An Analysis of Higher Education Policy: The Case of Government-Supported University Programs in South Korea

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Abstract   This paper examines government-supported university programs in South Korea over the last decade. To do this, we review the current status and issues of recent programs supported by the Ministry of Education. Thereafter, we draw some lessons and suggest policy implications for improving the effectiveness of government-supported university programs. The issues addressed include 1) low consensus amongst stakeholders in the higher education sector and top-down goal setting led by the government, 2) frequent reshuffling of the structures and contents of programs, 3) ineffectiveness due to redundancy of projects, 4) disparity between 'haves' and 'have-nots' in the higher education system, and 5) an inadequate evaluation system and assessment indicators. We suggest that government-supported programs should be re-aligned to stimulate the reform of higher education aimed at strengthening its publicness. The role of government needs to transit from 'leading' to 'supporting', while the universities should take initiatives in reforming the higher education system.

Keywords   Government-supported university programs, higher education, university restructuring, general university funding

I. Introduction

The evolution of universities lies in the process of balancing internal academic inquiries with the external social demands for provision of human resources, thus creating new knowledge and applications (Karmel, 1989; Kim, 2012). Universities have also contributed massively to the development of industry by producing skilled workers, solving difficulties in work places, and engineering

knowledge based on research activities. Furthermore, the recent rapid progress of the Fourth Industrial Revolution has highlighted the importance of the direction of curriculum for training human resources. The Fourth Industrial Revolution calls for changes across society and industry, and requires rapid adaptation to extensive social changes resulting from scientific and technological advances (Sohn, 2017).

These deep changes require university education to be redirected toward a balance between liberal arts and professional expertise rather than discipline-based specialization. In this context, in an effort to enhance the competitiveness of higher education, the Korean government has promoted various financial support projects to lead the restructuring of the higher education system, including enhancing research activities, strengthening the specializations of universities, and promoting university-industry collaboration (Hwang, 2017).

The majority of universities in Korea still face challenges, such as a sharp drop in the number of university entrants, insufficient government financial support, and the excessive inertia of traditional education programs. Most of the current universities in Korea seem to be incapable to reform of their own initiatives. Therefore, the government aimed to trigger deep change by implementing government-supported programs. These changes in the higher education system might not be achieved without policy measures, such as financial incentives and administrative interventions, at the initial stages.

Against this background, we review recent government-supported university programs to identify policy implications based on key issues. The next section briefly describes the recent development and concept of government-supported university programs in Korea. Section 3 addresses the current issues surrounding these programs, followed in section 4 by a discussion of lessons learned and suggestions for ways to improve these programs. Section 5 recommend implementation and draws a conclusion.

II. Overview of Government-Supported University Programs

1. Typology of the Programs

Lim et al. (2012) and Choi (2017) define government-supported university programs as those for which financial support is directly or indirectly given to higher education institutions from the governmental budget. Song (2000) and Park (2013), consequently, describe them as governmental activities to allocate financial resources, and evaluate the performance of the supported higher education institutions. The Ministry of Education (MOE) regards them as

financial support to achieve the policy goals of the higher education system (Ministry of Education, 2016).

Considering these definitions, government-supported university programs comprise both public goals (i.e. supporting the higher education system) and the means to achieve those goals. Most of the terms commonly include the process of the programs, transparent management of the programs, and the performance evaluation of the programs (Lim et al., 2012).

The typology of government-supported university programs is based on various properties, such as the legal entities of the institutions (i.e. public or private), the specific purposes of the programs, and the level of units in the organizations supported (Lee, 2010: 19; Han, 2015: 26; Lim et al., 2012: 8). Firstly, in terms of legal entities, the programs can be categorized as national (public)/ private-university supported programs. In 2014, the Korean government provided 48.1% (5.406 trillion won) of its total support to national (public) universities and 51.9% (5.895 trillion won) to private universities (Lee, 2017).

Secondly, according to the specific purpose of the programs, they can be categorized as an enhancement of education, research, and mixed programs.

Thirdly, the levels of units supported fall into three categories: institution level, project group level, and individual academics level (Lee, 2010: 19; Han, 2015: 26; Lim et al., 2012: 8).

2. The Recent Development of the Programs

2.1 Transition Process by Period

The government-supported university programs have been repeatedly modified with regard to their purposes, how they are supported, how they are operated, and the extent to which they are focused. In this section, we chronicle changes in programs by periods, purposes, and functions.

After the creation of the academic research project in 1963, the focuses of the programs were 'uniformly allocated' by the early 1990s. After the mid-1990s, the scheme was based on 'allocation by grades'. It again was changed to 'specially-targeted support' around the mid-2000s. After 2008, the allocation was set up by a specific formula including performance indicators, such as the number of papers produced and the number of students who graduated. Since 2014, these programs have closely reflected the structural reform of the higher education system (Lee, 2010).

Table 1 Development of government-supported university programs by period

Time	Main content
Before 1994	·Amount of financial support is small and mainly based on equal allocation ·In 1963, establishment of 'an enhancing academic infrastructure project' ·In the 1970s, operation of 'laboratories in colleges' ·In the 1980s, support for individual professors' research by Korea Research Foundation (KRF) ·In the early 1990s, financial support for national (public) / private universities
1994 -2003	· Introduction and expansion of gradual support system based on performance evaluation ·Encouragement of competition between public and private universities ·Significant increase in specially targeted support programs
2004 -2007	·Abolition of general support programs and initiation of special-purpose support by selection basis ·Systematic linkages to university evaluations (e.g. demand to reduce the number of students and encourage achievement of specific level of performance based on quantitative indicators) ·In 2007, establishment of education capacity improvement project
2008 -2013	·Introduction of 'block funding' based on the formula ·Reflection of basis for university endowments based on performance
Since 2014	·Linking of government funding with restructuring of universities ·Reorganization of academic departments according to industrial demands ·Creation of programs to foster socially-relevant human resources (PRIME, CORE etc.)
2016. 7. 14.	·Governmental notification of restructuring of government-supported university programs ·Attempt to strengthen university autonomy, emphasis on development plan according to the individual characteristics of universities ·Elimination of inefficiency originating from redundancy between program-operating units

2.2 Literature Review

In previous studies, the main focus was on descriptive analysis, such as the status, size, and problems of government-supported university programs. Recently, there has been an increasing number of empirical studies that explore the relationship between government financial support and program performance.

Quantitative analysis studies include those conducted by Song (2000) and Yoo (2001). Song (2000) analyzed the legal basis and support status of government-supported university programs. He suggested a new evaluation system for strengthening feedback and ex-ante measures according to the characteristics of the projects set up by the individual universities. Yoo (2001) also analyzed the size and status of financial support, and the management and operation of projects within universities. She proposed policies concerning the establishment

of a fair evaluation system, increase in the amount of financial support, and the establishment of a steering committee of program stakeholders.

Yoo (2001) proposed a formula for funding methods based on an exploratory analysis of financial support for private universities. Ban et al. (2005) reviewed the current status, characteristics, and problems of financial support projects at the government level and suggested the necessity of establishing an infrastructure for a balanced financial support and a linkage between university policies and financial support. Oh (2006) recommended that private universities strengthen their competitiveness through restructuring, suggesting funding based on a formula as a solution.

Since the mid-2000s, due to the increase in large-scale purpose-targeted projects, several empirical studies have investigated the relationship between financial support and performance. Yoo (2006) developed multiple performance evaluation criteria. Based on these criteria, she analyzed quantitative and qualitative performance of Brain Korea 21 (BK21), New University for Regional Innovation (NURI), programs fostering university-industry collaboration, programs for academic research, and university specialization programs. She also suggested guidelines and policy implications to increase the effectiveness of such programs.

Kim et al. (2008) argued that governmental policy has shifted from 'uniform allocation' to 'allocation by grades' and developed multiple performance indicators through simulations by applying indicators in the formula.

Baek (2009) verified the rationality of the formula and indicators included in the programs for education capacity. Moreover, considering the purpose of the programs and return-on-investment, the author examined the validity of a management system of programs and performance.

Kwon (2015) evaluated the university-industry programs and Kwon (2017) figure out the relationship and productivity of the programs. Meanwhile Seol (2012) evaluated the BK 21 Programs and recommended the new programs for the government.

III. Current Status and Issues of the Programs

1. Growth of Governmental Expenditures on Higher Education

The Education Hope Forum of the Korean National Assembly released a report titled 'Plans for Increasing Financial Support for Strengthening University Competitiveness and Publicness' in December 2017. According to the report, expenditures for higher education increased by about 4 trillion won,

reaching 9.86 trillion won in 2017 from 5.548 trillion won in 2010. (see table below).

Table 2 Korean government's higher education expenditure (Unit : KRW trillion, %)

Year	GDP (A)	Governmental expenditures (B)	MOE (C)	HE(D)	National scholarship[1] (E)	Net HE expen-ditures (F=D-E)	HE expenditure / Governmental expenditure D/B³ 100	F/B³ 100	HE expenditure / GDP² D/A³ 100	F/A³ 100
2010	12,653	2,552	386	50.5	4.2	46.3	1.98	1.82	0.40	0.37
2011	13,326	2,641	416	50.1	5.2	44.9	1.90	1.70	0.38	0.34
2012	13,774	2,826	457	62.3	19.2	43.1	2.20	1.52	0.45	0.31
2013	14,294	2,994	502	78.2	27.8	50.4	2.61	1.68	0.55	0.35
2014	14,860	3,097	511	89.1	35.4	53.6	2.88	1.73	0.60	0.36
2015	15,585	3,228	515	111.5	38.4	73.1	3.45	2.26	0.72	0.47
2016	16,374	3,229	519	97.2	38.8	58.4	2.95	1.77	0.59	0.36
2017	17,062	3,395	578	98.8	39.4	59.5	2.91	1.75	0.58	0.35

* Data : National statistical forum's national account (Bank of Korea), Ministry of Strategy and Finance's 'annual national budget' and 'central office settlement report', Korean Council for University Education

However, the majority of this increase resulted from the sharp rise in national scholarships, which are allocated to individual students rather than higher education institutions. The amount of funding for national scholarships was 420.9 billion won in 2010, and it reached 3.938 trillion won in 2017. In 2010, the expenditure per GDP for higher education, except the national scholarship scheme, slightly decreased from 0.37 percent, compared to 0.35 percent in 2017. This is mainly due to the launch of the new national scholarship program, which started in 2012. The funding for the program increased from 1.974 trillion won in 2012 to 3.778 trillion won in 2016. In the meantime, the general support for higher education institutions increased from 1.6187 trillion won in 2012 to 2.585 trillion won in 2016. In brief, the growth rate of the national scholarship program rose more sharply than the general support for higher education institutions.

In particular, the amount of government expenditure in higher education is lower than the OECD average (Choi, 2017). As of 2014, the OECD average was 16,143 USD per student, while in Korea it was 9,570 USD, which is 59.3%.

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[1] National Assembly Budget Office Financial Statistics (Excluding National Scholarship for the Ministry of Science and ICT).

[2] It was calculated by applying the average rate of change (4.2%) from 2011 to 2016.

[3] Including 1.3 trillion won for technical meetings.

Table 3 Ministry of Education's higher education financial support status[4]
(Unit : KRW 100 million)

	2011	2012	2013	2014	2015	2016
General support program	30,270	16,187	17,813	19,855	22,584	22,585
Student support program	6,928	19,740	28,590	35,497	38,052	38,778

* Data: Higher education financial support system, higher education financial support status of the ministry of education (Korean Council for University Education))

Table 4 Comparison of public education expenditure per student between OECD
average and Korea (Unit: PPP exchange amount, %)

		Elementary education		Secondary education		Higher education	
		Amount	Ratio	Amount	Ratio	Amount	Ratio[5]
2011[6]	OECD	8,296	84.1	9,280	88.4	13,958	71.7
	Korea	6,976		8,199		9,927	
2012	OECD	8,247	89.7	9,518	98.3	15,028	65.7
	Korea	7,395		9,355		9,866	
2013	OECD	8,477	93.9	9,811	87.6	15,772	59.1
	Korea	7,957		8,592		9,323	
2014	OECD	8,733	110.6	10,106	102.1	16,143	59.3
	Korea	9,565		10,316		9,570	

* Data : OECD(2014-2017), Educational at a glance, the ratio of public education and OECD average university expenses per student by education level (Korea Council for University Education)

In 2012, the government invested 9,866 USD per person in higher education, while the OECD average was 15,028 USD, double that of Korea. This means that the Korean household bears a higher burden, partly due to austerity in the public higher education sector.[7]

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[4] Excluing the national university's current operating expenses support

[5] The ratio is the ratio of the OECD average cost to the public education cost per person

[6] The year is based on data. (OECD year of publication)

[7] In view of OECD Education at a Glance (2015), at that time, the United States was investing $26,562 in higher education, while the amounts of investment were $24,338 in the U.K., $16,872 in Japan, and $9,866 in Korea. In the ratio of public education to GDP in major OECD countries, in Korea, government support accounts for 0.8% and the private sector 1.5 percent. By contrast, the OECD average is 1.2 percent for the government and 0.4 percent for the private sector.

2. Overview and Issues of the Programs

2.1 Overview of the Programs

The Ministry of Education offers government-supported university programs on a competitive basis, aiming to achieve multiple policy goals, such as strengthening specialization, reforming departments and curriculum, and enhancing research capacity. The major programs are CORE[8], PRIME[9], BK21+[10], CK[11], LINC[12] and LINC+[13], BRIDGE+[14], WE-UP[15], ACE[16], ACE+[17], LC[18], and PoINT[19]. The characteristics of the programs, due to their complexity and the variety of features, are classified in five categories: purpose, budget size, beneficiary level, type of beneficiaries, and duration. The purposes of the programs aim at university reform, bespoke development of social demand talents, reduction of university entrants, and revamping of the academic curriculum. With regard to the subsidy size of the programs, SCK is the largest, followed by BK21 +, CK, LINC +, and PRIME. Regarding the beneficiary level, most of the programs are supported at the university level, the others are supported at the college/center/group level. The next category is the type of beneficiary. The majority of beneficiaries are four-year universities, while the LINC+ and SCK programs support two-year colleges. Programs such as CK, PRIME, and CORE are mainly focused on undergraduates, while BK21+ is for post-graduates. The final category is the duration of the support periods. Support lasts from three to five years, with the exception of BK21+ (7 years) and LC (1 year). The new projects of CORE and PRIME starting in 2016 maintain support for three years.

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[8] CORE : initiative for **CO**llege of humanities **R**esearch and **E**ducation

[9] PRIME : **PR**ogram for **I**ndustrial needs-**M**atched **E**ducation

[10] BK21+ : **B**rain **K**orea **21 P**rogram for **L**eading **U**niversities and **S**tudents

[11] CK : University for **C**reative **K**orea

[12] LINC : **L**eaders in **IN**dustry-University **C**ooperation

[13] LINC+ : **L**eaders in **IN**dustry-University(college) **C**ooperation+

[14] BRIDGE+ : **B**eyond **R**esearch **I**nnovation & **D**evelopment for **G**ood **E**nterprises

[15] WE-UP : **W**omen in **E**ngineering - Undergraduate leading **P**rogram

[16] ACE : **A**dvancement of **C**ollege **E**ducation

[17] ACE+ : **A**dvancement of **C**ollege **E**ducation+

[18] LC : Life-long Education College

[19] PoINT : **P**rogram **o**f national University for **IN**novation and **T**ransformation

Table 5 Overview of major university-supporting programs

Name	Purpose	Budget size	Periods	Beneficiary
CORE	·Strengthening human resources capacity and innovation in universities ·Establishing a infrastructure for humanities education and research, training of talented human resources	60 B₩ ('16)	3years ('16-'18) (2+1)	Univ.
PRIME	·Improvement of university constitution centered on social demand (quantitative + qualitative) ·Strengthening student career capacity and eliminating mismatch of personnel	201.2 B₩ ('16)	3 years ('16-'18)	Univ.
CK	·Characterization of comparative advantage areas based on community demand ·Strengthening university competitiveness and supporting mutual growth with local communities	245.6 B₩ ('14) CK-I: 191 B₩ CK-II: 54.6 B₩	5 years ('14-'18) (2+3)	program
SCK	·Fostering professional colleges as centers of higher vocational education	269.2 B₩ ('14)[20]	5 years ('14-'18) (2+3)	program
BK21+	·Developing world-class graduate schools and excellent researchers ·Enhancing the quality of education and research in domestic universities	252.6 B₩ ('13)	7 years ('13-'19)	program
LINC+ [LINC]	·Supporting the cultivation of custom-made talent reflecting industry-leading university development and social demand	238.3 B₩ ('17)[21] [LINC 170 B₩ ('12)]	5 years ('17-'21) (2+3) [5 years ('12-'16) (2+3)]	Univ.
ACE+ [ACE][22]	·Well-taught college, fostering leading undergraduate university ·Creation and diffusion of leading model for advanced education in undergraduate education	73.5 B₩ ('17) [30 B₩ ('10)][23]	4 years ('17-'20) (2+2) [3 years ('10-'13) (2+1)]	Univ.
LC	·Establishing education system for life-long learners	30 B₩ ('16)	1 year ('16)	Univ.
PoINT	·Establishing innovation base and proprietary development model of National University ·Collaboration and function restructuring, such as sharing of resources between universities and joint education curriculum	19.5 B₩	2 years ('17~'18)(1+1)	Univ.
BRIDGE+ [BRIDGE]	·Enhancement of universal creative asset utilization function ·Strengthening capacity utilization of national technology, creation of technology-based new industry	12.5 B₩ ('18) [15 B₩ ('15)]	5 years ('18-'22) (2+3) [3 years ('15-'17)]	Univ.
WE-UP	·Reorganization of female-friendly engineering education system ·Cultivation of female specialists who customize industrial demand	5 B₩ ('16)	3 years ('16-'18)	program or consortium

* Source: Basic plan for each college finance project for each year (Ministry of Education)

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[20] Life-Long Vocational Education Advancement College, including WCC budget
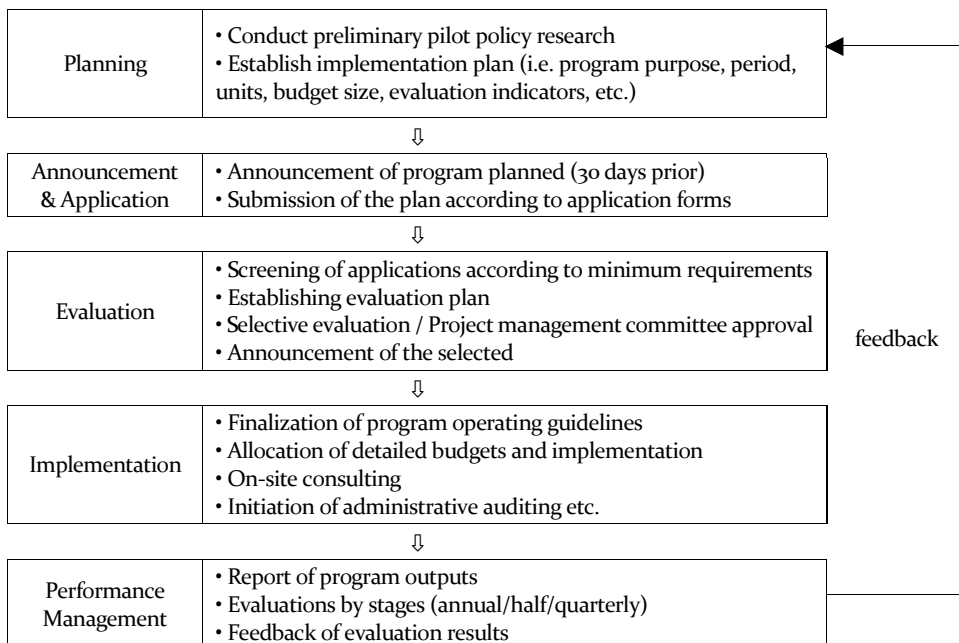
[21] Industry-Academia Collaboration Advanced 216.3 billion won, focus on social customization 22 billion won

[22] In 2010, university education capacity enhancement project 290 billion won → 260 billion won, Undergraduate Education Leading University Support 30 billion won

[23] 12 billion won in the metropolitan area, 18 billion won in provincial areas

2.2 Process of Implementing the Programs

The university's support programs generally follow the steps in the "Management Manual for Improving the Fairness and Transparency of the University Support Programs". The programs generally proceed according to the following steps: program planning, program announcement and application, evaluation, program implementation, and performance management.

Planning	• Conduct preliminary pilot policy research • Establish implementation plan (i.e. program purpose, period, units, budget size, evaluation indicators, etc.)

⇩

Announcement & Application	• Announcement of program planned (30 days prior) • Submission of the plan according to application forms

⇩

Evaluation	• Screening of applications according to minimum requirements • Establishing evaluation plan • Selective evaluation / Project management committee approval • Announcement of the selected

⇩

Implementation	• Finalization of program operating guidelines • Allocation of detailed budgets and implementation • On-site consulting • Initiation of administrative auditing etc.

⇩

Performance Management	• Report of program outputs • Evaluations by stages (annual/half/quarterly) • Feedback of evaluation results

feedback

* Source: MOE (2016), Management manual for improving the fairness and transparency of university support programs

Figure 1 Process of government-supported university programs

The table shows the program evaluation indicators looking at various aspects of the programs, such as the ratio of full-time academic staff, student enrollment rate, proportion of direct investment of student education, scholarship grant rate, employment rate, employment maintenance rate, undergraduate and curriculum management, and supporting teaching skills.

Table 6 Main quantitative evaluation indicators of the programs

Evaluation indicators	COR	PRIME	CK	ACE+	University structural reform
Ratio of full-time academic staff	◉	◉	◉	◉	◉
Student enrollment rate	◉	◉	◉	◉	◉
Proportion of direct investment of student education	◉	◉	◉	◉	◉
Scholarship grant rate	◉	◉	◉	◉	◉
Employment rate		◉	◉	◉	◉
Employment maintenance rate		◉		◉	◉
Undergraduate and curriculum management			◉	◉	◉
Supporting teaching skills			◉		◉

*Source: MOE (2016), Management manual for improving the fairness and transparency of the university support programs; Do (2016); Hwang (2017)

The table below shows the indicators for additional points and minimum requirements in the selection process according to the various supported programs, such as CK, PRIME, CORE and others.

Table 7 Additional points and minimum requirements for selection

	CK	PRIME	CORE	LC	WE-UP	SCK	PoINT
Reduction of the number of university entrants	◉	◉	◉	◉	◉	◉	
Participation of university society members for national universities Operation of university council for private universities	◉	◉	◉	◉	◉	-	★
Participation of national scholarship programs	○	◎	◎	◎	◎	○	
Participation of free semesters	○				◉		
Implementation of gender equality							○

Note: ○: 2 points, ◉: 3 points, ★: 5 points, ◎: minimum requirement

*Source : MOE (2016), Management manual for improving the fairness and transparency of university support programs; Do (2016); Hwang (2017)

These indicators include reduction of the number of university entrants, participation of university society members from national universities, operation of university council for private universities, participation of national scholarship programs, participation of free semesters, and implementation of gender equality.

IV. Major Issues and Problems of the Programs

In this section, we identify major issues in the whole process of the university support programs. This process can be divided into five stages: policy goal setting, planning, program structure, implementation, and evaluation.

1. Policy Goal Setting: Low Consensus of Stakeholders

Most scholars have raised the issue that policy goal setting of programs has been carried out with strong government intervention and without enough communication with stakeholders, such as university academics, private sector experts, and the public. Rather, it is exploited extensively for other policy goals, such as industrial policy (i.e. providing technical labor forces) instead of promoting the quality of the higher education system (Choi, 2017; Do, 2016; Lee, 2017; Hwang, 2017). This might hamper the endogenous development of the higher education system. In other words, due to their high dependence on government funding, individual universities have a tendency to compete with each other to win programs support, without setting up their own vision and strategy for sustainable growth. Furthermore, universities might lose the opportunity to reflect the opinions of industrial leaders and the public.

Another potential disadvantage is that it may undermine the diversity of the university system, harming the consumer's rights in the higher education market. In addition, this undermines the certainty and reliability of the government's higher education policy (Choi, 2017; Do, 2016; Lee, 2017).

2. Planning: Frequent Reshuffling of the Program Goals

Recently, scholars have criticized the inconsistencies between the short-term and long-term goals of higher education policy. That is to say, the goals of recent programs have been mainly biased toward solving short-term socioeconomic problems, such as low employment ratio and working on new industrial innovation, rather than enhancing the long-term standards of the system (e.g. quality of education infrastructure/curriculum, appropriate level of enrollment fees, low satisfaction level of consumers).

Accordingly, frequent changes in program goals have led to inconsistency and fragmentation of the planning system. Regarding the hierarchical structure of the planning system, government demands have been directly reflected in program goals because the government's power to determine program goals overwhelmed other actors in the planning system. Stakeholders witnessed the intervention of different ministries pursuing conflicting policy goals. Hence, the reliability of the goals of the university-supporting programs has been undermined (Hwang, 2017).

3. Program Structure: Redundancy and Inefficiency

When a new administration is elected in South Korea, the government is highly like to promise radical changes in the education system as a high priority. To do this, most of the programs initiated under the previous government must be modified accordingly (Lee, 2009). For example, CK in 2014, CORE in 2016, and PRIME have been modified thoroughly under the current regime, which started in 2017. Even within the Ministry of Education, there are many different kinds of programs and different departments.

However, the functional coordination is relatively weak; therefore, programs with similar goals tend to be implemented concurrently. The complexity and redundancy of program structures also weaken the communication among various actors in the program structures, which reduces the efficiency of program implementation.

4. Implementation: Disparity Between "Haves" and "Have-Nots"

Before the 1990s, government support was implemented by general university funding (GUF), which was allocated evenly to all universities according to their size and demand. Then, after the 2000s, competition-based funding has been increased remarkably (Ban, 2016; Lee, 2017; Hwang, 2017). This competition-based funding has been highly criticized for ultimately supporting a small number of universities with superior endowment, while the other universities without resources have no choice but to lag behind.

Competition-based funding has been widely adopted because it can foster a specific function of universities according to the government's demand. However, the more competitive it is, the more disparity between universities emerges. This results in stronger concentration of resources, subordination to governmental control, and impediment of universities efforts to set up their own goals (Do, 2016; Lee, 2017; Hwang, 2017; Hong, 2016; Park, 2014).

5. Evaluation: Inappropriate Indicators

As the evaluation system is highly based on the government's short-term goals, the aims of indicators tend to differ from the goals of programs, such as strengthening of university competitiveness. For instance, key indicators strongly reflect the government's policy intentions, such as decrease of entry rate. Such quantitative measures push individual universities to adopt more opportunistic behaviors (i.e. increase of the number of patents/papers easily managed rather than quality of education system) (Ban, 2017; Do, 2016; Lee, 2017; Hong, 2016).

The heavy dependence on those quantitative indicators is highly likely to encourage the pursuit of tangible, short-term outputs, thus undermining the potential to grow, which is not easily captured quantitatively. Therefore, the legitimacy of university-supporting programs could be greatly deteriorated (Do, 2016; Lee, 2017; Hwang, 2017).

V. Implications and Conclusion

This paper reviewed government-supported university programs to identify policy implications. To do this, we analyzed the significance, overview, process, indicators, and major issues of various programs, such as CK, PRIME, CORE, LINC +, ACE +, and others. We then argued how those programs could be improved in terms of five categories.

First, regarding policy goal setting, the traditional roles and functions of the government need to be re-arranged. The paradigm shift to a facilitating government is needed, which requires a more flexible and open goal-setting process. The current rigid and closed process of policy goal-setting costs many universities to commit unnecessary efforts to follow government top-down goals, which are weakly related to the enhancement of higher education systems, rather than calling for wider and more active participation of stakeholders in society.

Second, with respect to the planning system, the consistency between long-term education policy goals and individual goals of programs must be maintained. Moreover, universities need to exert effort to develop mid/long-term plans considering their own unique characteristics and philosophy.

Third, with regard to program structure, a coordination mechanism for the effective implementation of programs needs to be established. For instance, when several ministries are simultaneously involved in similar programs, which easily cause duplications, a new set-up steering committee is necessary to coordinate the roles of the participants to simplify the program structure.

Fourth, the implementation process needs to be improved. A two-track approach that combines GUF and competition-based funding need to be adopted. The former needs to be expanded to the general infrastructure of the education system, while the latter focuses on the specialization of the universities' roles in society (e.g. meeting the specific needs of the regional firms/technical sectors/social problems).

Finally, a better evaluation system must be created. All university-supported programs should not be used as a means to achieve the government's higher education policy objectives. Rather, the approach must be differentiated, according to the purpose, structure, and specific contents of the university support programs. In this context, the evaluation indicators system must be tailored to promote the individual goals of the programs rather than employing uniform quantitative measures.

In brief, most importantly, the government needs to undertake a paradigm shift from a leading role to a guiding role. The government, in the near future, should serve as a facilitator to encourage the universities themselves to be the leaders of the reform of the higher education system.

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