

**AN EMPIRICAL ANALYSIS ON THE SELF-EVLAUATION
LENIENCY-CASES OF NATIONAL RESEARCH AND DEVELOPMENT
PROJECTS IN KOREA**

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ABSTRACT

This study explains self-evaluation leniency in the national research and development policy in Korea. Self-evaluation leniency refers to the cases where the meta-evaluation scores by higher authority are higher than self-evaluation scores. The meta-evaluation on R&D projects by a higher authority is redundant and consumes a significant amount of resources but the existence of the self-evaluation lenience provides with a strong justification for it. At the same time, it is a very effective tool for Ministry of Science, ICT and Future Planning (MSIP) to check with other ministries which implement their own R&D projects and evaluation on them.

The self-evaluating ministries have strong incentives to give their R&D projects higher marks. First, since the scores are compared with those of other ministries, they want to 'look good' on the scores. Second, since there is a meta evaluation by MSIP, they tend to give their own R&D projects higher marks by anticipating that those will be slashed out by MSIP. At the same time, MSIP wants to be tough in the meta-evaluation in order to keep other ministries under control.

The existence of the self-evaluation leniency has been pointed out in a few qualitative studies but there has been little empirical studies so far. Also the studies explaining the causes of them is sparse. This study covers the national research and development projects in Korea from 2010 to 2013 and analyzes them by using regressions. The analysis confirms the existence of the self-evaluation leniency. Although the absolute size of the gap has decreased over times, the gap is positive and statistically significant. Regression results show that the

ratio of feedback, the size of a project have a statistically significant relationship with the size of the gap.

Keywords: words self-evaluation leniency, Cases of National research and development projects in Korea, meta-evaluation, self-evaluation

Definition of self-evaluation lenience phenomenon and empirical evidence

Recently in Korea, the government is growing their interests in performance evaluation, as it is also highlighted in the national research and development projects.

The government puts more money into national research and development projects every year, so that needs of performance management are rising.

The National Research and development projects introduced the performance evaluation system, after that it influenced on the establishment of National Finance Act and Government Affairs Assessment Framework Act and so on.

Performance evaluation institution was the first project adopted from the National Research which after influenced the establishment of National Finance Act and Government Affairs Assessment Framework Act and more.

The purpose of adopting a system, ultimately, is securing the accountability and trust of the projects.

Meta-evaluation in the national research and development projects was implemented that evaluation system was introduced for the first time in 2005.

Meta-evaluation in the national research and development projects is a checking the self-evaluation results that are implemented by agencies.

National research and development projects were evaluated by dual evaluation methods. And they try to get rational and efficient; however, there are many problems about the insufficiency of evaluation, lower acceptance of evaluation results, the lack of professionalism of evaluation committee and so on.

And Such as national research development project, the second stage evaluation institution has a high validity, but its evaluation subjects are different. So that icreases the probability of conflicts.

Basically meta-evaluation has a distrust of the self-evaluation. In the results of meta-evaluation scores are criteria of budget reduction which has an initiative by comparison with self-evaluation scores.

The purpose of self-evaluation by government departments is finding shortcomings and improving the problems in the projects.

Evaluation helps to know the substance of projects and solving the problem of national research and development projects. That enhances the capability of the management of national research and development projects.

Two level evaluation is a meta-evaluation. Over time self-evaluation is strengthening its ability. Gap decreases slowly between self-evaluation scores and meta-evaluation scores.

However, in the national research and development projects gap in results of self evaluation scores and meta-evaluation scores continue. So, second stage evaluation institution enhances the ability of self evaluation.

Because of the data resource deficit gap of two evaluations whether second stage evaluation is rigid or self evaluation is leniency we don't know exactly.

The Gap of scores is defined as conceptual terminology, "The leniency phenomenon" is that a self-evaluation scores are higher than meta-evaluation scores in opposition of "The Strictness Phenomenon".

This paper asserts that "The leniency phenomenon" appear consistently in the national research and development project evaluation.

In advanced research about "leniency and strictness" unit of analysis is an individual or if unit of analysis is a project they only study empirically leniency phenomenon a year. we cannot find study about multi-year.

We suggests self-evaluation leniency phenomenon's existence and what it cause empirically analyzed.

First, we confirm whether leniency phenomenon exists or not. <Figure 1> suggests scores variations in the leniency phenomenon in national research and development(the number of total projects : 332) from 2010 to 2013.

There is leniency phenomenon in the 287 projects of the total 332 projects.

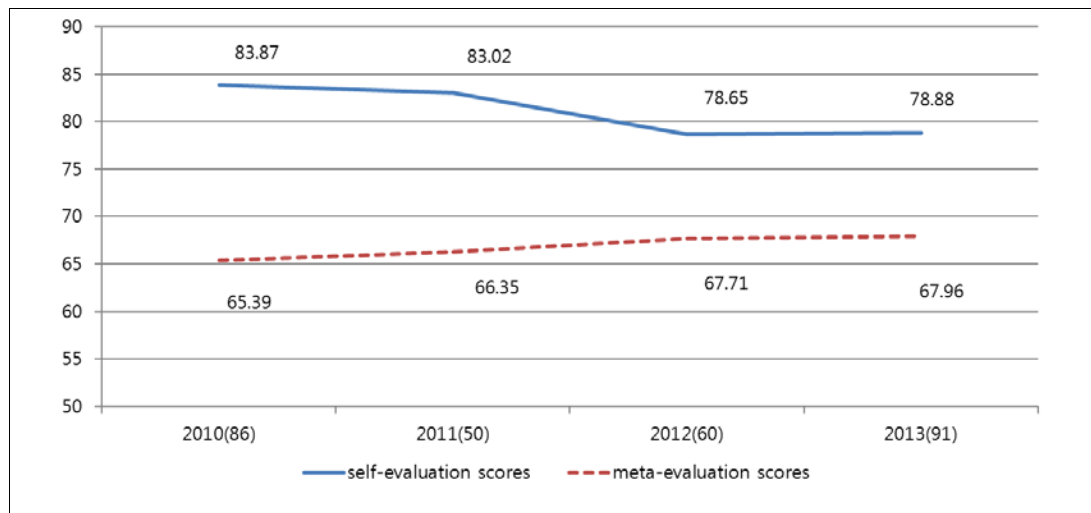
From 2010 to 2013, the number of projects is 86, 50, 60, 91 each year.

Self-evaluation scores are 83.87 that are higher than 18.48 at meta-evaluation in 2010. From 2011 to 2013, self-evaluation scores are higher than 16.67, 10.94, 10.92 meta-evaluation each year.

Gap between self-evaluation scores and meta-evaluation scores are very big that can be change evaluation grade.

We use t-test to confirm gap between self-evaluation scores and meta-evaluation scores, and then we find differences in two at level 0.01.

Figure 1. scores variation trends in national research and development projects(2010-2013)



Source : KISTEP(2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2014a, 2014b)

* next to year is the number of projects

In 287 projects, self-evaluation scores are 81.05 that are higher than 14.19 of meta evaluation. In 21 projects, self-evaluation scores are 71.2 that are higher than 3.86 of meta-evaluation scores, and gaps are statistically significant. In 24 projects, there are not gaps between self-evaluation and meta-evaluation.

This result means national research and development, projects have three effects such as leniency, strictness, and identification.

Table 1. t-test value of leniency, strictness, same

	leniency				strictness				identification			
	obs	mean	S.E	t-value	obs	mean	S.E	t-value	obs	mean	S.E	t-value
meta	287	66.86	8.17	-26.8	21	75.06	6.52	5.5	24	76.41	6.79	.
self		81.05	9.59	(0.00)		71.2	7.62	(0.00)		76.41	6.79	

<i>diff</i>		-14.19	8.97			3.86	3.2			0	0	
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Meta : meta-evaluation scores

Self : self-evaluation scores

Diff : difference between meta-evaluation scores and self-evlauation scores

Most projects in national research and development exist leniency phenomenon; however, we have to check several things before assert that leniency phenomenon exists in national research and development projects.

First, about the homogeneity of an appraiser. Self-evaluation projects are evaluated by project representative and member of self-evaluation committee, and meta-evaluation is evaluated by member of meta-evaluation committee.

Project representative's role is a planning and implementing of projects. We must know whether the quality of appraiser is an equal or not.

IF each member of committee doesn't have same capability to evaluate the projects , differences of evaluation are due to the evaluators.

So, we assume the professionalism of evaluators that is same because appraiser selected by expert pool. In other words, quality of the evaluator is same.

In consideration of my experience of taking part in evaluation committee, there are no differences in quality of evaluation.

Second, we consider the project's characteristics, for example age of projects, departments and so on.

Characteristics of projects or differences of departments affect leniency of evaluation for evaluating projects are not annually same.

If another factor affected evaluated projects, variation of evaluation scores did not defined leniency of self-evaluation.

We controlled these to divide into five groups, and each year transformed dummy variable.

In meta-evaluation report of 2013, self-evaluation leniency phenomenon is defined as on average of 3-year evaluation.

However, projects which are analyzed are not included 3-year evaluation. And self-evaluation leniency phenomenon defined as a continually higher than meta -evaluation scores.

Overview of performance evaluation in national research and development explained in II, Associated antecedents researches are reviewed in III. The cause of lenience phenomenon in self evaluation through empirical analysis in IV and V. The results summarize results of analysis and implications of research in VI.

II. Overview of national research and development projects and evaluation

Innovation of science technology are contributing to economic growth, therefore each country invests in science, technology continuously and systemically (OECD, 2005).

Govtment in Korea knows the importance of science and technology, so national R&D budget increases.

According to Figure 2, National R&D budgets of Korea(18.9 trillion) increase 2.5 times compared with 10 years ago(7.8 trillion).

In budgeting, R&D budget increases in the global economic uncertainty and competition with business potential to expand growth(I.J. Kim et al., 2014:1).

Since Government in Korea needs reliable security the more revenue the country brings in, it is important to have evaluation and monitoring of the budget.

So Government in Korea introduced a national research and development projects evaluation system. National R&D projects evaluation system operated by performance evaluation planning(first wave: 2006-2010, second wave: 2011-2015, third wave: 2016-2020).

Now the second planning performance evaluation operated. In this study, we analyze the part of national research and development project that are evaluated by Ministry of Science, ICT and Future Planning (MSIP). It is understood in total framework of national research and development. we summarize this system.

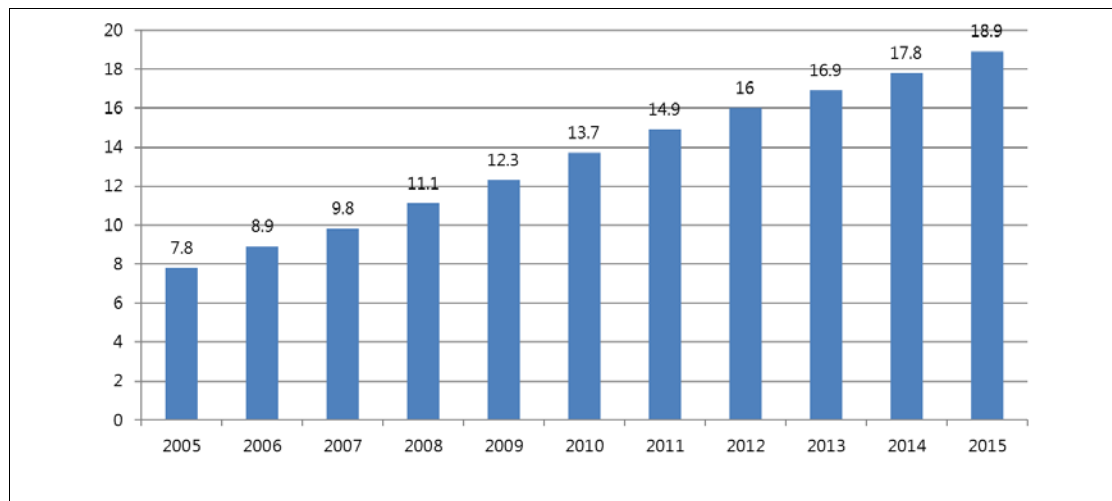
The national research and development performance evaluation can be classified into two types as project evaluation and institution evaluation.

Project evaluation is divided into such as mid-term evaluation, end of program evaluation, and tracking of program evaluation.

Mid-term evaluation is periodically evaluated by the head of the central administrative agency competent for the performance of national research and development projects and to check on MSIP.

Figure2. National Research and Development Budget

(won in trillions)



source : e-nara indicator

End of program evaluation is to assess the degree of achievement of the goal when budget is planned during the planning period.

Tracking the program evaluation is to check the process such as the technology transfer and support for commercialization.

According to this point, lower evaluation scores and leniency phenomenon.

First, absolute evaluation scores are low. In 2014, the scores of 92 national research and development projects from 16 departments is 70.9 on average. Inadequate (from 50 points to 65 points) but there is no corresponding " moderate(from 65 points to 80 points), score rating to maintain only. Even in 2015 superior grade projects not exist.

The second problem is dualistic, as there is a consistently bigger gap between self-evaluation and meta-evaluation in the mid-term evaluation. As we summarized above, the purpose of meta-evaluation introduction is to improve the project. However, the gap between self-evaluation and meta-evaluation is persistently stubborn.

Table 2. Overview of national research and development and evaluation master plan

Section		contents
Purpose		To improve the efficiency in national R&D projects
National research and development performance evaluation basic planning In Korea	<i>First basic planning</i> (2006-2010)	To focus on performance evaluation that is based on autonomous in departments. To find solutions through analyzing the evaluation
	<i>Second basic Planning</i> (2011-2015)	To use the research and development policy evaluation To improve qualitative performance
	<i>third basic planning</i> (2016-2020)	To reinforce support system focus on researcher To focus on qualitative evaluation To improve the autonomy and responsibility on quality research on development policy To improve the transparency and confidence of evaluation and evaluation base

source: MSIP(2013, 2015)

III. Previous studies

The purpose of this study is to examine and review of previous research that are differentiated from conventional prior studies. Previous studies can be divided into two categories.

First, study related to the national research and development projects, and the second is a study of meta-evaluation and self-evaluation.

Previous studies in National R & D deal with the projects are studies dealing with the Evaluation Committee (T. H. Kim, 2010; T. H. Kim and Lee, 2010) is a part of national research and development(nuclear research and development projects, world-class research university development projects, national research and development projects specific evaluation, sources research and development projects) to deal with research (T. H. Kim, 2010; W. H. Cho et al., 2010; B.R. Lee and G. B. Kang , 2010; B.H. Im and J.H. Heo, 2013).

Previous studies about the direction of evaluation studies on the adequacy of meta-evaluation and research on performance factors (S.S.Kim, 2005;W. S. Kim et al).

Before the performance evaluation is introduced that Hong(2002) explains that the some factors lower the member of evaluation utilization of the pre-validation process of the private, the evaluation report of the report in the case of leading technology development.

S.W. Yoon, G.B. Kang(2003) suggests on introduction of big research on development previous institutionalization of evaluation, getting a evaluation continuously reinforce feedback system to use evaluation results.

Second, for meta-evaluation and self-evaluation. Evaluation by higher institution uses like meta-evaluation. Lee (2015) is evident of Gaps between meta-evaluation and self-evaluation to use t-test. He focuses on financial projects autonomous evaluation; however, he didn't attend on the cause of leniency.

Previous studies of the self-evaluation focused on the problem of operating in the projects. G.S. Song(2007), D. Jegal and O. Jegal(2008) point to deficit of understanding and conversion of cognition of self-evaluation system. J. H. Kim(2009) suggests redundancy and over-evaluation of self-evaluation. M.H. Heo(2008) says self-evaluation leniency, difference in self-evaluation and meta-evaluation, increasing the workload by evaluation.

S.M. Lee(2010) suggests that self-evaluation didn't efficient due to deficiating of empowerment.

Problems of self-evaluation are pointed not previous studies, but departments in governments. To protect this leniency phenomenon meta-evaluation is advanced by criteria of relative evaluation of grade mandatory allot, or special grade is weighted towards smaller businesses (KISTEP, 2014:4).

Previous studies about the national research and development projects say case study of a part of project, if it treat the meta-evaluation, there are no exist.

Given cursory treatment in previous studies, we analyzed the leniency phenomenon.

IV. Theory

4.1 Attention-based view

Herbert Simon introduced behavior of organization and focused on rational choice theory. This is related by human's attentional results.

50 years later, attention from Herbert Simon is a base of social structure and recognition.

Attention based view suggests 3 ideal types that are based on structure, process, and outcomes.

First is a attentional perspective. This is a top-down cognitive to highten the feelings of awareness and focus to stimulus and reactiveness.

This is related to focusing on stimulus and reaction overtime top-down and cognitive structure.

Attentional perspective includes various terminology such as selective perception of functional backgrounds), attention structure(Derborn and Simon, 1958; March and Olsen, 1976; Ocasio, 2011:1288).

Second is a attentional engagement that allot for problem solving, planning, sense making, decision making.

Third is a attentional selection that voluntary and intentional attention focus of selective stimulus or another person's exclusion(Ocasio 2011:1288-1289).

Autonomous and intentionally attention reacts that focusing on stimulus or another exclusiveness.

Three parts of attention adopted in national research and development project representatives, according to this perspective magnitude of budget and ratio of output indicators(included outcome indicators).

Budget reduced when national research and development projects evaluation meta-evaluation getting grade. Project representatives try to getting a good self-evaluation scores.

To prevent budget reduction, project representatives getting a higher scores this is a easy thing additional time and efforts.

Sugar coating behavior to getting project scores is a logic that to predict budget reduction when they submitted planning report.

Self-evaluation scores in project representatives are higher that meta-evaluation scores

If project representatives focus on higher performance, self-evaluation leniency phenomenon to reduce budget maintain evaluation scores.

Project representative has a incentive to get higher performance, performance evaluation disadvantage can be larger.

This limits project representative's behavior, after it makes representative try to near scores.

National research and development projects allot to each project, it's chracteristics and magnitude of budget are different.

Budget's magnitude is larger reduction money, representatives focus on budget in large.

Budget magnitude is larger that stakeholder's attention is a larger and visibility increase. In this context large budget is a disadvantage of insufficient from evaluation results and individual disadvantage in this study the cause of self-evaluation leniency phenomenon.

Second, project representatives focus on not budget, but output indicators. The contents of national research and development are performance planning, performance process, and performance results.

In evaluation, performance indicators of performance feedback and relatedness of project's goal are important.

It's only 5 points in 100 points;however, selection of indicators value more than 5 points because planned performance is related to performance results.

It is important whether output indicators or not because ratio of output is higher. It means when national research and development projects have inputs and activities, it negatively influences goal achievement in the organization.

In this context, performance indicators divided into inputs, activities, outputs, outcomes, and then we find inputs and activities that have indicators of non-achievement.

This study means that compare input indicators with process indicators performance positively influence on evaluation results.

However, projects has a large ratio of outputs that is not getting a high scores.

If it has many outputs, indicators are not linked to performance targets or represent performance goal.

To get high scores in performance evaluation achievable output indicators setting. Choi and Park(2008) explains that to use ranchet-effect strategic behavior of organization.

Ranchet-effect is under performance management to make performance targets easier to lower performance target, and setting a goal achievable targets and less risk.

In result of meta-evaluation getting a low score. However, side of representative of project setting a project indicators of input indicators and process indicators.

Ratio of outputs higher evaluation scores expected this related to leniency phenomenon.

H1. Budgets in projects are larger when a self-evaluation phenomenon is also big.

H2. The outputs ratio in projects is larger when a self-evaluation phenomenon is big.

4.2 Performance feedback and Goal setting

Over the past few decades, it has increased that the use of performance measurement as a tool to improve democratic accountability and organization performance in government.

In particular, government try to measure goal. In goal setting theory, it encouraged to set a specific and difficult to achive goal. This is related to getting a high performance(Yukl and Latham, 1978:305; Locke and Latham, 2002:706).

Locke (Locke, 1968) explains that a goal-setting moderates effect of performance feedback, participation, and incentive of performance(Loke et al, 1968: 8; Yukl and Latham, 1978: 305 re-quote). Performance feedback plays a decisive role in to achieve a high performance.

And it is signal for organization to be changed(Salge, 2011; Nielsen, 2014 re-quoted: 5). According to behavior theory, decision-makers seek an appropriate solution to the current problems while reacting to the negative performance feedback(Salge, 2011).

The role of performance feedback in this study is a tool to measure specification of goal setting.

The role of feedback in this study and are not to serve as a tool used to determine the target set has not been materialized for measuring the effect of improving business performance through feedback.

In the national research and development projects, negative performance feedback includes that inadequate appraisal indicator or improve indicators in order to accurately represent the performance targets.

Second, performance feedback's contents include performance indicators's uncertainty.

To set a goal, private sector focus on economic variable as a benefit, cost, growth(Greve, 2003).

However, Public organization cannot define ambiguous goals(Chun and Rainey 2005:2; Pandey and Wright 2006:516).

This logic applied to the national research and development. Applying this logic to the national research and development R&D because the uncertainty aspect of itself has research and creation has a characteristic that must support a variety of lower activity based on a long-term plan specific and have side clear long-term strategy is required (D.H. Lee, 2010: 29).

The national research and development projects is due to public goods. Of meta-evaluation report in national research and development projects, to achieve higher level goals setting aiming targets clearly. And in this study 4 things that related to hypothesis. First is its outcomes to represent performance targets.

This means do goal when we think performance goals that have to include performance contents(MSIP, 2014: 25).

Second, there are various performance targets can be set to input, process, output, outcome, etc., of indicator in decision making absolute weighs similarity login between indicator weight allocated higher weight.

The third is that the surface to be excavated to achieve performance targets. Because, timely indicators of performance indicators in the absence of indicators to representative the performance targets in performance indicators because it includes only a part in performance targets or can include a non-critical information.

The fourth, the number of indicator and component we have to improve the indicator system. Developed performance indicator can be not represent performance targets. The meta-evaluation report is composed of feedback that has contents.

Loke explains setting a target that is a precise and specific. This study did target feedback to get a higher

Performance is defined as a high score that goal setting theory. Knowing own's performance is also performance.

Focusing on evaluation, projects representative evaluate their projects correctly; however, in national research and development project evaluation, they over-evaluate their performance, so that make difficult unclear objectives. There is hypothesis below.

Hypothesis 3. The self-evaluation phenomenon is larger when performance feedback has many factors that are to need outcomes, to improved the weight of indicator, to correct the indicator, and to need indicator system.

4.3 Age of projects

Adapting the organization limits structural inertia. The more suppression of environment ability to adaptation (Hannan and Freeman, 1977:930-931).

Process of empirical learning process next year ($n+1$) select the alternative is based on in the past what selection (Cyert and March 1963, Nelson and Winter 1982, Levitt and March 1988, Huber 1991, Miner and Mezias 1996).

Inertia influenced by environment this environment internal environment and external environment. Internal environment limits below. First, organization invest on equipment or professional personal resource, this make environment. Second, decision maker of organization information limitations. Third, internal political limitations important organization influenced by political balance.

Forth organization resist to reorganization to limitation of contract. For example, focusing on research reducing the existing education function (Hannan and Freeman, 1977:931-932).

This theory adopted national research and development below. Inside of organization resource allocated evaluation period is consistent adaptation to research activity reducing the registration. Second, there are limitation of performance national research and development improve to improve evaluation system limitation of performance limitation relatively. Specially evaluation resource is open.

Inside of resistance like organization level of improvement resist is low. low and institutional obstacle is a represent in outside environment.

In this study self-evaluation leniency phenomenon adapted to evaluation environment.

This behavior modification selected by environment to adapt organization(organization population) and their environment fitted(Denrell and March, 2001).

To adapt the environment it needs to be time. In organization learning's presumption increase the prefer result, not prefer result reduced(Lave and March 1975; Haunschild and M, Rhee 2004 requote: 1546).

Hypothesis 4. The age of projects is getting older, the leniency of self-evaluation phenomenon is less.

V. Research model and Results of analysis

Setting variables based of hypothesis above, research model and variable's operational definition is a below.

5.1 research model

This <Figure 3> explains cause of leniency of self-evaluation that relation between four independent variables and dependent variable

Budget and the number of output indicators are independent variables to measure attention based view theory.

Budget is a essential component to implement government policy and it increases visibility of projects in project evaluation.

Visibility is high in national research projects evaluation as evaluation results is also high in focal project to response project representative and stakes-holder.

Leniency phenomenon is positively related to budget, and then coefficient of budget is positive.

A number of output indicators is related to planning, and results stage of evaluation territory. The more output indicators in plan and result is higher than output indicators.

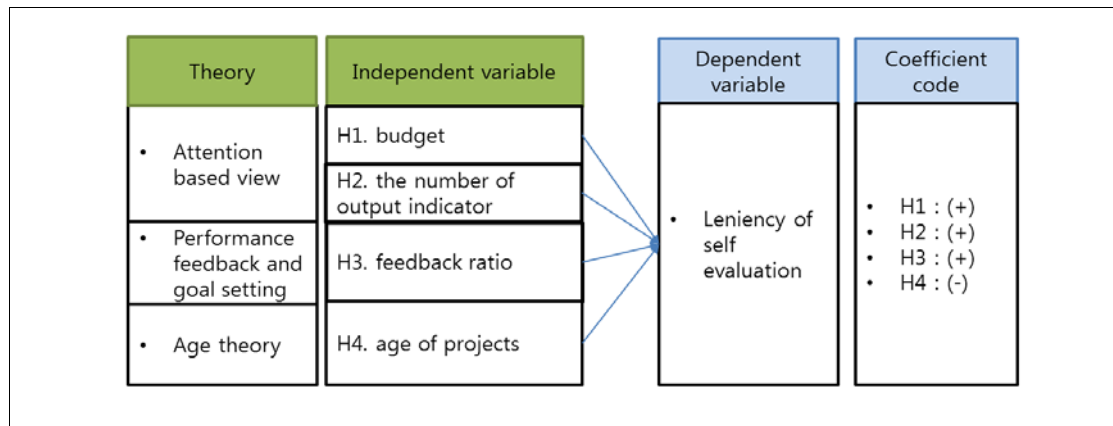
Performance feedback and feedback ratio to goal setting are ambiguous goal. This is explain coefficient is a positive. Because making indicators to goal setting

Age theory is related to age of project that is associated with firm's survival in old firm in organization ecology. Organization adapts environment and it makes organization to learn in learning theory. If organization adapted the environment, gaps in between self-evaluation scores and meta-evaluation score.

Coefficients of age of projects will be negative. However, this study defines leniency of self evaluation is gaps between meta evaluation and self evaluation. If self evaluation scores are higher than meta evaluation scores in national research and development project

evaluation, coefficients of independent variables are negative. But results of analysis to interpret convenience are analyzed with dependent variable multiplied by (-1).

<Figure 3> Research Model



5.2 Operationalization of variables

Dependant variable defines as the meta evaluation scores minus self evaluation scores. Meta-evaluation scores are a criterion of budget reduction as dependance variable operated by meta-evaluation.

Self-evaluation scores are higher than meta-evaluation and dependence variable's coefficient will be minus.

In this study, to convenience the interpretation of result from analysis, we multiplid the dependent variable.

5.2.1 Independent variable

A budget of projects of Hypothesis 1 are analyzed by transforming the natural log of every year.

A number of output indicators of Hypothesis 2 are included outcomes. It is used in meta-evaluation report.

Feedback ratio of hypothesis 3 is a performance feedback. The contents of performance feedback are in reports that have opinion to articulate of goal in the meta-evaluation.

It is coded 1 when included the contents such as to need outcome indicator, correct the weigh of indicators, to need changing the indicators, to improve indicator system.

The age of projects in national research and development projects is different in project magnitude and kinds. Age of projects transformed from year to month.

5.2.2 Control variables

5.2.2.1 Organization

National research and development projects performed by various organizations in government.

Organization controlled due to impact on organizational culture and organization characteristics. 22 organizations classified by 5 groups.

5.2.2.2 year

The temporal scope of the study is from 2010 to 2013. When a specific event occurs during the year that may affect the evaluation results. Table 3 summarized variables that explained below.

Table 3 Measurement of variable operational definition

section		variables	
dependent variable	meta evaluation scores	Meta-evaluation scores	(-1) multiplied dependant variable
	- self evaluation scores	- Self-evaluation scores	
independent variable	budget's magnitude	ln(budget) by every year	2010, 2011, 2012, 2013
	output indicators ratio	Ratio of outputs	(output indicators+outcome indicators)/the number of projects
	feedback ratio	Contents of feedback =1, others=0 Feedback ratio=(sum of feedback contents/4)	* feedback contents : to need outcomes, to improved the weight of indicator, to correct the indicator, and to need

			indicator system.
	age of projects	(focal year-start year)*12	-
control variable	organization	focal organization=1 others=0	Organization divided into 5 Reference group(group4)
	year	every year is transformed by dummy variables	Reference year(2013)

5.2.3 Descriptive statistics and analysis results

5.2.3.1 Descriptive statistics

Every variables above descriptive statistics below <table 4>. A dummy variable is a ratio of output indicators, organization, year minimum 0, maximum 1. Output indicator variables are nearly 1. Organization average is related to ratio and group 2 has many of them.

Yearly dependant variables average is similar; however, 2013 is higher. Magnitude of budget is a natural log, and average scores are 23.6. Descriptive statistics are not natural log, budget's minimum is a 7.8 billion, maximum is a 19,618 billion. Project budget average is a 567billion minimum (7.8billion). Performance feedback ratio is a ratio, including 4 indicators.

Performance feedback ration's maximum is a 0.75, this means projects 3 factors. Ages of projects in the independent variable of Hypothesis 4 are twelve month minimum.

Table 4. Decriptive statistics

Variables		Obs	Mean	S.E	Minimum	Maximum
Dependant variable (meta-evaluation scores- self-evaluation scores)		287	14.19	8.96	0.2	49.2
Independent	ln(amount of budget)	287	23.60	1.39	20.47	28.30

variable	ratio of outputs		287	0.78	0.28	0	1
	feedback ratio		287	0.23	0.23	0	0.75
	Age of projects		287	9.60	11.30	12	744
Control variables	Organization	group1	287	0.09	0.29	0	1
		group2	287	0.49	0.50	0	1
		group3	287	0.16	0.37	0	1
		group4	287	0.14	0.35	0	1
		group5	287	0.11	0.32	0	1
	Year	2010	287	0.30	0.46	0	1
		2011	287	0.17	0.38	0	1
		2012	287	0.21	0.41	0	1
		2013	287	0.32	0.47	0	1

5.2.3.2 Analyzed results

Variables uses model 1 and model 2. Model1 is consist of control variables such as organization and year(2010-2013). Model 2 is consists of independent variable magnitude of budget and ration of output indicators, age of projects and control variable. Model 1 is statistically significant in group2 and group5. Coefficients magnitude of group4 decrease leniency phenomenon by group2; however Group5 increases when we check the self-evaluation phenomenon.

Coefficients of every year are significant; however, a magnitude of 2010 and 2011 is larger than 2013. Coefficients of 2012 is a positive.

In model 2, independent variables statistically significant variables 3 of 4 budget amount, ratio of output indicators, feedback ratio, age of projects.

One of the independent variable that budget is associated with the hypothesis 1; however, it was not statistically significant.

Table5. Regression analysis results

Section		Model 1			Model2		
		Regression coefficient	Standard error	T - value (p-value)	Regression coefficient	Standard error	T - value (p-value)
Budget					-0.12	0.37	-0.31 (0.754)
Ratio of output indicator					4.36	1.77	2.47 (0.014)
Feedback ratio					5.02	2.28	2.20 (0.029)
Age of projects					-0.003	0.005	-0.60 (0.551)
o r g a	group1	3.47	1.96	1.77(0.077)	3.90	2.01	1.94(0.054)
	group2	-2.75	1.45	-1.90(0.05 9)	-2.35	1.47	-1.61(0.110)
	group3	2.63	1.72	1.53(0.127)	3.06	1.75	1.74(0.082)
	group5	6.28	1.87	3.36(0.001)	6.52	1.88	3.47(0.001)
year	2010	7.83	1.19	6.56(0.000)	6.33	1.31	4.82(0.000)
	2011	5.92	1.39	4.26(0.000)	4.11	1.53	2.68(0.008)

	2012	-0.401	1.28	-0.31(0.755)	-0.22	1.32	-0.17(0.866)
	constant	10.81	1.33	8.12(0.000)	9.69	8.76	1.11(0.270)
	N	287			287		
	R ²	0.2806			0.3091		
	Adj. R ²	0.2626			0.2815		
	F-valus	15.55(0.000)			11.19(0.000)		

In regression analysis results, dependant variable of budget is bigger gap between self evaluation scores and meta-evaluation scores is not significant. If budget is bigger visibility effect, attention is getting from stakeholder. Big project budget increasing the accountability.

However, regression analysis results represent due to accountability project represent strategic behavior to higher. It is not significant; however, regression coefficient is negative that means rigid self-evaluation.

Outputs ratio and performance feedback in hypothesis 2 and hypothesis 3 at level 0.05. About attention of the inputs is related to scores of evaluation results.

Ratio of performance feedback is higher, self-evaluation scores bigger. In hypothesis 4, age of project coefficient is a negative; however it is not significant. This means getting older, leniency phenomenon is not big.

Specially less than 5 years in projects, self-evaluation leniency is big and relatively project age is older, leniency phenomenon is smaller.

To find the reason to statistically, age of project divided into special section and regression implement. if less than 49, 0.18. less than 74(151), coefficient is 0.004, besides it negative. that's because 287 projects almost 50% are less than nine year . Reduction of leniency phenomenon is not significant.

According to this study, ratio of outputs, performance objective not control variable that are sort. In model 2, group 5 statistically significant; however, like model 1, compare with group 4. Self-evaluation scores higher than meta-evaluation.

This is because evaluation system is a long-term. And before to evaluate the focal year's evaluation system is changed such as improved the indicator evaluation criterion.

This means not only existence of evaluation system, but also improvement on the operation and contribution.

Lets look over classification and year of organization from control variables.

In model1, the group2 and group5 of organization variables statistically significant, and meta-evaluation scores are higher than self-evaluation scores. Group 5 is culture, welfare, secure are that Ministry of Culture, Sports and Tourism, Ministry of Health and Welfare, Defense Acquisition Program Administration, National Emergency Management Agency, Ministry of Public Safety and Security

Group 4 is Ministry of Trade, Industry and Energy, Small and Medium Business Administration. The role of organization is different; however, they have in common to r&d activities. Leniency phenomenon is different by groups is that a interesting.

Government is not relatively autonomous compare with local government. The cause of this difference will be other research evidence.

Conclusion

The evaluation defines as confirm planned in goal achievement how economically and efficiently.

There are many evaluation, meta-evaluation in the long run self evaluation. Gaps between meta evaluation scores and self-evaluation scores decrease;however, credibility increase to pupose.

This study suggests leniency phenomenon of evaluation in national research and development projects. Self-evaluation scores consistently higher than meta evaluation exist, and what it cause of this phenomenon.

This study sets four hypothesis, and first hypothesis is related to budget magnitude and self-evaluation leniency phenomenon. After analysis big budget influence self-evaluation leniency phenomenon; however, it was not significant.

Second hypothesis is that ratio of output indicators are higher self-evaluation leniency phenomenon. This is caused by self-evaluation leniency and combined with the efforts of getting a higher scores. It is an important that evaluating the project, this phenomenon influences output indicators.

Performance management policy of the previous government calculates indicators (outcome indicators included), and look for the rest of the performance targets and indicators and of the representative, meaning that the linkage was overlooked.

If projects have output indicators, from planning stage, implementation stage, and result stage have to achieve the high performance. Simply, it cannot completed to improve operation of projects.

To overcome incompleteness of project evaluation, project representatives have to attention to independent variable. And they try to articulate a performance goal.

Projects have more performance feedback, self-evaluation leniency phenomenon is bigger.

Second and third hypothesis related to that project contents influence self-evaluation leniency phenomenon, according to fourth hypothesis organization adapted to the environment and old projects to make leniency phenomenon weak.

However, this study's projects are composed of 9 years projects, self-evaluation phenomenon weaker.

If national research and development projects become mature, it is expected to mitigate the leniency phenomenon in self-evaluation as it adjusts to the evaluation system.

In this study, there are some implications for the development of the evaluation system. First, where project representatives and evaluation committee are attention to project evaluation.

In order to draw attention of project representatives, to continuously educate project representatives to recognize evaluation institution and give performance feedback.

When we evaluate projects, we have to not results but measurements.

And, this effort can't be achieved short-term, so it must be achieved long-term.

National research and development is also operated by government, public officer performs their work every two years.

Evaluation institution improved to correct evaluation; however, they try to get scores of representative in projects.

The limitation of this study is that if we track the evaluation, quality is improved or leniency phenomena weak correct evaluation lack of data we can't tracking other evaluation.

And didn't know the cause of level of leniency between organization. There are some implications. Elder project reduction over time learning occurrence. For an evaluation institution until self-evaluation finds their way.

References

- Ministry of Strategy and Finance (2009). 2009 National Research and Development Self-Assessment Manual.
- J. H. Kim (2009). "Operational assessment of the government work evaluation system research: focusing on the operating direction of the self-evaluation." *"Policy Analysis and Evaluation Science Review"*, 19 (3): 187-218.
- T. H. Kim (2010). "Research Evaluation Committee on the Effects between the network efficiency of national research and development projects." *"Technology Innovation Society"*, 13 (4): 794-816.
- T. H. Kim, Lee (2010). "National Study Committee on Evaluation and Recognition Efficiency Analysis of linkages between research and development projects." *"Technology Innovation Society"*, 13 (1): 184-203.
- The Ministry of Science, ICT and Future Planning (2013). Second National R & D Performance Evaluation Plan.
- The Ministry of Science, ICT and Future Planning (2015). Third national R & D Performance Evaluation Plan (Draft). Creation of Future Science.
- G. S. Song (2007). "The government empirical work on the evaluation system under the self-assessment capabilities." *"Korea Policy Science Science Review"* 11 (1): 57-79.
- D.L Shin, G.J.Seo (2001). "Members Papers: corrective feedback from the teacher effect on self-efficacy and academic performance improves." *"Curriculum studies"* 19 (1): 319-342.
- J.E. Ahn et al (2015). Study on national research and development projects and assessment system, *"the Korea Information Society"*.
- O. Y. Lee (2010). "National research and development by type A Study on the Evaluation Logic Model Development": 1-99.
- What is rare, B.D. Choi (2011). "Meta-evaluation of the Volunteer Center evaluated." *"Municipal Korea Science Review"*, 23 (3): 233-257.
- B.R. Lee, G. B. Kang (2010). "The impact factor variance analysis according to the utilization of evaluation utilization party affiliation." *"Korea administrative studies"* 19 (2): 65-101.
- S. Y. Lee, G. H. Jeong (2007). "Issues for the efficient evaluation of the national research and development projects and research on the analysis derived", Korea Institute of Science and Technology Evaluation and Planning.

- S. M. Lee (2010). "Empowerment evaluation (Empowerment Evaluation) Study the feasibility of navigating the governmental assessment of: self-evaluation as the center", "Policy Analysis and Evaluation Science Review" 20 (1): 25-53.
- W. H. Lee(2015). "Evaluation of the effectiveness of self-financing project evaluation - Case of the Ministry." "South Korea compared to the Government Gazette," 19 (1): 225-246.
- Y.S.Lee (2010). " Policy evaluation theory". Seoul: British cultural history.
- C.G. Lee (2012). "Reliable assessment of research and development promotion scheme." "Korea Society and administrative studies" 23 (3): 155-182.
- H.S. Lee (2010). "Lottery funding research projects on the meta-evaluation." "Korea administrative studies" 19 (2): 39-63.
- B.H. Im, J.G. Heo (2013). Metrics to improve the quality of national research and development of patented research results, "Korea Technology Innovation Society"
- S.H.Yu (2015). "Critics Factors Affecting Financial business target achievement." "Korea administrative studies" 24 (2): 1-28.
- Y.S. Jang (2006). "America's research and development program evaluation methods and systems analysis, Korea Industrial Technology Foundation.
- Stationary phase et al. (2014). "2013 Global R & D investment trends and issues analysis: 1-506.
- D.Jegal, L.Jegal (2008). "Improvements sought for the development of the new government work evaluation system." "Policy Analysis and Evaluation Science Review" 18 (1): 65-99.
- G. M. Jo et al. (2013). "A Study on the meta-evaluation model design of maritime traffic safety system diagnostics." "Society of Marine Environment and Safety" 19 (4): 382-390.
- Only composition et al. (2010). Upward of a university hospital personnel evaluation results downward comparison, "Korea Institute of Health Policy and Administration"
- W.H. Cho et al. (2010). "Empirical analysis of the national research and development projects introduced quantitative evaluation effectiveness." "Technology Innovation Society", 13 (3): 494-512.
- S.R.Choi, M.J. Park (2008). "The introduction of performance management and bureaucratic response: sawtooth effect in the center." Executive Journal 46 (2): 135-161
- Korea Institute of Science and Technology Evaluation and Planning (2011a). "2011 National Research Development Self-Assessment Report", National Science and Technology Council.

- Korea Institute of Science and Technology Evaluation and Planning (2012a). "2012 National Research Development Self-Assessment Report", National Science and Technology Council.
- Korea Institute of Science and Technology Evaluation and Planning (2013a). "2013 National Research Development Self-Assessment Report" Future Creation Science
- Korea Institute of Science and Technology Evaluation and Planning (2014a). "2014 National Research Development Self-Assessment Report" Future Creation Science
- Korea Institute of Science and Technology Evaluation and Planning (2011b). "2011 national higher research and development project evaluation report" National Science and Technology Council.
- Korea Institute of Science and Technology Evaluation and Planning (2012b). "2012 National Top Research and Development Project Evaluation Report", National Science and Technology Council.
- Korea Institute of Science and Technology Evaluation and Planning (2013b). "2013 National Top Research and Development Project Evaluation Report" Future Creation Science
- Korea Institute of Science and Technology Evaluation and Planning (2014b). "2014 National Top Research and Development Project Evaluation Report" Future Creation Science
- Y. S. Ha (2013). "Studies on the effectiveness of the business characteristics of each performance management system." "Korea administrative studies" 22 (3): 61-90.
- M.H. Heo et al. (2008). "Government Affairs Assessment Analysis for the primary direction and operating system." "Korea Policy Science Science Review" 12 (1): 1-18.
- H. D. Hong (2002). "An Empirical Study on the Meta assessment of the national research and development project studies - focusing on leading technology development business." "Korea government nonjip" 14 (4): 867-892.
- B.S. Huang, G.B. Kang (2005). "General Papers: Development of government-funded research organization evaluation specification-based technology around the Meta assessment of the Research on assessment practices." "Korea Science Review Policy" 14 (1): 121-151.
- Ashford, S. J., et al. (2003). "Reflections on the looking glass: A review of research on feedback-seeking behavior in organizations." *Journal of Management* 29(6): 773-799.
- Chen, Z., et al. (2007). "Leader-member exchange and member performance: a new look at individual-level negative feedback-seeking behavior and team-level empowerment climate." *Journal of Applied Psychology* 92(1): 202.
- Chun, Y. H. and H. G. Rainey (2005). "Goal ambiguity in US federal agencies." *Journal of public administration research and theory* 15(1): 1-30.

- Cyert, R. M. and J. G. March (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ Prentice-Hall
- Denrell, J. and J. G. March (2001). "Adaptation as information restriction: The hot stove effect." *Organization science* 12(5): 523-538.
- Greve, H. R. (2003). "A behavioral theory of R&D expenditures and innovations: Evidence from shipbuilding." *Academy of Management Journal* 46(6): 685-702.
- Hannan, M. T. and J. Freeman (1977). "The population ecology of organizations." *American journal of sociology*: 929-964.
- Huber, G. P. (1991). "Organizational learning: The contributing processes and the literatures." *Organization science* 2(1): 88-115.
- Chan Su, J. (2013). "Navigating a Rough Terrain of Public Management: Examining the Relationship between Organizational Size and Effectiveness." *Journal of Public Administration Research & Theory* 23(3): 663-686.
- Kelman, S. and J. N. Friedman (2009). "Performance improvement and performance dysfunction: an empirical examination of distortionary impacts of the emergency room wait-time target in the English National Health Service." *Journal of public administration research and theory*: mun028.
- Levitt, B. and J. G. March (1988). "Organizational learning." *Annual review of sociology*: 319-340.
- Locke, E. A., et al. (1981). "Goal setting and task performance: 1969–1980." *Psychological bulletin* 90(1): 125.
- March, J. G. and H. A. Simon (1958). *Organizations*, New York, NY: John Wiley & Sons.
- Mayer, R. E. (1987). *Educational psychology: A cognitive approach*, Little, Brown Boston.
- Miner, A. S. and S. J. Mezias (1996). "Ugly duckling no more: Pasts and futures of organizational learning research." *Organization science* 7(1): 88-99.
- Nelson, R. R. and S. G. Winter (1982). "The Schumpeterian tradeoff revisited." *The American Economic Review*: 114-132.
- Nielsen, P. A. (2014). "Learning from performance feedback: Performance information, aspiration levels, and managerial priorities." *Public Administration* 92(1): 142-160.
- Nonaka, I. (1994). "A dynamic theory of organizational knowledge creation." *Organization science* 5(1): 14-37.
- Ocasio, W. (1997). "TOWARDS AN ATTENTION-BASED VIEW OF THE FIRM WILLIAM OCASIO." *Psychology* 1: 403-404.
- Ocasio, W. (2011). "Attention to attention." *Organization science* 22(5): 1286-1296.

- OECD (2005). *Main Science and Technology indicators, Organisation for Economic Cooperative Development*. Paris, France.
- Pandey, S. K. and B. E. Wright (2006). "Connecting the dots in public management: Political environment, organizational goal ambiguity, and the public manager's role ambiguity." *Journal of public administration research and theory* 16(4): 511-532.
- Rhee, M. and P. R. Haunschild (2006). "The liability of good reputation: A study of product recalls in the US automobile industry." *Organization science* 17(1): 101-117.
- Salge, T. O. (2011). "A behavioral model of innovative search: Evidence from public hospital services." *Journal of public administration research and theory* 21(1): 181-210.
- Walsh, J. P. and G. R. Ungson (1991). "Organizational memory." *Academy of management review* 16(1): 57-91.
- Weinstein, C. E. and R. E. Mayer (1983). The teaching of learning strategies. *Innovation Abstracts, ERIC*.
- Yukl, G. A. and G. P. Latham (1978). "Interrelationships among employee participation, individual differences, goal difficulty, goal acceptance, goal instrumentality, and performance." *Personnel Psychology* 31(2): 305-323.