

Tuition Rising in Competitions for a World-class University: Cost Sharing or Cost Transfer?

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Abstract

This paper discusses tuition increases in the 2000s which was caused by competition within Korean higher education as universities sought to be ranked as a world-class university. The increased costs have been paid by students as well as by government and private sector and due to this, the share of student tuition in university revenues has been consistent over ten years. This implies that over the last decade, it was students who have been paying the costs for the increase in research productivity which eventually leads to the obtaining of the world-class university status for many universities. The share paid by students could be reasonably regarded as cost sharing, if students receive benefits proportionally to their payment. However, in reality, students in soft-disciplines pay more proportion than the benefit they receive when compared with their colleagues in hard-disciplines, e.g., medical science despite their benefit return rate is much lower. Likewise, students in undergraduate programs pay more proportion for increased expenditure than the graduate students, and students in low-tier universities pay more than the students in top-tier universities. Because of this, cost transfer between different groups of students is occurring.

Keywords: tuition rising, tuition by major, tuition by institutional mission, positional good, world-class university, global rankings

1 Introduction

Recent competition between universities to obtain higher status in the rankings has accompanied increases in university expenditure. This competition has been very noticeable since the mid-2000s when global rankings emerged and is related to Frank and Cook's the winner takes all society (1995). The principle of winner takes all applies not only to business but also to the university sector (Ehrenburg, 2000; Marginson, 1997). The top-ranking universities attract the best professors and students, and greatest funding. University managers know that rankings are not a reflection of organizational effectiveness, nor do

they reflect the quality of education (Shin, 2011a). But they do know that a top-ranking brings huge benefits to the university.

The competition for a world-class university is a reason why tuition has been rising during the 2000s in Korea (Shin & Jang, 2013). To compete with top-ranking universities, universities at lower-tiers began to benchmark top-tier ones. For example, a university ranked at 500 might benchmark a university ranked at 100 to move up their global ranking. However, benchmarking requires considerable resources. A world-class university requires smaller class sizes, professors to teach fewer credit hours (usually about six credit hours per semester in many US research universities) to devote more time on research, and to reduce service hours on students (Altbach, 2009; Ma, 2008). In addition, a world-class university needs expensive equipment which most undergraduate students are unable to access, as well as an expensive library service that most undergraduate students do not need.

For that, the universities are expected to generate their own resources as well as seeking government support and are actively involved in generating fund through their revenues from copyrights, patents, campus business, lifelong learning, etc. (e.g., Harrison & Hatt, 2012; Ma, 2008; Mohrman, 2008; Slaughter & Rhoades, 2004; Teixeira & Koryakina, 2013). Another approach is to increase tuition to the extent that students can still pay it. The top-ranking universities are in a stronger position than other universities to do this because they have long student waiting lists and student enrollment is less affected by their tuition increases. Once the top-ranking university increases its tuition, the second-tier universities often increase their tuition to generate revenues to compete with the first tier universities (e.g., McPherson & Schapiro, 1998; Shin & Milton, 2006). In such context, the second tier universities no longer concern that they might lose their students through increased tuition because of the acceptance of increased tuition at the top ranking universities.

In the higher education market consumers do not occupy position that is superior to the providers (top ranked universities); rather, providers -- Especially highly reputed providers -- Have the power to decide the price since the

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academic degrees students receive are referred as positional goods (Hirsch, 1976). Colleges compete with each other to obtain a higher position that has greater power in the market. Because of the role of a university to provide positional goods, universities are inevitably sensitive to rankings (e.g., Marginson, 1997). As Ramsden (1999) found, top ranking universities attract high quality students and charge high tuition even though their students are not satisfied with their teaching quality. However, once students graduate from the top ranking universities, they are hired by well known companies and paid high salaries. As a result, the top-ranked universities are able to charge high tuition and students are willing to pay.

Because of the global competition and benefits from the world-class status, tuition increase may become a regular event to attain the desired level in the global rankings. Public universities are becoming private in terms of tuition charges because their increased tuitions will enable them to compete better with top-ranking private universities (e.g., Ehrenberg, 2000).

This study provides an overview of the tuition increase in Korean higher education and examines the changes in revenues of a highly selective university in relation with obtaining the world-class university status. Also, special focus is paid to find out how the expenditure has been paid differently by different groups of students, e.g., by their disciplines, their levels of education, and institutional missions.

2 The Contexts of Korean Higher Education

2.1 Tuition Increase: Massification and Global Competition

This study uses Korean higher education as an example of cost sharing in building world-class university. Currently, Korean parents and students pay the greatest share of college expenditure as a percentage of total higher education expenditure. According to Organization of Economic Co-operation and Development (OECD) data in 2005, the government provided only 24.3% of tertiary education expenditure while students and parents paid the rest (Shin & Harman, 2009). This high level of contribution by students and parents is caused by Korea having the highest student enrollment rate (80%) in the private sector among the OECD countries (Shin & Harman, 2009). In addition, university tuition has been increasing faster than the growth of GDP or inflation. Since 1990, the average tuition increase has been 7.2% yearly, whereas GDP growth was 4.9%. In this context, the increased rate of student payment is becoming a serious issue among policymakers as well as among students and parents.

Recent tuition increases have been caused by two factors. First, the tuition increases in the 1980s and 1990s were related to the enhancement of education infrastructures and environments. With the rapid massification of higher education, the Korean government gave priority to improving the quality of education (e.g., Shin, 2012). As Ehrenburg (2000) and many others have discussed (see, for example, Shin & Harman, 2009), mass higher education requires greater resources in order to educate students with differing levels of academic preparation, representing various age groups, and socio-economic backgrounds. The Korean government therefore adopted an accreditation system in 1994. This policy initiative contributed to an improved education environment (Korean Council for University Education, 2001) although such kind of policy initiative required considerable investment and led to tuition increases between 1980 and 1990 (see Table 1).

The tuition increase in the 2000s is related to the research and graduate education infrastructure. In the late 1990s, the Korean government aggressively pushed universities to enhance research productivity to compete with global universities (Shin, 2009a). Through this policy initiative, Korean higher education has shifted from teaching focused to research focused during the 2000s. Universities started to hire research productive professors and reduced their teaching loads in order to bring in more funding from the government (Shin, 2009a). In addition, Korean universities began to open new graduate programs to educate and expand research functions. Because of this trend as well as government policy, it was rare for Korean universities to identify themselves as teaching focused (Shin, 2009b). Therefore, many universities identify themselves as research-oriented universities regardless of their actual research capability. These universities placed strong emphasis on research productivity in order to receive more government fund and to attract talented students. Because of the situation, many Korean universities identify themselves as a research university although most of them are not much research productive.

The cost issue seems to be outside policymakers' interests, but establishing a research university is much more costly than policymakers expect (e.g., Altbach, 2009). The high cost of a research university is due to many factors. A research university pays a great deal of money to hire research productive professors, build new facilities, offer scholarships to attract talented students, and internationalizes higher education (e.g., Horta, 2008; Ma, 2008; Mohrman, Ma, & Baker, 2008). In the research university, professors stay longer in their office or lab, communicate mostly with graduate students, and reduce their available consulting time for their undergraduate students (e.g., Altbach, 2009). Because of the strong

Table 1 Higher Education Budget, R & D Expenditure, and Tuition

Year	Tertiary Enrollment	Grad. Enrollment	HE bud.	R & D exp. Total	Tuition
1965	127,126	3,842	1,915		32,270
1970	163,511	6,640	6,635	10,547	118,700
1975	221,277	13,870	20,439	42,664	420,200
1980	563,748	33,939	144,967	211,727	702,000
1985	1,192,172	68,178	196,691	1,155,156	1,147,000
1990	1,379,951	86,911	409,782	3,210,486	1,572,500
1995	2,212,852	112,728	1,105,913	9,440,606	4,254,500
2000	3,130,251	229,437	1,782,249	13,848,501	4,905,500
2005	3,208,645	276,918	2,537,458	24,155,414	6,889,000
2010	3,223,734	316,633	4,635,494	37,928,500	9,041,000

Data Sources: Report on the Survey of Research and Development in Science and Technology (Ministry of Education, each year); Annual Education Statistics (Ministry of Education, each year).

Notes: (1) Budget and education expenditure are in million Korean won, and tuition is in single Korean won.

(2) The tuition is based on the maximum tuition charged by any private university. The Annual Education Statistics provides data only on maximum and minimum tuition rates. Between the maximum and minimum tuition rates, I selected the maximum tuition because most regular universities set tuition close to the maximum tuition level whereas setting it at the minimum tuition level is quite exceptional.

research orientation, students especially undergraduates, often feel isolated from the university community including professors and graduate students. All these factors require considerable funding and student tuition has been increased two times in the ten years between 2000 and 2010 in Korea as shown in Table 1.

2.2 Revenue for World-Class University

The revenue resources for the increased expenditure have been paid by the government, student, and private sector. The Korean government has increased its higher education budget and research funding from the late 1990s. During the ten years between 2000 and 2010, Research and Development (R & D) expenditure has been dramatically increased in Korea. These statistics show that the Korean government has indicated their support for a world-class university by providing research funding. However, the R & D investment also requires a similar level of contribution from students. During the last decade, student tuition has increased twice in order to build and maintain new facilities, hire and pay high salaries to professors, install expensive equipments, and internationalize their campus.

The case of Seoul National University (SNU), the leading research university in Korea, demonstrates these issues too. Government appropriation fund for SNU has increased 1.9 times, student tuition 2.1 times, and external research funding 3.7 times.

The ratio of government appropriation fund to total revenue for SNU, however, has gradually declined from 57.1% in 1993 to 43.7% in 2011, although the total amount has increased since 1993 as shown in Table 2. It is because the amount of overhead from external research funding, tuition and fees charged by SNU, and benefits from

university development fund have increased more rapidly. The share of the external research funding to the total SNU revenue has grown from 26.3% in 1993 to 70.3% in 2011 due to such a change in the government financial support policy to higher education. Only about 10% of the external research funding is from the private sector. During the same period, the share of total revenue coming from student tuition fees has increased from 23.5% in 1993 to 26.1% in 2010 and 24.6% in 2011. University development fund has increased at a faster rate than any other revenue sources. The amount of revenue from the university development fund has recorded an almost nine-fold increase compared to 1993. This means that the increased expenditure to build a world-class university in the 2000s has been paid proportionally by government, students, and the private sector.

Although we agree with the argument that research is a core function of the modern university, our primary concern is with identifying the principle agent to pay and cover for the increased expenditure. If the increased costs are not related to undergraduate education, undergraduates should not be required to pay for the increased costs. Although there are controversies on the nexuses between teaching and research (e.g., Hattie & Marsh, 1996), academics who have studied the relationships with empirical data found that there is very weak or no relationships between teaching and research. According to Marsh and Hattie (2002), research productivity does not contribute to teaching quality in an Australian university context. Even, Shin (2011b) found that international journal publication has negative impacts on the classroom teaching of junior professors in a Korean university. If there is no clear evidence that academic research contributes to classroom teaching, then college

Table 2 University Revenues by Sources (SNU)

Year	Tuition & fees	Government appropriation	External research fund	University development fund	Total revenue
1993	37,892,796	92,189,448	42,405,779	14,128,922	161,525,849
1995	53,833,146	121,111,107	78,629,411	35,578,801	238,372,272
1997	70,202,899	171,486,656	104,120,251	65,854,015	326,488,652
1999	76,894,031	156,337,665	124,142,418	65,638,757	315,126,552
2001	96,553,121	185,061,573	169,309,232	68,858,790	370,400,989
2003	119,857,076	210,868,939	231,109,599	62,429,949	433,520,749
2005	140,665,357	200,200,833	283,121,256	106,069,564	497,896,972
2007	158,730,254	262,661,327	346,902,488	136,310,732	614,671,692
2009	175,167,760	312,742,735	420,033,696	115,146,731	670,538,429
2011	183,950,540	327,386,757	526,755,061	125,584,376	748,821,490

Source: Seoul National University (1993-2012).

Notes: The currency is Korean Won in thousands. The total revenue consists of government appropriation, tuition and fees, overhead from research funding, benefits from university development fund, etc. SNU has an independent research corporation which manages the external research funding. The research corporation charges overhead by contracting with the fund raiser and transfers the overhead to SNU. Therefore, only limited percent of the total research fund is transferred to education and general budget account of SNU and the total revenue does not include the total research fund.

students are not benefiting from the research orientation even though they pay the increased tuition for a world-class university.

On the other hand, some academics may argue that undergraduate students in a research oriented university may benefit from a world-class university and research competition because they are the main beneficiaries of their university's reputation. Presumably, students in research focused universities share the benefits from the tuition increase necessitated by emphasizing research productivity; on the other hand, students in teaching focused universities may not share the benefits despite the fact that they pay for the research productivity. Regardless of this reality, however, most Korean universities including teaching-focused ones, charge similar tuition rates. The teaching focused universities are pressured to enhance their research productivity in order to attract more research funding, which is 8.2 times larger in size than general higher education budget (see Table 1). As a result, students in the teaching focused universities also pay for the competition between universities in relation to research.

3 Cost Sharing or Cost Transfer?

3.1 University Expenditure by Discipline, Level, and Mission Type

The cost sharing is widely applied in many countries including in Europe (e.g., Agasisti, Pérez-Esparrells, Catalano, & Morales, 2012). Although there may be philosophical disputes (e.g., Link & Scott, 2011) about the university as a public good, policymakers tend to adopt a user pays approach when facing financial constraints

(e.g., Johnstone & Marcucci, 2010). Even ex-communist countries and China charge student tuition. This paper is not arguing that students should not pay for their university education but is concerned with whether the students' share is proportional to the benefits they received from the university. The benefits can be viewed from an economist's perspective as the rate of return in higher education (e.g., Berger, 1988; Eide & Waehrer, 1998; Montmarquette, Cannings, & Mahseredjian, 2002). This paper, however, focuses on whether students are paid back during their university study with respect to the expenditure of their universities. If undergraduate students pay, but the university uses the increased tuition revenue for graduate students, there is an issue of equal payment between students.

If students pay proportionally according to the benefits they receive, there might be less controversy about the cost sharing between government, the private sector, and students. However, if students do not pay proportionally according to the benefits they receive, cost sharing may appear less logical. This section therefore focuses on whether students pay similar proportion according to the benefits they receive as measured by college expenditure. In a college expenditure study, it is difficult to assign shared expenditure (e.g., the expenditure related to university administration) to each unit (e.g., graduate vs. undergraduate, each academic unit etc.) (Ehrenberg, 2000; Johnes, Jones, & Thanassoulis, 2008). A comprehensive study on college expenditure in the US has been conducted by Middaugh, Graham and Shahid (2003). The study is referred to as the "Delaware Study," based on the title of the paper. The study collected expenditure data from

175 universities according to academic discipline levels. The participating universities are in different categories of the Carnegie Classification and thus the data provides expenditure data across mission types.

Middaugh et al.'s (2003) study shows how much colleges spend resources differently based on their academic disciplines and mission types. As shown in Table 3, college expenditures for humanities courses given by comprehensive universities are three times higher than those of medicine courses by research universities. A similar study but at the individual university level has been conducted in Korea. Unfortunately, the Korean study does not provide tuition differences by mission types. As the table shows, although university expenditures are slightly different between Korean universities and US universities, the rank order of expenditure between disciplines is the same in the two countries. The disciplines of humanities and social sciences are the cheapest followed by the natural sciences, arts and physical sciences, engineering, and medicine in respective order. In the table, expenditure is standardized by dividing the lowest tuition by the lowest mission type. In the Delaware Study, for example, the tuition in each cell is divided by the tuition of humanities and social sciences in a comprehensive university because it is the lowest tuition in the study.

There are not many studies on the expenditure differences between undergraduate and graduate education. Even the Delaware Study did not include graduate programs. Technically, it is quite difficult to split expenditures by undergraduate and graduate courses. In the US, 40 state governments have developed a funding formula for budget allocation purposes (e.g., Mullin & Honeyman, 2008). The

formula includes disciplinary differences and levels of programs (e.g., lower undergraduate, upper undergraduate, master, Ph.D., and professional degree courses). For example, the State of Texas developed a funding formula to allocate budget within the state (Texas Higher Education Coordinating Board, 2008). According to the formula, graduate education for a pharmacy major was assigned 25.3 times more state funding than that for undergraduate education for a liberal arts major.

Unfortunately, there are few studies on expenditure differences between undergraduate and graduate education in the Korean university context. This is because graduate education has only been expanding since the late 1990s when the knowledge-based economy began emerging. With this reason, graduate education was not properly developed in Korea up to the late 1990s although Korean universities were awarding Ph.D. degrees. The expenditure on Korean graduate education does not provide much insight for this study. Even Seoul National University does not provide expenditure data for its graduate education. This is mainly because graduate education is not independent from undergraduate education in most Korean universities.

In 2009, the Korean government began to provide tuition data of individual university to public through the university information providing service. The data include the cost of tuition for each university by its discipline. This enables an analysis of how student tuition differs by institutional mission and discipline. The notion of institutional mission in Korean universities was suggested by Shin (2009b) and the mission classification scheme has been applied in many other studies including international comparative studies (e.g., Changing Academic Profession

Table 3 University Expenditure by Discipline and Mission

Research on College Expenditure		Humanities & Social Sciences	Natural Sciences	Engineering	Medicine	Arts & Physical Sciences
Delaware Study	Research	1.3	2.0	2.8	3.2	2.0
	Ph.D. granting	1.1	1.6	2.3	2.8	1.6
	Comprehensive	1.0	1.2	2.4	2.7	1.2
	Average	1.0	1.4	2.2	2.6	1.5
Korean Universities	Yun (1995)	1.0	1.3	1.1	4.2	1.3
	Kim, Ham, & Lee (2001)	1.0	1.2	1.0	3.8	-
	Kang & Shim (2008)	1.0	1.1	1.1	3.3	-
	Han & Kim (2002)	1.0	1.5	1.5	-	-
	Choi, Park, & Kim (2005)	1.0	0.7	1.8	-	-
Average exp. per student		1.0	1.2	1.3	3.8	1.3

Notes: (1) In the Delaware Study, medicine includes only nursing as a major because nursing is the only available medicine discipline in the study. (2) Humanities and social sciences are the criteria for standardizing expenditure. In the Delaware study, the expenditures of academic disciplines are standardized by dividing the expenditure of each discipline by the humanities and social sciences of a comprehensive university. In Korean universities, humanities and social sciences are the criteria used to transform the expenditure to a standardized score in each case. (3) The standardized tuition of the Delaware Study is the average of each discipline in each category. For example, the standardized tuition of humanities and social sciences is based on the average of 15 majors in the Delaware Study.

study in 2008). According to Table 4, tuition per student is the highest for research universities, followed by Ph.D. granting, and comprehensive universities. Also, student tuition differs by discipline. Student tuition is the lowest for humanities and social sciences, followed by natural sciences, arts and physical sciences, engineering, and medicine.

3.2 Cost Sharing or Cost Transfer?

This section focuses on how universities charge tuition according to academic majors, levels of education (graduate vs. undergraduate), and different mission types (research, Ph.D. granting, and comprehensive university). For this purpose, the study uses college expenditure data from the currently available literature to determine how much expenditure is reflected in tuition rates across disciplines, levels, and institutional missions.

3.2.1 Between Academic Disciplines

The benefits of increased college tuition differ by students' major areas. Students in hard disciplines benefit more than their peers in soft disciplines because they can use expensive equipment and labs, technological equipment, etc.; on the other hand, students in soft disciplines may benefit less from the increased tuition and college expenditure (e.g., Casper & Henry, 2001; Middaugh et al., 2003; Smith, 1992). Although many Korean universities apply different tuition rates for different academic majors, the tuition differences between disciplines are smaller and the increased expenditure is not equally paid by the students (for details, see Table 3 and Table 4). As shown in Figure 1, students in medicine benefit more from university expenditure than the students in other disciplines. In the figure, the tuition and expenditure are standardized by dividing the expenditure (or tuition) by the lowest expenditure (or tuition) -- In this case, humanities and social sciences.

In fact, a university does not proportionally increase tuition according to the expenditure of each discipline or to students' tuition elasticity (for details, see Shin & Milton, 2008). For example, a university prioritizes resource investment in medical education because of increasing demand for highly qualified doctors, even though students in medical education are not tuition elastic comparing with other disciplines. This is similar in many other countries (e.g., Australia) where universities set relatively lower tuition for medical education even though it incurs high costs. In addition, in the competition for high rankings, the medical field is important because over 40% of the papers in ISI are in bio-medical areas (Leydesdorff & Shin, 2011).

In the ranking races and world-class university competition, a question arises with the issue as to why students in soft disciplines should pay the same proportion of increased expenditure as others, given that they benefit less from it than their peers in the hard disciplines. This is the core issue in discussing cost sharing. If a government prioritizes medical education and provides more resources for medical education, then the equality of cost sharing is less controversial; however, if it's the students in other disciplines who pay the increased costs for medical education, it raise an issue of equality in cost sharing. Clearly it depends on the practice in each country. As Figure 1 shows, costs (expenditure) are transferred to students in other disciplines because the Korean government does not provide more resources for medical education and as a result students in other disciplines share the increased costs.

3.2.2 Between Graduate and Undergraduate Education

It is quite unclear as to whether increased tuition benefit students especially undergraduates. Graduate students are more likely to benefit from the increased tuition because they have more opportunity to access expensive equipment, work with their professors, and develop their research

Table 4 Undergraduate Student Tuition per Student in Korea (2011)

Mission Types		Average	Humanities & Soc. Sciences	Natural Sciences	Engineering	Medicine	
Research (21 Universities)	Public	4,679	4,034	4,659	5,127	5,898	5,313
	Private	8,118	7,120	8,438	9,444	11,045	8,929
Ph.D. granting (26 Universities)	Public	4,275	3,645	4,422	4,781	6,147	4,827
	Private	7,843	6,704	8,027	8,761	10,155	8,171
Comprehensive (20 Universities)	Public	4,122	3,612	4,189	4,523		4,473
	Private	7,562	6,705	8,001	8,585	9,679	8,660
Average	Public	4,390	3,787	4,449	4,844	6,637	4,918
	Private	7,823	6,811	7,612	7,392	10,407	8,719
	Total	6,873	5,974	7,062	7,625	9,379	7,615

Source: University Information Providing Service (n.d.).

Notes: The currency is Korean Won in thousands.

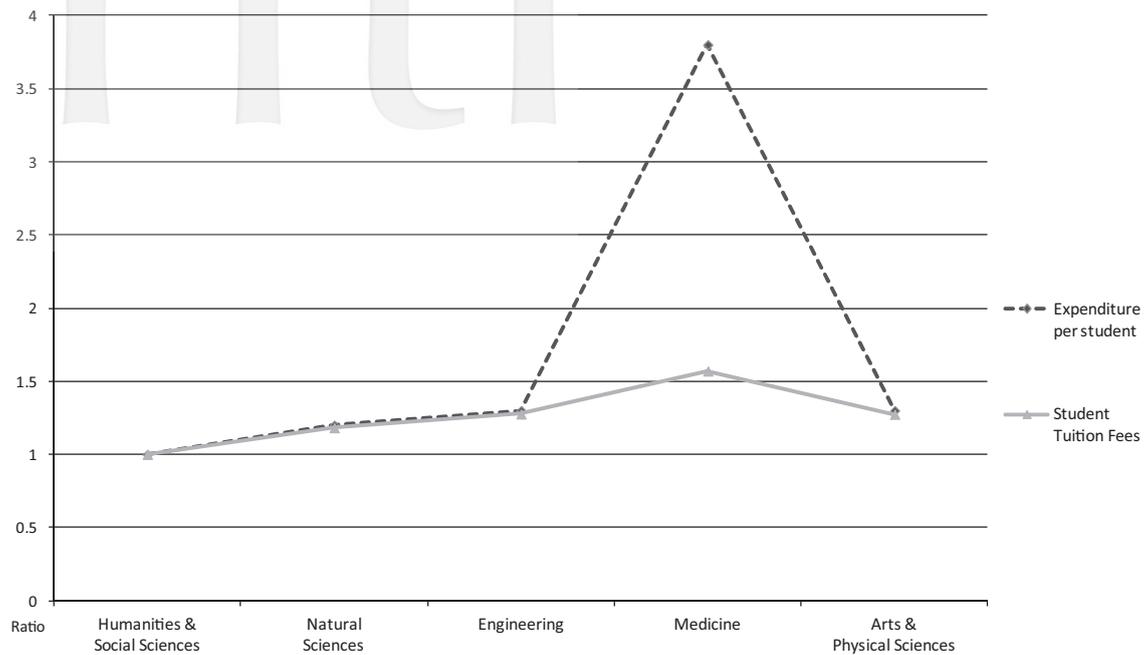


Figure 1 Expenditure per Student and Student Tuition by Disciplines

Notes: (1) Expenditure per student is based on the average in the Korean literature (Table 3). (2) Student tuition is based on the average tuition of 67 Korean universities (Table 4).

capability through collaboration with faculty and classmates (e.g., Bloom, 1983; Smith, 1992). Further, they have a better chance of obtaining scholarships because professors and universities tend to provide better scholarships and research assistantships to graduate students, especially Ph.D. program students, who are critical in conducting research projects. After their Ph.D. degrees, they are likely to be hired as post-Doctoral researchers. Clearly, graduate students benefit from a world-class university.

Many US state governments apply different weightings in their funding formulae to undergraduate, master's, and doctoral programs. If undergraduate students pay a similar level of tuition as graduate students, it means that undergraduate students actually pay much more because universities' actual expenditure for undergraduate education is considerably lower than that of graduate education. This gap in education expenditure becomes quite large when a university spends its resources to build a world-class university.

It is difficult to analyze the differences in university expenditures between the graduate and undergraduate education in Korea because of lack of data on expenditure on graduate education. We may use a funding formula for graduate education as a proxy of expenditure for graduate education. The funding gaps between graduate and undergraduate education in Figure 2 is based on the Texas funding formula. Although this does not reflect the Korean higher education context, the figure has its implications in interpreting the expenditure differences between undergraduate and graduate education. For example,

natural sciences and engineering require more resources for graduate education than for undergraduate education. On the other hand, the requirements for humanities and social sciences programs do not vary much between graduate and undergraduate education.

The figure implies that a university invests much more in graduate education than undergraduate education while charging slightly higher tuition for graduate students. The investment in graduate education is due to increase in competition to attract talented students, provide better scholarships and assistantships for the students, and to purchase expensive equipment for their education in order to compete for the world-class university label. This produces a cost transfer from graduate students to undergraduate students because undergraduate students benefit less from the increased tuition.

3.2.3 Between Research Focused and Teaching Focused Universities

Expenditure in a top-ranked university is much higher than that of a teaching focused university. According to the Delaware Study of 2003, a research focused university uses more resources for its education than its peers in Ph.D. granting or comprehensive universities, as shown in Table 3. In the US, the differences in university expenditure between a research university and a comprehensive university are significant, as shown in Figure 3. However, universities tend to charge a similar rate of tuition whether they are research or comprehensive universities in Korea. These findings can be interpreted in two ways. One interpretation is that research universities charge low tuition because

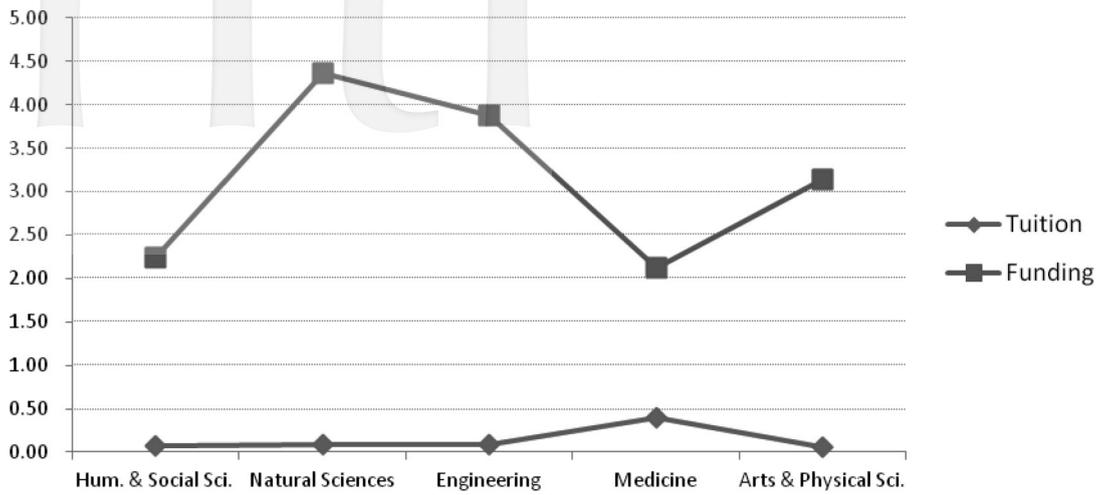


Figure 2 Gaps between Graduate and Under Graduate Students in Tuition and Funding by Disciplines

Notes: (1) The tuition line represents the tuition gaps between graduate and undergraduate students. The funding line represents the funding gaps between graduate and undergraduate students. (2) Student tuition for graduate students is based on the average from 67 Korean universities. The average tuition for a graduate program in thousands of Korean Won in the humanities and social sciences is 6,385, natural sciences 7,590, engineering 8,151, medicine 10,837, and arts and physical sciences 7,994. (3) Funding is based on the funding formula of the state of Texas for 2010-2011.

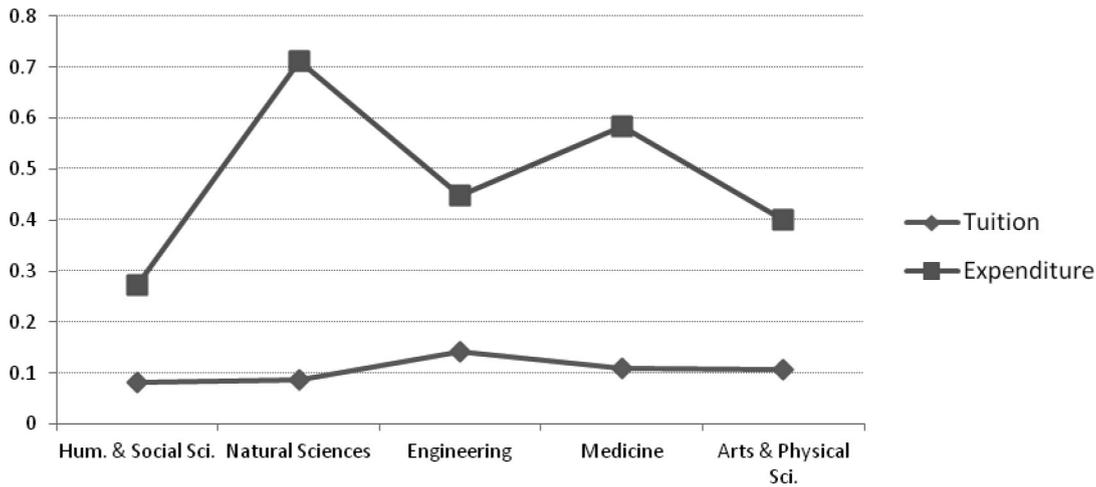


Figure 3 Gaps between a Research University and a Comprehensive University

Notes: (1) The tuition line represents the tuition gaps between a research university and a comprehensive university. The expenditure line represents the expenditure gaps between a research university and a comprehensive university. (2) Student tuition is based on the differences between the averages charged by research universities and comprehensive universities (see Table 4). (3) Expenditure is based on the differences between the averages spent by research and comprehensive universities in the Delaware study (see Table 3).

these universities have sufficient external funding sources (such as research funds). The top-ranking universities are relatively better positioned to bring in funds to cover the increased expenditure than those universities situated at the lower end, because they are generally well supported by government, and have better external funding sources. As a result, the top ranked universities tend not to directly transfer the increased expenditure to their students whereas the low-ranked universities do.

On the other hand, comprehensive universities charge high tuition in order to be recognized as a world-class university. Once a top-ranking university increases its tuition, it results in a tuition increase for most of other Korean universities. The tuition increase by low-tier

universities is related to the homogenization of Korean universities, i.e., low-ranking universities tend to follow top-ranking universities. Because Korean universities are sensitive to ranking status, they tend to copy new initiatives attempted by a top-ranking university including tuition setting. As a result, the increase in tuition in a top-ranking university seeking to be a world-class university has an impact on low-ranking universities. Students in low-tier universities (Ph.D. granting and comprehensive universities) pay for the increased expenditure that comes from building a research focused university. In this context, there is a cost transfer between students from high-tier to low-tier universities.

4 Conclusion

This paper has discussed tuition increases in the 2000s in relation with global competitions for a world-class university. Although there are different perspectives on tuition rising such as political factors and higher education as a labor intensive sector, this study highlighted tuition rising from a global competition perspective. The global competition to obtain a world-class university status is related to the university as a positional good, given that a top-ranking university has a superior position in obtaining talented students, professors, and financial resources. Because of these benefits, Korean universities are competing to become a world-class university. The main discussion focus of this paper is based on who has paid for the increased expenditure in the 2000s. One source has been government funding. The Korean government has aggressively increased research and development funding since the 1990s. This increased funding for higher education has no doubt enhanced education quality in Korea.

Increased research funding has also led Korean universities to focus on research productivity. This research-orientation on the other hand has resulted in some Korean universities to lose their original mission, and as a result it has strengthened rigid hierarchy between universities based on research productivity. The increased costs have been paid by students as well as by government and private sector. Because of this, the share of student tuition in university revenues has been consistent as shown in the Seoul National University case. This implies that over the last decade, it was students who have been paying the costs for the increase in research productivity which eventually allows the obtaining of the world-class university status for many Korean universities. Although the empirical evidence for this study is based on limited data of Korean universities, the discussions explain who actually paid the increased expenditures during the 2000s when Korean universities were actively involved in the global ranking race.

The share paid by students could be seen as cost sharing if students pay proportionally according to the benefits they receive. However, in reality, this is not the case. Instead, students in soft-disciplines pay more proportion than the benefit they receive when compared with their colleagues in hard-disciplines. Likewise, students in undergraduate programs pay more proportion for increased expenditure than the graduate students, and students in low-tier universities pay more than the students in top-tier universities. Because of this, cost transfer between different groups of students is occurring. Policy makers and university leaders are recommended to consider the caveats in their tuition settings. Specifically, the

differences in college expenditure across disciplines, levels of education, and institutional mission should be considered in budget allocation at government policy level, and these differences also should be considered in institutional budget reallocation process.

Followings are some proposals for future studies which can improve current study's limitation. In fact, there was relatively little empirical evidence in the discussion about the cost transfer in this study because there is not enough university expenditure data in Korean higher education contexts, but further study with better data will provide more insight for the issue of cost transfer between students.

Another topic which should be explored is the cost transfer between students' social classes. Students in upper social classes are not burdened by tuition increases but students in lower classes are (e.g., Christie, Munro, & Rettig, 2001; Harrison & Hatt, 2011; Paulsen & St. John, 2002). Because of the merit-based scholarships, students in low socio-economic contexts may lose the opportunity for a university education. Although the Korean government adopted in 2009 the Income-Contingent Loan (ICL) program, the loan designed with a deferred payment system, increased tuition still leads to over-burdening low-income students because such a loan program only postpone students' burden into the future, not solve their problem.

Finally, policymakers are recommended to pay attention to the increasing costs when seeking to be a world-class university and also to cost sharing between government, students and parents, and other funding sources. As discussed, if students in soft-disciplines, undergraduate programs, and low-tier universities pay a disproportionate share compared with other groups of students, policymakers should consider how to equitably share the increased costs between different entities and groups of students, by taking students' socio-economic class into account. Building a world-class university is both an issue of cost transfer as well as an issue of strategy for a competitive university.

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