AN IMPACT OF SELF-ASSESSMENT BUDGETARY PROGRAM ON BUDGET DECISIONS IN KOREA

By

KIM, Jisu

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Submitted to

KDI School of Public Policy and Management

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ABSTRACT

AN IMPACT OF SELF-ASSESSMENT BUDGETARY PROGRAM ON BUDGET DECISIONS IN KOREA

By

Jisu Kim

This paper aims to investigate the impact of Self-assessment Budgetary Program (SABP), a representative assessment tool of the public budgetary program in Korea. Multivariate analysis was conducted, focusing on 401 assessed budgetary programs in 2015 that were matched with budget data of FY 2014-2016, while controlling for the program characteristics and political content. The result shows the statistically significant impact of SABP on the budget decision. In particular, this impact is stronger when the program's budget size is initially large or middle rather than small. Although planning and management evaluation components have statistically significant to outcomes, the result component does not. Also, the impact of planning component is much bigger than management component. Therefore, this performance evaluation system and its management, the evaluation process should be improved in order to reflect the real performance of the program.

TABLE OF CONTENTS

LIST OF TABLES

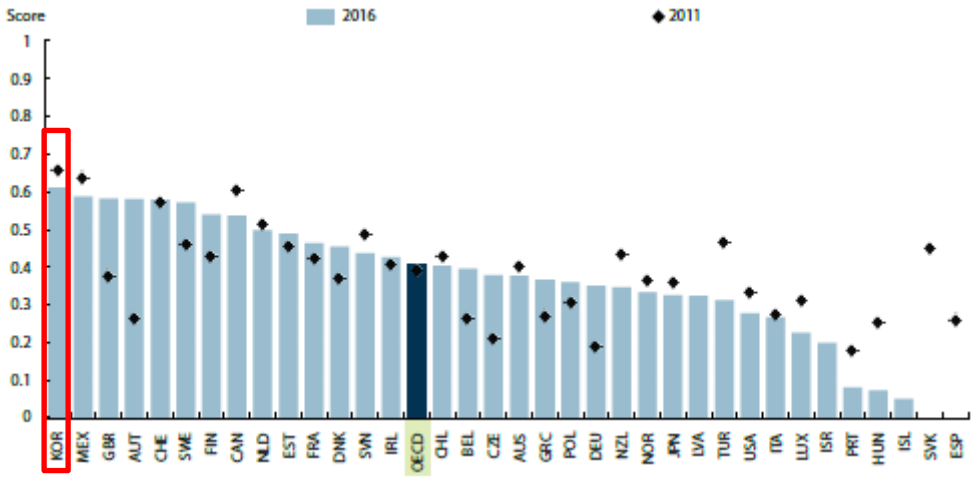
LIST OF FIGURES

I. Introduction

Budgeting is crucial for policy process. Public budget is the plan for the government's objectives and goals including an estimate of resources required within a definite period and available resources (Smith and Lynch 2004). Also, Wildavsky (1961) suggested that budgeting is more likely based on political decision making rather than economic condition so budgeting itself includes government's activities, political strategies, policy decision and future prospectus. In this regard, budgeting is a complex decision-making process that considers many factors, such as political or managerial issue. Therefore, budgeting system has continuously evolved in order to improve budgeting system to be systematical and logical. Due to recent trends and emerging phenomena since the 1990s such as the global economic crisis and the aging society, governments suffer from a public budget deficit and it also emphasized the necessity of improving efficiency and effectiveness of public expenditure.

Performance budgeting system is one of the main systems that were implemented as part of modern fiscal reform. Performance-based budgeting system is a mechanism of enhancing the linkage between the performance of the budgetary program and budget allocation based on the assumption that performance evaluation can improve government performance, improve outcomes, strengthen accountability and enhance transparency of budgeting process (Krietensen, Groszyk, and Buhler, 2002). Since Korean government introduced performance-based budgeting in 2003, performance budgeting system in Korea has been developed in accordance with the Korean context. Korea is currently ranked first among OECD countries in terms of good performance-based budgeting practices.

Figure1.1 OECD Index of Performance Budgeting Practices in the National Level



Source: OECD Government at a Glance, 2017

Performance-based budgeting system can be a tool for improving public spending and managing public budgetary program by evaluating individual programs to enhance performance. Under this performance budgeting system, government policies which have good performance and high returns to society can be sustainable while the budget itself could be allocated systemically regardless of changes in governments in power. Also, under the performance evaluation system and its management, the evaluation process should be valid and well-developed in order to improve the effectiveness of performance-based budgeting program overall and enhance long-term fiscal sustainability.

The Korean government argues that performance information is significantly considered for budget decision (Cho, 2010). However, some researchers and experts point out that the Korean performance budgeting system has a tendency to become lenient in the evaluation, leading to scoring inflation or underreporting unsatisfactory programs (Park, 2009) (MOSF 2016). A survey among government officers who answer the self-assessment questionnaires administered under the SABP shows their respective authors' skeptical view on the validity of Korean performance budgeting (Jung, 2012) (Oh, 2017).

Therefore, this paper aims to analyze the SABP, which is Korea's representative performance budgeting system, by examining its impact on budgetary decisions. This research aims to build upon

the results of previous studies in Korea. For this research, looks into the 401 budgetary program assessed in 2015 in relation to budget data from FY 2014-2016 budget data, gathered from the MOSF. This research is focused on 1) identifying whether Korean performance budgeting linked budget decisions with performance, 2) what factors may impact on SABP program-managerial practices and program performance within spending organizations of the Korean central government.

II. Background of Performance Budgeting

2.1 Origins of Performance-based Budgeting System

Unlike private enterprises, government and public agencies are generally not oriented towards enhancing profit and have no strong incentive to base the budget on the performance of government programs. Often, legislatures and executive budget agencies allocate limited budget resources without knowing which programs need more and which deserve less, thus it becomes difficult to increase the effectiveness and efficiency. Based on this problem V. O. Key (1940) lamented the absence of a proper budgetary theory to guide proper resource allocation. This lack of objective criteria to help make proper budget decision led to the interest in performance measurement and performance-based budgeting (Melkers and Willoughby, 1998).

In the late 1980s, most of OECD countries experienced increased government debt and budget deficit. Due to a deepening recession across the world, demand for public services increased even though revenues were limited and even scarce (Cho, 2010). An increase in the aging population also exhausted the public budget and increased public debt (Kim, 2012). To alleviate this difficult situation, governments concentrated on enhancing the efficiency and effectiveness of public spending. Since then, governments have shown an increasing tendency to shift from detailed input control to a more results-oriented budget management. As a consequence, performance budgeting has regained the attention which it originally received in the 1960s. The new performance budgeting models aim to improve the performance of government operations by associating budget decisions with performance.

In the 2000s, many OECD countries adopted performance budgeting system with the goal of enhancing linkage between budget allocation on each program and program performance (Curristine, 2005). Among the most prominent performance-based system was introduced by the US federal government through the Program Assessment Rating Tool (PART) in 2002[1] in order to assess the performance of programs which uses public funding. So far, 50% of OECD countries have begun

[1] The first Performance management budgeting system in United States was Government Performance and Results Act (103 P.L. 62; 107 Stat. 285) which were enacted in 1993. However, PART is considered as a representative performance-based budgetary program and it was benchmarked in some OECD countries.

using performance measurement results in order to set program priorities and to allocate budgets among programs (Curristine, 2005).

Metzenbaum (1998) presented two benefits of performance-based budgeting. First, performance-based systems intend to improve program's outcome. Following each stage of performance-based budgeting, evaluation can boost outcomes by increasing awareness of problems, clarifying goals and measures to improve direction and expectations. Outcomes can be improved through the performance-based system process by learning programs and gathering information to improve their activities (Metzenbaum, 1998).

Another benefit of the performance-based system is an improvement in accountability and transparency. Evaluation mechanisms encourage government agencies to take responsibility for the consequences of their performance. Furthermore, improved transparency comes along with increased accessibility of performance information. In budget decision-making, this information should be accessible and open to people. In turn, performance-based systems are also characterized by flexibility and fairness since it focuses on results rather than the process and decreases inconsistencies in inspections (Metzenbaum, 1998; Buell and Tortorella, 2011)

2.2 Performance budgeting history in Korea

In Korea, comprehensive budget process reforms were introduced in the early 2000s. The four major fiscal reforms were: 1) Medium Term Expenditure Framework, 2) Top-down budgeting, 3) Performance-oriented Budgeting, and 4) Digital Budget and Accounting System. The reforms aimed to promote the effectiveness of performance-oriented management of expenditure programs and enhance the long-term fiscal sustainability of Korea. Among these fiscal reforms, Performance-based budgeting was introduced in four phases and was continuously refined to reflect political developments and public finance considerations.

Initially, performance management system in Korea was launched in 1999 as a pilot project with 16 ministries. This system benchmarked the US system's the Government Performance and

Results Act (GPRA), with some revision. Following the US example, each ministry that spent public budget was required to produce annual performance plans and reports. However, the political support of each ministry was not strong for this "Performance-based Budgeting Project," thus it was not sustained by the change of administration.

After a new government came to power in 2003, performance management received a higher level of attention and this time, again following the GPRA in the US, another performance management system called the "Performance Management System for Budgetary Programs (PMSBP)" was introduced in 16 ministries. This system was somewhat advanced than previous pilot project since the range of PMSBP was gradually expanded beyond the initial 16 ministries. However, the significant difference between the US GPRA and the Korean PMSBP was that while the GPRA covered every program including personnel management and operation programs, the PMSBP excluded these as well as the strategic plan, which was an integral component of the GRPA. This discrepancy comes from an institutional difference between the two countries' political systems (Kim and Park, 2007).

Due to this institutional shortcoming, the MPB established a new system for performance management which linked performance evaluation to budget allocation. This new budgetary system, the Self-assessment Budgetary Program (SABP) was introduced in 2005, patterned after the newer Program Assessment Rating Tools (PART) introduced in the US. As its name implies, the SABP is a self-assessing system wherein government agencies which are responsible for the expenditure programs evaluate the performance of their own programs. The evaluation was done by answering questions on a checklist according to three evaluation criteria: planning, management, and results of budgetary programs and sub-programs. The MOSF double checked the assessment and used the information for both the self-assessment result and the meta-test by the MOSF at the same time. All the budgetary programs should be assessed over a three-year period and cover about one-third of programs annually (MOSF, 2015).

In 2016, Korea amended SABP and adopted the Integrated Evaluation System on Government Programs (IESGP). The main assessment concept is similar to SABP but it expanded the

scale of target programs from one third to all program. Before 2015, the program was classified into general budgetary programs, fund programs, R&D programs, and regional development programs. Under the previous SABP, each ministry was in charge of evaluating budgetary programs within their scope, while the MOSF was responsible for general budgetary programs and special fund programs, the Ministry of Science, ICT and Future Planning assessed performance of R&D programs, and the Presidential Committee on Regional development was in charge of Regional development programs. However, there were many inconsistencies, thus there was a need to amend the SABP towards a more comprehensive universal evaluation system. In addition, while the SABP considered both the self-assessment system by agencies and the meta-test by the MOSF, the IESGP focused only on self-assessed scores and considered the meta-test only for appraisal, thus reducing inefficiencies and increase autonomy and accountability. Also, the number of self-evaluation indicator reduced from 11 to 4. On the other hand, the evaluation was differentiated considering the program's characteristics and budget size. (MOSF, 2016)

2.3 Self-assessment budgetary program: Evaluation, Strength, and limitation

The Korean government initiated the Self-Assessment of Budgetary Program (SABP) in 2005 in order to strengthen the linkage between performance result and budgeting, thus the SABP can be considered as somewhat an improvement from the previous system. The MOSF intended to restructure or even end some expenditure programs based on performance results. In other words, the objective of SABP was to make central government agencies accountable for the performance of their programs (Park 2012).

The SABP evaluation criteria consisted of three sections: Planning, Management, and Result. Each evaluation section was accorded different weights: 20, 30, and 50 percent respectively. As of 2015, the evaluation questionnaire included 11 questions and an additional two questions on IT programs, which designated self-assessors in each agency were required to answer (MOSF, 2015). Evaluation index and questions are shown in Table 2.1.

Table 2.1 Evaluation Questions of the 2015 SABP

· Planning		**Mark**	
		General Program	**IT Program**
1. Adequacy of program plan			
1-1.	Are the program objectives clear and correspond with accomplishing performance targets?	2	2
1-2.	Is the program unnecessarily similar or overlapping with other programs?	3	3
1-3.	Does the program have adequate design and efficient delivery system?	5	5
2. Adequacy of performance plan			
2-1.	Is there a firm link between performance indicator and program objectives?	5	5
2-2.	Is the target for performance indicator reasonable and concrete?	5	5
· Management			
3. Adequacy of program management			
3-1.	Does the program agency do the best to expense the budget as planned?	15	12
3-2.	Does the program agency improve efficiency in achieving program objectives?	5	4
3-3.	Does the program agency operate monitoring system and make efforts to improve it?	10	8
3-IT1	Does the program agency adequately manage information management system?	-	3
3-IT2.	Does the program agency make effort establish to fair and competitive market environment?	-	3
· Performance and feedback			
4. Accomplishment of performance objectives and feedback of evaluat			
4-1.	Is the target level of performance indicator achieved?	30	30
4-2.	Is the program carried out efficiently based on the evaluation results?	10	10
4-3.	Are the feedbacks from evaluation results and other external opinion incorporated to improve program structure?	10	10

Source: MOSF, 2015 SABP Guidelines. 2015

Based on this SABP total score, each program under a government agency was classified according to total score received. Budgetary programs which achieved higher than 90 were categorized as “very satisfactory”, those with 80-90 were “satisfactory”, those that scored 70-80 were “fair”, those in the 60-70 range were “unsatisfactory”, and programs with scores of 60 and less were categorized as “very unsatisfactory” (MOSF, 2015). The MOSF noted in its 2015 SABP Guidelines that programs classified as either “very satisfactory” or “satisfactory” should not exceed more than 20%

of the total within each ministry while the “very unsatisfactory” and “unsatisfactory” group should be at least 15% per ministry.

Also in principle, a reward and punishment system existed within SABP such that programs that were found to be unsatisfactory were penalized by cutting up to 10% of previous year’s budget. In case of punishment, the budget cut was not automatic, since program characteristics and specifications were also considered on a case to case basis. On the other hand, those classified as highly satisfactory could be considered for an increase of up to 10% of previous year’s budget.

The OECD performance budgeting review compared the Korean SABP to the PART in the US and found that the performance budgeting system was taken much more seriously by the Korean National Assembly compared with the US Congress since the PART was regarded as a budgeting tool for the executive branch which could be simply ignored by the legislature. This difference may be due to differences in the constitutional set-up in each country. The US Congress has greater prerogative in increasing or decreasing the proposed budget by the Executive compared with the Korean National Assembly which has a stricter budgetary ceiling in increasing or decreasing proposals made by the Executive branch. Thus, the Korean performance budgetary program (SABP) could work as a stronger tool to link performance evaluation and impact to the budget in the following year while many countries could not materialize the performance-oriented budgeting (Park and Brumby, 2012)

The SABP has evolved in accordance with the Korean context. Among OECD, Korea is considered as first in terms of utilizing performance information on the budget. However, some researchers pointed out the problems and limitations of Korean performance budgetary program. First, the number of assessed programs is fluctuating and the sampling is not balanced (Park and Won, 2012). Second, it’s hard to see that SABP enhanced the overall performance of government budgetary significantly (Park, 2015). Third, many SABP scores were found to have been inflated (MOSF, 2016).

There appears to have been little improvements made in addressing these problems, based on the most recent 2015 SABP Assessment Report result, which found similar trends and issues. First, there was a decreasing trend in the number of SABP assessed program. Also, the sampled programs were not balanced in terms of the purpose of program and budget type. Table 2.2 shows the

descriptive statistics of SABP program and the ratio of the budget. According to this result, SABP program only observed around 8% of all programs, amounting to only 12.2% of the total budget size. Among the classified group by program purpose, less than 5% of programs classified under Science and Technology, Land and Regional Development, and Administration were assessed. On the other hand, programs under Agriculture, Forestry and Fishery, Communication, and Environment exceed more than 10%. Even worse, less than 1% of the total budget was assessed under SABP programs classified under Science and Technology, Land and Regional Development, Culture and Tourism, and Administration. This shows the gross imbalance of scope among SABP assessed programs.

Table 2.2 Descriptive Statistics of SABP sampled programs

	Total Government Budgetary Program	SABP Program Observasion	Observation Ratio	Budget Ratio
Public order & security	430	25	5.81%	9.70%
Science & technology	307	11	3.58%	1.09%
Education	246	22	8.94%	7.43%
Transportation	479	35	7.31%	18.75%
Defense	275	19	6.91%	10.78%
Land & regional development	134	6	4.48%	1.65%
Agriculture, forestry &fishery	572	60	10.49%	7.43%
Culture & tourism	377	37	9.81%	0.74%
Health care	349	32	9.17%	5.47%
Welfare	804	73	9.08%	24.07%
Industry, SME & energy	541	34	6.28%	8.68%
Diplomacy & reunification	205	18	8.78%	15.17%
Administration	857	40	4.67%	0.90%
Communication	189	20	10.58%	14.35%
Environment	251	34	13.55%	29.91%
Total	**6016**	**466**	**7.75%**	**12.23%**

Data source: MOSF

Second, the KIPF report pointed out that there were no mechanisms implemented to improve the performance after SABP and back up the check for unsatisfactory group programs. It would be difficult to find out whether that overall performance of government budgetary programs was enhanced significantly or not. However, the average scores of the SABP were 62.7 in 2010, 64 in 2011, 62.9 in 2012, 65.3 in 2013, 65.3 in 2014, and 69.5 in 2015. Also, we could see the result component score has been improved since 2012.

Table 2.3 State of SABP Results by Evaluation Components

Year	Total score	Program planning	Performance planning	Management	Result
2010	62.7	92	70.1	65.9	55.1
2011	64	95.9	79.2	53.9	61.5
2012	62.9	96.8	73	65.7	53.6
2013	65.3	88.1		61	59.5
2014	65.3	88.4		61.7	59.7
2015	69.5	88.3		64.8	64.7

Source: MOSF(2011-2015), KIPF(2014)

Third, there was also a tendency of evaluating the program as “moderate” or neither too positive nor too negative. The proportion of assessed budgetary programs which were evaluated as “moderate” was almost 70% from 2010 to 2014, except in 2011. This tendency has persisted since the beginning of SABP implementation; from 2005 to 2011 around 80% budgetary programs were assessed as “moderate.” This suggests that ministries and government organizations became conservative in self-assessing their programs. Park and Won (2012) noted that MOSF saw that central agencies were too generous in assessing programs in the period of 2005-2007 and so ordered them to be stricter in their self-assessment after 2008. This tendency was addressed as MOSF set specific mandatory limits on the proportion of unsatisfactory and satisfactory assessments per agency.

Table 2.4 Summary of SABP Results

(Unit: programs, %)

Year	"Unsatisfactory" group	"Moderate" group	"Satisfactory" group	Total
2010	116 (24.5%)	335 (70.8%)	22 (4.7%)	473
2011	118 (30.4%)	245 (63.0%)	26 (6.7%)	389
2012	112 (23.6%)	330 (69.6%)	32 (6.8%)	474
2013	144 (24.1%)	424 (71%)	29 (4.9%)	597
2014	91 (18.8%)	363 (75%)	30 (6.2%)	484
2015	101 (21.7%)	283 (60.75)	82 (17.6%)	466

Source: MOSF

III. Literature Review

3.1 Performance-based budgeting as a valid tool for performance evaluation

Many studies explore the impact of performance budgeting and validity as a tool of performance evaluating measures. Curristine (2005) examines challenges and success factors for performance budgeting system implementation and how this performance information is used in the budget process. In her paper, she argues that performance budgeting system has many limitations as a budgetary tool, noting that majority of countries where the performance information is available do not consider this as a major determinant factor for budget allocations. Rather such information is only used along with other information in budgeting process due to lack of means to integrate it into the budget process.

In order to ensure the success and effectivity of performance budgeting, a number of studies highlight key requirements. Cho (2015) emphasized that incentive can be a good solution for exacting accountability and intended performance. Kelly and Rivenbark (2014) also state that good performance measurement and reporting system is the foundation for performance budgeting but simply reporting performance result in the budget document does not constitute performance budgeting. Kim (2013) assessed the appropriateness of certain performance indicator using available performance information. The study revealed that the understanding of self-assessment differs among agencies and ambiguous performance goal restrict clear performance budgeting system.

3.2 Impact of performance-based budgeting system on budget decision

Regarding the impact of performance budgeting system, most of the theoretical and empirical evidence shows that it has a positive impact on the budget decision. In the U.S. case, Gilmour and Lewis (2005) examined the impact of Performance Assessment Rating Tool (PART), using budget data from FY2005 to FY2007. They found that PART scores have a larger impact on small- and medium-sized programs than on large programs. In addition, the result component of PART scores has a smaller impact on budget decisions compared with the program purpose

component. In particular, Gilmour and Lewis (2006) focused on the influence of political content on budget choices. According to this paper, once budget choices were modeled to allow the political content of programs to influence not only budgets but also the PART scores themselves, it became harder to disentangle the unique influence of the scores on budgets. Larcinese, Rizzo, and Testa (2006) also pointed out how presidents are engaged in the strategic distribution of federal budget and also provide good evidence in support of partisan theories of budget allocation. Nonetheless, Klase and Dougherty (2008) tested as to what extent the implementation of performance-based budgeting has had an impact on the actual allocation of resources in the form of constant per capita. The finding shows that the implementation of performance budgeting has a statistically and positively significant impact on budget outcomes in US states as measured by constant per capita expenditure which means performance budgeting system helps to enhance the performance of public budgetary programs.

Park and Choi (2010) studied whether the program assessment results affect the future budgets of programs during FY 2004 to 2007. The PART result had an impact on the budget adjustment but not in 2006. This paper concludes that in the early stage, there may have a significant impact but could not be sustained for a long-term. In addition, the PART results did not affect the budget adjustment process in Congress, thus suggesting that PART result was not respected by the legislative branch as it should have been reflected in budget allocation. Sterck (2007) examined the effect of performance budgeting on the role of legislatures in the budget process in four countries (Australia, Netherlands, Sweden and Canada) and found that performance budgeting initiatives have a dominant focus on changing the budget structure but does not successfully changes the budget functions. Kelly and Rivenbark (2014) also address that performance information can never be determinant in budget decision making unlike political-legal mandates and fiscal constraints which are always considered in decision making.

In Korea, Ha (2013) studied how the Korean program rating tool effectively deals with the characteristic feature of budgetary programs. He focused on eight dimensions of programs, namely: tangible vs. intangible services, workload vs. outcome measures, short-term vs. long-term programs, policy types, a method of policy implementation, budget size, the duration of programs, and the

number of performance indicators. He found the programs that were directly performed by central government had better performance than those are not like a subsidy programs , invest or loan programs. Also when the program size is bigger and longer the performance of budgetary program was better. Park and Choi (2010) also considered Korea's cultural and socio-economic characteristics in the implementation of performance-based budgeting in Korea. They noted that policy implication included the performance of strong support from top decision makers and customization of performance budgeting system. The Korean case demonstrates the stable, sustainable performance budgeting system reform requires capacity building of relevant stakeholders and sometimes significant restructuring of the organization. Considering this program's characteristics and other factors that may affect budget allocation, these control variables were included in my research model.

Finally, Cho (2010) examined the impact of Korean performance budget system on a government program in the early stage of SABP using 2005 and 2007 SABP data. He found that SABP score and budget decision have a statistically significant relationship, noting that the performance-based budget system was able to influence changes in program managerial practice and to improve performance. However, there has been no subsequent assessment of the SABP program to reflect recent developments. This research seeks to fill that gap in the current literature.

3.3 Research Question and Hypothesis

Following this preliminary review regarding performance-based budgeting system, this research focused on the question of whether the Korean government allocates budget based on the SABP results. In other words: Is the Korean budget truly performance-based? The following are the initial hypothesis:

1) SABP scores have a statistically significant impact on a budget especially when the budget size is small and middle, rather than on large programs
2) "Performance" evaluation component of SABP score may have a large impact on the budget decision than "Planning" and "Management"
3) Depending on political content and program's purpose, the impact of SABP assessment result may differ from each other.

IV. Research Design

4.1 Data

This research focuses on the following questions: (1) whether the Korean government allocates budget based on the SABP assessment result; and (2) what are the factors that may affect SABP assessment result or budget allocation under SABP performance-based budgeting system.

Firstly, I examine the relationship between SABP assessment result and government budges changes to analysis whether SABP scores have an impact on budget allocation controlling program's characteristics such as budget size, budget type and so on. For this research, I use the 2015 SABP assessment results reports provided by Korean ministries and the Korean Government Budget data from 2014 to 2016 fiscal years.[2] The annual SABP reports provide each program's characteristics, program period, budget size and evaluation results. The budget variations, which are approved by National Assembly, are expressed as a natural log.

In 2014, 3019 expenditure programs were executed, and 466 were evaluated under the SABP system. Each of 466 programs was matched to the 2014-2016 budget data. 65 programs out of 466 programs were dropped out given that 37 programs were not matched with the budget data because these programs are subprograms of certain expenditures programs. Additionally, 12 programs were eliminated as they were already expired or discontinued due to political or managerial issues. Finally, 16 programs were dropped out because their budget in 2016 was zero.[3] In total 401 expenditure programs are used as my main sample. Table 4.1 shows that in total, SABP programs are 466 and in the main sample there are 401 programs have little difference and t-test result is 0.027. In other words, there were no significant differences between two samples in SABP result on average.

[2] All years expressed in this research are based on the fiscal year implemented by the Korean Government. The fiscal in Korea is from January to December

[3] Even though these programs were discontinued in 2016, their evaluation grade is different among them which means that their discontinuity is not due to the SABP assessment.

Table 4.1 Frequency Distributions of Grade, FY2014 Budgetary Programs

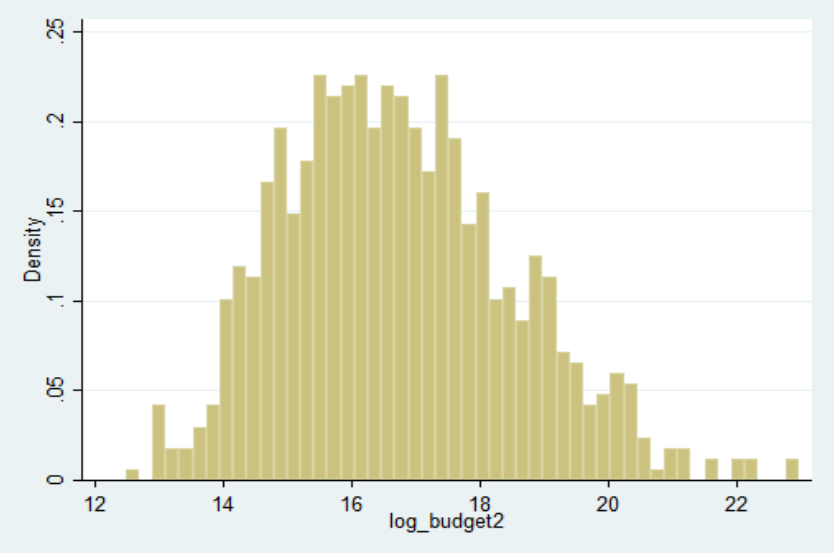
FY 2014	SABP Total	SABP Sample	Estimated difference
Very unsatisfactory	31 6.65%	23 5.74%	0.91%
Unsatisfactory	70 15.02%	59 14.71%	0.31%
Modest	283 60.73%	243 60.60%	0.13%
Satisfactory	65 13.95%	61 15.21%	1.26%
Very satisfactory	17 3.65%	15 3.74%	0.09%
Total	466 100%	401 100%	

Data source: MOSF

4.2 Research Model

For the impact evaluation of SABP score on the budget decision, I use the natural log of the change in the budget from 2015 to 2016 for each program as a dependent variable Figure 4.1 plots the histogram of program budget changes.

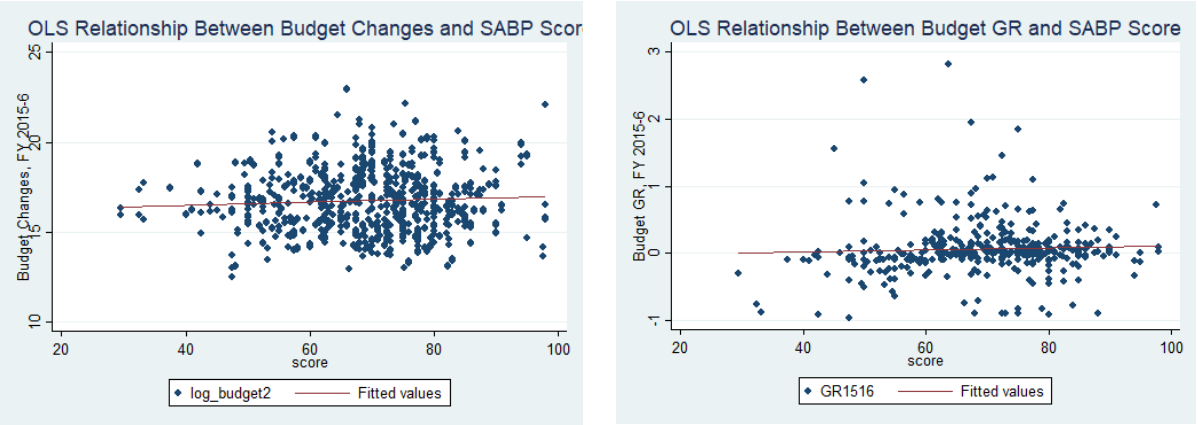
Figure 4.1: Histogram of Budget Changes to Assessed Budgetary Programs FY2015-2016.



Source: MOSF (2015)

Since the main objective of this research is to identify the impact of SABP on budget changes, I consider the total weighted SABP score for each program as my main variable of interest. The total SABP score is derived by summing the weighted scores for the following sections: program planning (20%), program management (30%) and program result (50%) respectively. The mean score is 69.4; lowest score is 29.5 of The Ministry of Health and Welfare program has the lowest score which is 29.5; and three programs by the Ministry of Education, Rural Administration and Ministry of Environment have the highest score which is 98.

Figure 4.2 Relationship between Budget Changes and SABP Score



(a) Budget changes and SABP score (b) Budget growth rate and SABP score

Figure 4.2 shows a scatter plot of the relationship between natural SABP score and log budget changes from FY 2015 to FY 2016, (a); and SABP score and percentage increase rate (b). In graphs, SABP score and the budget decision have a positive correlation which could indicate an association between both indicators. However, this relationship is no causal; thus, it is necessary to estimate the impact of SABP score on budget decision using regression analysis.

In this paper, I follow the same strategy as Gilmour and Lewis (2006) to estimate the impact of SABP score. They strongly emphasized controlling some factors that could be correlated both with Program Assessment Rating Tool (PART) scores and budget changes. They controlled for political content and program characteristics and considered budget changes from the year before the program was assessed.

In order to control for political content, I include a dummy variable that indicates whether this expenditure program belongs to presidential agenda or not. If the expenditure program is related to the presidential agenda, the government may provide some proxy for the political content of the program and support this program.

Gilmour and Lewis (2005) emphasized the increase percent rate of the budget before program assessment. I also include this variable, i.e., increase percentage rate of program's budget in 2014 not just for a measure of a political issue but also control for incrementalism. In any case, the literature on incremental budgeting suggests that budget changes by incrementalism are normally small.

Also, Ha (2000) studied how Korean program performance rating tool effectively deals with the characteristic feature of budgetary programs focusing on eight dimensions of the programs. Among these eight dimensions, I used budget type and method of policy implementation which were coded following the budget type: general account, special account or fund and method of policy implementation: direct federal, assets for a citizen or local government, investment and loan. I also estimated models with fixed effect for ministries to control for unobservable ministry characteristics that can also affect the budget decisions.

My baseline estimating equation is:

$$ln(Budget)_{imt} = \beta_0 + \beta_1 SABP\ Score_{imt-1} + \beta_2 \%increase_{imt-1} + X'_{imt}\mu_1 + \gamma_m + \varepsilon_{imt}, \quad (1)$$

where $ln(Budget)_{imt}$ is the natural log of the targeted expenditure budget for program *I*, in ministry *m*, in the year *t*; $SABP\ Score_{imt-1}$ is SABP scores of the targeted expenditure program; $X'_{imt}$is a vector of control variables such as political contents, program's characteristics, type of budget etc.; γ_m is ministry fixed effects; and ε_{imt} denotes the error term.

V. Empirical Finding

5.1. Impact of SABP assessment on budget decision

Table 5.1 SABP Scores and Budget Changes for FY 2015-2016

VARIABLES	(1) OLS	(2) OLS with controls	(3) Fixed effect with controls
SABP score	0.00848	0.0136***	0.0149***
	(0.00524)	(0.00512)	(0.00523)
% increase in 2014		0.0541	0.108*
		(0.0567)	(0.0617)
Political content		0.0756	0.110
		(0.144)	(0.153)
Project type (Direct)		0.809***	1.002***
		(0.147)	(0.169)
Project type (Assist)		0.718***	0.790***
		(0.160)	(0.193)
Fund		-0.844***	-0.759***
		(0.167)	(0.186)
Special account		-0.306	-0.0987
		(0.195)	(0.219)
Constant	16.14***	15.97***	15.69***
	(0.369)	(0.401)	(0.411)
Ministry fixed effects	No	No	Yes
Observations	802	802	802
R-squared	0.003	0.090	0.217

Mote: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5.1 presents the regression estimates of equation (1) which show the impact of SABP scores on Budget changes for 2015-2016. Column (1) shows a simple OLS regression between budget changes and SABP scores and column (2) is a multiple regression analysis with budget increase rate before the program was assessed and five controlled variables. Column (3) shows the specification including ministry fixed effects. The estimated results in column (2) and (3) show that SABP scores exerted a statistically significant impact on the budget decision. This estimate suggests that an increase in SABP score by 1 points may lead to a 1.4 to 1.5 percentage increase in budget.

Some empirical studies proposed that performance-based budgeting system may have different impacts on budget changes following the performance measurement and adequacy of

measurement.

As it mentioned above, SABP assess is based on three components with different weights for each component: planning (20%), management (30%) and results (50%). This different weight system may be interpreted as intending that program's performance (results) should have a larger impact on the budget decision than other the two components (planning and management). In order to identify how each component of the SABP score has an impact on the budget decision, I include each of these indicators instead of the total SABP score in equation (1). Table 5.2 presents the estimates including these indicators.

Table 5.2 Impact of SABP Assessment Components on Budget Changes

VARIABLES	Budget change
Planning score	0.0249***
	(0.00464)
Management score	0.00739**
	(0.00353)
Result score	-0.00190
	(0.00384)
% increase in 2014	0.0999
	(0.0615)
Political content	0.0773
	(0.158)
Fund	1.140***
	(0.175)
Special account	0.790***
	(0.201)
Project type (Direct)	-0.758***
	(0.194)
Project type (Assist)	-0.184
	(0.226)
Constant	14.18***
	(0.518)
Ministry fixed effects	Yes
Observations	760
R-squared	0.250

Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

It shows that result score which connotes the real performance of project has no statistically significant impact on the budget decision but planning and management components have an impact and are statistically significant at the 1 percent level. Also, planning component has a larger impact on

the budget decision than management component. Considering the weight of each SABP components in the calculation of SABP total score, the planning component overwhelms the SABP assessment result. This means that SABP could not fully reflect the performance of government budgetary programs.

5.2. Subgroup and Interaction Analysis

5.2.1 SABP score and budget size

In this section, I explore the impact of SABP score on budget size dividing the sample into three categories: (1) small size budget, (2) medium size budget, and (3) large size budget. Table 5.3 shows the subgroup analysis based on the budget size. Based on the budget allocation for 2014, budget size groups are categorized as follows: smaller than 6,583,000 won are in the small size program group, middle size programs are greater than or equal to 6,583,000 won but smaller than 39,825,000 won, and larger programs were identified programs greater than or equal to 39,825,000.

Table 5.3 Subgroup Analysis based on Budget Size

VARIABLES	Small size program	Middle size program	Big size program
SABP Score	-0.000109	0.00475	0.0334***
	(0.00516)	(0.00372)	(0.00629)
% increase in 2014	0.135***	0.261***	0.436
	(0.0435)	(0.0379)	(0.346)
Political content	-0.0480	0.141	-0.0930
	(0.130)	(0.113)	(0.189)
Fund	0.215	0.138	0.564***
	(0.160)	(0.128)	(0.217)
Special account	0.550**	0.239*	-0.0656
	(0.221)	(0.128)	(0.219)
Project type (Direct)	-0.0316	-0.117	-0.285
	(0.227)	(0.117)	(0.218)
Project type (Assist)	0.173	0.0799	-0.279
	(0.251)	(0.147)	(0.254)
Constant	14.75***	16.15***	16.58***
	(0.459)	(0.272)	(0.495)
Ministry fixed effects	Yes	Yes	Yes
Observations	254	308	240
R-squared	0.264	0.311	0.357

Note: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The estimates show that only in budgetary programs which are categorized as “large size budget group”, SABP score shows statistical significance at the 1 percent level. In contrary, for small budget size group and middle budget size group, SABP score does not show a significant impact on budget decisions. It means that small or middle-size programs are less likely to be affected by SABP score result.

Gilmour and Lewis (2005) show that PART scores have a larger impact on small and medium-sized programs than on large programs. Also, in the case of the Korean SABP analysis, Ha (2012) shows that SABP score has a larger impact on large size program. As some empirical studies suggested, the SABP score may impact differently depending on budget size, I included indicators for big and middle size programs and interacted these indicators with the SABP score. Table 5.4 shows the result of analysis and there is positive coefficient between the interaction terms in large size budget and SABP score.

Table 5.4 Impact of SABP Score on Budget Changes 2015-2016 by Program Size

VARIABLES	Budget change
SABP score	-0.00252
	(0.00398)
Score*Big size program	0.0284***
	(0.00541)
Score*Middle size program	0.00908*
	(0.00499)
Other	
Political content	-0.0284
	(0.0577)
Big size program	1.964***
	(0.380)
Middle size program	1.081***
	(0.351)
Fund	0.353***
	(0.0592)
Special account	0.0472
	(0.0645)
Constant	14.95***
	(0.282)
Observations	1,203
R-squared	0.780

Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

It suggests that the impact of SABP scores on a budget is larger for large and middle-size programs than for small size programs. Even though large size programs are less likely to be cut and penalties due to SABP could be smaller than the small and middle size program, the SABP scores do have a significant impact on budget changes more for big size programs. For big budget size programs, an increase of 10 points is estimated to increase a program's budget around 0.2 percentages. For a middle size program, the increase is closer to 0.09 percentages.

The finding shows that the budget size is the determinant factors in particular, but the initial budget size itself does not have a significant impact on SABP score. Analysis result is shown in Table 5.5.

Table 5.5 Impact of the Budget Size on SABP Scores

VARIABLES	SABP score
Log budget in 2014	0.517
	(0.351)
Other	
Political content	-0.449
	(1.415)
Fund	-5.695***
	(1.448)
Special account	-1.792
	(1.589)
Project type (Direct)	-0.283
	(1.665)
Project type (Assist)	-0.946
	(1.922)
Constant	63.16***
	(6.134)
Observations	401
R-squared	0.040

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

I re-estimate the impact of SABP on budget decision using budget increase rate as my dependent variable. This is done to consider the possibility that the budget size may bias the overall impact on the budget. However, there is no statistical significance using budget increase rate as my

dependent variable.

5.2.2 SABP score and Budget type

Table 5.6 shows the descriptive statistics based on budget type. Overall, it shows that program by general account has a better SABP score on average than that of the special account and fund types. However, the budget changes from 2015 to 2016 and the budget increase rate are larger in programs based on fund type.

Table 5.6 Descriptive Statistics based on Budget Type

	General account	Special account	Fund
SABP score	71.09	69.67	65.88
	(11.27)	(12.74)	(12.32)
Budget Change FY 2015-2016	16.38	17.01	17.20
	(1.70)	(1.60)	(1.95)
Budget Increase rate	0.166	0.059	0.196
	(0.88)	(0.44)	(1.37)
Ministry direct	0.60	0.68	0.52
Assist	0.23	0.23	0.20
Invest & Loan	0.16	0.086	0.27
Observasion	633	243	327

Data source: MOSF (2015)

To identify the impact of SABP on a budget considering the budget type, I include an interaction term of SABP score and budget type. However, there is no statistically significant impact of SABP result with budget type on budget decisions

Table 5.7 Impact of SABP Score on Budget Changes by Budget Type

VARIABLES	Budget change
SABP score	0.0119**
	(0.00604)
Score*Fund	0.00838
	(0.00980)
Score*Special account	-0.00700
	(0.0105)
Other	
Political content	0.0587
	(0.117)
Fund	0.270
	(0.675)
Special account	1.235*
	(0.749)
Project type (Direct)	-0.846***
	(0.136)
Project type (Assist)	-0.306*
	(0.159)
Constant	16.07***
	(0.449)
Observations	1,203
R-squared	0.094

Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.2.3 SABP score and Policy

Some expenditure program related to welfare, the defense may be less likely to be affected by SABP score given that those programs continuously keep a significant size due to their own characteristics. On the other hand, programs related to culture or technology may be vulnerable and easily affected by SABP score.

Programs can be classified into 15 groups following the purpose of programs: Public order & security, Science & Technology, Education, Transportation, Defense, Land & regional development, Agriculture, forestry &fishery, Culture & tourism, Healthcare, Welfare, Industry, SME & energy, Diplomacy & reunification, Administration, Communication and Environment.

Table 5.8 Descriptive Statistics following the Program Purpose

	Observation	Score	Budget
Public order & security	24	68.41	67,600,000
Science & technology	10	72.55	9,053,521
Education	13	72.35	348,000,000
Transportation	30	65.7	132,000,000
Defense	15	72.53	229,000,000
Land & regional development	5	71.3	12,500,000
Agriculture, forestry &fishery	55	72	108,000,000
Culture & tourism	31	70.01	48,200,000
Health care	31	66.75	21,700,000
Welfare	63	65.76	350,000,000
Industry, SME & energy	27	67.04	48,400,000
Diplomacy & reunification	15	70.96	43,800,000
Administration	35	70.88	14,100,000
Communication	13	79.39	24,300,000
Environment	33	68.57	56,600,000

Data source: MOSF (2015)

Table 5.8 shows the descriptive statistics of groups which are classified by program purpose. Among 15 groups classified by program purpose, programs related to welfare defense are programs whose budget rarely changes. Programs related to culture & tourism and administration represent the general budgetary program.

Table 5.9 shows the estimates interacting SABP score with the purpose of the programs. Column (1) shows that the impacts of SABP assessment score on budget changes controlling by

groups that are classified by program purpose. Column (2) includes the interaction term of SABP score and program purpose. In column (1) program relate to defense has a positive statistically significant impact. On the other hand, Science & Technology and Administration programs are negative and statistically significant at the 1 percent level. However, in column (2), the interaction terms are not statistically significant, overall.

Table 5.9 Impact of SABP Score on Budget Changes with Program Purpose

VARIABLES	Budget change (1)	Budget change (2)
SABP score	0.0126***	0.0138***
	(0.00403)	(0.00476)
Score*welfare		-0.00737
		(0.0108)
Score*Defense		0.00199
		(0.0249)
Score*Science&Technology		-0.00270
		(0.0291)
Score*Culture&Tourism		0.00131
		(0.0164)
Score*Administration		0.000605
		(0.00268)
Welfare	0.202	0.693
	(0.145)	(0.729)
Defense	1.723***	1.580
	(0.257)	(1.820)
Science and technolog	-1.087***	-0.890
	(0.312)	(2.129)
Culture and tourism	0.0523	-0.0365
	(0.186)	(1.165)
Administration	-0.904***	-0.901***
	(0.178)	(0.179)
Other		
Fund	0.702***	0.703***
	(0.121)	(0.124)
Special account	0.740***	0.734***
	(0.131)	(0.137)
Project type (Direct)	-0.802***	-0.805***
	(0.134)	(0.136)
Project type (Assist)	-0.243	-0.244
	(0.157)	(0.158)
Constant	16.03***	15.95***
	(0.321)	(0.366)
	(0.159)	
Observations	16.07***	1,203
R-squared	(0.449)	0.160

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

VI. Conclusion and Policy Implication

Korean government introduced performance-based budgeting in 2003 to improve efficiency and effectiveness of public expenditure. Since Self-Assessment of Budgetary Program (SABP) in 2005 was initiated, it has been developed in accordance with the Korean context. However, some studies revealed problems and limitations of SABP system.

First, there was a decreasing trend in the number of SABP assessed program. Also, the sampled programs were not balanced in terms of the purpose of program and budget type. Second, it was difficult to find out whether the performance of government budgetary programs was enhanced significantly. Third, there was the tendency of evaluating the program as "moderate" or neither too positive nor too negative.

Therefore, I examined the relationship between SABP assessment result and government budget changes controlling program's characteristics such as budget size, budget type and so on. I used the 2015 SABP assessment results reports provided by Korean ministries and the Korean Government Budget data from 2014 to 2016 fiscal years for this analysis.

The estimated results showed that SABP scores exerted a statistically significant impact on the budget decision and it suggested that an increase in SABP score by 1 points may lead to a 1.4 to 1.5 percentage increase in budget. Also, the analysis of each SABP assessment components' impact on budget changes showed that result score had no statistically significant impact on the budget decision but planning and management components had an impact.

The SABP scores do have a significant impact on budget changes more for big size programs. For big budget size programs, an increase of 10 points is estimated to increase a program's budget around 0.2 percentages. For a middle size program, the increase is closer to 0.09 percentages. In conclusion, even though this research shows that SABP system has a statistically significant impact on the budget decision, other factors like budget size and program type also correlate to this mechanism so it may interrupt the performance-based budgeting system in Korea.

Performance-based budgeting system can be a good tool for improving public spending and managing public budgetary program by enhancing individual budgetary program's performance. Under this performance budgeting system, government policies which have good performance and high returns to society can be sustainable while the budget itself could be allocated systemically regardless of changes in governments in power. Therefore, performance evaluation system and its management, evaluation process should be valid and well-developed in order to improve the effectiveness of performance-based budgeting program overall and enhance long-term fiscal sustainability.

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