I. INTRODUCTION

Facing globalization and intensified competition in global market, how to bring up and develop higher education has become one of the key issues for leading Korea to a developed-country. Various problems can be mentioned for development of higher education in Korea; poor schooling environments, standardized and authoritarian classroom culture, meager research outcomes, notorious 'exam hell' for college entry, strong regulation by government and so on. Among them, so called 'objective' and invariable ranking order of universities is asserted to be a basic problem, because invariable ranking order might prevent universities and students from free competition with each other, which leads universities and students not to make efforts to develop by themselves.

To examine this assertion, this paper studies what is the market structure of universities related to the ranking order, how far the competition among universities goes, how the order of ranking is carried on and whether the ranking of universities is fixed or flexible.

Korean Government, in fact, made a ambitious educational reform which tried to enhance the autonomy of each university and loosen various regulation on universities in 1995 (Cheonsik Woo et al, 1999). She also announced then to strengthen the performance assessment on universities to amplify the competition in the university systems, linking the government's financial subsidy with the assessment. These efforts, of course, seem to be related to the issue of the invariable ranking order of universities.

After literature survey on higher educational industry follows in the next part(Chapter II), this paper studies, in Chapter III, the characteristics of higher education market of Korea by analyzing each university's financial conditions, which are expressed through connection with price, costs and student subsidy, and then, touching the relations among the financial conditions, student quality and educational circumstances. First, financial data of 130 4-year universities in 1999 is researched to analyze each university's financial conditions including tuition & fees per student, various kinds of expenses per student and average student subsidy of each university. Second, the average score of the Entrance Examination to university is counted to measure the student quality. Third, to understand educational circumstances, various

factors are researched; enrollments of each university, quality of faculty, characteristics of university such as location, scale and duration of individual universities, and other circumstances like building area per student, the number of books and dorms each university has per student and so on. With those analyses, even in Korea market for higher education, it will be confirmed that there has been a mechanism of competition according to their financial conditions.

Then, other questions are arising: what's going on with the name-value and images of those universities, or their history? To answer those questions and find out the main factors of ranking-decision among universities, regression analyses are carried on in Chapter IV. The dependent variable is the score of the Entrance Examination to university. The proxy variables of faculty quality, university's characteristics, educational circumstances and financial conditions are used as independent variables. With those inquiries, the importance of the financial conditions will be stressed, which reflects that there are competitive efforts among universities to draw more excellent students even though the name-values and images of those universities still have important influences to ranking order of universities.

Lastly, in part V, this paper examines the preferential subsidy of the government to national universities and especially Seoul National University and the effect of regulation by the government, comparing the financial conditions and educational circumstances between public and private schools, and between Seoul National University and other schools. As a result of it, after confirming the existence of preferentialism and regulation of the government, this paper will touch the effect of them. With the result, it will be pointed out that government has still played significant roll in ranking order, distorting the fair competition structure of higher education industry.

In Chapter VI, a brief conclusion follows, just consolidating each part’s results.

II. THEORIES AND LITERATURES

In the view of the economics of higher education, education in university can be thought to have two aspects: consumption good and investment good. As a good of merely consumption, education has clear characteristics, which shows that there is a positive relation between income and the consumption of education. (World Bank, 1995) If a consumer has to choose one among them, he/she will choose income (inferior good).

More important aspect is related to an investment good. As World Bank report shows, primary and secondary education has given strong benefits privately and socially to each country. In the case of higher education, however, we can hardly say that there are strong correlation between them and the effect of externalities. This is because education is a long-term investment with an uncertain result. (Psacharopouos, 1994)

Meanwhile, there is another approach to the education good, namely, signaling approach. This thought is that higher education has just a function that allows public administration and private companies to select able individuals because, it is asserted, on-the-job productivity and the costs of education are negatively related. (Spence, 1973)

In the association with the production function of universities that are related to inputs, outputs and performance, some aspects can be found in the literatures.
First, higher education is a nonprofit firm because asymmetries of information make the buyer highly vulnerable to sellers' opportunism, and because the social returns of education might be higher than the private returns. (Hansmann 1980)
Second, higher education is a good with a "customer-input" technology, which means that colleges buy inputs to their production only from the customers who buy their products. This makes the allocation of different students to different universities. (Rothschild et al 1995)
Third, the production of education has a sharply hierarchical structure in relation with costs, prices, subsidies, and competition. This is mainly because each university has other access to their donative resources like endowments, legislatures, gifts, and their capital stocks. (Winston 1999)

Even though competition in this kind of hierarchical market appears to be limited, there should be the competition for 'prestige maximization'[1] or pursuing excellence differently from profit maximization in for-profit market. And this competition takes place in two different ways. At the bottom of the hierarchy, it's competition occurs in the product market for customers who will buy the output; at the top, it's competition in the input market for scarce student quality that will improve a school's educational quality and position. (Winston 1999)

The existence of an invariable ranking structure of universities in Korea is summarized to have following problems: First, because the ranking of universities is not the outcome of any measurable competition process, the relative valuation by itself restricts free competition among universities, and in the end, the quality, performance and service of education in universities will be reduced and restricted. (Kim, 1999)

Second, the established and fixed ranking system makes companies in recruitment process confront difficulties in screening able and less able students, leading them rely on entrance examination more and more. In the student's point of view, this means the quality and performance of studying in university will be reduced. (Seliger, 2000)

Third, as the reliance on the college entrance examination in selection process increases because other objective measurements are hardly feasible, the race for high scores in the entrance examinations leads those students standardized rather than eligible for a specific specialization. (Park, 2000)

[1] James, Estelle. 1990. “Decision Processes and Priorities in Higher Education,” The Economics of American Universities. NY: State University of New York Press. Re-quoted in Winston, 1999

III. CHARACTERISTICS OF MARKET STRUCTURE IN UNIVERSITIES OF KOREA

As noted above, it is said that the schools who compete for pursuing excellence try to generate excess demand, and then, select students from the resulting queue based on the peer effects, the importance of donative resources and the characteristics of hierarchical structure in higher educational industry. To examine whether this assertion is applied to Korea case as same, this paper tries to analyze the characteristics of higher educational market of Korea.

Table 1 shows a apparent hierarchical structure. The schools are ranked by student subsidies shown in column4. Student subsidy consists of two parts; one is financial aid to some students[2], the other is a general subsidy to all students[3]. Main resources of the costs also consist of two parts; one is school's donative resources such as government's subsidy, transfer from foundation, and other various donations, which represent charitable component, the other is sticker price which consists of tuition and fees from students, which is made of the commercial component.
We can confirm that the range of average student subsidy is very wide, which goes along with the amount of costs in column 3, while net price in column 2 is a little adverse to the amount of student subsidies.

Even though the schools at the top charge a little lower tuition and fees than do the schools at the bottom, the gap between at the top and at the bottom by student subsidy is drastically enlarged. And most high-subsidy schools are high-cost schools. That is, a hierarchy of institutions in higher education is influenced by their donative resources[4] rather than commercial resources that are made of student's tuition and fees.

Table 2 shows the relation between student subsidies and the school's circumstances. This table extends such a hierarchical characteristic to the quality of students and faculty and other educational circumstances. The school with bigger student subsidies

[2] = Sticker price - Net price (here, Net price = Sticker price – Scholarship). Means so-called pure scholarship.
[3] = Costs - Sticker price
[4] The source of donative resources can be their endowments, gifts and other capital stocks besides government's subsidy, transfer from foundation.

<Table. 1> Costs, Prices, Subsidies, and Hierarchy, 1999

Ranked by Subsidy	Enrollments	Price: Net Tuition&Fees	Costs: Educational Expenses	Average Student Subsidy	Price/Cost Ratio
	1	2	3	4	5
	#	₩	₩	₩	%
1	13,474	2,577,274	8,031,232	5,453,958	32.1%
2	15,213	1,994,047	4,334,100	2,340,054	46.0%
3	14,058	2,348,891	4,301,075	1,952,184	54.6%
4	14,745	3,021,784	4,338,682	1,316,898	69.7%
5	12,232	3,354,974	4,007,108	652,133	83.7%
6	11,134	3,277,791	3,603,858	326,067	90.9%
7	10,344	3,317,772	3,378,826	61,054	98.2%
8	8,259	3,259,674	3,012,479	-247,195	108.2%
9	8,220	3,142,849	2,701,178	-441,670	116.4%
10	6,548	3,395,170	2,452,207	-942,963	138.5%
Public	13,656	1,540,631	3,886,039	2,345,409	39.65%
Private	10,864	3,326,120	4,048,583	722,463	82.16%

Sources: Korean Higher Education Research Institute, 1999 and 2000.

Note: i) Includes 110 4-year universities, of which 22 are public and 88 are private.

ii) All amounts are per student averaged over universities.

iii) Col 2: Price = Tuition & Fees - Scholarship.

iv) Col.3: Educational costs = Personnel expenses + Managerial expenses + Research expenses + other expenses.

v) Col. 4: Average Student Subsidy = Educational costs - Price

has better maintained facilities like buildings and laboratories, more excellent faculty with lighter teaching loads that leave more time for research, better library with more books, more varied courses and programs.[5] Then, the school, which can provide these items at a lower price with much more expenditure for education production, can

[5] Bigger enrollment might mean bigger scale so that it can be presumed to have more varied courses and programs.

<Table. 2> Subsidies, Student Quality, and Educational Circumstances

Ranked by Subsidies	SAT	Medical College	Faculty Secured	Building Area	Books	Dorms	Laboratory	History	Figure in Success
	1	2	3	4	5	6	7	8	9
	score	%	%	%	#	#	₩	year	Log #
1	339.1	63.6	89.3	74.5	61.9	43.6	6,366,677	35.2	4.0
2	310.5	81.8	71.0	64.4	38.0	9.2	2,194,315	40.3	1.0
3	317.1	45.5	61.9	75.1	38.9	14.0	2,063,068	36.8	1.0
4	322.9	45.5	53.9	62.0	42.7	7.8	1,836,947	36.9	1.3
5	295.5	36.4	52.0	71.0	42.1	7.8	2,650,687	37.9	0.7
6	284.8	18.2	51.4	58.9	40.3	20.5	929,960	31.5	0.4
7	281.8	27.3	43.8	65.2	39.4	8.9	1,022,942	28.6	0.2
8	250.8	0.0	44.7	60.8	35.6	15.5	1,027,898	19.5	0.1
9	275.5	9.1	44.6	54.1	35.6	10.6	942,637	21.7	0.3
10	269.9	0.0	43.1	58.0	35.0	14.1	747,948	15.6	0.0
Public	310.4	45.5	63.8	63.8	40.6	11.5	2,765,559	36.1	1.7
Private	290.9	29.5	53.5	64.6	41.0	15.9	1,753,115	29.0	0.7

Sources: SAT(Col 1) from Jinhak-Sa, Col 2 from Korean Council for University Education. Col 3~7 from Korean Higher Education Research Institute. History(Col 8) from each homepages on website in internet. Col 9 from Dong-A Ilbo, Chosun Ilbo, Chungang Ilbo and Munwha Ilbo.

Note: i) Col 2: Each university's averaged score of the National Entrance Exam except the score of colleges of Arts and Athletics.

ii) Col 3: The ratio of gained faculty to settled number regulated by law.

iii) Col 4~6: Numbers are amounts averaged per students over universities

iv) Col 7: The budget amounts per student for laboratory materials

v) Col 8: The duration since establishment as 4-year colleges.

vi) Col 9: The number of alumni enrolled in the four major daily newspaper's DB.

generate its excess demand to select better qualitative students. And students with higher score in SAT apply to the school at the top where student subsidy by providers is higher.

In sum, universities in Korea have a apparent hierarchical structure by their donative resources rather than student's tuition & fees that compose commercial resources of individual universities. Under this hierarchical structure, we can say that higher educational industry of Korea has its own market composition that moves according to financial conditions of individual schools, although its characteristics are differentiated from commercial market. That is, in relation with market structure, rich schools sell their educational services at a lower price or higher production costs and quality, on the contrary, poor schools do at a higher price or lower production costs and quality. And it is affirmed that schools pursue the excellence rather than profit, and try to generate the excess demand to select students from the resulting queue as same principle as Winston's research. (Winston 1999)

IV. RANKING-DECISION AND HIGHER EDUCATIONAL MARKET

Under the hierarchical structure by financial conditions, what's going on with the name-value and images of some universities, or their history, or something else?[6] What are the main factors of ranking-decision in universities? And is ranking of higher education fixed or flexible?

To reply to those questions, this paper uses the regression analysis as shown in from Table 3 to Table 7. Dependent variable is the score of the Entrance Examination to university (Korean SAT, hereafter, SAT). There would be various assessment methods for universities, but the 'voting with the feet' by students might be one of the best assessments to the schools. In addition, SAT score can be the 'objective' indicator for student's quality[7] because all students who want to enter university have to take that examination with few exceptions. It is said, moreover, that even recruitment by companies is based on the SAT score in entrance examination of the university the student graduated. Although this is not the case, this hearsay certifies the importance of SAT as an indicator for student's quality. It is general that most of schools try to take higher scored students.

Independent variables is divided with four fields; the quality of faculty, characteristics of university, educational circumstances, and financial conditions.
The quality of faculty is represented by the ratio of gained faculty to settled-number regulated by law[8] (FACUL) and the number of papers appeared in international scientific journals (SCI).[9]

The characteristics of schools are represented by the number of enrollment (ENROLL), the duration of the university since being established as 4-year college (HISTORY). And accomplishment of students graduated (LOGCELE) is expressed by the number of alumni enrolled in the four major daily-newspapers' DB, which shows

[6] It is generally thought that these factors are pivotal in ranking-decision.
[7] There might be critics on SAT score as an indicator because of discontent with SAT system, but we should distinguish 'to-be' with 'have-to-be'. Although current SAT system would be overcome, it is not true that SAT system itself is wrong or groundless.
[8] Settled number is different according to the sort of colleges each university has, for example, the college of cultural science is regulated by 25 students per faculty while the science and engineering college by 20 students,
[9] KAIST, 1998. SCI in this paper was divided by the number of faculty.

the persons who were successful in the individual fields like economic circles, political circles and cultural circles etc. Plus, some dummy variables are added; public or private university (PUBLIC), the located place of school in capital area[10] or local area (CAPITAL), having medical college or not(MEDI).

Educational circumstances are represented by the area of buildings per student the university owns (BUILD), the number of books per student (BOOK), the number of dorms per student (DORM) and the budget amounts per student for laboratory materials (LAB). In the case of private schools was included DISPUTE which describe the eruption of campus disputes by the problems of Foundation.[11]
The average student subsidy (STUSUBS[12]), donations (DONA[13]) and tuition & fees (TUITION[14]) represent financial conditions as described in above chapter. In the case of private schools, transparency of finance is included (OPEN[15]). And governmental subsidy is included in each case of public and private school (GOVSUB) individually because the system of both public and private budget accountings is different.

Table 3 shows the results of regression of all the 4-year universities. Significant are PUBLIC, CAPITAL, LOGCELE, and STUSUBS. That is, public schools have positive effect on the quality of fresh students, while schools in capital area have robust advantages in ranking order. The more a school has abundant donative resources, the higher position the school takes. The more successful alumni, who would reflect name-value of a university, the more the school is applied by high scored students. These results are similar to the other cases with a few differences; capital-area schools (Table 4), local-area schools (Table 5), public schools (Table 6), private schools (Table 7).

The result of that STUSUBS has a strong significance all over the fields is related to our observation seen in above chapter. In there, the ranking order made by student subsidy was clear and reflected rich donative resources, so, schools that pursue the

[10] Seoul and Keong-ky province
[11] This was investigated by the frequency of newspaper accounts from 1995 to 1998
[12] = Sticker price – scholarship
[13] Denotes per-student donation scale a university takes.
[14] Denotes sticker price per student.
[15] Transparency of finance was accounted by the number of universities that opened their financial balance sheets by the May 2001, which is the limitation of the date government requested to all private universities.

quality of supplier-of-input is led to compete to subsidize more to students. That is to say, the high-ranked schools have their own reasons for their position in the market regardless of their name-value, scale, history or images. Under these circumstances, even a new comer to this industry can get the higher-ranking, in that sense, all universities have a likelihood for free competition with each other in their own way. This can a suggestive disproof of fixed ranking order because financial conditions can be improved by their self-helps differently from other characteristics such as government subsidy, number of alumni, history of a school, student scale and so on. This paper, however, cannot give any evidence whether ranking order works fixed or flexible, which needs more data and comparison of change between other years.

The reason why the variable PUBLIC is significant can be explained by the fact that most of schools in Korea have had poor donative resources so that the reliance of school's financial resources on governmental subsidy has been high, therefore, public schools have secured financial structure compared to private schools (see also Table 1). Table 4 and Table 5 support this, too. In case of capital-area universities (Table 4), STUSUBS works as nearly a unique factor significant, while PUBLIC and LOGCELE show significance besides STUSUBS in case of local-area (Table 5). Because there is only SNU in capital area as public schools while there are several public schools in local area, we can say that PUBLIC reflects deeply and has firm connection with financial conditions.

The variable CAPITAL also is reasonable because it is universal in Korea that most of famous and so-called high-ranking universities have located in capital area. It is not true, of course, that being located in capital area and being famous mean easier access to the donative resources. However, Table 6 and Table 7 also show that CAPITAL is firmly related to financial conditions. Among public universities (Table 6), STUSUBS is not significant at all, while STUSUBS is strongly significant along with CAPITAL and LOGCELE among private universities (Table 7). This is because National Universities have similar financial conditions while private universities are extensively different(See Table 8). Positive significance of STUSUBS in private universities can be interpreted that universities in capital area have more abundant donative resources than ones in local area.

Because abundant alumni (LOGCELE) reflects the tradition of a school and

accumulated human network of it, this factor makes a new comer who are poor in alumni suffer with disadvantages in higher educational market. This is reasonable and natural, supporting the general beliefs that high name-valued school has high position in ranking order. However, LOGCELE goes along with STUSUBS in regression results in the case of private universities that rely more on donative resources from alumni or something else as same as in the case of CAPITAL (Table 7). We can say this variable LOGCELE also is firmly related to financial conditions.

The scale of school's enrollment is little significant differently from general prediction except in the case of capital-area schools and public schools. This may mean that bigger universities don't get the effect of scale. And history itself is rarely significant as owning medical college, which implies the scale of a school and represent varied courses or programs, rarely have positive effects on the ranking order.

In column 3 of Tables, more specifically, the source of student subsidy of the schools inclined to tuition and fees rather than donations. In case of public schools, however, governmental subsidy also has significant effect (Table 6).

In column 2 and 4, the effects of educational expenditure appear different; in the case of capital-area schools, the effect declines to laboratory material value, in the case of local-area schools does the quality of faculty, in the case of public schools does the number of dorms, in the case of private schools does the number of papers appeared in international scientific journals.

The variable PUBLIC is more significant in the local area than in the capital area, while is the variable CAPITAL in the private schools than in the public schools (Table 5 and Table 6).

The capital-area schools are influenced by the scale of the school (ENROLL), the owning medical college (MEDI), the duration of a university since being established as 4-year college (HISTORY) or the number of alumni in success (LOGCELE). And the number of alumni in success influences the local-area schools more significantly.

The reason why the effect of PUBLIC in capital area (Table 4) is negative can be

explained by that the SAT score of Seoul National University[16] (hereafter SNU) was relatively lower than the other schools in capital area in comparison to the high amounts of subsidy which SNU is paid, that is, the subsidy of SNU is too high in comparison with the score SNU gets. Same is CAPITAL in regression result of public schools (Table 6) that also is related to the achievement of SNU compared to the other public schools.

One more Interesting fact is the variable OPEN that shows negative effect significantly as seen in private schools (Table 7). This may mean the schools which open their financial balance-sheet by the command of the central government have week political power and poor donative resources so that they should obey the command sincerely.

In sum, ranking order in higher education is strongly and a little evenly influenced by some important factors; public/private, capital-located/local-located, name-value and financial conditions of each university. However, those significant variables are firmly related to financial conditions, that is, financial conditions have not only a strong influence on ranking decision, but also have deep effects on other significant variables directly or indirectly. Among various variables, financial conditions are changeable and within attainment relatively than other variables such as name-value, images and history and so on. Therefore, this factor provides universities a ground for free competition among them in the way of positioning, according to their self-helps to improve their financial conditions.

[16] There is only SNU as a national university in capital area.

<Table. 3> Regression Results of All Universities

	1	2	3	4	5
INTERCEP	224.217***	206.481***	142.675***	219.317***	139.605***
	4.51623039	10.42144292	19.935004	12.4083341	19.7766324
ENROLL	0.001	0.001	0.000	0.001	0.001
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
PUBLIC	23.519***	29.044***	86.385***	25.243***	78.260***
	(5.190)	(5.474)	(13.455)	(5.778)	(14.019)
CAPITAL	44.022***	43.930***	35.881***	44.360***	34.303***
	(4.386)	(5.507)	(4.692)	(5.436)	(4.717)
MEDI	3.427	-0.558	6.168	0.721	2.312
	(5.399)	(6.667)	(4.994)	(6.612)	(5.366)
HISTORY	0.158	0.273	0.197	0.269	0.221
	(0.233)	(0.267)	(0.218)	(0.264)	(0.216)
LOGCELE	5.176**	4.698*	2.731	4.742*	1.834
	(1.793)	(2.053)	(1.821)	(2.025)	(1.866)
STUSUBS	0.005***			0.005*	0.005*
	(0.001)			(0.002)	(0.003)
SCI		22.806		6.410	
		(25.123)		(26.321)	
FACUL		0.159		0.025	
		(0.133)		(0.150)	
BUILD		-0.006		-0.061	
		(0.135)		(0.137)	
BOOK		0.148		0.124	
		(0.141)		(0.140)	
DORM		0.171*		0.131	
		(0.095)		(0.097)	
LAB		0.001		0.000	
		(0.001)		(0.002)	
DONA			0.009***		0.000
			(0.001)		(0.005)
TUITION			0.026***		0.028***
			(0.007)		(0.007)
Adj R-sq	0.798	0.795	0.823	0.801	0.827
No.of Obs	109	98	109	98	109

t value in parenthesis
***: p<0.001. **: p<0.01. *: p<0.1**

<Table. 4> Regression Results of Universities in Capital Area

	1	2	3	4	5
INTERCEP	259.488***	240.500***	162.477***	265.033***	155.337***
	(8.460)	(13.667)	(31.487)	(20.698)	(30.973)
ENROLL	0.001*	0.001	0.000	0.001*	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
PUBLIC	-5.194	-49.024*	75.450**	-49.599*	57.085*
	(17.775)	(23.516)	(23.506)	(22.866)	(25.323)
MEDI	-16.306	-5.957	-7.966	-14.433	-16.784*
	(10.917)	(10.784)	(8.572)	(11.831)	(9.830)
HISTORY	0.455	0.412	0.294	0.587*	0.307
	(0.315)	(0.283)	(0.288)	(0.298)	(0.281)
LOGCELE	4.620	4.330	5.267*	1.369	3.959
	(3.012)	(2.914)	(2.623)	(3.420)	(2.670)
STUSUBS	0.007*			0.008	0.007*
	(0.003)			(0.005)	(0.004)
SCI		27.252		17.046	
		(32.674)		(32.446)	
FACUL		0.039		-0.091	
		(0.121)		(0.145)	
BUILD		0.015		-0.126	
		(0.122)		(0.150)	
BOOK		0.282		0.272	
		(0.229)		(0.222)	
DORM		0.108		0.041	
		(0.093)		(0.101)	
LAB		0.008*		0.007*	
		(0.004)		(0.004)	
DONA			0.016*		0.001
			(0.007)		(0.011)
TUITION			0.026**		0.030**
			(0.009)		(0.009)
Adj R-sq	0.7672	0.8237	0.8102	0.8333	0.8197
No. Obs	43	35	43	35	43

t value in parenthesis

***: p<0.001. **: p<0.01. *: p<0.1**

<Table. 5> Regression Results of Universities in Local Area

	1	2	3	4	5
INTERCEP	225.743***	195.729***	138.999***	201.982***	133.339***
	(5.927)	(18.820)	(28.915)	(20.479)	(28.626)
ENROLL	0.001	0.001	0.001	0.001	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
PUBLIC	27.064***	28.982***	93.276***	26.047**	81.127***
	(5.947)	(6.997)	(18.976)	(7.945)	(19.950)
MEDI	10.257	-0.022	11.608*	1.400	8.114
	(6.768)	(8.873)	(6.399)	(9.086)	(6.612)
HISTORY	-0.226	0.142	-0.091	0.105	-0.107
	(0.343)	(0.415)	(0.328)	(0.419)	(0.323)
LOGCELE	5.682*	3.961	1.788	4.127	0.596
	(2.286)	(3.192)	(2.604)	(3.211)	(2.653)
STUSUBS	0.005***			0.003	0.008*
	(0.001)			(0.004)	(0.004)
SCI		51.321		26.757	
		(47.128)		(56.598)	
FACUL		0.469*		0.370	
		(0.274)		(0.302)	
BUILD		0.020		0.022	
		(0.344)		(0.345)	
BOOK		0.099		0.088	
		(0.196)		(0.197)	
DORM		0.083		0.072	
		(0.182)		(0.183)	
LAB		0.000		-0.001	
		(0.003)		(0.003)	
DONA			0.009***		-0.004
			(0.001)		(0.007)
TUITION			0.028**		0.031**
			(0.009)		(0.009)
Adj R-sqr	0.715	0.709	0.743	0.707	0.752
No. Obs	65	62	65	62	65

t value in parenthesis

***: p<0.001. **: p<0.01. *: p<0.1**

<Table. 6> Regression Results of Public Universities

	1	2	3	4	5
INTERCEP	225.085***	208.845**	48.201	209.745**	19.531
	(26.787)	(54.272)	(75.900)	(56.892)	(89.805)
ENROLL	0.003*	0.002	0.002*	0.002	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
CAPITAL	-2.748	-61.216	-88.387*	-52.168	-106.816*
	(30.360)	(43.011)	(41.859)	(52.111)	(51.712)
MEDI	-30.399*	-25.331*	-34.432*	-23.762*	-36.963*
	(14.906)	(11.213)	(12.048)	(12.592)	(12.958)
HISTORY	0.364	0.491	-0.505	0.486	-0.508
	(0.484)	(0.423)	(0.500)	(0.443)	(0.512)
LOGCELE	1.396	2.422	7.837*	2.127	6.991
	(4.259)	(4.069)	(4.178)	(4.346)	(4.479)
STUSUBS	0.015			-0.003	0.009
	(0.009)			(0.010)	(0.015)
SCI		51.093		37.918	
		(68.121)		(80.902)	
FACUL		-0.843		-0.793	
		(0.556)		(0.601)	
BUILD		0.503		0.486	
		(0.545)		(0.573)	
BOOK		0.256		0.263	
		(0.147)		(0.155)	
DORM		1.257**		1.366*	
		(0.364)		(0.495)	
LAB		0.015		0.017	
		(0.010)		(0.011)	
DONA			0.031		0.030
			(0.026)		(0.027)
TUITION			0.101*		0.114*
			(0.044)		(0.050)
GOVSUB			0.012**		0.009
			(0.004)		(0.006)
Adj R-sqr	0.674	0.869	0.7763	0.857	0.766
No. Obs	21	21	21	21	21

t value in parenthesis

***: p<0.001. **: p<0.01. *: p<0.1**

<Table. 7> Regression Results of Private Universities

	1	2	3	4	5	6
INTERCEP	221.310 ***	205.084 ***	156.228 ***	208.473 ***	150.464 ***	228.542 ***
	(4.913)	(10.922)	(21.717)	(14.287)	(22.229)	(5.308)
ENROLL	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
CAPITAL	44.386 ***	42.694 ***	38.079 ***	42.927 ***	36.867 ***	44.943 ***
	(4.571)	(5.547)	(4.927)	(5.619)	(5.026)	(4.410)
MEDI	8.336	6.554	10.309 *	6.763	6.822	10.220 *
	(5.915)	(7.487)	(5.517)	(7.558)	(6.270)	(5.778)
HISTORY	0.030	0.153	0.160	0.155	0.160	0.015
	(0.262)	(0.295)	(0.251)	(0.297)	(0.250)	(0.251)
LOGCELE	6.418 **	5.517 *	3.525 *	5.526 *	2.662	6.584 ***
	(1.966)	(2.267)	(2.090)	(2.282)	(2.214)	(1.906)
STUSUBS	0.005 ***			0.001	0.004	0.005 ***
	(0.001)			(0.003)	(0.003)	(0.001)
SCI		63.441 *		55.543		
		(29.934)		(36.881)		
FACUL		0.081		0.053		
		(0.139)		(0.159)		
BUILD		0.041		0.024		
		(0.148)		(0.156)		
BOOK		0.246		0.231		
		(0.248)		(0.253)		
DORM		0.090		0.085		
		(0.099)		(0.100)		
LAB		-0.001		-0.001		
		(0.002)		(0.002)		
DONA			0.005 *		-0.001	
			(0.003)		(0.006)	
TUITION			0.021 **		0.024 **	
			(0.007)		(0.008)	
GOVSUB			0.022		0.018	
			(0.019)		(0.019)	
OPEN						-11.916 **
						(4.045)
DISPUTE						1.774
						(5.280)
Adj R-sq	0.813	0.819	0.835	0.817	0.836	0.828
No. Obs	87	76	87	76	87	87

t value in parenthesis

***: p<0.001. **: p<0.01. *: p<0.1**

V. REGULATION, PREFERENTIALISM, AND FAIR COMPETITION

It is said that the Korean government, on the one hand, has maintained strong regulation on activities and educational processes of individual universities, which results in restricting fair competition of higher education industry.[17] On the other hand, many people who related to the higher education criticize; the government has kept the preferential subsidy policy to national universities, especially to SNU. They argue that the concentrated bring-up policy for public schools and SNU is a decisive evidence of the ranking-order policy by government and brings about the fixed ranking order in market of universities. (MBC TV, 2000)
These arguments are that wrong policies of the government have obstructed fair competition among universities and resulted in promoting the fixed ranking order by the way the rich get richer and the poor poorer.

In the following, this paper studies the role of the government in the structure of ranking order related to the subsidy policy to individual universities, before considering whether and how the capital-area-restriction policy has had influence on the ranking order.

Table 8 shows the subsidies compared between public schools and private schools and between SNU and the other schools in terms of student subsidy. The subsidy of public schools is much higher than that of private schools, and, in the case of price/cost ratio, the subsidy of public schools is much lower than that of private schools. In relation with SNU, the subsidy of SNU is much higher than that of other public schools, while the subsidy of SNU is a little lower than that of other top decile schools. With other top decile schools excepting Pohang University of Science and Technology, however, the average subsidy of other schools is lower than that of SNU. In the case of price/cost ratio, the gap is more drastic, that is, the subsidy of SNU is much higher.

Considering low contribution of donation as donative resources as seen in column of Donations (Table 8), a main causation of this distinction seems to stem from the governmental subsidy to universities. Same tendency of differentiation among universities also happens in relation with educational circumstances as shown in Table9.

[17] Cheonsik Woo et al, 1999, KDI.

<Table. 8> Financial Relation among SNU, Public Schools and Other Schools.

		Enrollments	Price	Costs	Subsidy	Price/Cost ratio	Donations
Public vs. Private	Public	13,656	1,540,631	3,886,039	2,345,409	39.65	120,402
	Private	10,864	3,326,120	4,048,583	722,463	82.16	571,580
SNU vs. Other Schools	SNU	29,453	2,253,072	6,429,268	4,176,196	35.04	191,877
	Other Public	12,904	1,506,705	3,764,933	2,258,228	40.02	116,998
	Other Schools in Top Decile	20,448	3,465,158	8,177,976	4,712,818	42.37	2,400,290
	*Top Decile except SNU & POSTEC.	21,909	3,701,621	5,799,078	2,097,458	66.70	899,401

Sources and Contents are same to <Table 1>

* Other Top Decile Schools Exempted SNU & Pohang University of Science and Technology.

Public schools have more excellent circumstances than do private schools, although the area of buildings and the number of books per student universities have are similar, and, it is obvious to the case of SNU, in any comparison with other schools, that she has excellent faculty with lighter teaching loads, better maintained facilities like buildings and laboratories, and better library with more books.

From these results, it is confirmed that the preferentialism for national universities, especially for SNU happens in reality.

<Table. 9> Educational Circumstances among SNU, Public Schools and Other Schools.

		SAT	SCI	HCSE	Figure	Facul	Grd	Build	Book	Lab
		1	2	3	4	5	6	7	8	9
		score	%	%	Log#	%	%	%	#	₩
Public vs Private	Public	310.4	0.17	1.93	1.75	63.8	171.7	63.8	40.6	2,765,559
	Private	290.9	0.12	0.62	0.69	53.5	159.2	64.6	41.0	1,753,115
SNU vs Other Schools	SNU	381.2	0.92	37.31	25.65	82.9	119.1	83.1	75.1	5,792,543
	Other Public	307.1	0.13	0.24	0.61	62.8	174.2	62.9	38.9	2,621,417
	Other Schools in Top Decile	362.9	0.51	4.91	3.47	69.3	218.0	76.1	55.9	5,551,549
	*Top Decile except SNU & POSTEC	359.8	0.32	4.94	3.63	62.8	87.8	66.0	52.1	1,865,296

Sources: SAT from Jinhak-Sa, SCI(Science Citation Index) from, Korea Advanced Institute of Science and Technology. HCSE(The Higher Civil Service Examination) from Central Officials Training Institute and The Judicial Research & Training Institute. Figure(Col 4) from Dong-A Ilbo, Chosun Ilbo, Chungang Ilbo and Munwha Ilbo. Col 5~9 from Korean Higher Education Research Institute.

Note: i) Col 1: Each university's averaged score of the National Entrance Exam except the score of colleges of Arts and Athletics.

ii) Col 2: proportioned number of papers appeared in international scientific journals.

iii) Col 3: proportioned number of success in HCSE.

iv) Col 4: the number of alumni enrolled in the four major daily newspaper's DB.

v) Col 5: the ratio of gained faculty to settled number regulated by law.

vi) Col 6: the area of grounds per student the university owns.

vii) Col 7: the area of buildings per student the university owns.

viii) Col 8: the number of books per students each university has.

ix) Col 9: the budget amount per student for laboratory materials

<Table. 10> Financial Relations of Universities between in Capital area and in Local area

		Enrollments	Price (Tuition-Scholarship)	Costs	Subsidy	Price/Cost ratio
Capital vs. Province	Capital	12,452	3,554,367	4,311,268	756,902	82.44
	Province	10,736	2,578,793	3,819,279	1,240,486	67.52

Sources: Korean Higher Education Research Institute.

<Table. 11> Educational Circumstances of Universities between in Capital area and in Local area

		SAT	SCI	HCSE	Figures	Facul	Ground	Build	Book	Lab
Capital vs. Province	Capital	321.8	0.15	2.07	1.74	55.4	133.9	67.8	46.1	1,299,318
	Province	276.8	0.12	0.09	0.35	55.7	180.3	62.2	37.5	2,384,766

Sources and Contents are same to <table 9>

<Table. 12> Changed Ranking from 1994 to 1999

	Below -16	-15 -6	-5 +5	+6 +15	Above +16
All institutions	8	18	59	16	8
Public	1	3	11	3	4
Private	7	15	48	13	4
In capital area	1	5	25	9	4
In local area	7	13	34	7	4

Sources: Jinhak-Sa.

<Table. 13> Changed Ranking and Changed Enrollments from 1994 to 1999

	Public In Capital	Public In Local	Private In Capital	Private In Local	All Institutions
Average Changed Ranking	1.00	5.19	2.26	- 4.80	0
Changed Enrollments	- 482	12,423	15,729	32,769	60,439

Sources: Jinhak-Sa.

Table10 and Table11 are comparing individually financial relations and educational circumstances between capital-area schools and local-area schools. Schools in capital area have smaller student subsidy and worse circumstances than schools in local area. So, we can't say that schools in capital area have any premium in terms of governmental budget subsidy, in reverse, we can say that local-area schools have more advantages than capital-area schools. In addition, if we compare public schools with top decile schools, the result is same. In terms of governmental budget subsidy to universities, there is no evidence of that universities in capital (or even a few famous top decile universities) take more preferentialism from the government than do universities in local, although the government subsidizes preferentially to public schools than to private schools.

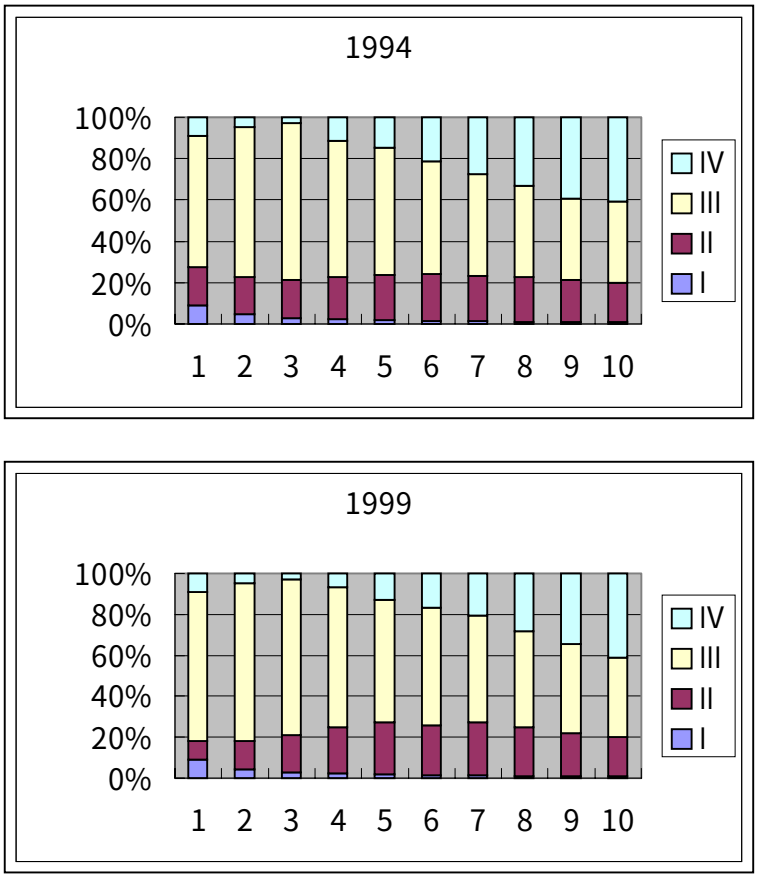
Related to the level of changed ranking order, by the way, Table 12 and Table 13 show how much public schools and capital-area schools changed in ranking order relatively. In Table 12, public schools ascend more in rank-position than do private schools while local-area schools descend more in rank-position. In Table 13, public schools both in capital area and local area ascend more in rank-position, but private schools in local area sink drastically while private schools in capital area rise in rank-position.

Figure 1 shows the changed level by accumulated decile in ranking order from 1994 to 1999. This figure means that public schools at high position except SNU[18] descend overall, while the public schools at low position[19] ascended drastically.

[18] Such as Pusan National University, Keong-Buk National University, Chung-Nam National University and Jun-Nam National University: These are 4 major local national universities in Korea.
[19] Such as Andong National University, Kunsan National University, and Yeosu National University

As shown in <Table 13>, these phenomena seem to be related to the capital-area-restriction policy, which has regulated the number of university's enrollment and has suppressed establishing new schools in capital area with a few exceptions such as Electronic colleges, being maintained even after 1995 reform. The regulation seems to have produced the premium of the capital-area-universities.

<Figure 1> Changed Level by Accumulated Decile in Ranking Order



Sources: Jinhak-Sa.

VI. CONCLUSION

Higher education has apparent characteristics that are distinguished from primary and secondary education. One of most important things might be market structure. While public or states basically regulate primary and secondary school, higher education is free from such regulation because of its uncertainty in the effect of externalities. This is the reason why free and fair competition system based on matured educational market is requested. Market system by itself, of course, cannot guarantee high level of higher education, but might be minimal requirement for its development being able to survive in global competition.

Educational market in Korea has begun to compose its own features and characteristics; hierarchical structure among universities moves according to financial conditions of individual ones, producers (universities) compete to sell their educational services and goods while consumers (students) compete to buy more qualitative services or lower price goods; Financial conditions of individual universities have played pivotal role in ranking-decision, rather than name-value, images, history or something else, which are generally said to be decisive factors for ranking order. Corresponding to that trend, from 1995, the government has tried to enhance the autonomy of universities and loosen various regulations on them.

However, many people say that ranking order among universities has deepened to be fixed, and that main reasons are caused by wrong policies of the government; preferentialism and regulation. In our study, it is confirmed that preferentialism to public universities and regulation in enrollment-restrict policy has distorted free and fair competition in higher educational market. That is, the government’s reform has not yet made good outputs, or even maintained wrong policy. The government should change the preferentialism and regulation policy extensively in order to make ranking order flexible, which leads higher educational market to be more competitive

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