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Regional Difference of Project Finance and Its Policy Implications*

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Abstract : This paper aims at examining the existence and characteristics of regional difference in project finance in Korea. Main results of this paper are as follow. Firstly, regional difference in project finance between capital region and local can be seen partially. However, their characteristics are different from corporate finance. ANOVA tests show significant differences of excess interest rate occur in case of commercial real estate projects and significant differences of contracted terms occur in case of residential real estate projects carried out by local banks. Secondly, key factors causing the regional differences in project finance are asymmetric information for cash flow generated by the project between the capital region and local. Especially, regional differences in project finance are different from those in corporate financing because of local banks°Ø behaviors. They follow and act as the passive members of nationwide banks in case of the capital region projects. Thirdly, prepaid sale system and the guarantee system depending on construction companies dilute the regional differences in project finance in case of residential real estate projects. Although these systems contributed rapid growth of project finance, they may be the main factors distorting project finance market which lead to financial crisis. In these context, policy implications may be derived in order to solve the confronted problems of project finance market.

Keywords : Project Finance, Regional Financial System, Asymmetric Information, Local Bank, Regional Deference, Financial Crisis

1. Introduction

Project finance is a method of raising debt funds for an economically separable capital investment project, based on lending against the cash flow generated by the project. Thus, project finance depends heavily on a detailed evaluation of a project's potential risks and returns. Project finance has been used in Korea as a financing method for infrastructure projects since the middle of the

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1990s. Project finance has been especially popular in the real estate development projects since 2000.

Project finance was first used in Korea in the 1990's as a mean of financing SOC projects. Korean government attempted to attract private capital to expand SOC, using project finance as a financing technique to attract private capital. But project finance became common place in real estate development projects since 2000. Under an easy-money policy including low interest rates and affluent liquidity, financial companies attempted to finance real estate development using project finance as the main sources of asset management. According to data of Financial Supervisory Service, real estate development occupied 77% of project finance for the period from 2001-2004.

Among real estate development projects, project finance has been exceedingly common place in the housing sector. This was because housing development projects used a prepaid sale system. Market risk could be diminished through the prepaid sale system in most housing development projects, and thus, housing development project finance provided competitive risk adjusted return to financial companies.

Used in this context, project finance can contribute to the promotion of various regional development projects such as expansion of the SOC and real estate projects. Therefore, project finance can be used as an important tool to stimulate regional economy. Because project finance can be an instrument to stimulate the regional economy, the effectiveness of regional financial systems is very important. If the financial system carrying out project finance operates effectively throughout all regions, financing conditions for project finance can be indiscriminate throughout all regions. However, if the financial system operates ineffectively and discriminately between regions, regional differences in project finance can occur. This would result in an expansion of regional economic differences owing to the availability of project finance.

According to Park's(1997) study on regional differences of the Korean financial market, regional differences in the credit loan market between the financial core and other regions occurred because of asymmetric information about local creditors between regions. Basically, the project finance market is different from the credit loan market, because it is based not on the credit of the debtor, but on the cash flow generated from the project. Thus, the main factor inducing differences in project finance may be asymmetric information about the cash flow of a project between regions. The problem of asymmetric information may have added influence on executing project finance in the case of real estate development projects. It may increase regional differences in financing conditions, and finally lead to economic disparity between regions. Therefore, it is very important to examine whether regional differences of project finance may occur.

Especially, global financial crisis stemmed from subprime mortgage defaults in USA has attacked Korean financial markets. Project finance market has been most seriously influenced by financial crisis. Essentially, Project finance should robust against financial crisis, because it raise debt funds based on lending against the cash flow generated by the project and protected by various risk hedge tools. However, the situation of Korean project finance market is diagonally opposite. Namely, project finance market is most vulnerable against

financial crisis. Therefore, it is worth while analyzing the major reasons and policy implications in order to solve the confronted problems of project finance market.

Given the conditions outlined above, this paper aims to examine the existence and characteristics of regional differences in project finance in Korea. In order to accomplish this purpose, firstly, regional current states of project finance are analyzed. Secondly, existence of regional differences in project finance and its characteristics are examined. Thirdly, factors and mechanisms affecting the regional differences in project finance are analyzed. And Finally, some policy implications are derived in order to solve the confronted problems of project finance market.

2. Literature Review

Many researchers on the regional economy and economic geography have been interested in the regional dimension of finance. Imperfect information, institutional obstacles and transaction costs engaged in the real world have hampered interregional flow of financial funds and arbitrage. Under these conditions, many researches about the role of finance in the regional economy and the regional dimension of the financial markets have been performed in recent times.

These studies have focused on various dimensions including the issues of regional impact of monetary policy, regional monetary multipliers and regional financial markets(Dow and Rodriguez-Fuentes, 1997). They have shown that regional differentials in interest rate and regional disparities in credit availability, i.e. regional differences of financial markets, could occur. Moreover, These studies have also shown that regional financial markets may become isolated from the national financial market.

Fishkind(1977), Roberts and Fishkind(1979) and Dow(1987) elucidated regional differences of financial markets. They insisted that these regional differences were ascribed to market imperfection such as imperfect information, transaction costs, and the relative composition and competitiveness of regional economy. Moore and Hill(1982) elucidated the existence of isolated regional financial markets from the national financial market. They suggested that large firms, which easily disseminate information, have access to both local and national financial institutions. However, households and small-sized firms in outlying regions have no access to central capital markets because of the information search and transaction costs. According to their theory, the asymmetric information problem between local and nationwide financial institutions is a main factor creating isolated regional financial markets.

These theories have been developed by Moore, Karaska and Hill(1985), Harrigan and McGregor(1987), Hutchinson and McKillop(1990, 1991), Bias(1992), Amos and Wingender(1993), Porteous(1995), and Clark and O'Connor(1995). Porteous(1995) used the concept of financial cores and peripheries for explaining regional financial theory. Financial cores contain an agglomeration of financial activities and have easy access to important financial markets. On the other hand, financial peripheries lack such activities and access. Financial peripheries, in which local banks dominate the credit market, may be apt to become

isolated from the central financial market. Summarizing these studies, regional difference of the financial market and isolated regional financial markets can occur because of the imperfection of the national financial market. In addition, asymmetric information caused by distinct regional banking systems may be the primary factors in their creation.

In case of Korea, Park(1997) studied the regional differences of the financial market, and elucidated that regional differences of financial markets occur between Seoul as a financial core and the other regions as financial peripheries using the criterion of 'credit rationing'. Park(1997) insisted that the main factor creating the regional differences of financial market was asymmetric information of local creditors between nationwide financial companies and local financial companies. Namely, nationwide financial companies had less information about local creditors than local financial companies, and then, they used credit rationing in order to alleviate the asymmetric information problem.

Because Park(1997)'s study concentrated on the credit loan market where fund raising is based on the credit of the debtor, studies about regional differences in project finance market in Korean have not been executed. Considering project finance is a method of fund raising based on the cash flow generated by the project, results may be different than these based on the credit loan market. Therefore, it is worth-while to examine whether regional differences in project finance may occur.

3. Methodologies and Data

1) Methodologies

To achieve the purpose, quantitative methods such as statistical data analysis and ANOVA(Analysis of Variance) test as well as qualitative methods such as interview data analysis have been used in this study. Quantitative methods are mainly made to analyze statistical data about the status of project finance and to verify whether regional differences of project finance exist.

For the purpose of study, we establish the following basic hypothesis that "regional differences of project finance do not exist." And to test the hypothesis, ANOVA test method is used. If results of ANOVA reveal significant difference, we can conclude that regional differences of project finance exist. Though ANOVA test is a very simple method, it can be a powerful proxy instrument under the constraints of data.

As the criteria to test the existence and characteristics of regional financial differences, alternative models of regional finance may be derived. These are classified into ①interest spread type, ②credit rationing type, ③interest spread-credit rationing jointed type[1]. From these, ① interest spread, ②credit rationing, and ③degree of funds concentration can be adopted as the criteria to elucidate the presence of regional differences in project finance. In these contexts, we can use proxy variables such as excess interest rates, contracted amounts and contracted terms in order to elucidate interest spread, credit rationing, and degree of funds concentration between regions.

Qualitative methods are made to elucidate

factors generating regional differences of project finance. Because ANOVA test is a method showing simple and nominal results of regional differences, other disturbances may intervene and distort the results. Thus, structural factors and mechanisms generating regional differences should be elucidated for the interpretation of the results. Examination of factors and mechanisms may be effectively made by qualitative methods. Qualitative methods are mainly done by in-depth interviews with experts of financial companies such as local banks and nationwide banks.

2) Data

To meet the methodologies, various data were used in this study, and they were obtained from diverse sources. First of all, project finance contract data of commercial banks between 2001-2004 were used to analyze current state and regional differences of project finance[2]. Project finance contract data was obtained from the Korean Financial Supervisory Service[3].

The data were consisted of information about the project structure of each contract, including contract financial companies, types of projects, regions of projects, main Sponsors, guarantee entities, and information about contracted financing conditions of each contract, including contracted loan amounts, contracted interest rates, contract terms, and interest payment patterns. The number of project finance contract cases analyzed in this study was 663. These data were unpublished and internally aggregated by the Korean Financial Supervisory Service. Therefore, some missing values in each contract were found.

Next, in-depth interview survey data collected from experts of financial companies such as local banks and nationwide banks were used to elucidate factors bring about regional differences of project finance. Contents of the survey were composed of the mechanism of carrying out project finance, risk management and insurance methods of project finance, issues of asymmetric information about cash flow of project, and special problem of local banks in carrying out project finance.

4. Analysis Results

1) Current States of project finance

According to the data from the Korean Financial Supervisory Service, 663 contract cases of project finance were made from commercial banks between 2001-2004. The total amount of project finance exceeded 12 trillion Won during those years. In 2001, the total number of project finance cases was only 24 and the total contract amount was merely 620 billion Won. However, the market size of project finance grew very rapidly after that, and as a result, the total number of contracts expanded to 253 cases and the total contract amount surged 4.5 trillion Won in 2003.

Analyzing by project types, real estate projects occupied 65% of contract amounts between 2001-2004. Though SOC projects were most popular for the project finance market prior to 2002, the number of real estate projects has exceeded SOC projects since 2003. In fact, the ratio of real estate projects reached as high as 77% of the total contract amounts. Residential projects including

apartment developments and mixed-use developments for housing-and-commerce were especially popular among real estate projects. This was because most residential projects used prepaid sale system. Market may be diminished through the prepaid sale system in most housing development projects, and thus, housing development project finance provided better risk adjusted returns for financial companies than any other financing instruments.

Analyzing by regions, capital region[4], which is the core of Korean financial markets, occupied 63% of contract cases, and 53% of the total contract amount between 2001-2004. On the other hand, local regions[5], which are financial peripheries, occupied 37% of contract cases, and 47% of the contract amounts. Considering the trend by years, the ratio of local regions rose gradually. Especially worth noting is the remarkable expansion in the local regions' real estate project finance. This rapid expansion provides clear evidence of the trend for real estate project finance from the capital region to local regions. However, this trend was not valid for commercial development projects. The ratio of local regions for commercial development projects was merely 18% of the contract amounts during those years.

Analyzing the headquarter locations of contract banks, banks whose headquarters are located in the capital region account for 88% of project finance contracts. These are all nationwide bank, with branches located across the country, involved with project finance activities nationally. Because headquarters of nationwide banks are located in the capital region and the major decision making is carried out in the capital region, they may suffer from asymmetric information problems with local projects. Actually, 70% of financing contract cases undertaken by nationwide banks was capital region projects. Moreover, 90% of the projects

Table 1. Contract cases of project finance by year

		Contract year				total
		2001	2002	2003	2004	
residential	Capital Region	6 (100.0)	40 (60.6)	86 (54.8)	48 (60.8)	180 (58.4)
	Local	0 (0.0)	26 (39.4)	71 (45.2)	31 (39.2)	128 (41.6)
	Total	6 (100.0)	66 (100.0)	157(100.0)	79 (100.0)	308 (100.0)
commercial	Capital Region	5 (100.0)	37 (84.1)	55 (83.3)	34 (94.4)	131 (86.8)
	Local	0 (0.0)	7 (15.9)	11 (16.7)	2 (5.6)	20 (13.2)
	Total	5 (100.0)	44 (100.0)	66 (100.0)	36 (100.0)	151 (100.0)
SOC	Capital Region	8 (61.5)	14 (56.0)	9 (30.0)	10 (41.7)	41 (44.6)
	Local	5 (38.5)	11 (44.0)	21 (70.0)	14 (58.3)	51 (55.4)
	Total	13 (100.0)	25 (100.0)	30 (100.0)	24 (100.0)	92 (100.0)
total	Capital Region	19 (79.2)	91 (67.4)	150 (59.3)	92 (66.2)	352 (63.9)
	Local	5 (20.8)	44 (32.6)	103 (40.7)	47 (33.8)	199 (36.1)
	Total	24 (100.0)	135(100.0)	253(100.0)	139 (100.0)	551 (100.0)

Source: Korean Financial Supervisory Service (unpublished data).

Table 2. Contract amounts of project finance by year

		contract amount by year(billion Won)				total
		2001	2002	2003	2004	
residential	Capital Region	172(100.0)	808(58.2)	1,370(53.5)	1,053(68.8)	3,403(60.2)
	Local	0(0.0)	581(41.8)	1,189(46.5)	477(31.2)	2,247(39.8)
	Total	172(100.0)	1,389(100.0)	2,559(100.0)	1,530(100.0)	5,650(100.0)
commercial	Capital Region	102(100.0)	644(72.9)	701(79.0)	601(96.2)	2,049(82.0)
	Local	0(0.0)	240(27.1)	186(21.0)	24(3.8)	450(18.0)
	Total	102(100.0)	884(100.0)	887(100.0)	625(100.0)	2,499(100.0)
SOC	Capital Region	275(79.5)	476(20.6)	165(15.2)	270(42.0)	1,186(27.1)
	Local	71(20.5)	1,833(79.4)	920(84.8)	373(58.0)	3,197(72.9)
	Total	346(100.0)	2,308(100.0)	1,086(100.0)	643(100.0)	4,382(100.0)
total	Capital Region	549(88.5)	1,928(42.1)	2,237(49.3)	1,924(68.8)	6,638(53.0)
	Local	71(11.5)	2,654(57.9)	2,296(50.7)	873(31.2)	5,893(47.0)
	Total	620(100.0)	4,581(100.0)	4,532(100.0)	2,797(100.0)	12,531(100.0)

Source: Korean Financial Supervisory Service (unpublished data).

Table 3. Contract cases by headquarter locations of contract banks

		Headquarter locations		Total
		Capital Region	Local	
Residential	Capital Region	194 (92.8)	15 (7.2)	209 (100.0)
	Local	114 (84.4)	21 (15.6)	135 (100.0)
	Total	308 (89.5)	36 (10.5)	344 (100.0)
Commercial	Capital Region	127 (88.8)	16 (11.2)	143 (100.0)
	Local	20 (83.3)	4 (16.7)	24 (100.0)
	Total	147 (88.0)	20 (12.0)	167 (100.0)
SOC	Capital Region	35 (83.3)	7 (16.7)	42 (100.0)
	Local	40 (78.4)	11 (21.6)	51 (100.0)
	Total	75 (80.6)	18 (19.4)	93 (100.0)

Source: Korean Financial Supervisory Service (unpublished data).

located in the capital region were financed by nationwide banks.

On the other hand, local banks whose headquarters are located in one of the local regions accounted for 12% of project finance contracts. Because local banks are smaller than nationwide banks, their project finance activities are limited. However, half of the financing contract cases undertaken by local banks occurred in the capital region, although branches of local banks

Table 4. Contract cases by main guarantee entities

		guarantee entities							total
		none	Construction companies	developers	Third parties	Public institution	assets	others	
residential	Capital Region	37(17.8)	124(59.6)	16(7.7)	18(8.7)	-	13(6.3)	-	208(100)
	Local	32(23.7)	73(54.1)	14(10.4)	8(5.9)	2(1.5)	6(4.4)	-	135(100)
	Total	69(20.1)	197(57.4)	30(8.7)	26(7.6)	2(0.6)	19(5.5)	-	343(100)
commercial	Capital Region	25(17.5)	58(40.6)	11(7.7)	8(5.6)	1(0.7)	38(26.6)	2 (1.4)	14(100)
	Local	6(25.0)	13(54.2)	1(4.2)	1(4.2)	-	3(12.5)	-	24(100)
	Total	31(18.6)	71(42.5)	12(7.2)	9(5.4)	1(0.6)	41(24.6)	2 (1.2)	167(100)
SOC	Capital Region	21(50.0)	6(14.3)	3(7.1)	2(4.8)	7(16.7)	3(7.1)	-	42(100)
	Local	29(56.9)	2(3.9)	4(7.8)	-	13(25.5)	3(5.9)	-	51(100)
	Total	50(53.8)	8(8.6)	7(7.5)	2(2.2)	20(21.5)	6(6.5)	-	93(100)

Source: Korean Financial Supervisory Service (unpublished data).

are confined to special regions. Remarkably, 80% of their financing contract cases for commercial real estate projects was in the capital region.

As mentioned earlier, the raising of project finance is based on the potential of future cash flow generated by the project. However, most project finance is actually carried out by limited recourse method. Namely, financial companies request various guarantees to hedge default risks when they undertake project finance.

Analyzing guarantee entities by project types in this context, construction companies were the most important guarantee entities in half of the cases of real estate project finance. Thus, we see that financial companies usually request construction companies' guarantee, and the credit of construction companies are key factors in the availability of project finance. Therefore, pure non-recourse methods are rarely used in real estate project finance. On the other hand, non-recourse methods were used in half of SOC project finance. Analyzing guarantee entities by regions, construction companies were the most important guarantee entities in real estate project finance regardless of region.

2) Contracted Conditions of Project Finance

Representative contracted conditions of project finance may be contracted amount, contracted interest rate, contracted term and contracted interest payment pattern. The major results of analyzing contracted conditions of project finance are as follows. Firstly, analyzing the contracted amount of project finance reveals that the average contracted amount was 21 billion Won. Analyzing by project types, we see that the contracted

Table 5. Major Contracted Conditions of Project finance

		Average contracted amounts	Average excess interest rates	Average contracted term
Residential	Capital Region	17.28	2.8472	2.25
	Local	17.19	2.8323	2.42
	Total	17.24	2.8408	2.32
Commercial	Capital Region	15.17	2.6072	2.41
	Local	20.21	3.2782	2.88
	Total	15.90	2.6911	2.47
SOC	Capital Region	28.77	2.5627	12.75
	Local	62.68	2.4350	11.82
	Total	47.37	2.4944	12.23

Source: Korean Financial Supervisory Service (unpublished data).

amount of real estate projects was 16 billion Won, while that of SOC projects was 47 billion Won. It is worth noting that the contracted amount of commercial real estate projects was smaller than that of residential real estate projects. Analyzing by regions, we find that the contracted amount of local projects was larger than that of capital region projects in case of commercial real estate and SOC projects. On the other hand, the contracted amount of capital region projects was slightly larger than that of local projects in case of residential real estate projects.

Secondly, analyzing the contracted interest rate of project finance reveals that the average excess interest rate[6] was 2.77%. Analyzing by project types, we find that the average excess interest rate of real estate projects was higher than that of SOC projects. We note that the average excess in terest rate of residential real estate projects was higher than that of commercial real estate projects. Analyzing by regions, we find that the average excess interest rate of local projects was higher than that of capital region projects in the case of commercial real estate projects. On the otherhand, average excess interest rate of capital region projects was higher than that of local projects in the case of SOC projects.

Thirdly, analyzing the contracted term of project finance show that the average contracted term was 3.86 years. Analyzing by project types, we see that the contracted amount of real estate projects was 2.38 years, while that of SOC projects was 12.23 years. Because SOC projects are generally structured by BOT(Build-Operate-Transfer) method, the payment term is much longer than usual development projects. Analyzing by regions, the contracted term of local projects was longer than that of capital region projects in case of real estate projects. On the other hand, the contracted term of capital region projects was longer than that of local projects in case of SOC projects.

3) Tests on the Regional Differences of Project Finance

As mentioned earlier, ANOVA method is applied in order to test whether regional differences of project finance exist in the Korean financial market. Criteria for testing whether the regional differences exist are ①interest spread, ②credit rationing, and ③degree of funds concentration. As the proxy variables of these criteria, three contracted conditions of project finance, which are contracted amount, excess interest rate and contracted term, are adopted.

Categories of regions for testing differences are divided into the capital region and local. Capital region is the core of Korean financial markets, and local, which is the rest of the regions excluding capital region, is a financial periphery. Hence, headquarter locations and project regions are categorized into capital region and local. Outputs of ANOVA are produced by project type, headquarter location and project region. This means that variables such as project type, headquarter location and project region are controlled in calculating ANOVA. This method can remove any other factors and examine the pure effects of regional factors. Therefore, ANOVA test is carried out three times using the dependent variables such as contracted amount, excess interest rate and contracted term. In this context, the main results of ANOVA test are as follows.

Firstly, Table 6 shows the result of ANOVA on the dependent variable, contracted amount. Average contracted amount is largest in case of SOC projects located in local and undertaken by nationwide banks. On the other hand, the average contracted amount is smallest in case of commercial real estate projects located in local and undertaken by local banks.

According to ANOVA test, there are no cases that are significant at 10% level. Therefore, there is no evidence for major regional differences of project finance on the criteria of the contracted amount variable. However, some trends and characteristics for region differences can be partly distinguished. For example, nationwide banks raised more funds, on the average, for capital region projects in case of residential real estate projects. Local banks also raised more funds for capital region projects in case of real estate projects, though they were located in local. This result is exceptional compared to Park(1997). Park(1997) showed that local banks could lend more money to local creditors because they had more credit information on the local creditors. However, local banks showed contrary behavior in case of project finance.

Secondly, Table 7 shows the result of ANOVA on the dependent variable, excess interest rate. Average excess interest rate is highest in case of commercial real estate projects located in local and undertaken by local banks. On the other hand, average excess interest rate is lowest in case of SOC projects located in local and undertaken by nationwide banks. Because SOC projects are usually assured by government, excess interest rates of SOC project finance are low. Except for SOC projects, the average excess interest rate is lowest in case of commercial real estate projects located in capital region and undertaken by nationwide banks.

According to ANOVA test, a case is significant at 10% level. This is the case of commercial real estate projects. Therefore, we see that commercial

Table 6. Output of ANOVA(dependent variable: contracted amount)

Type	Headquarter Location	Project Region	Descriptive Statistics		ANOVA		
			Mean	Standard Deviation	Total Degree of Freedom	F-statistics	p-value
Residential	Capital Region	Capital Region	16.90	16.45	307	0.001	0.976
		Local	16.84	13.27			
		Total	16.88	15.33			
	Local	Capital Region	22.56	20.90	33	0.306	0.584
		Local	19.16	14.95			
		Total	20.56	17.42			
	Total	Capital Region	17.28	16.78	341	0.003	0.958
		Local	17.19	13.50			
		Total	17.24	15.56			
Commercial	Capital Region	Capital Region	14.84	16.65	146	2.142	0.145
		Local	21.85	34.37			
		Total	15.79	19.97			
	Local	Capital Region	17.80	20.93	19	0.280	0.603
		Local	12.05	8.68			
		Total	16.65	19.06			
	Total	Capital Region	15.17	17.12	166	1.333	0.250
		Local	20.21	31.62			
		Total	15.90	19.81			
SOC	Capital Region	Capital Region	31.44	26.04	74	0.949	0.333
		Local	72.72	249.30			
		Total	53.45	183.02			
	Local	Capital Region	15.43	9.38	17	0.985	0.336
		Local	26.17	27.37			
		Total	21.99	22.38			
	Total	Capital Region	28.77	24.73	92	0.973	0.326
		Local	62.68	221.37			
		Total	47.36	164.90			

Note: * significant at α=0.1 level. ** significant at α=0.05 level.

real estate projects located in local are charged significantly higher interest rates than those located in capital region by both of nationwide and local banks. In addition to this result, more trends and characteristics for region differences can be seen in the criterion of excess interest rate. Firstly, local banks charge higher interest rates for local region projects in case of all real estate projects, though they were located in local. It's an interesting result considering Park(1997)'s finding that local banks have more credit information on the local creditors. Additionally, major differences of excess

Table 7. Output of ANOVA(dependent variable: excess interest rate)

Type	Headquarter Location	Project Region	Descriptive Statistics		ANOVA		
			Mean	Standard Deviation	Total Degree of Freedom	F-statistics	p-value
Residential	Capital Region	Capital Region	2.86	1.27	253	0.203	0.653
		Local	2.78	1.50			
		Total	2.83	1.37			
	Local	Capital Region	2.60	0.59	24	0.306	0.584
		Local	3.13	0.76			
		Total	2.98	0.75			
	Total	Capital Region	2.85	1.25	278	0.009	0.926
		Local	2.83	1.42			
		Total	2.84	1.32			
Commercial	Capital Region	Capital Region	2.57	1.62	121	1.882	0.173
		Local	3.16	0.94			
		Total	2.64	1.56			
	Local	Capital Region	2.94	1.12	13	2.274	0.157
		Local	4.18	0.35			
		Total	3.12	1.13			
	Total	Capital Region	2.61	1.58	135	2.921	0.090*
		Local	3.28	0.95			
		Total	2.69	1.53			
SOC	Capital Region	Capital Region	2.53	0.94	52	0.407	0.526
		Local	2.38	0.82			
		Total	2.45	0.88			
	Local	Capital Region	2.69	0.86	17	0.055	0.818
		Local	2.58	0.95			
		Total	2.62	0.89			
	Total	Capital Region	2.56	0.91	70	0.371	0.544
		Local	2.44	0.85			
		Total	2.49	0.88			

Note: * significant at α=0.1 level. ** significant at α=0.05 level.

interest rate between the capital region and local projects can be seen in case of commercial real estate projects, while little differences can be seen in case of residential real estate projects.

Finally, Table 8 shows the result of ANOVA on the dependent variable, contracted term. We can infer banks tighten financing conditions if the contracted term is short. The average contracted term is longest in case of SOC projects located in the capital region and undertaken by nationwide banks. On the other hand, the average contracted term is shortest in case of residential real estate

Table 8. Output of ANOVA(dependent variable: contracted term)

Type	Headquarter Location	Project Region	Descriptive Statistics		ANOVA		
			Mean	Standard Deviation	Total Degree of Freedom	F-statistics	p-value
Residential	Capital Region	Capital Region	2.25	0.85	262	0.217	0.642
		Local	2.30	0.82			
		Total	2.27	0.84			
	Local	Capital Region	2.22	0.83	26	6.130	0.020**
		Local	3.11	0.90			
		Total	2.81	0.96			
	Total	Capital Region	2.25	0.85	289	2.696	0.102
		Local	2.42	0.87			
		Total	2.32	0.86			
Commercial	Capital Region	Capital Region	2.37	1.77	125	1.146	0.286
		Local	2.87	0.83			
		Total	2.43	1.69			
	Local	Capital Region	2.77	2.86	14	0.012	0.914
		Local	3.00	0.00			
		Total	2.80	2.65			
	Total	Capital Region	2.41	1.90	140	1.016	0.315
		Local	2.88	0.78			
		Total	2.47	1.81			
SOC	Capital Region	Capital Region	12.76	3.64	62	0.857	0.358
		Local	11.74	4.91			
		Total	12.21	4.37			
	Local	Capital Region	12.71	6.47	17	0.055	0.817
		Local	12.09	4.81			
		Total	12.33	5.34			
	Total	Capital Region	12.75	4.22	80	0.825	0.367
		Local	11.82	4.83			
		Total	12.23	4.56			

Note: * significant at α=0.1 level. ** significant at α=0.05 level.

projects located in the capital region and undertaken by local banks.

According to ANOVA test, a case is significant at 5% level. This is the case of residential real estate projects undertaken by local banks. Therefore, we can see that local banks provide significantly longer loans to local projects than capital region projects in residential real estate project finance. It is consistent with Park(1997)'s study. In addition, more trends and characteristics for region differences can be seen in the criterion of contracted term. Residential real estate projects

show more differences of contracted terms between capital region and local projects than commercial real estate projects. This finding is opposite to that of excess interest rate.

4. Regional Structure of Project Finance and its Policy Implications

1) Summary of the Results: Regional Aspects of Project Finance

As previously analyzed, results of ANOVA test show significant differences of excess interest rate occur in case of commercial real estate projects and significant differences of contracted terms occur in case of residential real estate projects undertaken by local banks. Summarizing the results, we can see two types of regional differences of project finance. first type is the regional difference of commercial real estate project finance in terms of interest spread, and second type is the regional difference of residential real estate projects undertaken by local banks in terms of credit rationing.

But their trends and characteristics are quite different from Park(1997)'s study on the regional differences of Korean financial market on the credit loan market. According to Park(1997), local banks imposed lower interest rates on the local creditors than external creditors, because local banks have more credit information on the local creditors. But the results of this study show local banks imposed higher interest rates on the local projects in case of commercial real estate projects. These fact are major distinction between regional differences of project finance markets and those of credit loan markets in Korea.

The results also told us that there are not overall and apparent differences between the capital region and local, because most p-values are not significant at 10% level. Ony two cases reveal significant p-values at 10% level. Therefore, only partial regional differences of project finance between the capital region and local can be seen. Summarizing these results, regional differences of project finance partially exist, but their characteristics are different from corporate financing in Korea.

2) Interpretations: Mechanisms and Factors Causing Regional Differences

As mentioned earlier, in-depth interviews with experts of local banks and nationwide banks were made in order to examine the structural factors and mechanisms generating regional differences. Through the interview surveys, we were able to determine the mechanisms for carrying out project finance. We could especially find out why local banks behavior for project financing is different from their behavior for credit loan financing. Putting the interviews together with results of ANOVA, factors causing regional differences of project finance could be elucidated.

In this context, following mechanisms for project finance undertaken by local banks can be elucidated through the interview surveys. First step is the submission of a project plan by sponsors. Second step is doing a preliminary feasibility study of this plan. Third step is arranging syndication by proposed banks. Forth step is doing a feasibility study by active members of syndication. Fifth step

is deciding on the arranger bank of syndication. Sixth step is negotiating financial conditions with sponsors. Seventh step is carrying out project finance. Last step is post closing management.

Because project finance is usually carrying out by syndication of financial companies, local banks have different processes for taking part in project finance according to their position of syndication. Local banks usually participate as passive members of the syndication in case of capital region project, because nationwide banks preoccupy arrangers by way of advantages of information and fund raising abilities. Therefore, they only play a passive members' role and the negotiation about financial conditions may be delegated to arrangers. As a result, major financial conditions are decided by nationwide banks and local banks follow and act as nationwide banks.

On the other hand, local banks usually participate as active members or arrangers of syndication in case of local projects. This is because they have more information and better ability to conduct feasibility studies on local projects than nationwide banks. Thus, they participate as active members from the submission of project plan step and often occupy the role of arrangers. As a result, they actively participate in negotiating financial conditions. Therefore, they play the role of influential decision makers of project finance.

These findings explain the reason why local banks behavior for carrying out project finance is different from behavior for carrying out corporate finance. Local banks act as local banks in case of local projects. But Local banks follow and act as nationwide banks in case of capital region projects.

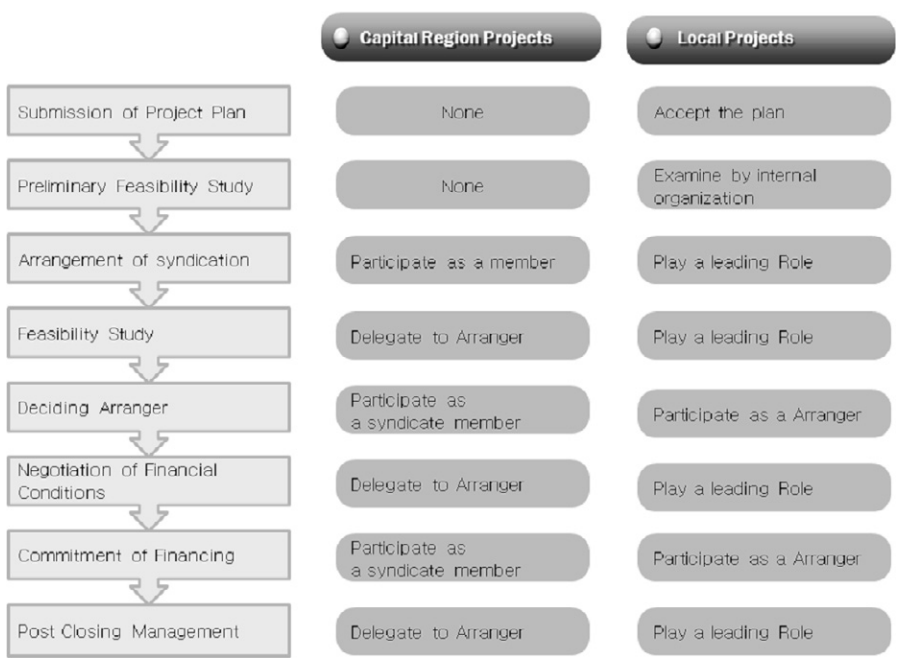

Figure 1. Mechanisms of Project Finance Committed by Local Banks

Therefore, local banks can conclude financial contracts similar to nationwide banks in spite of asymmetric information for capital region projects. For these points, regional differences of project finance partially exist, but their characteristics are different from corporate financing in Korea.

Putting together these points with the results of ANOVA, we can elucidate key factors causing regional differences of project finance and their characteristics. Firstly, the problems with asymmetric information for cash flow generated by the project between the capital region and local are key factors causing regional differences. Because project finance is based on the cash flow generated by the project, asymmetric information for cash flow generated by the project may result in the differentiation of ability to conduct a feasibility study between regions. Thus asymmetric information is an important factor causing regional differences.

Secondly, the factor of syndication explains why characteristics of the regional differences of project finance are different from those of corporate financing. As previously analyzed, local banks follow and act as nationwide banks in case of capital region projects, which cause the different pattern of regional differences.

On the other hand, we can also analyze why only partial differences of project finance between regions can be seen. Putting the interviews together with results of previous analyzing results, factors diluting regional differences of project finance also could be elucidated. Firstly, is prepaid sale system dilute regional differences of project finance. Especially, in case of residential real estate projects, most projects use prepaid sale systems, which can diminish the market risks associated with engaging in project finance. As a results, these situations can alleviate asymmetric information between regions in case of residential real estate projects. Speaking on the contrary, regional differences of project finance can be extended in case of commercial real estate projects because of a deficiency of risk reduction tools such as prepaid sale system.

Secondly, guarantee system depending on construction companies also dilute regional differences of project finance. Guarantee system depending on construction companies can also diminish the risks associated with engaging in project finance. Because construction companies which guarantee project finance were mostly large size companies which had higher credit grade, they can alleviate asymmetric information between regions in case of residential real estate projects. However this situation may raise serious arguments that most project finance in Korea are not real project finance, but conditional corporate finance.

3) Policy Implication: Financial Crisis and Issues about Project Finance

As mentioned earlier, project finance market has been most seriously influenced by financial crisis. Essentially, Project finance should robust against financial crisis, because it raise debt funds based on lending against the cash flow generated by the project and protected by various risk hedge tools. However, the situation of Korean project finance market is completely opposite. Namely, project finance market is most vulnerable against financial crisis. The major reasons are inferred from the results of analysis which analyze the mechanisms, factors and characteristics of Korean project

finance.

Firstly, prepaid sale system which contributed activation of project finance may lead to distortion of project finance market. Financial companies should evaluate detailed project's potential risks and returns. But They neglected to evaluate project's feasibility because they depends heavily on prepaid sale system. Therefore, indiscreet financing were made by financial companies, which resulted credit crisis of project finance.

Secondly, guarantee system depending on construction companies also may lead to distortion of project finance market. As mentioned earlier, Korean project finance market depends excessively on construction companies' guarantee, which may lead to distortion of project finance market. Namely, financial companies neglected to evaluate project's feasibility because they depends on construction companies' guarantee, which gave rise of making insolvent project finance. Namely, although the characteristics of Korean project finance market represented by prepaid sale system and guarantee system depending on construction companies contributed rapid activation of project finance, they may be the main factors distorting project finance market which lead to financial crisis.

In these context, some policy implications may be derived in order to solve the confronted problems of project finance market. First of all, project finance should depends on not prepaid sale system and guarantee system, but cash flow generated by the project. Namely, financial companies undertaking project finance should depend heavily on a detailed evaluation of a project's potential risks and returns. In this sense, overcoming asymmetric information problem about projects' cash flow is main issue. Especially, the role of local banks are important in order to alleviate asymmetric information between regions.

As mentioned earlier, project finance can be used as an important tool to stimulate the regional economy. Thus, the effectiveness of regional financial system for project finance is very important to promote regional economy. Local banks are especially key players of regional financial system. They may act as arrangers or active members of syndication in case of local projects. Thus, the effectiveness of regional financial system executing local projects depends on the abilities of local bank excavating prospective local projects, arranging syndication and coordinating conflicts of interests. In conclusion, activation of project finance relates to effectiveness of regional financial system, and thus, improvement of regional financial system is a key concern of regional economic development.

5. Conclusion

Summarizing the previous analysis results, regional differences in project finance between the capital region and local can be partially seen, but their characteristics are different from corporate financing in Korea. Results of ANOVA test show significant differences of excess interest rate occur in case of commercial real estate projects and significant differences of contracted terms occur in case of residential real estate projects undertaken by local banks. Additionally, partial differences of project finance conditions between the capital region and local are found. Putting together

interview survey with the results of ANOVA, we find that key factors causing regional differences of project finance are asymmetric information and the ability to conduct a feasibility study for cash flow generated by the project between the capital region and local. We also note that regional differences of project finance are different from those of corporate financing because of local banks' actions. They follow and act as nationwide banks in case of capital region projects.

Key factors causing the regional differences in project finance are asymmetric information for cash flow generated by the project between the capital region and local. Especially, regional differences in project finance are different from those in corporate financing because of local banks' actions. They follow and act as the passive members of nationwide banks in case of the capital region projects.

Prepaid sale system and the guarantee system depending on construction companies diluted the regional differences in project finance in case of residential real estate projects. Although these systems contributed rapid growth of project finance, they may be the main factors distorting project finance market which lead to financial crisis. In these context, some policy implications may be derived in order to solve the confronted problems of project finance market.

Note

1) Park, Won Seok, 1997, Regional Differences of the Financial Market in Korea, Journal of the Korean Regional Science Association, 13(1), pp.43-66.
2) Because these data were limited within project finance contracts of commercial banks, contracts of other financial companies such as life insurance companies were excluded.
3) These data were also used in the studies of Park(2005a) and Park(2005b). Therefore, this study may be the succeeding study of Park(2005a) and Park(2005b). But, the point of view managing data is quite different from previous studies because this study is focused on regions.
4) Seoul city, Inchon city and Gyeonggi province are included in capital region.
5) the rest regions excluding capital region are included in local regions.
6) Excess interest rate means nominal interest rate minus risk free return. In this study, return of government bond was chosen as the proxy of risk free return. Excess interest rate is more reasonable than nominal interest rate when analyzing the pure effect of interest rate conditions.

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프로젝트 금융의 지역적 차별성과 정책적 시사점*

박원석**

요약: 본 연구는 프로젝트 금융의 지역적 차별성의 존재 여부와 그 특징을 살펴보는 것을 목적으로 한다. 본 연구의 주요 결과는 다음과 같다. 첫째로, 수도권과 지방간의 프로젝트 금융의 지역적 차별성은 부분적으로 나타난다. 그러나 그 특성은 기업금융과는 상이하게 나타난다. ANOVA 검정 결과, 상업용 부동산 프로젝트 금융에서의 초과금리 지표, 지방은행이 실행한 주거용부동산 프로젝트 금융에서의 약정기간 지표에서 유의한 차이가 발견된다. 둘째로, 프로젝트 금융의 지역적 차별성을 일으키는 주요 요인으로 프로젝트에서 발생하는 현금흐름에 대한 수도권과 지방간의 정보의 비대칭성을 들 수 있다. 특히, 지방은행의 특유의 행태로 인해 프로젝트 금융의 지역적 차별성은 기업금융의 그것과 다르게 나타난다. 즉, 지방은행은 수도권에서 수행되는 프로젝트 금융에서 전국적 은행의 수동적인 컨소시엄 일원으로서 행동한다는 점이다. 셋째로, 선분양제도와 건설회사에 의존하는 보증시스템은 주거용 부동산 프로젝트 금융에서의 지역적 차별성을 희석시키는 역할을 한다. 이들 시스템은 프로젝트 금융의 급성장에 공헌한 바 있지만, 금융위기에서 프로젝트 금융을 취약하게 만드는 주요 원인이기도 하다. 이러한 맥락에서 프로젝트 금융시장이 당면하고 있는 문제 해결을 위한 정책적 시사점을 도출하였다.

주요어: 프로젝트 금융, 지역금융시스템, 비대칭적 정보, 지방은행, 지역적 차별성, 금융위기

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