Market Structure and Business Diversification of the Financial Sector

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Abstract

This paper examines business diversification of financial companies using macro and micro level data on 19 countries for the period 1996-1999. Standard Industrial Classification (SIC) codes are used to measure the level of diversification, which is defined here as the number of sectors or industries a given financial company operates in. This paper investigates the factors that may influence the diversification decisions of financial firms and their effects on the financial system, including the laws, regulations, and various financial activities. We use cross-country data at the financial firm and the international levels. Using macroeconomic and institutional variables, and financial firms' diversification variables, six major hypotheses are tested to examine the relationship between business diversification and market structure of the financial sector.

The bigger the size of financial market in one country, *ceteris paribus*, the greater the tendency for financial companies to choose specialized banking. Such differences in the institutional environment as financial market structure also influence business diversification of financial companies. The ratio of the direct to the indirect financial markets, and the degree of protection of property rights affect the diversification behavior of financial companies negatively, whereas it is affected positively by the size of financial companies and their business diversification across non-financial sector.

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Ⅰ. Introduction

The study of diversification behavior found in the financial sector, or the so-called universal banking, has long been an attractive empirical research topic for economists and business researchers. The key feature of universal banking is the triple combination of commercial banking, investment banking, and insurance. Since the latter half of the 1990s, many countries have been removing various long-standing laws and customs that have separated commercial banking from the securities and other business activities. Although differences across countries still remain in terms of their structure, domination, and regulatory framework, banking activities have become much more uniform internationally. An increasing competition in the financial sector, as well as the rapid advancement of information technology, should be credited for encouraging this convergence.

Financial industry is subject to various regulations in most countries due to its unique characteristics. The financial system and market structure in one country are an interactive output of government regulation and business activities. The financial system in each country has been developed endogenously in line with structural changes and government's regulation policy. Financial companies operate their businesses to maximize profit under the given conditions such as institutional variables, regulations, and market structure created from institutional variables.

Universal banking means that financial companies offer a comprehensive range of financial services, including deposits, loans, foreign exchange transaction, brokerage and issuance of bonds, insurances, and asset management.

Universal banking can be defined as provision of a combination of commercial banking, securities and insurance businesses by one financial company in a narrow sense, or by affiliated companies in a wider sense.

Governments around the world differ in terms of activities they permit banks to engage in. A bank in one country may not be the same as a bank in other country. In the United Kingdom, which has adopted universal banking system, a commercial bank is essentially allowed to engage in securities, insurance and real estate activities. Also commercial banks can own 100 percent of the equity in a non-financial company or be 100 percent owned by a non-financial company. At the other end of the spectrum is the United Sates, where universal banking system is not adopted and the mixing of banking and commerce is prohibited. Furthermore, although

the laws restricting banks from engaging in securities activities were repealed on November 12, 1999, there are still stringent restrictions imposed on real estate activities.

In most countries, universal banking is regulated to reduce the risk of conflict of interests, to maintain the stability of the financial system, to prevent economic concentration, and to maintain competition in the market. If there were no restriction on the financial sector, universal banking would have emerged as a natural behavior of bank management.

Imposing excessive regulations that restrict financial companies' business opportunities may impede them from adapting to the rapidly changing information technology and an increasingly global financial marketplace. When the banks are unduly prevented from servicing their customers in a flexible manner, financial intermediation cannot function efficiently. This will result in lower economic growth than it otherwise would have been. Widespread of universal banking since the 1990s is a reflection that universal banking has helped reduce competitive pressure for financial companies by giving them more room for business maneuvers. Meanwhile, specialized banking is regarded as to have weakened the ability of financial companies to cope with changes in the market by restricting their scope of business options. As the trend of universal banking among financial firms accelerated, the question is no longer about choosing between universal or specialized banking; rather, the main concern is about how to mix commercial banking, securities and insurance businesses or other activities together, and about the mode of doing universal banking, that is, whether to internalize or create a subsidiary.

There is hardly any empirical research focused on universal banking using cross-country data. This might be due to the limitations in the actual accessibility of data for cross-country studies. Difficulties in getting the relevant data for analysis result in a lack of empirical evidence that could provide information on the behavior of diversification and the policy implications for such a phenomena.

This paper examines the phenomena of business diversification of financial companies using macro and micro level data of 19 countries for the period 1996-1999. Standard Industrial Classification (SIC) codes are used to measure the level of diversification, which is here defined as the number of sectors or industries in which a given financial firm operates. This paper investigates those factors that may influence the financial companies' diversification decisions

and their effects on the financial system, including the laws, regulations, and various financial activities. We use cross-country data at the financial firm level and the international level.

For instance, the diversification index for U.S. financial companies, which have adopted specialized banking, is higher than that for French counterparts, which practice universal banking. This signifies that even the financial companies under specialized banking system make attempts to evade regulations using various flaws in the regulation, and are motivated to enter other various businesses. There are cases in the financial sector, where financial companies avoid or take advantage of regulations and maximize the objective function of individual companies in terms of profitability or growth potential.

Hence, the financial companies' diversification index needs to be understood in terms of universal banking involving organizational changes in the financial sector in order to deduce appropriate policy implications. Unlike the previous research on universal banking, this paper seeks to identify some of the possible financial policy measures concerning financial companies through analysis of both the institutional variables at the macroeconomic level and the financial industry's structural variable at the microeconomic level.

Six major hypotheses are tested to examine the relationship between business diversification and market structure in the financial sector. The bigger the size of financial market in one country, *ceteris paribus*, the greater the tendency for financial companies to choose specialized banking. Such differences in the institutional environment as financial market structure also influence business diversification of financial companies. The ratio of the direct to the indirect financial markets, and the degree of protection of property rights affect the diversification behavior of financial companies negatively, whereas it is affected positively by the size of financial companies and their business diversification across non-financial sector. There is a significant positive correlation between the size of financial system (defined as the sum of commercial assets, equity market capitalization and bond outstanding) and economic growth.[1]

The emerging consensus is that capital markets are becoming increasingly more efficient at intermediation than banks, as countries mature and evolve into service-oriented economies.

[1] James R. Barth, Daniel E. Nolle, Hilton L. Root, and Glenn Yago (2000) 'Choosing the Right Financial System for Growth', Milken Institute. Policy Brief Number 8.

There does not exist a significant correlation between the ratio of commercial bank assets to equity market capitalization plus bonds outstanding and GNP per capita. This means that banks and capital markets are complements rather than substitutes in promoting economic growth. Both banks and capital markets perform important but different roles on channeling funds from savers to investors.

Neither bank nor capital market financing is likely to matter much in developing countries without appropriate and enforceable rules of law and property rights. Without effective financial systems, weak economies will only experience further deterioration in their position in the global economy. Differences in bank ownership affect economic development. There exists a significant positive correlation between the percentage of private ownership of bank assets and GNP per capita. A significant negative correlation is found between the degree to which a country restricts the activities and ownership arrangements of banks and GNP per capita. With proper supervision, giving banks substantial leeway to engage in different types of activities and ownership arrangement may be a good public policy.

Ⅱ. Calculation of Diversification Index

1. Method of calculating diversification index

There are many methods that can be used to measure level of diversification – by using the number of industries in which a company operates, by using the entropy index of Jacquemin and Berry (1979), and so on. To count the number of industries in which a given company operates is perhaps the simplest method of measuring the level of diversification, so we will also adopt this measure. All the financial companies analyzed thus far operate in non-financial industries.

Since diversified companies operate in different business sectors, the number of sectors or industries in which a company operates reveals the level of diversification. According to the Standard Industrial Classification (SIC) codes, industries can be classified into a 5-digit, 4-digit, or 2-digit code. The number of different 2-digit codes can tell us many unrelated businesses a company operates in, while the number of different 4-digit codes indicates the figures on related

businesses. Accordingly, the summation of the number of 4-digit industries in a given 2-digit industry represents the level of diversification.

First, the number of industries in which a financial company operates is simply scaled and defined either as the level of diversification within the financial sector or within non-financial sectors[2)]. More specifically, the companies with main businesses categorized in the Standard Industrial Classification Codes between 81000 and 83000 are defined as financial companies, and the number of industries in which these companies operate are expressed as diversification index after being divided into 5-digit (Div5), 4-digit (Div4), and 2-digit (Div2) codes. In this research, the diversification indexes for non-financial industries, Div2, and for the sub-financial industries, Div5, are included in the analysis, but it is the Div4, or the diversification index for industries within financial sector, which is used most for analysis.

Second, we will measure and index only the number of industries (Fiv) within the financial sector that financial companies operate in. This is necessary since each country has a very different financial system to others and financial companies, in many cases, are involved in diverse activities, for example, financial consulting, which can cause distortion in countries' diversification index. Thus, the Fiv is indexed by limiting its scope to the number of companies within the financial sector only. This research defines financial sector as to include banking industry (8140), securities industry (8150), insurance industry (8200), sub-banking and securities industries (8300), lease and related industries (8400), and real estate and related industries (8500), while the rest are categorized as non-financial industries.

Third, we will measure if each financial company operates in both financial and non-financial sectors. The index for diversification in financial and non-financial sectors, M1, will be dummied as '1' if a company operates in both sectors and '0' if not.

Fourth, each financial company's involvement in industries within the financial sector is measured using its combination of financial industries and this will be dummied up. For this, the financial sector will be classified largely into three groups, namely, banking, securities, and other financial industries within the sector. Or, D1: banking – securities; D2: banking – other financial industries; D3: banking – non-financial industries; D4: securities – non-financial industries; D5: securities – other financial industries; D6: other financial industries – non-financial industries. Insurance industry will not be categorized separately, since insurance is the main business for only a very small number of listed companies.

<Table 1> Standard Industrial Classification (SIC) Codes in Financial Sector

SIC Code	Related Financial Industries
8500	- Owning and dealing in real estate
8490	- Hiring out other movables
84804	- Hiring other transport equipment
8430	- Hiring out office machinery and furniture
83962	- Central office of mixed activity enterprises
83954	- Miscellaneous business services
83952	- Market research/public relations consultants
83951	- Management consultants
8380	- Advertising
83702	- Technical services
83701	- Architects, surveyors & consulting engineers
8360	- Accountants, auditors, tax experts
8350	- Legal services
8340	- House and estate agents
8320	- Activities auxiliary to insurance
8310	- Activities auxiliary to banking and finance
82003	- Insurance other than long-term
82002	- Long-term (including life) insurance
82001	- Composite insurance institutions
81502	- Security investment institutions
81501	- Institutions specializing in credit
81402	- Banks and discount houses

2. Results of Diversification Indexation

The data for the calculation of diversification index and the financial variables of each company comes from PriMark's Company Analysis (CA). Using the data, 1,694 financial companies in 19 OECD countries, excluding those with financial companies less than 6, will be analyzed. The period analyzed spans 4 years, from 1996 to 1999.

First, the diversification index for each of the OECD countries analyzed is shown in Table 2. Noteworthy is that the American financial companies, which are in specialized banking system, have a higher diversification index than the French financial companies operating in universal banking system. This seems to have resulted, as even in countries that choose the specialized banking system, their financial companies make efforts to evade regulations by playing upon the various regulatory flaws, and are motivated to enter a range of industries.

<Table 2>International Comparison of Diversification Index

Country	No of firms	Fiv		Div5		Div4		Div2	
		Mean	Var	Mean	Var	Mean	Var	Mean	Var
Australia	143	1.80	1.24	2.28	2.66	2.06	1.55	1.81	0.90
Austria	16	1.44	1.16	1.69	1.77	1.44	1.16	1.25	0.32
Canada	40	2.21	0.98	2.98	2.59	2.36	1.53	2.10	1.13
Denmark	16	2.00	1.33	2.72	2.94	2.21	1.92	1.76	1.27
Finland	7	2.38	2.68	3.41	5.82	2.50	3.74	1.88	0.72
France	103	1.81	0.90	2.14	1.78	1.96	1.20	1.74	0.94
Germany	57	1.88	1.04	2.78	1.75	2.14	0.92	1.81	0.38
Ireland	8	2.88	0.98	3.50	2.29	2.88	0.98	2.38	0.55
Italy	51	2.01	1.93	2.62	4.52	2.17	2.58	1.88	1.55
Japan	109	1.75	1.06	2.04	1.89	1.85	1.49	1.60	0.78
Korea	41	1.52	0.36	1.70	0.73	1.52	0.36	1.44	0.25
Netherlands	35	1.66	1.45	2.14	3.49	1.77	1.57	1.51	0.60
Norway	8	3.46	2.18	4.23	2.83	3.46	2.18	2.27	0.45
Portugal	10	2.60	1.73	3.20	2.70	2.70	1.70	2.00	0.63
Spain	13	2.92	2.79	3.54	4.74	3.00	2.56	2.31	1.18
Sweden	17	1.85	1.73	2.77	2.91	2.38	1.64	1.98	0.85
Switzerland	62	1.76	0.96	2.24	2.26	1.92	1.17	1.61	0.56
U.S.A.	452	2.46	1.24	3.22	2.89	2.66	1.70	2.13	0.81
UK	501	1.50	0.97	1.84	2.35	1.71	1.63	1.52	1.01
Total	1694	2.10	1.41	2.69	2.78	2.25	1.66	1.84	0.78

Source: PriMark, Company Analysis (CA)

3. Data and Empirical Results

After measuring the level of diversification in each country, we will analyze the determinants of diversification and economic performance using a regression model. The regression model will be set as shown in Equations (1) and (2).

In Equation (1), F represents the relationship between the dependent and independent variables. The dependent variable is the level of corporate diversification (DIV), and the independent variables consist of institutions and other variables that may affect the level of corporate diversification, except institutional environment. We will explain in more detail the explanatory variables in Chapter Ⅳ.

$$DIV=F(\text{Institutional environment, other variables}) \quad (1)$$

Equation (2) presents the relationship not only between diversification and economic performance but also between institutions and economic performance. PF is the variable

reflecting economic performance and G is the function symbol. Other variables to control the effects of other factors will also be explained in Chapter Ⅳ.

PF=G(DIV, Institutional environments, other variables) (2)

On the other hand, the SIC data we use is from the Company Analysis CD-ROM supplied by PriMark. This CD-ROM database includes a profile indicating in which industries a firm is active by SIC code, and data on product segment sales. As of the end of June 1999, this database covered over 10,000 firms and 46 countries. We will select the firms and countries from the PriMark CD-ROM and classify them according to our criteria, which will be explained subsequently.

In order to analyze as many countries and firms as possible, we decided to select all countries for which we have data on more than 20 firms. While selecting the number of firms to be included in our sample, we found it would be suitable to include 20 for the research. We considered the number of countries appropriate for our analysis while deciding on the number of firms for our sample. In order to include more than 30 countries, we needed to lower our sample to 20 firms.[2] In selecting 20 firms for our analysis, we ranked all of the firms in each country according to asset size and chose those firms that had data on product segment sales starting from the top. For example, if all firms ranked between first and twentieth in a country had product segment sales data, then they were selected. However, if firms in the top 20 did not have such information, we looked beyond this selected group to meet the condition that all firms have product segment data. In the end, we selected 31 countries, 22 OECD countries and 9 non-OECD countries.

As for financial variables, which measure the performance of financial companies' operations, we used the financial companies' LNTA (natural log of total assets) and PRATA (Profit after tax/total asset) in order to achieve consistency between countries and minimize statistical errors. These variables for financial companies in each country for the period analyzed are shown in Table 3.

<Table 3> Average Values of Financial Variables for Financial Companies

[2] We also selected a sample of 50 firms to increase the number of firms while minimizing the loss in the number of countries. The empirical results using a sample of 50 firms will be presented in this study.

Country	LNTA (natural log of total assets)		PRATA (profit after tax/total asset*100)	
	mean	variance	mean	variance
Australia	1.80	1.38	-0.78	16.68
Austria	3.18	1.11	2.66	0.35
Canada	3.36	1.29	2.84	0.44
Denmark	3.50	0.67	2.89	0.13
Finland	3.32	0.81	6.01	0.92
France	2.83	1.64	2.64	0.27
Germany	3.64	1.59	2.08	0.33
Ireland	3.47	0.95	3.17	0.18
Italy	3.78	0.76	0.61	0.07
Japan	4.46	0.31	-0.22	0.01
Korea	3.54	0.44	-1.80	0.26
Netherlands	2.83	1.38	4.21	0.47
Norway	3.91	0.21	0.86	0.00
Portugal	3.82	0.52	0.90	0.02
Spain	3.93	0.78	2.77	0.64
Sweden	3.40	0.97	5.72	0.66
Switzerland	3.18	0.96	3.04	9.02
U S A	3.53	0.52	2.03	0.23
U K	2.35	0.96	0.92	4.65

As a variable of showing the degree of financial market development in one country, the ratio of money supply (M2) to GDP (MGG: M2/GDP), the ratio of directing financing to GDP(MCG: MC/GDP), and the ratio of financial market to GDP (MCBLG: (Loan + MC + Bond)/GDP) were used.

The variables of financial market structure included the total value of stock market as a share of the total value of loans (LOGM: Loan/MC in stock market) and the capital market as a share of the total value of loans (LOMB: Loan/(MC in stock market + outstanding value of bond market)). The data on the total value of the stock markets and the outstanding value of the bond market in countries analyzed was obtained from FIBV (International Federation of Stock Exchanges).

To depict the institutional and national characteristics of each country, the following variables in each country were included: the index of private property rights protection (PR), financial related laws (LO), average life expectancy (LIF), GDP per capita (PER), and interest rate (INT). The index of private property rights protection (PR) was obtained using the simple average value of the 5 indices based on the International Country Risk Guide (ICRG) [3)]. As for LO, data by La Porta (1997) and alike was used to give the dummy variable of 1, if legislations

originated from common law, and have been legalized, but 0, if they were based on Roman laws.[4)] The macroeconomic variables like GDP per capita (PER) and interest rate (INT) came from the IFS (International Financial Statistics) database. The fore-mentioned variables' average values for the period 1996-1999 are shown in Table 4.

<Table 4> Averages of International Data

(unit: %, index(lo, pr, lif))

Country	LO	PR	LIF	LNPER	INT	MCG	MGG	LOMB	MCBLG
Australia	1.00	9.33	4.31	4.30	6.69	0.85	0.66	0.64	1.85
Austria	0.00	9.83	4.29	4.42	2.90	0.16	0.18	0.24	1.68
Canada	1.00	9.80	4.31	4.18	4.91	0.94	0.62	0.71	2.01
Denmark	0.00	9.80	4.31	4.52	4.50	0.52	0.59	0.08	2.60
Finland	0.00	9.80	4.29	4.38	3.80	1.08	0.17	0.52	1.69
France	0.00	9.47	4.32	4.39	4.81	0.43	0.43	0.36	1.82
Germany	0.00	-	4.29	4.43	4.49	0.39	0.35	0.81	-
Ireland	1.00	9.13	4.28	4.40	2.19	-	0.68	-	-
Italy	0.00	8.33	4.31	4.31	6.70	0.26	0.46	0.12	1.79
Japan	0.00	9.67	4.33	4.52	0.88	0.71	-	0.61	3.23
Korea	0.00	6.05	4.20	3.89	9.36	0.40	0.52	0.31	1.85
Netherlands	0.00	9.80	4.33	4.37	4.08	1.13	0.78	0.76	3.39
Norway	0.00	9.73	4.33	4.53	6.43	0.37	0.56	0.40	1.52
Portugal	0.00	8.39	4.27	4.02	6.03	0.30	0.72	0.39	1.59
Spain	0.00	8.47	4.32	4.13	6.10	0.48	0.44	-	-
Sweden	0.00	10.00	4.33	4.42	3.94	1.21	0.45	0.62	3.05
Switzerland	0.00	10.00	4.33	4.57	1.61	2.17	1.46	-	-
USA	1.00	9.63	4.30	4.49	6.15	1.42	0.59	1.01	2.97
UK	1.00	9.67	4.30	4.35	5.52	1.63	1.05	0.78	3.74

4. Correlation of Representative Variables

This research attempted to select a wide range of variables and conduct empirical analysis to find the relationship between the degree of diversification among financial companies and the institutional, financial and macroeconomic variables. Since most of the variables showed similar trends, we looked at the correlation between the representative variables. Those key variables included the financial companies' diversification index, Di4, the ratio of indirect financing to direct financing, LOMB, and the variables, MCBLG and MGG, which indicate the level of financial market development. Also, LNTA and PRATA were used as variables showing the characteristics of financial companies. In addition, the interest rate (INT) and GDP per capita

(LNPER) were used as each country's macroeconomic variables. The interest rate showed a positive correlation with the diversification index, but the value of the correlation coefficient was not large. GDP per capita and the financial companies' diversification index had a positive correlation and a correlation coefficient value of 0.17, which is not so insignificant. The variables for financial market structure – the ratio of financial market size to GDP and the money supply as a share of GDP – and the diversification index were in a negative correlation, but the ratio of indirect financing to directing financing had a positive correlation with the same index.

<Table 5> Correlation of Representative Variables

	DI4	INT	LNPER	LOMB	MCBLG	MGG	PRATA	LNTA
DI4	1.00							
INT	0.09	1.00						
LNPER	0.17	-0.46	1.00					
LOMB	0.18	0.14	0.48	1.00				
MCBLG	-0.11	-0.24	0.30	0.55	1.00			
MGG	-0.13	0.45	-0.30	0.28	0.56	1.00		
PRATA	0.06	-0.01	0.02	0.01	-0.01	-0.03	1.00	
LNTA	0.33	-0.24	0.24	0.01	-0.08	-0.47	0.06	1.00

Ⅲ. Setting –Up and Proving Hypothesis

1. Setting –Up Hypothesis

In addition to the individual financial companies' financial variables, the development level of financial markets, market structure, and various institutional and macrofinancial variables of individual countries have an impact on diversification of financial companies. Based on the correlations and various related theories, this Chapter examines the relationship between diversification of financial companies and market structure of the financial sector by testing the following six hypotheses.

Hypothesis 1: As the financial market grows (quantitatively), *ceteris paribus*, financial companies will be more inclined to choose specialized baking.

The level of financial market development in one country has an effect on the demand for financial services. If we are to apply the industrial organization theory by Stigler (1951) to the financial market, the bigger the size of financial market and the higher the demand for financial services, the more inclined will financial companies be to specialize rather than perform various activities.[5] As shown using the simple correlation results in the previous paragraph, the higher the financial interrelations ratio, or Goldsmith ratio, as the ratio of financial market size to GDP is called, the lower the diversification index gets. Hence, we can create the following hypothesis.

Hypothesis 2: Financial companies are more likely to specialize as the share of direct financing increases.

Differences in such institutional environment factors as financial market structure also affects financial companies' diversification. As the ratio of indirect financing to direct financing falls, financial companies are likely to choose specialized banking. The U.S. provides a good example of this: because America's capital market is so well developed, the weight of direct financing is high and so the country is maintaining a typical specialized banking system. On the other hand, despite having a very high ratio of indirect financing to direct financing, Japan maintains specialized banking. As described earlier, diversification of individual financial companies does not necessarily correspond with the system in place. Except, financial companies are highly likely to split or specialize in activities, depending on the balance between universal and specialized banking in the financial market, if direct financing accounts for a higher proportion than indirect financing. In other words, the higher the proportion of direct financing, the greater the economies of scale for financial companies and thus the following hypothesis is generated.

Hypothesis 3: The bigger the size of the economy, the higher the level of diversification of financial companies.

The macroeconomic variables like the size of economy and interest rate influence financial companies' diversification. In particular, as GDP per capita grows, the demand for various financial services will increase and financial companies will be induced to provide a range of financial services. Therefore, the probability of financial companies adopting universal banking will increase.

Hypothesis 4: The degree of diversification will get higher as the size of financial companies gets bigger. Through diversification, individual financial companies are able to enter a diverse range of businesses and thereby diverse risks. That is, financial companies are able to achieve the economies of scope by performing a wide range of businesses. Such business diversification is more closely related to the size of financial companies than any other variables. Generally speaking, other factors, like financial market structure and financial system, being equal, the size of financial institutions must be large to allow the companies' production function to realize economies of scope.

Hypothesis 5: The level of diversification is high among financial companies operating in both financial and non-financial sectors.

Most countries ban financial companies from owning industrial capital as a means of maintaining the stability of financial system. In the case of U.S., the recently passed Financial Modernization Bill stipulates that the establishment of financial holding companies that can manage banking, securities and insurance businesses is permitted, but those financial holding companies are prohibited from conducting non-financial businesses.[6] It is concerned that allowing financial companies to own industrial capital would have an adverse effect on the financial market structure or the industrial organization of financial systems. We looked at whether or not the financial companies operating in both financial and non-financial businesses have a higher level of diversification.

Hypothesis 6: The stronger the legal system or property rights protection mechanisms, the lower the level of diversification.

The institutional variables like legal system and the provision of property rights protection affect financial companies' diversification decisions. Banks are expanding their business domains from traditional commercial banking to securities and investment. For such investment banking businesses to proliferate, the institutional environment has an important role to play, for instance, in protecting the investors' property rights. La Porta, Lopez-de- Silanes, Shleifer and Vishny (1998) argue that the countries with little legal protection mechanism for shareholders and credit lenders are low in the level of capital market development. They find that investors are most vulnerable and the capital market is least developed in countries with a French civil law system, whereas investors' property rights are most well protected and the capital market is most developed in countries with an Anglo-Saxon legal system. Hence, to examine the

relationship between legal system and property rights protection mechanisms and the diversification index, the following hypothesis is generated and tested.

2. Proof Method

The leading variables that conform to the fore-mentioned six hypotheses are assigned as independent variables and the diversification index is made a dependent variable before conducting the following regression analysis to test the hypotheses.

Div = f(Financial market development variable, Financial market structure variable, Macroeconomic variable, Financial company variable, Financial operation type variable, Institutional variable)

The method of estimation used was multi-nominal logit regression analysis. The business diversification index used in this research was distributed between 1 and 8, but those above 5 were included in 4. Regression analysis was conducted for the diversification indices, Div4, Div5, Fiv and Div2, and the results were mostly consistent so this research chose Div4 as the main diversification index for analysis.

<Table 6> Distribution of Diversification Index

Diversification Index	Fiv	Div5	Div4	Div2
1	47.3	38.6	40.7	42.8
2	25.2	20.7	27.4	41.6
3	17.2	16.9	18.7	11.6
4	6.7	12.3	7.7	2.4
5	2.9	6.3	3.8	0.9
6	0.5	2.4	0.9	0.3
7	0.2	1.3	0.5	0.0
8	-	1.0	0.1	0.1
9	-	0.2	0.1	0.1
10	-	0.1	-	0.1
11	-	0.1	0.1	-
12	-	-	0.1	-
13	-	0.2	-	-

The dependent variable is categorized into 4 types depending on the number of industries in which each financial company operates. And these 4 types are denoted as P_1, P_2, P_3, and P_4 in accordance with the level of diversification to show the probability of financial companies providing financial services. Each of these probabilities can be expressed in a binomial functional form as the following.

$$\frac{p_j}{(p_j + p_4)} = F(\beta_j' \chi) \qquad j = 1,2,3$$

$$\frac{p_j}{p_4} = \frac{F(\beta_j' \chi)}{1 - F(\beta_j' \chi)} \qquad j = 1,2,3,$$

Because of

$$p_4 = [1 + \sum_{j=1}^{3} G(\beta_j' \chi)]^{-1}$$

Therefore

$$p_J = \frac{G(\beta_j' \chi)}{1 + \sum_{j=1}^{3} G(\beta_j' \chi)}$$

For the convenience of calculating, they can be expressed as logit functional forms. That is,

$$G(\beta_j' \chi) = \exp(\beta_j' \chi)$$

$$p_j = \frac{\exp(\beta_j' \chi)}{1 + \sum_{j=1}^{3} \exp(\beta_j' \chi)}$$

3. Empirical Results

First, both the simplest regression analysis model, <Model 1>, which had the market structure variable and macroeconomic variable as explanatory variables, and <Model 2>, to which institutional variable was added as explanatory variable, have a negative coefficient value for MGG (M2/GDP). The negative coefficient value of P_3 is increasing compared to that of P_2, but the negative coefficient value of P_4 is shrinking and no significance exists. MGG (M2/GDP)

represents the proportion of money supply (M2), or the sum of cash currency, deposit currency and near money, to total economy. That is, it represents the weight of monetary financial institutions and the related financial services in the economy as a whole. According to the results of the empirical analysis, the probability of financial companies diversifying into 2 or 3 businesses tends to decline as the weight of banking in the total economy increases. But there is no significance in the probability of diversifying into 3 or more businesses. In <Model 3>, a regression analysis was attempted using the market structure variable of the ratio of stock market value, bond outstanding and loans to GDP (MCBLG: (MC+Bond+Loan)/GDP) as explanatory variable. MCBLG, attained by dividing the sum of most of financial assets in one economy by GDP, can be treated as a type of financial interrelations ratio. The analysis results are similar to those for MGG in <Model 1> and <Model 2>. The coefficient values of MCBLG are all negative and the negative coefficient value of P_{30} is increasing relative to P_2, but in the case of P_4, the negative value of coefficient is falling without significance. So, as the ratio of total production (financial interrelations ratio) to financial market assets increases, the probability of financial companies diversifying into 2 or 3 businesses tends to drop, but no significance exists if the number exceeds 4. The results indicate that the level of financial market development affects financial companies' decision to diversify into 2~3 businesses, but there is no definite impact that financial market structure makes when the companies are entering more than 4 businesses.

On the other hand, in estimating the effect of direct financing to GDP ratio on financial companies' diversification, no consistent conclusion can be made for <Model 1>, where the respective ratio's coefficient generally has no significance level in the 5% margin of error. Also in <Model 2>, the coefficient of the ratio of direct financing to GDP has no significance level within the 10% margin of error, making it difficult to deduce consistent conclusions. Unlike <Model 1> and <Model 2>, <Model 4> shows different results: the coefficient of the respective ratio has a negative value and it increases as the level of diversification goes up. Hence, there is a growing probability of diversification level rising with the ratio of direct financing to GDP within the 1% margin of error. In the case of <Model 5>, also, the results are similar to those of <Model 4>. Noticeably, in <Model 5>, the coefficient of the direct financing to GDP ratio has a negative value, which tends fall as the level of diversification increases. Thus, the probability of diversification level rising tends to decrease as the ratio of direct financing to GDP increases within the 1% margin of error.

Second, the ratio of direct financing to indirect financing, or LGM (Loan / Market capitalization), which was used as an explanatory variable, is regarded as an appropriate variable that explains market structure. In all <Model 1>, <Model 2>, <Model 3> and <Model 4>, like MGG, the coefficients of LGM have negative values and the negative coefficient value of P_3 is increasing compared to that of P_2. But in the case of P_4, the negative value of its coefficient is decreasing and there is no significance. Thus, there is a tendency for the probability of diversification into 2~3 businesses to decline as the ratio of indirect financing to direct financing rises, but it is difficult to conclude the same applies when the number of businesses increases to 4 and above. This confirms the earlier results that a high ratio of indirect financing to direct financing affects financial companies diversifying into 2~3 businesses, but no definite direction in which financial market structure influences the diversification of financial institutions into 4 or more businesses.

A third influence examined was that of the size of economy on business diversification. To conduct a regression analysis in <Model 1>, market structure variable and macrofinancial variable was included as explanatory variables, and to this, the institutional variables of each country, like property rights protection index, legal system index and average life expectancy, were added for <Model 2>. Both models show the coefficients of GDP per capita with a positive value. That is, the level of diversification increases with a rise in GDP per capita. Compared to P_2, the coefficient value of P_3 is not increasing, but has no validity within the 5% margin of error, while the positive value of P_4 coefficient has significance within the 1% margin of error. Hence, it is difficult to determine the probability of financial companies diversifying into 3 businesses as the size of economy grows, since there is no significance, but the probability of diversifying into 4 or more businesses tends to rise within the 1% margin of error as the GDP per capita grows. Similarly, the coefficient values of GDP per capita in <Model 3> are all positive. <Model 3> shows consistency in that the probability of diversification level increasing with GDP per capita drops within the 1% margin of error. That is, the model shows results more consistent than those of <Model 1> and <Model 2>, and supports our hypothesis that financial companies have the tendency to specialize as the size of economy grows. <Model 4>, like <Model 1> and <Model 2>, has GDP per capital coefficients with a positive value, which is declining, and significance exists within the 1% margin of error.

Fourth, the effect of interest rate on the level of diversification among financial companies slightly differs between models, making it difficult to reach a coherent conclusion. <Model 1> shows all the coefficients of interest rate with positive values. But they decline as the level of diversification increases, which indicates that financial companies are less likely to diversify when the interest rate rises. In <Model 2>, too, the coefficients of interest rate have positive values. However, those coefficients increases with the level of diversification, which implies that the likelihood of diversification level rising with a higher interest rate will be greater within the 1% margin of error. This is in contrast to the results shown in <Model 1>, but it is difficult to confirm that a concrete relationship exists given the highly insignificant change in coefficient. In <Model 3>, compared to P_2, the value of interest rate coefficient is negative in P_3 and positive in P_4. However, since the coefficient increases with the rising level of diversification, there is a growing probability of financial companies' diversification level edging up higher with a rising interest rate within the 1% margin of error. And this is a similar result found in <Model 2>. However, considering that the coefficients of P_2 and P_3 have no significance at the 10% level, we cannot conclude with certainty financial companies will be more induced to diversify as the interest rate increases. <Model 4> shows all of the coefficients of interest rate with positive values. However, the coefficients increase with the level of diversification, which is a result different from that of <Model 1> but similar to those of <Model 2> and <Model 3>. Hence, the probability increases within the 1% margin of error that the level of diversification will reach higher with an interest rate increase and this result shows the change in coefficients more clearly than that shown in <Model 2> and <Model 3>.

Fifth, we have identified a clear relationship existing between the size of firm and the level of diversification. In all models of <Model 1>, <Model 2>, <Model 3> and <Model 4>, the total assets of financial companies have coefficients all with a positive value. At the 1% significance level, there is a high probability that the level of diversification will increase as financial companies' total assets grow.

Sixth, <Model 2> estimates the effect of legal system on financial companies' diversification decision. The coefficient of legal system shows no significance within the 10% margin of error, so it is difficult to conclude about the probability concerning the level of diversification. On the other hand, both <Model 3> and <Model 4> show that all of the coefficients of legal system have significance within the 1% margin of error, with the coefficient value of P_3 increasing

relative to that of P_2. In the case of P_4, however, no significance exists within the 10% margin of error. Therefore, in countries with a legal system founded on the common law, financial companies are more inclined to diversify into 2~3 businesses.

Seventh, we have found results with significance that indicate whether or not there is property rights protection affects the level of diversification of financial companies. In <Model 2>, all coefficients for property rights protection index have positive values and significance exists within the 1% margin of error. The results indicate that financial companies operating in 2~3 businesses will be more inclined diversify as the property rights protection index increases, but will be less likely to diversify if there are operating in more than 3 business areas. In <Model 3>, significance exists within the 1% margin of error for the coefficient of property rights protection index and the higher the index, the more likely are financial companies to diversify their businesses. However, there exists no real significance to explain the greater inclination for financial companies to diversify if they are operating in 2~3 businesses as compared with operating in one business area. That is, if operating in 2 industries, no significance exists within the 10% margin of error and, in the case of financial companies operating in 3 and those in 4 industries, significance exists only within the 10% margin of error and within the 1% margin of error, respectively. <Model 4> shows the coefficients of property rights protection index with positive values and significance existing within the 1% margin or error. Also, it shows a consistent increase in the probability of financial companies diversifying as the property rights protection index rises.

Eighth, we have found the average life expectancy of each country having a positive effect on diversification of financial companies. In <Model 2>, the coefficients of average life expectancy all have a negative value and the coefficient values of P_3 and P_4 are increasing relative to that of P_2. Significance exists in the case of P_2 and P_3, but not in the case of P_4. Thus, the probability of financial companies diversifying to operate in 2~3 businesses increases as the average life expectancy grows, but there is no significance within the 5% margin of error for the probability of diversifying into 4 or more industries. In both <Model 3> and <Model 4>, the coefficients of average life expectancy have negative values, as in the case of <Model 2>. Compared to P_2, the coefficient values of P_3 and P_4 are increasing, but there is no significance in the case of P_4. Therefore, as the average life expectancy increases, we are more likely to see financial companies diversify into 2~3 industries, but it is reasonable to interpret that no

significance exists within the 5% margin of error where the number of diversification areas exceeds 4 and this is a similar outcome as in <Model 2>.

Lastly, no result with significance has been found in <Model 1> to <Model 8> on the dummy variable (M1) for operations in non-financial sectors. Financial companies' profitability coefficient showed no significance level within the 10% margin of error, preventing us from reaching consistent conclusions. In <Model 6>, the coefficients of D5 (dummy variable for securities – other financial industries) have positive values and significance within the 1% margin of error. Financial companies are more likely to diversify further if operating in securities and other financial industries.

<Model 7> and <Model 8> include all the dummy variables found in <Model 6> and show the same results as explained above. All the coefficients of D5 have positive values as well as significance within the 1% margin of error.

4. Results of Hypothesis Testing

Based on the results of empirical analysis, the results of hypothesis testing of the 6 hypotheses can be summarized as follows. First, we can conclude that Hypothesis 1 about the relationship between the size of financial market and the level of diversification in part holds. As the size of financial market, or the size of financial assets to the size of economy, gets bigger, there is a declining probability of financial companies diversifying into 2~3 industries, but there is no significance if the diversification includes 4 or more industries. The same result is obtained from the analysis of the relationship between the size of financial market defined in this case as M2 and the level of diversification. According to this, the level of financial market development affects financial companies' decision to diversify into 2~3 industries under the 4-digit SIC codes, but, when diversifying into 4 or more of other industries, it is difficult to make a conclusion about the relationship between financial market structure and diversification of financial companies.

Hypothesis 2, which argues that the larger the proportion of direct financing to total economy, the greater the tendency of financial companies to specialize, does not seem to hold. This hypothesis is true in <Model 5>, but the results in other models do not support the theory.

It is generally perceived that the countries like the U.S. with highly developed markets for direct financing have high tendency to choose specialized banking. But the results of this research indicate that in reality such institutional environment does not determine the financial companies' decision to diversify into other businesses. So, even with permissive institutional arrangements, whether individual financial companies decide to enter another business is a whole different matter.

It is hard to conclude that Hypothesis 3 is true, since there was no consistency among models and in the impact on the degree of diversification to show the effect of the size of economy on diversification of financial companies. Another macroeconomic variable, the interest rate, also had slightly different effect on the level of diversification in each model, making it difficult to reach a consistent judgment.

According to Hypothesis 4, if the other things being equal, the bigger the size of a financial company, the greater the level of its diversification. From the perspective of individual financial companies, they can disperse risks through business diversification. So, it needs to be proved whether financial companies can achieve the economies of scale by performing various businesses operation and whether this is related to the size of the companies. The analysis results attained from international data on financial companies' business diversification clearly support Hypothesis 4.

We cannot conclude that the theory about the relationship between industrial capital and financial capital as argued in Hypothesis 5 is true. This is because most of the models found no significance with consistency. In many countries, financial capital is not permitted to hold industrial capital out of concern for possible weakening the financial market structure and the industrial organization of the financial sector. However this, in reality, is not associated with the level of diversification. That is, we could not find evidence to support that financial companies have the tendency to diversify and operate in an extensively wide range of industries in financial and non-financial sectors.

Lastly, with regard to Hypothesis 6 about the effect of institutional variable on the degree of diversification, the institutional variables like legal system and protection of property rights are found to have an influence on the level of diversification of financial companies. In particular, we have taken into consideration of the argument by La Porta, Lopez-de-Silanes, Shleifer, and

Vishny (1997) that the countries with little legally enforced protection mechanisms for shareholders and credit lenders have less developed capital markets. And this research found that the higher the ratio of indirect financing to direct financing, the less inclined financial companies will be to diversify into 2~3 industries and this supports Hypothesis 6. However, according to the results inferred about the direct effect of legal system and property rights protection on diversification, financial companies are induced to expand into 2~3 industries if the legal systems are based on the common law, while they are more likely to diversify into 2~3 industries as the property rights protection index increases. In both cases, the probability of financial companies diversifying into 4 or more industries was slightly lower than that of diversifying into 3 industries. Hence, a caution must be taken in interpreting Hypothesis 6, which argues that the stronger the legal system and property rights protection mechanisms, the lower the level of diversification.

Ⅳ. Conclusion & Policy Implications

The phenomenon of diversification of financial companies is a natural development process that the financial sector is undergoing and it reflects the change in the structure of financial sector. An efficient financial structure is generated in the process of individual financial companies maximizing their objective function, and financial policies are responsible for identifying which measures will lead to an efficient financial structure. This paper has attempted to explain the trend of financial diversification, which is emerging amid the advancement of financial innovation and liberalization in the global financial sector. To that end, we used the available data on financial companies in 19 countries and measured the level of diversification of those companies in terms of the number of industries in which they operate. And from an endogenous financial system's perspective, we examined the relationship between the level of diversification and market structure variables and various institutional variables – how financial companies are affected by those variables in making diversification decisions and how they develop. The financial system in individual countries looks different from each other due to the endogenous structural changes in the financial sector, which take place as the economy advances, and due to government regulations. But, at the time, we are seeing the integration of financial systems in different countries. Universal banking system is no longer a German universal banking system; rather, it is being developed in various ways in accordance with the

circumstances of individual countries and the management strategies of individual financial companies. Since the late 1990s, such diversification has driven the evolution of the financial system in each country more than it did in the early 1990s.

This research generated and tested 6 hypotheses in order to examine the relationship between financial companies' diversification and the structure of the financial sector. From the results, we found that the bigger the size of financial market, *ceteris paribus*, the greater the tendency for financial companies to specialize. Financial companies' decisions to diversify are affected also by the differences in institutional environment, including the financial market structure. The ratio of direct financing to indirect financing is an indicator of market structure that expresses the degree of institutional accessibility allowing financial companies to expand into various business domains. In countries with a high proportion of direct financing, companies tend to specialize. Diversification helps individual financial companies to disperse risks throughout various businesses and this is associated with the size of the financial company. In other words, other things being equal, the bigger the size of financial companies, the higher the level of diversification. Furthermore, we found no evidence indicating that financial companies operating in both financial and non-financial sectors execute unrelated diversifications in an indiscriminating manner.

According to the results inferred from this research, it is possible to make different interpretations of the effect of institutional variables like legal system and protection of property rights protection on diversification of financial companies depending on the magnitude of the effect, rather than considering it only in absolute terms of being high or low. So, we could identify that financial companies have the inclination to diversify into 2~3 businesses if there is a legal system based on the common law or the protection of property rights is high. However, such a probability of financial companies diversifying into 4 businesses tends to be lower than that of diversifying into 3 businesses.

Based on the empirical results of the relationship between business diversification and market structure of the financial sector, we could make the following considerations about business diversification in Korea's financial sector. The policy challenge facing Korea's financial sector is the question of choosing the optimal industrial organization among the various forms of industrial organization in universal banking. The urgent issue is whether to

shift from the current specialized banking system to universal banking. Of course, the bottom line indicates that it is a global trend to move toward universal banking and the government is already enforcing policies by keeping in mind of universal banking under a financial holding company structure. Also, the policy that clearly stated universal banking through affiliation since 1993 remains in effect. That is, Korea basically has specialized banking, but it is possible for financial companies to diversify depending on the interpretation of the Banking Regulations by the Governor of Financial Supervisory Service. Thus, unlike Japan or U.S., the route to diversification is not completely closely off. However, since financial companies can operate non-financial activities only after being approved by the government, it may be impossible to diversify due to regulations on non-financial businesses. Hence, to gradually move toward universal banking, it is necessary to introduce a negative system of clearly stating the financial business domains

Currently, most of the banks in Korea achieve diversification by having an affiliated company to perform non-banking activities. The fact that those banks are operating in other businesses through a subsidiary might make them integrated financial services companies, but the problem is that such a subsidiary has not been bought or established for the purpose of business diversification but for other reasons. Consequently, the Korean banks have entered areas that do not fall in line with their business strategy for business diversification[7]. Therefore, the banks and their subsidiaries have failed to develop a close relationship as an integrated financial group in which considerations are given to such factors as product marketing in order to execute comprehensive business strategies. So this means that there has been no diversification of Korean banks in a true sense.

To bring up the level of diversification as a way of improving the efficiency of Korean financial companies, they should be provided with greater choices at the institutional level to make possible a combined production of various financial services. Of course, the institutional system needs to be re-examined to enhance the stability of the financial system and minimize the conflict of interest. And this kind of review process should be undertaken with consideration for which system will generate maximum efficiency given the circumstances and responsive competencies of individual financial companies.

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p=Div4 (Model 1)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	-9.1866	-2.0706	C3	-8.8362	-1.5945	C4	-18.6445	-3.0227
MGG2	-2.7192	-5.3295	MGG3	-2.9396	-4.7519	MGG4	-0.6483	-0.9825
LGM2	-0.4251	-2.7957	LGM3	-0.9269	-4.1286	LGM4	-0.7842	-3.1644
LNPER2	1.6097	1.7077	LNPER3	1.3411	1.1256	LNPER4	3.2518	2.4787
INT2	0.5095	9.4048	INT3	0.4768	7.4510	INT4	0.4492	6.2180
LNTA2	0.3283	4.6583	LNTA3	0.7005	8.2732	LNTA4	0.9264	10.2388
MCG2	0.3434	1.1350	MCG3	0.3994	1.0568	MCG4	-0.5781	-1.5169

dep=Div4 (Model 2)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	133.9790	3.2516	C3	88.1087	1.6977	C4	16.1880	0.2765
MGG2	-3.1789	-4.7063	MGG3	-3.6046	-4.7398	MGG4	-1.4349	-1.6315
LGM2	-0.4707	-2.5066	LGM3	-0.5003	-1.9403	LGM4	-0.3226	-1.1232
LNPER2	-0.3351	-0.2233	LNPER3	-1.3115	-0.7893	LNPER4	0.5182	0.2671
INT2	0.5356	4.2552	INT3	0.6541	4.5030	INT4	0.7650	4.6982
LNTA2	0.5265	6.7449	LNTA3	0.9049	9.7713	LNTA4	1.3522	12.6633
LO2	0.3812	0.8528	LO3	0.2892	0.5755	LO4	0.1591	0.2690
PR2	1.5460	4.3913	PR3	1.8950	4.3620	PR4	1.8501	3.7874
LIF2	-34.5905	-3.4448	LIF3	-24.3234	-1.9382	LIF4	-10.1919	-0.7340
M12	21.6373	0.0061	M13	21.7585	0.0062	M14	23.2772	0.0066
MCG2	-0.6800	-1.1554	MCG3	-0.1202	-0.1772	MCG4	-0.8149	-1.0954

dep=Div4(Model 3)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	146.4610	3.9543	C3	125.5000	2.6769	C4	25.1068	0.4524
MCBLG2	-1.2473	-7.5722	CBLG3	-1.2751	-6.4504	MCBLG4	-0.8286	-3.6616
LGM2	-0.5089	-2.9207	LGM3	-0.6547	-2.7838	LGM4	-0.3416	-1.1996
LNPER2	5.1154	5.2457	LNPER3	5.0704	4.7052	LNPER4	3.0408	2.5379
INT2	-0.0553	-0.4763	INT3	-0.0289	-0.2083	INT4	0.4327	2.7786
LNTA2	0.5731	7.4209	LNTA3	0.9606	10.4875	LNTA4	1.3888	12.7702
LO2	0.7411	1.9872	LO3	0.9134	2.0905	LO4	0.2165	0.4436
PR2	0.2392	0.7843	PR3	0.5610	1.4101	PR4	1.0983	2.4846
LIF2	-39.3457	-4.4639	LIF3	-35.5527	-3.2188	LIF4	-12.6867	-0.9781
M12	21.6995	0.0061	M13	21.8533	0.0062	M14	23.3007	0.0066
PRATA2	-0.0963	-0.1788	PRATA3	-0.4771	-0.9429	PRATA4	1.5845	0.7435

dep=Div4 (Model 4)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	187.1030	4.3431	C3	142.3850	2.6897	C4	57.6678	0.9544

LGM2	-0.6717	-3.3942	LGM3	-0.7205	-2.8126	LGM4	-0.4949	-1.5922
LNPER2	5.1592	5.2823	LNPER3	4.8661	4.5161	LNPER4	3.0385	2.5441
INT2	0.1620	1.5800	INT3	0.2458	2.0335	INT4	0.5812	4.2747
LNTA2	0.5915	7.6851	LNTA3	0.9781	10.7257	LNTA4	1.3874	12.9992
LO2	1.3128	3.1308	LO3	1.2662	2.5736	LO4	0.5005	0.9493
PR2	0.8464	2.6708	PR3	1.1671	2.8784	PR4	1.5540	3.4230
LIF2	-50.5643	-4.8744	LIF3	-41.1651	-3.2648	LIF4	-21.4668	-1.4987
M12	21.7064	0.0061	M13	21.8321	0.0061	M14	23.3203	0.0066
MCG2	-2.8804	-6.7448	MCG3	-2.5500	-5.1146	MCG4	-1.9391	-3.4669

dep=Div4(Model 5)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	164.2910	4.3150	C3	146.9130	3.0927	C4	38.8703	0.6661
MGG2	1.3389	1.6788	MGG3	1.9530	1.9961	MGG4	3.6183	3.2790
LGM2	-0.7541	-4.1065	LGM3	-0.8938	-3.8136	LGM4	-0.8582	-2.7240
LNPER2	6.2267	5.5302	LNPER3	7.2226	5.2196	LNPER4	7.7323	4.7439
INT2	-0.1622	-1.2490	INT3	-0.2266	-1.4120	INT4	-0.0369	-0.2222
LNTA2	0.5413	7.0887	LNTA3	0.9400	10.3956	LNTA4	1.3684	13.0105
LO2	0.3525	1.1280	LO3	0.5351	1.4115	LO4	0.0307	0.0652
LIF2	-43.9430	-4.7396	LIF3	-41.2534	-3.5969	LIF4	-17.5284	-1.2852
M12	21.7543	0.0064	M13	21.9052	0.0065	M14	23.3575	0.0069
MCBG2	-2.1762	-5.7423	MCBG3	-2.3821	-5.1230	MCBG4	-2.5164	-4.9767

dep=Div4(Model 6)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	131.0400	3.2872	C3	108.0650	1.8384	C4	-0.1287	-0.0018
LGM2	-0.4262	-2.0448	LGM3	-0.3934	-1.2016	LGM4	-0.3887	-0.8521
LNPER2	6.6043	6.1446	LNPER3	7.9612	5.6514	LNPER4	6.7191	4.3648
INT2	0.0917	0.7998	INT3	0.1006	0.6241	INT4	0.4444	2.4940
LNTA2	0.6317	6.4365	LNTA3	1.0162	7.9494	LNTA4	1.3961	9.7406
LO2	1.6766	3.1922	LO3	1.7068	2.4474	LO4	0.8899	1.1698
LIF2	-37.5877	-3.9732	LIF3	-34.5691	-2.4957	LIF4	-9.4270	-0.5765
D52	6.4790	6.3554	D53	9.1299	8.7785	D54	10.6696	9.7778
M12	22.2838	0.0070	M13	24.1240	0.0076	M14	26.5524	0.0083
MCG2	-2.0348	-3.9223	MCG3	-1.7700	-2.5057	MCG4	-1.1413	-1.4517

dep=Div4(Model 7)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	157.4290	3.1749	C3	135.3240	1.8153	C4	12.0194	0.1426
LGM2	-0.5097	-2.1413	LGM3	-0.9877	-2.3983	LGM4	-0.7731	-1.4814
LNPER2	8.3341	6.5084	LNPER3	7.2761	4.3699	LNPER4	6.0640	3.3883
INT2	-0.0045	-0.0309	INT3	-0.0156	-0.0751	INT4	0.3857	1.7319
LNTA2	0.4830	4.2705	LNTA3	0.6466	4.3743	LNTA4	1.0819	6.6660
LO2	2.0672	3.2051	LO3	1.6935	2.0165	LO4	0.9691	1.0771
LIF2	-45.3101	-3.8723	LIF3	-39.8193	-2.2831	LIF4	-11.3203	-0.5755
D12	19.8415	0.0078	D13	22.1615	0.0088	D14	22.2855	0.0088

D22	20.2952	0.0106	D23	22.0433	0.0115	D24	21.9271	0.0114
D32	-103.4030	-0.0015	D33	-87.7583	-0.0012	D34	-88.8112	-0.0018
D42	21.3978	0.0012	D43	-0.2745	0.0000	D44	23.2414	0.0013
D52	6.9030	6.7332	D53	9.3060	8.7974	D54	10.1411	9.2226
D62	20.2101	0.0068	D63	19.3355	0.0065	D64	20.7380	0.0070
M12	16.8137	0.0054	M13	20.2431	0.0065	M14	20.3922	0.0066
MCG2	-2.2978	-3.7869	MCG3	-1.9834	-2.4402	MCG4	-1.0734	-1.1981

dep=Div4(Model 8)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	176.5740	3.8779	C3	151.3530	2.0908	C4	28.3867	0.3507
LGM2	-0.6670	-3.0200	LGM3	-1.1164	-2.7555	LGM4	-0.9729	-2.0150
LNPER2	7.1820	5.8206	LNPER3	6.2717	3.9368	LNPER4	5.6108	3.2667
INT2	-0.1516	-1.0689	INT3	-0.1467	-0.6933	INT4	0.2780	1.2402
LNTA2	0.4212	3.7006	LNTA3	0.5948	3.9970	LNTA4	1.0293	6.3091
LO2	0.8744	2.0845	LO3	0.6910	1.1114	LO4	0.3408	0.4757
LIF2	-48.0557	-4.4876	LIF3	-42.0478	-2.5105	LIF4	-14.2250	-0.7636
D12	19.6388	0.0077	D13	21.9537	0.0087	D14	22.0745	0.0087
D22	20.2125	0.0105	D23	21.9569	0.0114	D24	21.8743	0.0113
D32	-103.2000	-0.0015	D33	-87.5202	-0.0012	D34	-88.3796	-0.0018
D42	21.0655	0.0013	D43	-0.6004	0.0000	D44	22.7703	0.0014
D52	6.7953	6.6732	D53	9.1953	8.7476	D54	10.0269	9.1745
D62	20.4391	0.0069	D63	19.5609	0.0066	D64	20.8799	0.0070
M12	16.6820	0.0054	M13	20.1123	0.0065	M14	20.3459	0.0066
MCBG2	-1.6139	-5.8236	MCBG3	-1.4328	-3.6168	MCBG4	-0.9243	-2.1379

dep=Div4(Model 9)								
ind	estimate	t-statistic	ind	estimate	t-statistic	ind	estimate	t-statistic
C2	146.4610	3.9543	C3	125.5000	2.6769	C4	25.1068	0.4524
MCBLG2	-1.2473	-7.5722	CBLG3	-1.2751	-6.4504	MCBLG4	-0.8286	-3.6616
LGM2	-0.5089	-2.9207	LGM3	-0.6547	-2.7838	LGM4	-0.3416	-1.1996
LNPER2	5.1154	5.2457	LNPER3	5.0704	4.7052	LNPER4	3.0408	2.5379
INT2	-0.0553	-0.4763	INT3	-0.0289	-0.2083	INT4	0.4327	2.7786
LNTA2	0.5731	7.4209	LNTA3	0.9606	10.4875	LNTA4	1.3888	12.7702
LO2	0.7411	1.9872	LO3	0.9134	2.0905	LO4	0.2165	0.4436
PR2	0.2392	0.7843	PR3	0.5610	1.4101	PR4	1.0983	2.4846
LIF2	-39.3457	-4.4639	LIF3	-35.5527	-3.2188	LIF4	-12.6867	-0.9781
M12	21.6995	0.0061	M13	21.8533	0.0062	M14	23.3007	0.0066
PRATA2	-0.0963	-0.1788	PRATA3	-0.4771	-0.9429	PRATA4	1.5845	0.7435

1) Saunders and Walter (1994) define a bank as being universal if it operates all financial activities by itself, including deposit, lending, foreign currency transaction, securities and insurance businesses. However, there is another opinion, which defines universal banks more broadly as those with a close relationship with companies based on equity ownership, exercise of the voting right on assigned shares, and assignment of directors. Liewellyn (1995) calls financial companies that diversify from the

traditional banking activities through affiliates as financial conglomerates, distinguishing them from universal banking.

2) Jwa & Jun (1999) used the same method as companies' diversification indicator.

3) Jwa and Jun (1999) derived 5 indices measured using ICRG(International Country Risk Guide) and the property rights protection index derived using the simple averages of those indices, namely, the risk of exploitation in the 80s, the risk of government rejecting contracts, constitutional system, government corruption, and quality of government bureaucracy. In particular, Jwa and Jun referred to North's (1992) theory and explained that the countries where property rights are well protected, companies have a greater tendency to expand, and that the property rights protection index influences the level and the quality of diversification, since large companies require more resources to diversify.

4) Porta, R. L., F. Lopez-De-Silanes, A. Shleifer and R. W. Vishny(1997), "Legal Determinants of External Finance," *Journal of Finance*, Vol. LII, No. 3, pp.1131-1150.

5) Stigler (1951) established the proposition that division of labor as mentioned by Adam Smith in his 『The Wealth of Nations』 is determined by market size.

6) In financial holding companies converted from financial companies, operating income from non-financial businesses is not permitted to exceed 15% of total income and they are expected to withdraw from such activities in the next 10-15 years.

7) For example, in an attempt to prevent the inflow of industrial capital, government restricts investment trust companies to make investment through banks, and there are cases where securities companies and mutual saving banks have become affiliates of those companies unable to repay debt by taking over the equity held in subsidiaries to clear loans.