiled to form another dimension to determine the ownership variable's interactive effects with diversification and market power on excess firm value.

The second limitation relates to the measurement of the dependent and independent variables. The variables include excess firm value, the level of diversification, and the level of market power.

Excess Firm Value. Excess firm value is determined using the multiplier approach which uses single segment firms as benchmarks to estimate the value of diversification to firm value. However, it assumes that multi-segment and single-segment firms are the same with similar investment opportunities, no comparative advantages between firms, similar ability to compete, same ability to exploit market opportunities, and that firm-specific organizational capital, assets, and managerial talents are the same across firms and industries. However, some research (Maksimovic and Phillips 2002) have found that firms are different before they start to diversify while others have found that there are measurement issues in determining the excess firm values of multi-segment firms. These new research have brought new perspectives as to the appropriateness of using single segment firms as valuation benchmarks for segments of multi-segment firms.

Level of Diversification. The measure of the level of diversification uses the Herfindahl index which uses industry classification based on the SIC categories. The use of SIC classification as measure of diversification might not be accurate because it cannot fully simulate the actual business environment in terms of vertical and horizontal integrations and synergistic effects (Nayyar 1992; Scharfstein 1998; Gertner, Powers et al. 2002). The use

of SIC classification to measure diversification might result in an under representation of diversified firms since SIC classification and segment information cannot distinguish a focused firm and a vertically integrated firm. The SIC categories are classified on a regional basis for the calculation of the multiplier and for the measurement of market power which assumes that the firms in our sample data set are the sole producers of their products globally. The total market for a segment is actually the global demand, and competition should include all firms globally that produces the same or substitute products. The firm value index calculation also assumes that industries are related if they are within the same 3 digit SIC level. However, segment classifications within the 3 digit SIC level might not really be related or similar.

Level of Market Power. The level of market power is measured by a segment and firm-adjusted Herfindahl index. While market share based measures are objective and are good proxies for market power, there might be intrigue relationships and conditions under which market power is exercised but not easily captured and measured by any type of market power measurement.

The measurement of the effects of diversification and market power can be under-estimated with the way firms diversify in many emerging markets in the Asia Pacific. Many firms use the equity carve-out approach to diversify in which segments become publicly listed while the parents retain control. Although the carved-out entities are classified as single segment firms for this

research, they do derive benefits from diversification and market power from their affiliation with the parents' groups.

7.4 CONTRIBUTIONS AND APPLICATIONS

We hope that this research can contribute to existing knowledge in several ways.

Contribution to Academic Knowledge. There is limited research on the effects of diversification and market power on firm value in the emerging markets, and the finding of these research are often contradictory or inconclusive. This research further explores these topics and contributes to the existing pool of knowledge.

Contribution to the Practice of Management. We hope to contribute to the practices of management with this research study by providing insights on how diversification and market power affect firm valuation in the emerging markets. For management of emerging market firms, we hope to shred some light on how diversification as a strategic alternative and the accrual of market power will affect firm values. For management of foreign firms, we hope that our findings can help them evaluate the built or buy decisions as they commence or expand operations in the Asia Pacific region.

Contribution to Equity Holders and Investment Management Professionals. We hope that our finding can provide insights to shareholders

and investment management professionals in their process of firm evaluation and valuation relating to the firms' decision to diversify.

Contribution to the Study of Market Power. While the world economies are becoming more integrated, many emerging markets are asked or forced to open their markets to the forces of the free market. While free markets can usually provide the most social and economic benefits in the long run, it could introduce instability into otherwise stable economies in the short term. Many economists and scholars are now advocating more orderly market changes to reduce the magnitude of the economic shocks from these changes. We hope that this research can contribute to the study of market power by shedding some advantageous light on this concept. Market power has been negatively associated with monopoly profits and uncompetitive behavior in the developed economies; however, market power can provide orderly systems for firms and individuals to overcome inherent market inefficiencies and failures in the emerging markets without which the economy might be operating at a lower level equilibrium of efficiency.

7.5 SUGGESTIONS FOR FUTURE RESEARCH

We suggest the following areas for future research.

Expansion of the Sample Selection Criteria. Future research can incorporate private firms in the analysis. Future research can also include firms from both the developed and emerging markets to highlight differences

in institutional structures and other environmental factors that these firms face. By expanding and incorporating firms from both markets, the excess firm value, the level of diversification, and the level of market power can be better measured because all relevant firms are included and a more realistic reflection of the business environment can be modeled. This research is also a cross-sectional study of firms and information can be skewed by one time firm, market, or even regional events which affect all firms in a market for that particular year. A longitudinal study can be devised to capture trends over time to overcome these potential weaknesses of a cross-sectional study.

Development of Better Measurement for Variables. Future research can incorporate better information to enable more in-depth analysis of the effects of diversification and market power on firm values. While the Worldscope database provides a relatively comprehensive database of information on firms, the analysis can be further improved if information from other sources can be incorporated. Geographical allocation of sales can be incorporated to determine how foreign sales affect firm valuation in the context of diversification and market power. More in-depth evaluation of firm operations can be used to provide better measurement on the level of diversification that can identify and measure vertical and horizontal diversification. If firm level data on operations and investments can be identified, then the relative investment ratio (RINV) and relative value-added (RVA) measures can be used to determine the quality of the investment allocation decisions within the firms. Changes to the quality of the allocation decision due to changes in the level of diversification or market power can be determined. A more

comprehensive and objective measurement of market power can be developed as input to the analysis as well.

Previous research has found that mergers and acquisitions activities happen in waves. Along similar lines, further research can evaluate if diversification in the emerging markets occurs when firms face a particular set of economic conditions. Alternatively, the economic condition that firms are facing can be incorporated into the analysis.

Incorporation of Ownership Information. While many previous research have found that large blockholders dominate ownership structure of firms outside developed markets (Shleifer and Vishny (1997), La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998), La Porta, Lopez-de-Silanes and Shleifer (1999), Claessens, Djankov, and Lang (2000), Denis and McConnell (2003)), this ownership relationship has only been summarily incorporated in this research in Section 5.3.3 Firm Ownership and Agency Problems. While the ownership data from the Worldscope database was used in this research, more detailed analysis needs to be performed to determine the actual ownership structure and relationship between firms in order to take into account the full effects of ownership on firm values within the context of diversification and market power.

Within the context of ownership information, the level of corporate governance at the firm and market level can also be incorporated into the analysis in

future research because corporate governance also plays a pivotal role in firm valuation.

APPENDIX

APPENDIX I REFOCUS THROUGH DIVESTITURES, EQUITY CARVE-OUTS, AND SPINOFFS

Generally, firms can refocus their operations through divestitures, equity carve-outs, and spinoff transactions. We will first provide some basic information on each type of transaction, then we will provide the reasons why spinoffs are the most commonly used type of transaction for the study of diversification.

Divestitures provide the parents a restructuring mechanism to transfer control of the assets or subsidiaries to other firms and raising cash for the parents without any issuance of public securities. Although reporting to the relevant regulatory authorities and disclosure to shareholders and the public might be made, the assets or the subsidiaries are sold to third parties through private negotiations that entail little public disclosures during the process. Divestitures are not commonly used for event studies because of the requirement to revalue assets during acquisitions and the full absorption of the acquired units into the new parent companies making it difficult for researchers to isolate the information of the divested segments. The full terms of the divestiture relevant for the research study might also not be fully disclosed.

In equity carve-outs, the parents generate cash through partial public sale of the subsidiaries' equity while retaining a controlling interest in the subsidiaries. There are potential benefits from improved efficiency in asset usage and alignment of interest for contracts, and equity carve-outs can also generate a permanent increase in public disclosure and reduction in information asymmetry. Slovin, Sushka et al. (1995) studied the share price reactions of rivals to divestitures, equity carve-outs, and spinoffs and found that the share

price reactions of rivals are negative only for equity carve-outs. Their results suggest that managers conduct equity carve-outs when they think that outside investors are likely to price the new shares higher than managers' perceived value. Equity carve-outs are not commonly used for event studies because of their relatively less frequent occurrences in the U.S. financial markets and the lack of control premium for the cash receipts from the sale.

In spinoffs, the parents transfer ownership of the subsidiaries, usually on a tax-free basis, to their existing shareholders on a pro-rata basis without any elements of external financing. Spinoffs create stand-alone public entities that are independent of the parent and induce a permanent increase in public disclosure. The spinoff transactions provide an excellent opportunity for the study of diversification and focus because the nature of the transaction makes it very suitable for this type of research. There is no cash involved, accounting rules disallow any revaluation so that measurement errors are reduced when comparing data, and shares of the subsidiary are distributed proportionally to existing shareholders (Daley, Mehrotra et al. 1997). Firms are also required to segregate the financial information of the spinoff unit in their financial statements before the actual spinoff itself, and the spunoff entities will have their own financial statements after the transaction because they are legally separate firms. Researchers can study the effects of the transaction by combining the financial statements of the parent firm and subsidiary post spinoff and comparing that to the financial statements prior to the spinoff.

APPENDIX II STANDARD INDUSTRIAL CLASSIFICATION CODE

The Standard Industrial Classification ("SIC") system was introduced in the 1930s to collect, aggregate, present, and analyze information of the U.S. economy. The SIC codes are four digit numerical codes assigned to business establishments to identify the primary business of the establishment. The first two digits of the code identify the major industry group, the third digit identifies the industry group, and the fourth digit identifies the industry.

In 1997, the Office of Management and Budget of the U.S. Government announced a new six digit system called the North American Industry Classification System (NAICS) which would strive for compatibility to include Canada and Mexico and the inclusion of new and emerging industries, services, and advanced technologies. Although the NAICS will replace the SIC code for governmental regulations and census reporting purposes, the SIC code are still being used in corporate and other filings and in non-U.S. based filings. As a result, the SIC codes are used in this research as the basis of industry classification determination.

Below is the list of SIC classification at the two digit level for information purposes. More details on the SIC code can be found at the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) website at http://www.osha.gov/pls/imis/sicsearch.html, and the full list of SIC code down to the four digit level can be found at http://www.window.state.tx.us/ecodata/sic1987.html. Information on the NAICS can be found at the NAICS website at http://www.naics.com/index.htm.

SIC code at the two digit level:

01 Agricultural Production Crops
02 Agricultural Production Livestock and Animal Specialties
07 Agricultural Services
08 Forestry
10 Metal Mining
12 Coal Mining
13 Oil and Gas Extraction
14 Mining and Quarrying of Nonmetallic Minerals, Except Fuels
15 Building Construction General Contractors and Operative
16 Heavy Construction Other Than Building Construction
17 Construction Special Trade Contractors
20 Food and Kindred Products
21 Tobacco Products
22 Textile Mill Products
23 Apparel and Other Finished Products Made From Fabrics
24 Lumber and Wood Products, Except Furniture
25 Furniture and Fixtures
26 Paper and Allied Products
27 Printing, Publishing, and Allied Industries
28 Chemicals and Allied Products
29 Petroleum Refining and Related Industries
30 Rubber and Miscellaneous Plastics Products
31 Leather and Leather Products
32 Stone, Clay, Glass, and Concrete Products
33 Primary Metal Industries
34 Fabricated Metal Products, Except Machinery and Transportation
35 Industrial and Commercial Machinery and Computer Equipment
36 Electronic and Other Electrical Equipment and Components,
37 Transportation Equipment
38 Measuring, Analyzing, and Controlling Instruments
39 Miscellaneous Manufacturing Industries
40 Railroad Transportation
41 Local and Suburban Transit and Interurban Highway Passenger
42 Motor Freight Transportation and Warehousing
43 United States Postal Service
44 Water Transportation
45 Transportation By Air
46 Pipelines, Except Natural Gas
47 Transportation Services
48 Communications
49 Electric, Gas, and Sanitary Services
50 Wholesale Trade-Durable Goods
51 Wholesale Trade-Non-Durable Goods
52 Building Materials, Hardware, Garden Supply, and Mobile Homes
53 General Merchandise Stores
54 Food Stores
55 Automotive Dealers and Gasoline Service Stations
56 Apparel and Accessory Stores

57 Home Furniture, Furnishings, and Equipment Stores
58 Eating and Drinking Places
59 Miscellaneous Retail
60 Depository Institutions
61 Non-Depository Credit Institutions
62 Security and Commodity Brokers, Dealers, Exchanges
63 Insurance Carriers
64 Insurance Agents, Brokers, and Service
65 Real Estate
67 Holding and Other Investment offices
70 Hotels, Rooming Houses, Camps, and Other Lodging Places
72 Personal Services
73 Business Services
75 Automotive Repair, Services, and Parking
76 Miscellaneous Repair Services
78 Motion Pictures
79 Amusement and Recreation Services
80 Health Services
81 Legal Services
82 Educational Services
83 Social Services
84 Museums, Art Galleries, and Botanical and Zoological Gardens
86 Membership Organizations
87 Engineering, Accounting, Research, Management
88 Private Households
89 Services, Not Elsewhere Classified
91 Executive, Legislative, and General Government, Except Finance
92 Justice, Public Order, and Safety
93 Public Finance, Taxation, and Monetary Policy
94 Administration of Human Resource Programs
95 Administration of Environmental Quality and Housing Programs
96 Administration of Economic Programs
97 National Security and International Affairs
99 Nonclassifiable Establishments

Campbell (1996) grouped the SIC classification into twelve similar industrial classification for evaluation of industry type for his research. This classification was subsequently used in other research to control for variations between industries. Table 16 below outlines the twelve classifications used.

Table 16 SIC Classification System Based on Campbell

Petroleum industry	13, 29
Finance / real estate industry	60-69
Consumer durables industry	24*, 25, 30, 36-37, 50, 55, 57
Basic industry	8*, 10, 12, 14, 26, 28, 33
Food / tobacco industry	1, 2*, 7*, 9*, 20, 21, 54
Construction industry	15-17, 32, 52
Capital goods industry	34-35, 38, 39*
Transportation industry	40-42, 44, 45, 47
Utilities industry	46, 48, 49
Textiles / trade industry	22-23, 31, 51, 53, 56, 59
Services industry	72-73, 75, 76*, 80, 81*, 82, 83*, 86*, 87*, 89, 92*, 99*
Leisure industry	27, 58, 70, 78-79, 84*

* added as not included in Campbell's SIC classification system

APPENDIX III DESCRIPTIVE STATISTICS BY COUNTRY

China

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	87	3.318	1.835	3.439	16.052	0.445	16.498	1.000	1.835	4.726
	Single	60	2.856	1.580	3.262	16.052	0.445	16.498	1.000	1.580	3.140
	Multi	27	4.346	3.195	3.657	12.809	0.530	13.339	1.189	3.195	6.406
	Diff		-1.490								
	Sig		0.076								
lnEFV	All	87	0.780	0.607	0.896	3.612	-0.809	2.803	0.000	0.607	1.553
	Single	60	0.642	0.454	0.848	3.612	-0.809	2.803	0.000	0.454	1.144
	Multi	27	1.086	1.161	0.941	3.225	-0.634	2.591	0.173	1.161	1.857
	Diff		-0.444								
	Sig		0.041								
DIVERS	All	87	0.876	1.000	0.195	0.647	0.353	1.000	0.800	1.000	1.000
	Single	60	0.992	1.000	0.021	0.094	0.906	1.000	1.000	1.000	1.000
	Multi	27	0.619	0.589	0.157	0.528	0.353	0.881	0.507	0.589	0.785
	Diff		0.373								
	Sig		0.000								
MPI	All	87	0.0139	0.0052	0.0352	0.2789	0.0001	0.2790	0.0013	0.0052	0.0109
	Single	60	0.0184	0.0074	0.0416	0.2788	0.0002	0.2790	0.0023	0.0074	0.0155
	Multi	27	0.0038	0.0017	0.0042	0.0143	0.0001	0.0143	0.0004	0.0017	0.0062
	Diff		0.0146								
	Sig		0.074								
DIVERSMPI	All	87	0.0149	0.0057	0.0355	0.2788	0.0001	0.2790	0.0017	0.0057	0.0140
	Single	60	0.0186	0.0074	0.0421	0.2788	0.0002	0.2790	0.0023	0.0074	0.0155
	Multi	27	0.0066	0.0038	0.0076	0.0291	0.0001	0.0292	0.0010	0.0038	0.0113
	Diff		0.0120								
	Sig		0.146								
Total Assets	All	87	726	350	1,003	5,944	39	5,983	167	350	820
	Single	60	799	424	1,052	5,943	40	5,983	208	424	878
	Multi	27	563	194	880	3,665	39	3,704	116	194	588
	Diff		236								
	Sig		0.281								
Total Sales	All	87	342	124	462	2,358	12	2,370	70	124	471
	Single	60	345	176	382	1,892	16	1,908	84	176	472
	Multi	27	333	74	612	2,358	12	2,370	44	74	133
	Diff		12								
	Sig		0.909								
FirmSize	All	87	5.064	4.820	1.272	5.252	2.519	7.771	4.245	4.820	6.154
	Single	60	5.253	5.172	1.155	4.798	2.755	7.554	4.427	5.172	6.158
	Multi	27	4.646	4.310	1.437	5.252	2.519	7.771	3.787	4.310	4.889
	Diff		0.607								
	Sig		0.060								
FinLev	All	87	0.262	0.265	0.151	0.630	0.000	0.630	0.149	0.265	0.367
	Single	60	0.268	0.291	0.154	0.630	0.000	0.630	0.151	0.291	0.354
	Multi	27	0.247	0.233	0.147	0.488	0.000	0.488	0.141	0.233	0.404
	Diff		0.021								
	Sig		0.534								
GrowOpp	All	87	0.202	0.088	0.290	1.635	0.000	1.635	0.038	0.088	0.222
	Single	60	0.178	0.118	0.201	1.037	0.000	1.037	0.041	0.118	0.212
	Multi	27	0.257	0.068	0.427	1.633	0.002	1.635	0.027	0.068	0.271
	Diff		-0.079								
	Sig		0.242								
Profit	All	87	0.081	0.084	0.302	2.148	-1.438	0.710	0.011	0.084	0.210
	Single	60	0.106	0.106	0.284	2.036	-1.326	0.710	0.021	0.106	0.255
	Multi	27	0.025	0.072	0.338	1.921	-1.438	0.483	-0.011	0.072	0.111
	Diff		0.081								
	Sig		0.246								

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Hong Kong

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	320	1.351	0.904	1.575	10.364	0.038	10.402	0.453	0.907	1.551
	Single	149	1.137	0.889	1.218	7.845	0.063	7.907	0.449	0.889	1.202
	Multi	171	1.537	0.936	1.813	10.364	0.038	10.402	0.453	0.936	1.708
	Diff		-0.400								
	Sig		0.023								
lnEFV	All	320	-0.170	-0.102	0.976	5.610	-3.268	2.342	-0.792	-0.102	0.439
	Single	149	-0.264	-0.117	0.897	4.835	-2.768	2.068	-.0800	-0.117	0.184
	Multi	171	-0.088	-0.066	1.036	5.610	-3.268	2.342	-0.793	-0.066	0.535
	Diff		-0.176								
	Sig		0.104								
DIVERS	All	320	0.778	0.876	0.234	0.824	0.176	1.000	0.574	0.876	1.000
	Single	149	0.987	1.000	0.027	0.099	0.901	1.000	0.998	1.000	1.000
	Multi	171	0.595	0.588	0.173	0.722	0.176	0.898	0.484	0.588	0.721
	Diff		0.392								
	Sig		0.000								
MPI	All	320	0.0084	0.0014	0.0285	0.4517	0.0000	0.4517	0.0003	0.0014	0.0062
	Single	149	0.0120	0.0027	0.0391	0.4517	0.0000	0.4517	0.0005	00027	0.0120
	Multi	171	0.0052	0.0010	0.0130	0.1069	0.0000	0.1069	0.0002	0.0010	0.0040
	Diff		0.0068								
	Sig		0.032								
DIVERSMPI	All	320	0.0112	0.0021	0.0368	0.4517	0.0000	0.4517	0.0004	0.0021	0.0085
	Single	149	0.0121	0.0027	0.0391	0.4517	0.0000	0.4517	0.0005	0.0027	0.0120
	Multi	171	0.0103	0.0018	0.0348	0.3912	0.0000	0.3912	0.0004	0.0018	0.0061
	Diff		0.0018								
	Sig		0.669								
Total Assets	All	320	684	119	3,400	55,598	20	55,618	58	119	380
	Single	149	305	107	727	6,661	20	6,681	50	107	272
	Multi	171	1,015	128	4,583	55,597	21	55,618	65	128	501
	Diff		-710								
	Sig		0.063								
Total Sales	All	320	251	85	626	7,877	3	7,880	33	85	205
	Single	149	196	98	288	1,775	5	1,780	41	98	217
	Multi	171	298	70	812	7,877	3	7,880	28	70	187
	Diff		-102								
	Sig		0.149								
FirmSize	All	320	4.471	4.439	1.366	7.850	1.123	8.972	3.495	4.439	5.323
	Single	149	4.562	4.586	1.214	5.926	1.558	7.484	3.717	4.586	5.379
	Multi	171	4.392	4.245	1.485	7.850	1.123	8.972	3.318	4.245	5.233
	Diff		0.170								
	Sig		0.269								
FinLev	All	320	0.193	0.168	0.168	0.917	0.000	0.917	0.056	0.168	0.286
	Single	149	0.188	0.148	0.173	0.879	0.000	0.879	0.059	0.148	0.275
	Multi	171	0.197	0.191	0.164	0.917	0.000	0.917	0.049	0.191	0.296
	Diff		-0.009								
	Sig		0.643								
GrowOpp	All	320	0.097	0.039	0.188	2.051	0.000	2.051	0.016	0.039	0.087
	Single	149	0.084	0.037	0.129	0.761	0.000	0.761	0.016	0.037	0.081
	Multi	171	0.109	0.043	0.227	2.051	0.000	2.051	0.015	0.043	0.090
	Diff		-0.025								
	Sig		0.235								
Profit	All	320	-0.053	0.029	0.355	2.642	-1.957	0.686	-0.115	0.029	0.107
	Single	149	-0.001	0.041	0.298	2.127	-1.441	0.686	-0.026	0.041	0.118
	Multi	171	-0.099	0.012	0.393	2.456	-1.957	0.499	-0.173	0.012	0.097
	Diff		0.098								
	Sig		0.014								

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India

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	105	1.249	0.928	0.945	3.890	0.077	3.968	0.613	0.928	1.687
	Single	69	1.316	0.929	1.003	3.890	0.077	3.968	0.631	0.929	1.687
	Multi	36	1.121	0.876	0.822	3.367	0.139	3.506	0.448	0.876	1.674
	Diff		0.195								
	Sig		0.289								
lnEFV	All	105	-0.061	-0.075	0.797	3.936	-2.558	1.378	-0.489	-0.075	0.523
	Single	69	-0.005	-0.074	0.792	3.936	-2.558	1.379	-0.461	-0.074	0.523
	Multi	36	-0.168	-0.132	0.807	3.227	-1.972	1.254	-0.804	-0.132	0.514
	Diff		0.163								
	Sig		0.323								
DIVERS	All	105	0.860	1.000	0.205	0.640	0.360	1.000	0.720	1.000	1.000
	Single	69	0.989	1.000	0.026	0.098	0.902	1.000	1.000	1.000	1.000
	Multi	36	0.611	0.551	0.164	0.533	0.360	0.893	0.476	0.551	0.724
	Diff		0.378								
	Sig		0.000								
MPI	All	105	0.0061	0.0013	0.0185	0.1617	0.0000	0.1617	0.0004	0.0013	0.0041
	Single	69	0.0043	0.0011	0.0106	0.0782	0.0000	0.0783	0.0004	0.0011	0.0041
	Multi	36	0.0096	0.0019	0.0279	0.1617	0.0000	0.1617	0.0006	0.0019	0.0043
	Diff		-0.0053								
	Sig		0.164								
DIVERSMPI	All	105	0.0084	0.0015	0.0303	0.2914	0.0000	0.2914	0.0005	0.0015	0.0050
	Single	69	0.0044	0.0011	0.0106	0.0782	0.0000	0.0783	0.0004	0.0011	0.0041
	Multi	36	0.0161	0.0031	0.0492	0.2914	0.0001	0.2914	0.0009	0.0031	0.0077
	Diff		-0.0117								
	Sig		0.060								
Total Assets	All	105	425	134	1,226	11,603	20	11,623	65	134	314
	Single	69	524	136	1,494	11,600	23	11,623	68	136	371
	Multi	36	237	120	274	1,055	20	1,075	62	120	253
	Diff		287								
	Sig		0.257								
Total Sales	All	105	279	101	866	8,582	4	8,586	47	101	239
	Single	69	346	103	1,060	8,580	6	8,586	47	103	262
	Multi	36	150	98	141	555	4	559	43	98	215
	Diff		196								
	Sig		0.274								
FirmSize	All	105	4.684	4.616	1.230	7.636	1.422	9.058	3.841	4.616	5.476
	Single	69	4.757	4.634	1.302	7.267	1.790	9.058	3.858	4.634	5.567
	Multi	36	4.545	4.585	1.083	4.904	1.422	6.326	3.763	4.585	5.367
	Diff		0.212								
	Sig		0.379								
FinLev	All	105	0.288	0.267	0.237	0.845	0.000	0.845	0.052	0.267	0.485
	Single	69	0.284	0.253	0.247	0.845	0.000	0.845	0.024	0.253	0.491
	Multi	36	0.295	0.292	0.219	0.764	0.000	0.764	0.085	0.295	0.466
	Diff		-0.011								
	Sig		0.819								
GrowOpp	All	105	0.104	0.036	0.259	1.994	0.000	1.994	0.010	0.036	0.087
	Single	69	0.101	0.036	0.214	1.517	0.000	1.517	0.011	0.036	0.090
	Multi	36	0.109	0.032	0.332	1.994	0.000	1.994	0.008	0.032	0.058
	Diff		-0.008								
	Sig		0.894								
Profit	All	105	0.082	0.081	0.153	1.231	-0.785	0.447	0.028	0.081	0.167
	Single	69	0.105	0.100	0.136	0.739	-0.292	0.447	0.050	0.100	0.185
	Multi	36	0.038	0.051	0.176	1.144	-0.785	0.360	-0.006	0.051	0.128
	Diff		0.067								
	Sig		0.052								

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Indonesia

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	90	1.393	0.954	1.316	6.071	0.119	6.190	0.473	0.954	1.907
	Single	50	1.331	0.873	1.330	6.071	0.119	6.190	0.471	0.873	1.589
	Multi	40	1.470	0.993	1.312	5.558	0.141	5.699	0.485	0.993	2.205
	Diff		-0.139								
	Sig		0.619								
lnEFV	All	90	-0.065	-0.047	0.917	3.955	-2.132	1.823	-0.750	-0.047	0.644
	Single	50	-0.106	-0.136	0.891	3.955	-2.132	1.823	-0.754	-0.136	0.463
	Multi	40	-0.012	-0.007	0.959	3.700	-1.960	1.740	-0.731	-0.007	0.791
	Diff		-0.094								
	Sig		0.635								
DIVERS	All	90	0.811	0.948	0.226	0.667	0.333	1.000	0.577	0.948	1.000
	Single	50	0.991	1.000	0.020	0.066	0.934	1.000	1.000	1.000	1.000
	Multi	40	0.586	0.553	0.149	0.556	0.333	0.890	0.487	0.553	0.709
	Diff		0.405								
	Sig		0.000								
MPI	All	90	0.0074	0.0017	0.0183	0.1370	0.0000	0.1370	0.0004	0.0017	0.0067
	Single	50	0.0081	0.0021	0.0210	0.1370	0.0000	0.1370	0.0006	0.0021	0.0077
	Multi	40	0.0065	0.0013	0.0144	0.0726	0.0000	0.0726	0.0002	0.0013	0.0064
	Diff		0.0016								
	Sig		0.683								
DIVERSMPI	All	90	0.0095	0.0022	0.0221	0.1370	0.0000	0.1370	0.0005	0.0022	0.0081
	Single	50	0.0082	0.0021	0.0213	0.1370	0.0000	0.1370	0.0006	0.0021	0.0077
	Multi	40	0.0111	0.0025	0.0233	0.1277	0.0000	0.1227	0.0004	0.0025	0.0101
	Diff		-0.0029								
	Sig		0.547								
Total Assets	All	90	333	86	779	5,801	21	5,821	43	86	258
	Single	50	228	76	464	2,221	21	2,242	35	76	165
	Multi	40	464	115	1,041	5,798	23	5,821	55	115	466
	Diff		-236								
	Sig		0.155								
Total Sales	All	90	167	66	275	1,607	6	1,613	32	66	169
	Single	50	136	62	235	1,400	7	1,407	28	62	119
	Multi	40	205	109	316	1,607	6	1,613	34	109	199
	Diff		-69								
	Sig		0.254								
FirmSize	All	90	4.331	4.184	1.219	5.544	1.841	7.386	3.476	4.184	5.127
	Single	50	4.183	4.133	1.123	5.335	1.914	7.249	3.316	4.133	4.781
	Multi	40	4.516	4.690	1.320	5.544	1.841	7.386	3.537	4.690	5.290
	Diff		-0.333								
	Sig		0.207								
FinLev	All	90	0.437	0.392	0.382	1.649	0.000	1.649	0.083	0.392	0.693
	Single	50	0.362	0.303	0.360	1.383	0.000	1.383	0.036	0.303	0.535
	Multi	40	0.531	0.473	0.391	1.646	0.004	1.649	0.238	0.473	0.748
	Diff		-0.169								
	Sig		0.038								
GrowOpp	All	90	0.075	0.041	0.100	0.618	0.001	0.619	0.019	0.041	0.088
	Single	50	0.087	0.041	0.124	0.618	0.001	0.619	0.019	0.041	0.088
	Multi	40	0.060	0.041	0.055	0.221	0.001	0.223	0.019	0.041	0.093
	Diff		0.027								
	Sig		0.200								
Profit	All	90	0.091	0.085	0.192	1.581	-1.064	0.517	0.031	0.085	0.183
	Single	50	0.128	0.112	0.145	0.762	-0.277	0.485	0.036	0.112	0.231
	Multi	40	0.045	0.066	0.233	1.581	-1.064	0.517	0.007	0.066	0.120
	Diff		0.083								
	Sig		0.054								

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Korea

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	337	0.948	0.723	1.068	13.505	0.030	13.535	0.471	0.723	1.099
	Single	262	1.005	0.765	1.139	13.424	0.111	13.535	0.517	0.765	1.116
	Multi	75	0.747	0.569	0.740	5.030	0.030	5.060	0.335	0.569	0.865
	Diff		0.258								
	Sig		0.021								
lnEFV	All	337	-0.352	-0.324	0.754	6.125	-3.520	2.605	-0.753	-0.324	0.095
	Single	262	-0.268	-0.268	0.693	4.807	-2.202	2.605	-0.660	-0.268	0.109
	Multi	75	-0.644	-0.564	0.881	5.141	-3.520	1.621	-1.095	-0.564	-0.145
	Diff		0.376								
	Sig		0.000								
DIVERS	All	337	0.904	1.000	0.193	0.747	0.253	1.000	1.000	1.000	1.000
	Single	262	0.999	1.000	0.005	0.057	0.943	1.000	1.000	1.000	1.000
	Multi	75	0.572	0.539	0.155	0.626	0.253	0.879	0.480	0.539	0.691
	Diff		0.427								
	Sig		0.000								
MPI	All	337	0.0104	0.0017	0.0292	0.3305	0.0000	0.3305	0.0004	0.0017	0.0074
	Single	262	0.0115	0.0019	0.0306	0.3305	0.0000	0.3305	0.0004	0.0019	0.0087
	Multi	75	0.0062	0.0013	0.0235	0.2020	0.0001	0.2021	0.0004	0.0013	0.0050
	Diff		0.0053								
	Sig		0.167								
DIVERSMPI	All	337	0.0127	0.0020	0.0510	0.7997	0.0000	0.7997	0.0005	0.0020	0.0089
	Single	262	0.0115	0.0019	0.0306	0.3305	0.0000	0.3305	0.0004	0.0019	0.0087
	Multi	75	0.0169	0.0025	0.0920	0.7996	0.0001	0.7997	0.0007	0.0025	0.0099
	Diff		-0.0054								
	Sig		0.620								
Total Assets	All	337	720	120	3,789	52,698	21	52,719	62	120	290
	Single	262	724	139	3,562	52,698	21	52,719	67	139	340
	Multi	75	704	94	4,519	39,183	24	39,207	53	94	161
	Diff		20								
	Sig		0.972								
Total Sales	All	337	517	110	2,314	35,293	4	35,297	50	110	244
	Single	262	494	126	1,486	15,367	4	15,371	52	126	270
	Multi	75	599	78	4,064	35,286	12	35,297	44	78	149
	Diff		-105								
	Sig		0.827								
FirmSize	All	337	4.816	4.699	1.367	9.073	1.398	10.472	3.904	4.699	5.496
	Single	262	4.913	4.839	1.405	8.242	1.398	9.640	3.948	4.839	5.597
	Multi	75	4.481	4.360	1.174	8.000	2.471	10.472	3.793	4.360	5.006
	Diff		0.432								
	Sig		0.016								
FinLev	All	337	0.330	0.295	0.271	1.832	0.000	1.832	0.140	0.295	0.461
	Single	262	0.324	0.291	0.256	1.832	0.000	1.832	0.140	0.291	0.468
	Multi	75	0.351	0.304	0.317	1.755	0.000	1.755	0.131	0.304	0.448
	Diff		-0.027								
	Sig		0.500								
GrowOpp	All	337	0.059	0.030	0.094	1.051	0.000	1.051	0.012	0.030	0.067
	Single	262	0.060	0.031	0.095	1.051	0.000	1.051	0.013	0.031	0.068
	Multi	75	0.054	0.024	0.090	0.612	0.000	0.612	0.012	0.024	0.062
	Diff		0.006								
	Sig		0.645								
Profit	All	337	0.050	0.051	0.122	1.439	-0.783	0.656	0.020	0.051	0.101
	Single	262	0.058	0.054	0.122	1.439	-0.783	0.656	0.025	0.054	0.106
	Multi	75	0.024	0.050	0.122	0.780	-0.490	0.290	-0.005	0.050	0.086
	Diff		0.034								
	Sig		0.038								

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Malaysia

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	283	1.192	0.992	0.952	7.653	0.067	7.720	0.591	0.992	1.485
	Single	169	1.328	1.042	1.033	7.653	0.067	7.720	0.755	1.042	1.588
	Multi	114	0.990	0.705	0.779	4.372	0.163	4.535	0.471	0.705	1.278
	Diff		0.338								
	Sig		0.002								
lnEFV	All	283	-0.079	-0.008	0.732	4.747	-2.703	2.044	-0.526	-0.008	0.396
	Single	169	0.047	0.041	0.720	4.747	-2.703	2.044	-0.281	0.041	0.462
	Multi	114	-0.265	-0.349	0.713	3.324	-1.812	1.512	-0.754	-0.349	0.246
	Diff		0.312								
	Sig		0.000								
DIVERS	All	283	0.836	0.986	0.217	0.738	0.262	1.000	0.669	0.986	1.000
	Single	169	0.990	1.000	0.025	0.095	0.908	1.000	1.000	1.000	1.000
	Multi	114	0.606	0.616	0.167	0.628	0.262	0.890	0.490	0.616	0.735
	Diff		0.384								
	Sig		0.000								
MPI	All	283	0.0061	0.0012	0.0190	0.1770	0.0000	0.1770	0.0003	0.0012	0.0046
	Single	169	0.0071	0.0013	0.0195	0.1700	0.0000	0.1700	0.0004	0.0013	0.0057
	Multi	114	0.0046	0.0008	0.0181	0.1770	0.0000	0.1770	0.0002	0.0008	0.0029
	Diff		0.0025								
	Sig		0.277								
DIVERSMPI	All	283	0.0072	0.0014	0.0216	0.2153	0.0000	0.2153	0.0004	0.0014	0.0056
	Single	169	0.0071	0.0013	0.0196	0.1700	0.0000	0.1700	0.0004	0.0013	0.0057
	Multi	114	0.0074	0.0015	0.0243	0.2153	0.0000	0.2153	0.0003	0.0015	0.0056
	Diff		-0.0003								
	Sig		0.905								
Total Assets	All	283	212	65	528	5,384	20	5,404	37	65	160
	Single	169	141	53	342	3,863	20	3,883	33	53	118
	Multi	114	317	108	709	5,382	20	5,404	41	108	253
	Diff		-176								
	Sig		0.006								
Total Sales	All	283	120	38	280	2,201	4	2,205	21	38	87
	Single	169	111	36	273	2,201	4	2,205	20	36	75
	Multi	114	134	43	291	2,156	6	2,163	22	43	99
	Diff		-23								
	Sig		0.504								
FirmSize	All	283	3.836	3.637	1.197	6.299	1.400	7.698	3.061	3.637	4.461
	Single	169	3.761	3.582	1.178	6.299	1.400	7.698	2.995	3.582	4.318
	Multi	114	3.948	3.754	1.222	5.812	1.867	7.679	3.093	3.754	4.590
	Diff		-0.187								
	Sig		0.201								
FinLev	All	283	0.255	0.229	0.216	1.154	0.000	1.154	0.069	0.229	0.399
	Single	169	0.229	0.207	0.212	1.154	0.000	1.154	0.036	0.207	0.368
	Multi	114	0.295	0.286	0.216	1.144	0.000	1.144	0.125	0.286	0.441
	Diff		-0.066								
	Sig		0.012								
GrowOpp	All	283	0.079	0.039	0.133	1.234	0.000	1.234	0.017	0.039	0.080
	Single	169	0.090	0.038	0.159	1.234	0.000	1.234	0.017	0.038	0.089
	Multi	114	0.063	0.041	0.077	0.542	0.001	0.543	0.017	0.041	0.078
	Diff		0.027								
	Sig		0.090								
Profit	All	283	0.002	0.052	0.262	2.561	-1.729	0.832	-0.028	0.052	0.113
	Single	169	0.013	0.059	0.282	2.561	-1.729	0.832	-0.016	0.059	0.112
	Multi	114	-0.015	0.044	0.230	1.426	-1.051	0.375	-0.085	0.044	0.116
	Diff		0.028								
	Sig		0.364								

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Philippines

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	48	1.241	0.994	1.527	9.662	0.041	9.702	0.477	0.994	1.307
	Single	38	1.381	1.000	1.686	9.662	0.041	9.702	0.533	1.000	1.427
	Multi	10	0.708	0.643	0.311	0.904	0.325	1.229	0.441	0.643	1.016
	Diff		0.673								
	Sig		0.025								
lnEFV	All	48	-0.192	-0.006	0.917	5.474	-3.202	2.272	-0.742	-0.006	0.268
	Single	38	-0.128	0.000	0.999	5.474	-3.202	2.272	-0.637	0.000	0.356
	Multi	10	-0.435	-0.447	0.452	1.331	-1.125	0.206	-0.823	-0.447	0.014
	Diff		0.307								
	Sig		0.164								
DIVERS	All	48	0.922	1.000	0.169	0.574	0.426	1.000	1.000	1.000	1.000
	Single	38	1.000	1.000	0.002	0.013	0.987	1.000	1.000	1.000	1.000
	Multi	10	0.629	0.605	0.168	0.472	0.426	0.898	0.456	0.605	0.781
	Diff		0.371								
	Sig		0.000								
MPI	All	48	0.0048	0.0008	0.0143	0.0948	0.0000	0.0948	0.0003	0.0008	0.0029
	Single	38	0.0054	0.0007	0.0160	0.0948	0.0000	0.0948	0.0002	0.0007	0.0037
	Multi	10	0.0023	0.0013	0.0032	0.0106	0.0002	0.0108	0.0005	0.0013	0.0025
	Diff		0.0031								
	Sig		0.261								
DIVERSMPI	All	48	0.0052	0.0008	0.0145	0.0948	0.0000	0.0948	0.0003	0.0008	0.0038
	Single	38	0.0054	0.0007	0.0160	0.0948	0.0000	0.0948	0.0002	0.0007	0.0037
	Multi	10	0.0045	0.0025	0.0075	0.0251	0.0004	0.0255	0.0006	0.0025	0.0043
	Diff		0.0009								
	Sig		0.797								
Total Assets	All	48	457	117	1,041	5,948	20	5,968	61	117	279
	Single	38	374	99	1,042	5,948	20	5,968	42	99	195
	Multi	10	771	351	1,031	3,060	97	3,157	145	351	1,058
	Diff		-397								
	Sig		0.297								
Total Sales	All	48	247	51	564	2,568	4	2,572	25	51	153
	Single	38	216	42	526	2,568	4	2,572	18	42	129
	Multi	10	363	135	708	2,333	25	2,359	58	135	291
	Diff		-147								
	Sig		0.551								
FirmSize	All	48	4.167	3.936	1.535	6.365	1.487	7.853	3.199	3.936	5.029
	Single	38	3.956	3.728	1.543	6.365	1.487	7.853	2.888	3.728	4.859
	Multi	10	4.971	4.901	1.270	4.527	3.239	7.766	4.051	4.901	5.672
	Diff		-1.015								
	Sig		0.047								
FinLev	All	48	0.290	0.304	0.199	0.794	0.000	0.794	0.089	0.304	0.477
	Single	38	0.274	0.263	0.214	0.794	0.000	0.794	0.084	0.263	0.490
	Multi	10	0.351	0.337	0.113	0.388	0.149	0.537	0.274	0.337	0.425
	Diff		-0.077								
	Sig		0.283								
GrowOpp	All	48	0.235	0.058	0.638	3.710	0.000	3.710	0.036	0.058	0.129
	Single	38	0.249	0.058	0.707	3.710	0.000	3.710	0.036	0.058	0.126
	Multi	10	0.184	0.066	0.249	0.717	0.010	0.727	0.032	0.066	0.330
	Diff		0.065								
	Sig		0.644								
Profit	All	48	-0.055	0.069	0.468	2.476	-1.974	0.502	-0.022	0.069	0.172
	Single	38	-0.089	0.060	0.507	2.423	-1.974	0.448	-0.018	0.060	0.150
	Multi	10	0.075	0.091	0.256	0.994	-0.492	0.502	-0.036	0.091	0.224
	Diff		-0.164								
	Sig		0.166								

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Singapore

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	213	0.947	.0708	0.890	6.992	0.089	7.081	0.405	0.708	1.159
	Single	89	0.898	0.721	0.832	6.992	0.089	7.081	0.432	0.721	1.071
	Multi	124	0.982	0.680	0.931	5.719	0.131	5.850	0.396	0.680	1.251
	Diff		-0.084								
	Sig		0.493								
lnEFV	All	213	-0.345	-0.345	0.750	4.380	-2.423	1.957	-0.904	-0.345	0.148
	Single	89	-0.367	-0.327	0.728	4.380	-2.423	1.957	-0.839	-0.327	0.068
	Multi	124	-0.329	-0.386	0.768	3.799	-2.033	1.766	-0.926	-0.386	0.224
	Diff		-0.038								
	Sig		0.709								
DIVERS	All	213	0.780	0.809	0.218	0.707	0.293	1.000	0.584	0.809	1.000
	Single	89	0.992	1.000	0.019	0.095	0.908	1.000	1.000	1.000	1.000
	Multi	124	0.628	0.639	0.160	0.602	0.293	0.895	0.502	0.639	0.779
	Diff		0.364								
	Sig		0.000								
MPI	All	213	0.0074	0.0010	0.0265	0.2536	0.0000	0.2536	0.0002	0.0010	0.0034
	Single	89	0.0128	0.0009	0.0391	0.2536	0.0000	0.2536	0.0004	0.0009	0.0046
	Multi	124	0.0036	0.0010	0.0090	0.0672	0.0000	0.0673	0.0002	0.0010	0.0027
	Diff		0.0092								
	Sig		0.012								
DIVERSMPI	All	213	0.0091	0.0012	0.0294	0.2536	0.0000	0.2536	0.0004	0.0012	0.0045
	Single	89	0.0130	0.0009	0.0398	0.2536	0.0000	0.2536	0.0004	0.0009	0.0046
	Multi	124	0.0063	0.0014	0.0182	0.1665	0.0000	0.1665	0.0003	0.0014	0.0045
	Diff		0.0067								
	Sig		0.101								
Total Assets	All	213	495	80	1,805	18,853	20	18,874	42	80	219
	Single	89	177	73	370	3,097	20	3,117	46	73	163
	Multi	124	723	83	2,322	18,852	21	18,874	39	83	266
	Diff		-546								
	Sig		0.029								
Total Sales	All	213	228	63	614	5,084	4	5,088	33	63	151
	Single	89	151	73	208	1,261	5	1,265	33	73	164
	Multi	124	283	55	781	5,084	4	5,088	32	55	151
	Diff		-132								
	Sig		0.122								
FirmSize	All	213	4.328	4.151	1.304	7.202	1.332	8.535	3.484	4.151	5.014
	Single	89	4.297	4.296	1.237	5.625	1.518	7.143	3.489	4.296	5.094
	Multi	124	4.350	4.005	1.355	7.202	1.332	8.535	3.452	4.005	5.015
	Diff		-0.053								
	Sig		0.768								
FinLev	All	213	0.217	0.177	0.186	0.855	0.000	0.855	0.037	0.177	0.369
	Single	89	0.186	0.153	0.178	0.675	0.000	0.675	0.011	0.153	0.361
	Multi	124	0.240	0.212	0.189	0.855	0.000	0.855	0.076	0.212	0.385
	Diff		-0.054								
	Sig		0.034								
GrowOpp	All	213	0.102	0.048	0.178	1.369	0.000	1.369	0.017	0.048	0.104
	Single	89	0.092	0.029	0.194	1.369	0.001	1.369	0.013	0.029	0.083
	Multi	124	0.110	0.064	0.166	1.187	0.000	1.187	0.027	0.064	0.120
	Diff		-0.018								
	Sig		0.485								
Profit	All	213	0.004	0.036	0.218	2.071	-1.683	0.388	-0.023	0.036	0.096
	Single	89	0.016	0.039	0.178	1.368	-1.113	0.255	-0.004	0.039	0.087
	Multi	124	-0.006	0.033	0.243	2.071	-1.683	0.388	-0.052	0.033	0.103
	Diff		0.022								
	Sig		0.468								

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Taiwan

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
EFV	All	176	1.869	1.331	1.595	8.702	0.102	8.805	0.870	1.331	2.346
	Single	119	2.060	1.353	1.806	8.702	0.102	8.805	0.925	1.353	2.712
	Multi	57	1.468	1.293	0.913	4.767	0.191	4.958	0.780	1.293	2.031
	Diff		0.592								
	Sig		0.021								
lnEFV	All	176	0.326	0.286	0.785	4.456	-2.280	2.175	-0.139	0.286	0.853
	Single	119	0.395	0.302	0.826	4.456	-2.280	2.175	-0.078	0.302	0.998
	Multi	57	0.184	0.257	0.677	3.255	-1.654	1.601	-0.249	0.257	0.708
	Diff		0.211								
	Sig		0.074								
DIVERS	All	176	0.864	1.000	0.214	0.692	0.308	1.000	0.709	1.000	1.000
	Single	119	0.997	1.000	0.014	0.096	0.904	1.000	1.000	1.000	1.000
	Multi	57	0.587	0.573	0.164	0.585	0.308	0.893	0.473	0.573	0.699
	Diff		0.410								
	Sig		0.000								
MPI	All	176	0.0049	0.0014	0.0112	0.1131	0.0000	0.1131	0.0004	0.0014	0.0046
	Single	119	0.0053	0.0012	0.0131	0.1131	0.0000	0.1131	0.0003	0.0012	0.0045
	Multi	57	0.0041	0.0018	0.0058	0.0278	0.0002	0.0280	0.0008	0.0018	0.0046
	Diff		0.0012								
	Sig		0.488								
DIVERSMPI	All	176	0.0063	0.0020	0.0136	0.1171	0.0000	0.1171	0.0004	0.0020	0.0054
	Single	119	0.0054	0.0012	0.0134	0.1171	0.0000	0.1171	0.0003	0.0012	0.0045
	Multi	57	0.0082	0.0037	0.0141	0.0727	0.0002	0.0729	0.0010	0.0037	0.0092
	Diff		-0.0028								
	Sig		0.220								
Total Assets	All	176	743	291	1,410	12,635	20	12,655	139	291	673
	Single	119	665	259	1,139	9,020	20	9,041	134	259	711
	Multi	57	903	368	1,855	12,628	28	12,655	187	368	662
	Diff		-238								
	Sig		0.376								
Total Sales	All	176	406	175	663	5,198	8	5,206	70	175	367
	Single	119	424	178	615	3,180	11	3,190	74	178	394
	Multi	57	368	151	756	5,198	8	5,206	66	151	343
	Diff		56								
	Sig		0.625								
FirmSize	All	176	5.208	5.163	1.241	6.444	2.114	8.558	4.248	5.163	5.906
	Single	119	5.246	5.184	1.282	5.692	2.376	8.068	4.299	5.184	5.977
	Multi	57	5.127	5.019	1.156	6.444	2.114	8.558	4.194	5.019	5.838
	Diff		0.119								
	Sig		0.540								
FinLev	All	176	0.283	0.303	0.176	0.719	0.000	0.719	0.155	0.303	0.406
	Single	119	0.257	0.245	0.178	0.681	0.000	0.681	0.100	0.245	0.384
	Multi	57	0.338	0.329	0.159	0.718	0.001	0.719	0.239	0.329	0.447
	Diff		-0.081								
	Sig		0.004								
GrowOpp	All	176	0.122	0.052	0.195	1.708	0.000	1.708	0.017	0.052	0.149
	Single	119	0.126	0.055	0.207	1.708	0.000	1.708	0.021	0.055	0.149
	Multi	57	0.114	0.048	0.169	0.859	0.001	0.859	0.013	0.048	0.133
	Diff		0.012								
	Sig		0.696								
Profit	All	176	0.009	0.031	0.184	1.434	-0.987	0.447	-0.045	0.031	0.085
	Single	119	0.014	0.040	0.198	1.434	-0.987	0.447	-0.045	0.040	0.104
	Multi	57	-0.001	0.019	0.152	0.873	-0.549	0.325	-0.050	0.019	0.063
	Diff		0.015								
	Sig		0.596								

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Thailand

									Percentiles		
		N	Mean	Median	Std Dev	Range	Min	Max	25	50	75
	All	159	1.141	0.888	1.005	5.673	0.085	5.758	0.440	0.888	1.272
	Single	130	1.128	0.904	0.996	5.598	0.160	5.758	0.442	0.904	1.279
EFV	Multi	29	1.201	0.836	1.057	4.166	0.085	4.252	0.422	0.836	1.414
	Diff		-0.073								
	Sig		0.736								
	All	159	-0.169	-0.118	0.772	4.214	-2.463	1.751	-0.820	-0.118	0.241
	Single	130	-0.170	-0.101	0.751	3.583	-1.833	1.751	-0.818	-0.101	0.246
lnEFV	Multi	29	-0.161	-0.179	0.872	3.911	-2.463	1.447	-0.863	-0.179	0.341
	Diff		-0.009								
	Sig		0.958								
	All	159	0.922	1.000	0.175	0.746	0.254	1.000	1.000	1.000	1.000
	Single	130	1.000	1.000	0.006	0.064	0.936	1.000	1.000	1.000	1.000
DIVERS	Multi	29	0.575	0.553	0.146	0.619	0.254	0.873	0.503	0.553	0.672
	Diff		0.425								
	Sig		0.000								
	All	159	0.0047	0.0017	0.0087	0.0566	0.0000	0.0566	0.0005	0.0017	0.0050
	Single	130	0.0046	0.0017	0.0079	0.0564	0.0000	0.0564	0.0005	0.0017	0.0050
MPI	Multi	29	0.0053	0.0013	0.0115	0.0566	0.0001	0.0566	0.0003	0.0013	0.0046
	Diff		-0.0007								
	Sig		0.765								
	All	159	0.0056	0.0017	0.0120	0.1095	0.0000	0.1095	0.0005	0.0017	0.0064
	Single	130	0.0046	0.0017	0.0079	0.0564	0.0000	0.0564	0.0005	0.0017	0.0050
DIVERSMPI	Multi	29	0.0101	0.0024	0.0224	0.1094	0.0001	0.1095	0.0005	0.0024	0.0082
	Diff		-0.0055								
	Sig		0.026								
	All	159	267	73	697	6,516	20	6,536	37	73	183
	Single	130	191	64	418	3,830	20	3,850	34	64	146
Total Assets	Multi	29	609	130	1,336	6,507	29	6,536	69	130	408
	Diff		-418								
	Sig		0.003								
	All	159	166	58	352	2,903	3	2,903	33	58	123
	Single	130	137	54	301	2,903	3	2,906	32	54	111
Total Sales	Multi	29	299	87	508	1,982	11	1,992	51	87	216
	Diff		-162								
	Sig		0.024								
	All	159	4.243	4.063	1.187	6.812	1.163	7.975	3.497	4.063	4.810
	Single	130	4.136	3.996	1.125	6.812	1.163	7.975	3.469	3.996	4.709
FirmSize	Multi	29	4.724	4.464	1.352	5.234	2.364	7.597	3.940	4.464	5.373
	Diff		-0.588								
	Sig		0.036								
	All	159	0.399	0.387	0.302	1.777	0.000	1.777	0.139	0.387	0.595
	Single	130	0.380	0.361	0.298	1.777	0.000	1.777	0.138	0.361	0.569
FinLev	Multi	29	0.481	0.437	0.312	1.313	0.008	1.321	0.245	0.437	0.680
	Diff		-0.101								
	Sig		0.120								
	All	159	0.073	0.036	0.123	1.176	0.000	1.176	0.016	0.036	0.083
	Single	130	0.069	0.037	0.118	1.176	0.000	1.176	0.016	0.037	0.084
GrowOpp	Multi	29	0.092	0.034	0.144	0.596	0.002	0.598	0.019	0.034	0.091
	Diff		-0.023								
	Sig		0.414								
	All	159	0.044	0.062	0.241	2.218	-1.604	0.613	0.008	0.062	0.135
	Single	130	0.044	0.060	0.213	2.148	-1.535	0.613	0.007	0.060	0.122
Profit	Multi	29	0.043	0.082	0.344	1.955	-1.604	0.350	0.016	0.082	0.194
	Diff		0.001								
	Sig		0.993								

EFV = Excess firm value
lnEFV = Natural logarithm of excess firm value
DIVERS = level of diversification based on segment Herfindahl index
MPI = Market Power Index
DIVERSMPI = interactive term between diversification and market power
FirmSize = firm size control based on natural logarithm of total sales in millions of US dollars
FinLev = financial leverage control based on book value of debt to total assets
GrowOpp = growth opportunity control based on capital expenditure to sales
Profit = profitability control based on operating income to sales

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