A Test of the Internal Capital Market Hypothesis:
The Case of South Korea

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Abstract

Several studies found that diversification in developed capital markets, on average, did not enhance shareholders' wealth and concluded that diversification was more likely to be an agency phenomenon rather than to improve efficiency. However, much of the literature on diversification realized the importance of internal capital markets and argued that an efficient internal capital market might create value for shareholders. This paper examined the valuation of corporate diversification in an emerging market. It followed Berger and Ofek's methodology by computing the imputed market values. Then, two cross-sectional regression models were performed to examine the difference in market valuation between focused firms and diversified firms. Using South Korean firms, it was found that prior to the economic crisis (1994-1996) there was no difference in market valuation between focused and diversified firms. However, a significant diversification discount of 43.2 percent and 55.7 percent was found in 1997 and 1998, respectively. These findings suggested that before the crisis year the Korean capital market be segmented. Diversified firms, therefore, could take advantage from internal financing. This benefit offset the potential agency costs associated with diversification. After financial liberalization, the market has become more sophisticated. The cost differential between internal and external capital market reduced significantly whereas the agency costs still existed. Consequently, diversified firms traded at substantial discount.

Keywords: diversification, internal capital, valuation, Korea

Introduction

Several studies documented that corporate diversification was not beneficial for shareholders. Recent research found that in developed capital markets, on average, diversification did not enhance shareholders' wealth (Lang and Stuz, 1994; Berger and Ofek, 1995; Servaes, 1996; Lins and Servaes, 1999). Morck and colleagues showed that during the 1980s, diversifying acquisitions decreased shareholders' wealth (Morck et al., 1990). In the more recent paper, Lins and Servaes studied the value of diversification in emerging markets, which included Hong Kong, India, Indonesia, Malaysia, Singapore, South Korea, and Thailand (Lins and Servaes, 2002). Using 1995 data, they reported that diversified firms traded at a discount of approximately eight percent compared to focused firms. The discount was even larger in countries with poorly developed external capital markets. The evidence leaded to the conclusion that corporate diversification was inefficient. It was more likely to be an agency phenomenon rather than to improve efficiency.

However, much of the literature on diversification argued that an efficient internal capital market might create value for shareholders. Using internal funds, a segment of a diversified firm would be able to invest in profitable projects regardless of its own cash flow. Lamont studied diversification in the oil industry and found that investment in a division of a diversified firm largely depended on the success of the other unrelated industry divisions (Lamont, 1997). His study showed that when oil prices dropped in the mid-1980s, investment in non-oil divisions fell substantially. Shin and Stulz also found that investment by segments of highly diversified firms was less sensitive to their cash flows than investment of comparable single-segment firms (Shin and Stulz, 1998). The more recent study by Kim and colleagues showed that both industrial and geographic diversification significantly reduced earnings volatility (Kim et al., 2001).

According to Gertner and colleagues and Stein internal capital markets were beneficial, particularly where access to external funds was limited or unavailable (Gertner et al., 1994; Stein, 1997). Using industry-adjusted valuation, they presented that in the 1960s conglomerates

were valued at premium. They reported that evidence from acquisition histories suggested that during that period conglomerate diversification may have added value by creating internal capital markets.

Although a growing empirical literature realized the importance of internal capital markets, there was no apparent evidence supporting the argument. The objective of this paper was to test whether internal capital markets were efficient. It examined the diversification valuation of firms in South Korea during 1994-1998. Due to financial liberalization, the Korean capital market had been changed considerably during that period (see Table 1). External financing was relatively more accessible. The importance of internal capital markets in funding valuable projects was reduced. This might affect the potential benefits/or costs of diversification at the firm level. The next section discussed about the costs and benefits associated with diversification. Then, the methodology and the sample used in this study were described. Finally, the results were presented and compared to Lins and Servaes's (Lins and Servaes, 2002).

Table 1 Plan for Capital Market Opening (Under the Five-Year Plan for the New Economy and the Foreign Exchange Reform Plan)

	Stock Market	**Bond Market**	**Others**
Stage I (1993)	- Eliminate the ceiling on foreigners' stock investment in companies with over 50% of equities already owned by foreigners (Aug. 1993)		- Allow foreign investment trusts and investment consulting companies to participate in the equity of domestic investment trust firms (up to 5% for each) (Jan. 1993)
Stage II (1994-1995)	- Raise the general ceiling on foreigners' investment in a company shares from 10% to 12% (Dec.1994), to 15% (Jul. 1995) - Guarantee national treatment in stock investment to those residents who are defined as foreigners under the Securities Exchange Act (Apr. 1995) - Relax requirements for open-ing branches by foreign securities companies (May 1995) - Lower capital requirements by type of business for branches of foreign securities companies (May 1995)	- Allow foreigners to purchase equity-linked securities such as convertible bonds issued by small- and medium-sized enterprises (SMEs) (Jul. 1994) - Allow foreigners to under-write government and public bonds issued at international rates (Jul. 1994) - Allow foreigners to invest in bond-type beneficiary certi-ficates, as a way of indirectly opening the bond market (Apr. 1995) - Allow international organiza- tions to issue won-denominated bonds in the domestic market (May 1995)	- Expand the ceiling on equity participation by foreign investment trusts and investment consulting companies (1995) - Allow the establishment of foreign investment consulting firm's branches (1995)
Stage III (1996-1997)	- Raise the general ceiling on foreigners' investment in a company's shares from 15% to 18% (Apr.1996), to 20% (the 2nd half of 1996) - Continue to raise the ceiling on foreigners' stock investment	- Allow foreigners to invest directly in SMEs' long-term bonds (1997)	- Allow the establishment of foreign investment trust's branches and joint-ventures (1996) - Allow the establishment of foreign consulting firm's joint-ventures and subsidiaries (1997)

Source: Bank of Korea (2003)

Hypotheses

There are several hypotheses to explain why firms diversify. Some assumes that the managers' objective is to maximizing shareholders' wealth. The decision to diversify, like any other investment decision, should be primarily motivated by the desire to increase the stockholders' wealth. Others assume that the managers pursue a non-wealth maximizing behavior. They are motivated by a desire to increase firm's size in order to maximize their own utilities rather than serve the interests of shareholders.

Although there was evidence indicating that corporate diversification was not beneficial in developed countries such as the U.S., firms in emerging markets might gain from existing imperfections in these capital markets. Due to higher level of information asymmetries, firms in these economies would take advantage by creating an internal capital market and exploiting it through corporate diversification. According to Stein, the more severe the asymmetric information, the higher cost differential between internal and external financing (Stein, 1997). In other words, imperfections in capital markets and information asymmetries increased the cost of external financing over internal financing. Diversification allowed firms to gain the advantage of using funds from divisions with high cash flows but poor investment opportunities to finance divisions with low cash flow but good investment opportunities. Furthermore, inefficient law enforcement and high business-government relations made it more difficult for focused companies to do business in these countries (Khanna and Palepu, 1997).

However, market imperfections and high asymmetric information allowed management and controlling shareholders to easily exploit the firm for their own interests (Jensen, 1986). It is more likely that diversified firms are not operated in order to maximize shareholders' wealth. Poor corporate control, as well as crony capitalism, which is widespread among poorly developed markets also raises agency problems. Therefore, the agency costs associated with diversification also increase.

Owing to financial liberalization, which is said to have led to the economic crisis on 1997, the Korean capital market has been developed to some extent. Virtually, South Korea has been following a policy of internalization of the capital market since the early 1980s (Myung-Guk, 1996). In January 1992, the Korean stock market was first time open to foreigners for direct investment. A blue print of financial liberalization plan was announced in July 1993 (see Table 1). Foreign investment ceiling on equity which was initially set at 10 percent of outstanding shares of each listed company had been raised to 20 percent by the end of 1996. In addition, Korea became a member of the OECD in December 1996. Due to the obligations of the OECD codes of Liberalization of Capital Movements and Current Invisible Operations, the Korean government started to remove all controls on capital flows and expand the opening of the bond market and the financial industry in 1997 (Ley and Poret, 1997). Korean, therefore, has made significant progress in liberalization and opening of the capital market.

Furthermore, the chaebol, Korea's big industrial conglomerates, which played an important role on internally generated cash, local equity and abundant bank financing, was shaken by the collapse of Hanbo, the 14th largest chaebol in 1997 (Mariott, 1997). These considerable changes in both external and internal capital markets would inevitably affect the value of firms.

To investigate which approach is better in explaining the market reaction: the efficient internal market or the agency costs hypothesis, this paper looked at the difference of market valuation between focused firms and diversified firms. If the value of diversified firms is higher than that of focused firms, it implies that the benefits from exploiting internal capital markets exceed the agency costs. The internal capital market approach, therefore, dominates the agency costs hypothesis. On the other hand, if diversified firms trade at discount relative to focused firms, it could be concluded that the agency costs overwhelm the benefits of diversification at firm level. Then, the agency costs hypothesis is more pronounced.

Materials and Methods

The Models: To test whether internal capital markets are efficient, two cross-sectional regression models were used to examine the difference in market valuation between focused firms and diversified firms.

1. Excess market value $= \alpha + \beta_1$(Diversification dummy) $+ \varepsilon$
2. Excess market value $= \alpha + \beta_1$(Diversification dummy) $+ \beta_2$ (Size) $+ \varepsilon$
$$\beta_3 \text{ (Profitability)} + \beta_3 \text{ (Growth)} + \beta_4 \text{ (Leverage)} + \varepsilon$$

where:

Excess market value is the natural log of the ratio of the actual market value to the imputed market value. Using the methodology proposed by Berger and Ofek, the imputed value is computed as follows (Berger and Ofek, 1995):

a) Use only the data from focused firms to compute the median of market-to-sales in each two-digit SIC code industry.

b) For diversified firms, the imputed value is computed by multiplying their sales in each segment by their corresponding industry median market-to-sales ratios, then summed across all segments.

c) For focused firms, the imputed market values are the product of their sales and their corresponding industry median market-to-sales ratios.

Both extremely high and low imputed values are considered to be outliers and excluded from the analysis.

Diversification dummy is equal to one if a firm operates in two or more segments, where a segment is defined as a two-digit SIC code industry.

Size is the log of total assets.

Profitability is the ratio of operating income to sales.

Growth is the ratio of capital expenditure to sales.

Leverage is the ratio of total debts to total assets.

The coefficient β_1 is the measure of the diversification valuation. It can be either positive or negative. The positive coefficient indicates that diversified firms are more valuable than focused firms, implying that the internal capital market is efficient. Therefore, the internal capital market hypothesis works. The negative coefficient would signify that the agency costs overwhelm benefits of diversification. Consequently, the agency costs hypothesis is more powerful.

Size, profitability, growth and leverage are control variables that may affect the value of the firm. According to the three-factor Fama-French model, size has a significant impact on required rate of return. Firms with different size, therefore, could be valued differently by investors (Fama and French, 1996). Likewise, difference in valuation may be related to difference in profitability. It is likely that high-profitable firms would have higher market value than do low-profitable ones.

Undoubtedly, growth expectation has an important role in stock valuation. It may also explain the portion of valuation differences. Finally, since diversified firms have significantly more debt than focused firms, leverage ratio was included in the model to examine whether the valuation difference is partly due to difference in debt.

The Sample: The sample consisted of South Korean companies whose primary businesses were not financial services and/or who did not diversify into the financial industry. South Korean was selected for this study since it is one of emerging markets and its capital market had been changed substantially during 1994-1998. In addition, according to Lins and Servaes, it has relatively high rate of diversification. Diversified firms with no single-segment firms operating in the same industry and those that did not report sales by segment were also excluded

(Lins and Servaes, 1999). Using the Worldscope database, the final sample of 259 firms included 98 diversified firms and 161 focused firms during 1994-1998. Table 2 presents the sample selection procedure. A firm is classified as diversified if it has more than one two-digit SIC code business segment, and the most important segment accounts for less than 90 percent of total sales. Consistent with Lins and Servaes's, 38 percent of Korean firms in our sample were diversified firms (Lins and Servaes, 2002).

Table 2 Sample selection of Korean firms: 1994-1998

	Number of firms	
	This study	**Lins & Servae**
Total firms listed on Worldscope Database	316	243
Subtract:		
1) Firms whose primary businesses are in financial services and/or firms that diversify into the financial industry	52	45
2) Diversified firms with no single-segment firms operating in the same industry	3	-
3) Diversified firms that do not report sales by segment	2	1
4) Firms that are not listed in the Korean stock exchange	-	7
Final sample	259	190
Number of diversified firms	98 (38%)	75 (39%)
Number of focused firms	161 (62%)	115 (61%)

Note: A firm is classified as diversified if it has more than one two-digit SIC code business segment.

Results and Discussion

Summary statistics was reported in Table 3. In terms of assets, there were no significant differences in size between diversified firms and focused firms during the study period (1994-1998). Both were also indifferent in terms of profitability with the exception of 1996 when diversified firms were slightly more profitable. Surprisingly, prior to the crisis (1994-1996) diversified firms had higher growth than focused firms. The mean capital expenditure-to-sales ratios of diversified firms ranged between 0.39-0.45 whereas those of focused firms ranged between 0.19-0.26. This was inconsistent with the argument that firms seek for diversification when they lack growth opportunities. Finally, diversified firms had significantly higher debt than focused firms, consistent with the findings of previous studies (Berger and Ofek, 1995; Lins and Servaes, 2002). During 1994-1996 leverage ratios of diversified firms were, on average, approximately 50 percent; whereas those of focused firms were approximately 45 percent. However, no differences in leverage ratio existed after the crisis.

Table 3 Descriptive statistics of the sample

Number of segments	Focused firms		Diversified firms		Differences	
	Mean	Median	Mean	Median	Mean	Median
	1	1	2.15	2	-1.15	-1
Total assets (Won MM)						
1998	2353463	601364	2207253	843790	146210 (.829)	-242426 (.177)
1997	2093905	554470	2409973	836158	-316068	-281688 (.109)
1996	1652659	509197	1870781	724299	(.631)	-215102 (.397)
1995	1423629	475865	1711066	710942	-218122 (.668)	-235077 (.110)
1994	1299530	487679	1324484	636348	-287437 (.531) -24954 (.950)	-148669 (.516)
Profitability (Operating income/sales)						
1998	1.22	6.34	-0.63	5.32	1.85 (.544)	1.02 (.140)
1997	4.83	7.07	4.34	6.00	0.49 (.716)	1.07 (.301)
1996	5.72	5.38	6.42	6.33	-0.70 (.379)	-0.95 (.057)[c]
1995	7.08	6.21	6.90	6.51	0.18 (.786)	-0.30 (.847)
1994	7.51	6.70	7.57	7.41	-0.06 (.930)	-0.71 (.344)
Growth (Capital expenditure/sales)						
1998	0.57	0.14	0.38	0.12	0.19 (.421)	0.02 (.814)
1997	0.65	0.13	0.12	0.19	0.53 (.130)	-0.06 (.640)
1996	0.86	0.19	0.80	0.39	0.06 (.765)	-0.20 (.026)[b]
1995	0.89	0.19	0.78	0.45	0.11 (.550)	-0.26 (.001)[a]
1994	0.84	0.26	0.72	0.39	.012 (.511)	-0.13 (.053)[c]
Leverage ratio (Total debts/total assets)						
1998	52.56	47.69	59.58	51.66	-7.02 (.188)	-3.97 (.126)
1997	51.96	53.30	55.22	56.84	-3.26 (.179)	-3.54 (.062)[c]
1996	45.28	46.62	51.65	53.35	-6.37 (.026)[b]	-6.73 (.017)[b]
1995	44.15	45.07	50.61	50.03	-6.46 (.023)[b]	-4.96 (.037)[b]
1994	44.17	44.39	50.83	49.57	-6.66 (.065)[c]	-5.18 (.012)[b]

Note: The p-values of the tests of equality of means and median tests (Focused-Diversified) are reported in parentheses. a) $P < 1\%$, b) $P < 5\%$, c) $P < 10\%$

Table 4 showed that prior to the economic crisis (1994-1996) the diversification dummy was insignificant, implying that there were no differences in market valuation between diversified firms and focused firms. Consistent with Fama and French, size had a significant impact over this period as well as in 1998 (Fama and French, 1996). Leverage also was a significant variable as expected. Although the diversification dummy was significant in 1996, it lost its explanatory power after the presence of other variables. However, in 1997 (the crisis year) only the diversification dummy was significant in both models. Whereas size regained its explanatory power in 1998, leverage still lost its. This might result from no differences in debt between diversified firms and focused firms after the crisis. Surprisingly, there was no significant relationship between excess market value and growth opportunity, which was proxied by the ratio of capital expenditure and sales. However, in this sample the ratio was, on average, relatively very low (less than 1 percent) compared to that from Lins and Servaes (1999)'s sample (8-20 percent).

The results indicated that market imperfections before financial liberalization made internal financing beneficial for diversified firms. The benefits, however, just offset the agency costs associated with diversification. As a result, there was no significant difference in market valuation between diversified firms and focused firms.

Since 1997, the Korean capital market has become more integrated. The cost differential between internal funds and external funds reduced significantly. The benefits from corporate diversification were not sufficient to cover the agency costs any more. Hence, diversified firms traded at substantial discount.

Table 5 provided a comparison between our results and those reported by Lins and Servaes (2002)'s. While they found the diversification discount of 7 percent in 1995, this study showed no difference in market valuation between focused and diversified firms. They also reported that size and growth opportunity had a positive effect on shareholders' wealth although the impact of growth was relatively small. In this study, we showed that size negatively affected shareholders' wealth, not only in 1995 but in the other years as well. However, there were two important differences between these two studies. Firstly, Lins and Servaes (2002)'s results were based on a sample from seven emerging countries: Hong Kong, India, Indonesia, Malaysia, Singapore, South Korean and Thailand, whereas our results relied on South Korean alone. Secondly, due to studying across different countries, Lins and Servaes needed to convert financial data to U.S. dollars whereas all data used in this study were reported in Korean currency (Won). The results, therefore, were not contaminated by exchange rate discrepancy.

Table 4 Differences in market valuation between diversified firms and focused firms

The models: (a) Excess market value = $\alpha + \beta_1$(Diversification dummy)

           (b) Excess market value = $\alpha + \beta_1$(Diversification dummy) + β_2(Size)

                                          $+ \beta_3$(Profitability) + β_4(Growth) + β_4(Leverage)

	1998 (a)	1998 (b)	1997 (a)	1997 (b)	1996 (a)	1996 (b)	1995 (a)	1995 (b)	1994 (a)
P-value of the model	.001[a]	.002[a]	.003[a]	.022[b]	.028[b]	.001[a]	.129	(.000)[a]	.632
Intercept	-.037 (.712)	3.11 (.003)[a]	-.069 (.439)	2.07 (.032)[b]	-.021 (.786)	2.58 (.000)[a]	-.010 (.892)	2.77 (.000)[a]	-.015 (.836)
Diversification dummy	-.531 (.001)[a]	-.557 (.013)[b]	-.427 (.003)[a]	-.432 (.035)[b]	-.282 (.028)[b]	-.174 (.203)	-.174 (.129)	-.068 (.578)	-.054 (.632)
Size		-.207 (.008)[a]		-.115 (.140)		-.152 (.006)[a]		-.191 (.000)[a]	
Profitability		.001 (.920)		.002 (.874)		-.016 (.166)		.016 (.170)	
Growth		-.104 (.186)		-.126 (.156)		-.032 (.537)		-.028 (.578)	
Leverage		-.005 (.384)		-.007 (.241)		-.009 (.056)[c]		-.007 (.008)[a]	
Adjusted R^2	.043	.100	.030	.057	.017	.106	.007	.139	.005
Number of firms	223	138	249	143	223	195	185	152	157

Note: Excess market value was the natural log of the ratio of the actual market value to the imputed market value. For diversified firms, the imputed value was computed by multiplying their sales in each segment by their corresponding industry median market-to-sales ratios, then summed across all segments. For focused firms, the imputed market values were the product of their sales and their corresponding industry median market-to-sales ratios. Diversification dummy was equal to one if a firm operates in two or more segments, where a segment was defined as a two-digit SIC code industry. Size was the log of total assets. Profitability was the ratio of operating income and sales. Growth was the ratio of capital expenditure and sales. Leverage was the ratio of total debts and total assets. The p-values of each variable was show in parentheses. a) Significant at 1%. b) Significant at 5%. c) Significant at 10%.

Table 5 Comparison between the 1995 results from this study and Lins & Servaes'
The model:
Excess market value $= \alpha + \beta_1$(Diversification dummy) $+ \beta_2$(Size) $+ \beta_3$(Profitability)
$+ \beta_4$(Growth) $+ \beta_4$(Leverage)

	This study	**Lins & Servaes**[*]
P-value of the model	.000[a]	n.a.
Intercept	2.77	-.420
	(.000)[a]	(.000)[a]
Diversification dummy	-.068	-.083
	(.578)	(.040)[b]
Size (the log of total assets)	-.191	.023
	(.000)[a]	(.040)[b]
Profitability (operating income/sales)	.016	
	(.170)	
Growth (capital expenditure/sales)	-.028	.908
	(.578)	(.000)[a]
Leverage (total debts/total assets)	-.007	
	(.008)[a]	
Adjusted R^2	.139	.050
Number of firms	152	744[**]

Note: *The sample included firms from five emerging countries defined by the International Finance Corporation (IFC), which were India, Indonesia, Malaysia, South Korea and Thailand.
** The number of Korean firms in this sample was 190.
The p-values of each variable were shown in parentheses. a) P > 1%, b) P > 5%, c) P > 10%.

Conclusion

The result supported the efficient internal capital market hypothesis that greater information asymmetries and market imperfections create the potential benefits through corporate diversification even though these benefits cannot dominate the overwhelming agency costs. However, the internal capital market advantages are transitory and heavily dependent on the status or efficiency of external capital markets.

References

Berger, P., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of Financial Economics*, *37*, 39-65.

Fama, E. F., & French, K. R. (1996). Multifactor explanations of asset pricing anamolies. *Journal of Finance*, *51*, 55-84.

Gertner, R. H., Scharfstein, D. S., & Stein, J. C. (1994). Internal versus external capital markets. *Quarterly Journal of Economics*, *109*, 1211-1230.

Jensen, M. C., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*, 305-360.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review*, *76*, 323-329.

Khanna, T., & Palepu, K. (1997). Why focused strategies may be wrong for emerging markets. *Harvard Business Review*, *75*, 41-51.

Kim, C., Kim, S., & PantZalis, C. (2001). Firm diversification and earnings volatility: an empirical analysis of U.S.-based MNCs. *American Business Review*, *19*, 26-38.

Lamont, O. (1997). Cash flow and investment: Evidence from internal capital markets. *Journal of Finance*, *52*, 83-109.

Ley, R., & Poret, P. (1997). The new OECD members and liberalization. *Organization for Economic Cooperation and Development: The OECD Observer*, *205*, 38-42.

Lang, L., & Stulz, R. (1994). Tobin's q, corporate diversification and firm performance. *Journal of Political Economy*, *102*, 1248-1280.

Lins, K., & Servaes, H. (1999). International evidence on the value of corporate diversification. *Journal of Finance*, *54*, 2215-2239.

Lins, K., & Servaes, H. (2002). Is corporate diversification beneficial in emerging markets. *Financial Management*, *31*, 5-31.

Mariott, C. (1997). Chaebol: misfits of global finance. *Global Finance*, *11*, 34-37.

Morck, R., Shleifer, A., & Vishny, R. (1990). Do managerial incentives drive bad acquisitions? *Journal of Finance*, *45*, 31-48

Myung-Guk, D. (1996). Recent development of financial market liberalization and its perspectives in Korea. *Business Korea*, *13*, 55.

Servaes, H. (1996). The value of diversification during the conglomerate merger wave. *Journal of Finance*, *51*, 1201-1225.

Shin, H., & Stulz, R. M. (1998). Are internal capital markets efficient? *Quarterly Journal of Economics*, *113*, 531-552.

Stein, J. C. (1997). Internal capital markets and the competition for corporate resources. *Journal of Finance*, *52*, 111-133.