

Performance-Oriented Budgeting in Public Universities:

The Case of a National University in Japan

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Kiyoshi Yamamoto *

Abstract

Public higher education systems have experienced major changes through globalization, marketization and demographic movements. In response to the system change, several reforms have been adopted into higher education institutions (HEIs). Especially in governance and management, the ideas and tools of new public management (NPM) have diffused in many developed countries like in public sector reforms. The corporatization of national universities in Japan is a typical example. However, the autonomous character of HEIs may conflict with performance evaluation by the government and incentive system through performance oriented financial management. Accordingly in the case of a national university in Japan, this paper investigates the responses and impacts of HEIs, then unveils whether the intended and unintended outcomes is caused or not.

Keywords: performance budgeting, incentive system, public universities, corporatization, NPM

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Introduction

Use of the performance-based budgeting system at public universities is growing across the globe. Public universities have two sides to their character, that of a public sector organization and the other of a higher education institution (HEI). The public sector has a long history—since the 1920s—of adopting the concept of performance management and budgeting (Redburn et al., 2008), while the HEIs initiated performance budgeting as incentive-based budgeting or responsibility center budgeting (RCB) in the 1980s in American public universities (Priest et al., 2002). The concept of performance management and budgeting for public universities requires consideration of the specific factors of government control, public accountability, and funding through taxes. The concept of incentive-based budgeting or RCB asks HEIs to take on the character of multi-production of teaching, research and public services, co-production between staff and students, and limited administrative control over academic staff owing to academic autonomy. There are diverse interpretations of the term ‘performance budgeting’, so in this paper we use ‘performance-oriented budgeting’ as the term which seeks to shift budgeting from inputs towards results (OECD, 2005:58). The definition leads to the necessary conditions to be effective: measurability, appropriate linkage, and sufficient funds. First, performance must be measured objectively in terms of outputs or outcomes. Second, the measurement shall be linked to budgeting or resource allocation. Third, the part which is performance based might be sufficient to incentivise.

However, these conditions are sometimes in conflict with the nature of higher education. As Wilson (1989) indicates, education services provided by public entities are classified as coping type where neither outputs nor outcomes are observable. Besides, it is significantly difficult to identify the causal relationships between inputs and outcomes. Accordingly, this type of education services does not fit with performance management. In the multi-product features of HEIs, institutional economists (e.g. Holmstrom and Milgrom, 1991) suggest that higher linkage relations or strong incentive systems would not always produce successful results, because there are differences in measurement errors among multi-products, and HEIs might achieve certain goals at the expense of other goals. Further, public universities have constraints on funding which serve to incentivise performance, owing to the basic characteristic of a public institution being a resource consuming entity, which is in contrast to enterprises that can potentially increase income through better performance. The measures public universities can employ are quite limited, although they have some opportunities to raise revenue through contracts with the private sector. Practices in US state universities show that the performance-related portion of funding to universities is just 5% (Burke et al., 2002).

Despite these constraints, since the 1990s, performance-oriented budgeting has been introduced to many public universities in European countries (Paradeise et al., 2009) and the US (Priest et al.,

2002). Recently, some national universities in Japan have adopted the concept in their institutional budgeting. This change in budgeting is caused by a combination of public management reform referred to as new public management (NPM) (Pollitt and Bouckaert, 2004) and higher education reform. Public management reform has appeared at three levels: in the government sector, the higher education sector and individual institutions. In other words, from line-item budgeting to lump-sum budgeting at the first level, corresponding to accountability for inputs to accountability for outputs or outcomes; from incremental funding to greater focus on performance or competitive funding at the second level; and from cost center to profit or responsibility center at the third level. The higher education reform has been driven by social demographic change, government de-regulation in education policy and internationalization. The above factors serve to make the HEIs improve their performance and efficiency in accordance with the higher education environment and policy change.

Compared to earlier reforms in higher education, since the 1990s there has been a consistent progression towards performance-oriented budgeting for public universities coupled with NPM reform and the policy environment (Shattock, 2008). NPM relies on the markets, strong performance measures, and empowered and entrepreneurial management rather than on collegial public sector professionals and administrators (Andresani and Ferlie, 2006). In other words, budgeting at public universities cannot be isolated from the campus in which it operates or from the economic and public policy environment. The dual character described earlier surely produces the complex and conflicting issues that arise in the implementation of performance-oriented budgeting. Priest et al. (2002: 2) also note an ambiguity in that “public university administrators have toyed with incentive-based budgeting but yet have not universally accepted it”. Especially, it is acknowledged that there might be trade-offs between autonomy and control, relevance and objective measurement for academic performance. However, a sectoral approach, which places attention on specific features of higher education, would not enable us to analyze total figures in the budgeting process at public universities. The process is a part of public policy and political process in the public sector.

From this perspective, the next section outlines the background and changing nature of budgeting in Japanese national universities brought about by corporatization. The third section explores the mechanism of performance-oriented budgeting in terms of external funding and internal allocation by using a model, and several hypotheses are indicated. The fourth section investigates the practices of performance-oriented budgeting in the case of a national university. In the fifth section, the hypotheses are tested and interpreted, and some side effects are described. Finally, conclusions and future issues are presented.

Funding and Budgeting in Corporatized National Universities

The NUCs, created by incorporation of all Japanese national universities in 2004, are individual juridical public bodies separated from the central government. The transition was implemented through the National University Corporation Act of 2003 which was the enactment of the report entitled "New Vision for National University Corporations". The report in 2002 showed three reforming ideas: identifying the missions and goals of each university, defining the responsibility and granting considerable autonomy in management through adopting business management tools, and introducing a competitive mechanism among universities in addition to respecting more the needs of students and the business world. These principles have broadly appeared as NPM in higher education reform in developed nations (Teixeira et al., 2004; OECD, 2004a).

The incorporation has dramatically changed the governance and management system of national universities (Yamamoto, 2008). First, NUCs are at present find themselves in a multiple-principal and agent relationship (Bernheim and Whinston, 1986), by contrast to the previous hierarchical or simple principal-agent model (Holmstrom, 1979) within the MOE. Before incorporation, national universities are an internal organization of MOE. The principal was the Education Minister and the agent was each national university. Second, much flexibility in management is given to the NUCs in exchange for increased accountability for their own results through the medium-term plan, which is approved by the Education Minister. The targets must be set to enhance the quality of teaching and research, and improve operations and efficiency. The performance is evaluated annually by the Evaluation Committee for NUCs. NUCs have full discretionary power in management and operations laid out in the medium-term plan.

Each NUC receives two types of funding: operating grants for current expenditures and subsidy for capital expenditures. The operating grant for the first year (FY 2004) was calculated by operating expenses minus revenues such as tuition fees, although competitive funds such as research contracts are excluded from the revenues. The operating grants since FY 2005 have been reduced by a fixed percentage (now 1%) year on year. As opposed to line-item budgeting which was adopted in the previous system, NUCs are given full discretion in their use of the operating grant; this global or block grant and greater flexibility in management has innovated university budgeting to adopt an incentive mechanism for performance. The subsidy fully compensates for the capital expenditures (subsidiary rate is 100%), while the use of the subsidy is more constrained.

In exchange for greater flexibility and autonomy in operational management, accountability for results and linkage between funding and performance are strengthened. It is presumed that the performance of each national university in the mid-term (a 6-year period) will be considered in the resource allocation of operating grants for the next mid-term plan. This is partly explained by the identical nature of HEIs where performance for teaching and research can be considered as

comparable among national universities.

Model and Theoretical Hypotheses

Model

Operating income budget (OI) of a national university is expressed as

$$OI = OG + TF + OR + EI \quad (1)$$

where OG stands for operating grants from the government, TF for tuition fees, OR for other operating income, and EI for external income through research grants and contracts, etc.

The budget for operating expenditures of the university (OE), on the other hand, is expressed as

$$OE = PC + EC + XC = OI \quad (2)$$

where PC stands for personnel costs, EC for teaching and research costs other than personnel costs, and XC for expenses of external funds.

Corporatised national universities have greater discretion in management, and as a consequence, there is no line-item regulation in resource allocation or budgeting to faculties and departments. This means that each national university is able to develop its own budgeting system including incentive-based or RCB. However, due to the government regulations on funding, the current situation is somewhat in the middle of traditional budgeting and RCB: in the former system all revenues are collected centrally and allocated in the form of expenditures budget to departments with no relation to sources of revenue, while in the latter system all revenues and all costs are attributed to each faculty or department.

Although research grants from the government are a major part of external income, they constitute competitive funds for specific research projects. In addition, it is unknown whether the project will be selected for funding until the start of the fiscal year. In particular, the largest competitive research fund – the grant-in-aid for scientific research (GSR) – is funded to the leader of the project by the government, not directly delivered to the university to which he or she belongs. Consequently, this part of revenue works like an RCB. At the same time, as part of public sector reform, the government has asked public institutions including NUCs to reduce personnel costs by 1% every year, such as in decreasing operating grants. This downsizing policy has led to a centralized system in which the head office controls total human resources or personnel costs, while in cost accounting system the accrued personnel costs could be attributed to the faculty or department at the university.

Consequently in budgeting, the head office of a national university centrally controls the personnel costs as a whole. Also the earmarked income for specific project like GSR is delivered to the accrued faculties without the discretion. Therefore, the target for resource allocation into faculties and departments is EC: It is distributed to faculties after reserving some part of EC as a

top-slicing budget. Of course, the reserving part composes of a source of strategic fund and operating budget for overhead departments including head office. If β is the rate of top-slicing, $(1-\beta)EC$ is firstly allocated to faculties. Then a part of top-sliced (γ) is re-distributed to faculties as a strategic or discretionary budget of the university. Accordingly, the allocated budget to faculty i (R_i ; $i=1, \dots, m$; m =number of faculties) is as follows.

$$R_i = [\alpha_i(1-\beta) + \beta\gamma_i]EC + XC_i \quad (3)$$

where α_i denotes the share of faculty i in basic operating expenditures budget, γ_i for redistribution ratio of faculty i , and XC_i for expenditures of the faculty i financed by external fund.

$$\text{Here, } \sum \alpha_i = 1 \quad (0 < \alpha_i < 1) \quad (4)$$

$$\sum \gamma_i = \gamma \quad (0 < \gamma < 1) \quad (5)$$

On the other hand, the head office and other overhead departments have the budget (B) of the residual part.

$$\text{That is } B = \beta(1-\gamma)EC \quad (6)$$

Equation (3) shows that the budget for a faculty is determined by top-slicing policy(β), allocation standards(α), the amount of operating expenditures budget other than personnel costs(EC), and external funding accrued($EI=XC$). Here, α_i is efficient of allocation for basic teaching and research activities of faculty i , while γ_i is the coefficient for strategic budget like president discretionary expenditures budget.

Therefore we can express α_i and γ_i as

$$\alpha_i = f(t_i, a_i, h_i) \quad (7)$$

$$\gamma_i = g(p_i, s_i, o_i, e_i) \quad (8)$$

where t is the number of students, a is the number of staff, h is the character for faculty, p is the performance, s is the cost savings, o is the earned income, e is the external income and i means the faculty i . Here $\frac{\partial g}{\partial p} > 0, \frac{\partial g}{\partial s} > 0, \frac{\partial g}{\partial o} > 0, \frac{\partial g}{\partial e} > 0$.

Each faculty seeks to increase R which will be used for teaching and research, because higher academic activities and outcomes shall be accompanied by larger resources.

When we look at equation (3), for faculty i , β , α_i and EC are predetermined by the head office given the enrolled students, staff and character. The faculty will make an effort to increase γ_i and XC_i . However, to what extent the faculty staff responds to the budget policy will depend on not only the relative strength of $\beta\gamma_i$ to $\alpha_i(1-\beta)$ but also the relative weight of the first term ($=[\alpha_i(1-\beta) + \beta\gamma_i]EC$) to the second term ($=XC_i$). Hence we have the following two hypotheses.

H1a: The impact of incentive-based or performance-oriented budgeting will be determined by not only the relative strength of the new system to the traditional or basic part of the budget, but also to what extent each faculty can respond it.

H1b: The responsive behavior to the new scheme will vary from faculty to faculty: faculty having more earned income will be less affected, while faculty with little earned income will significantly adjust to the scheme.

When we compare equations (3) and (6), we can understand the budgets for faculties and overhead departments are determined by the university budget policy (α , β , γ), personnel costs and external income. The latter two elements are significantly affected by the government policy, because national universities are required to reduce the personnel costs in compliance with the public management reform in addition to cutting the operating grants, while the budgets for competitive research have increased recently.

As mentioned before, the operating grants are basically calculated by reducing the total amount of EC and PC from the sum of earned income other than external income. Also the law stipulates that evaluation results shall be reflected on the operating grants in the next mid-term. Further the tuition and medical treatment fees which composes of the major part of earned income are regulated by the government as a public utility. This means that the government policy will influence EC inevitably. Therefore we hypothesize:

H2: Government policy will influence the budgeting system of NUCs through governmental funding and evaluation.

The performance oriented or incentive based budgeting uses performance indicators to specify the coefficient(γ) so that better performance will be transformed into larger number (measure). However, many scholars (Smith, 1996; Dixit, 2000; Fronlich and Strom, 2008) indicated, performance measures and indicators are not only biased by technical problem but also might cause unintended outcomes. For example, in case of research, the performance measurement in publishing articles blocks innovations which will search for new research themes, because of taking time "to start a steady flow of publications" (Bruijn, 2002:23) . Accordingly we hypothesize:

H3: There might be trade-offs between improving performance and higher or better performance indicators, when the PIs are inappropriate.

The downsizing policy on finance and human resources for NUCs, as mentioned earlier, has decreased the operating grants in revenue side, while in expenditure side it has so far contributed to maintain or increase the budgets for teaching and research due to larger decrease in personnel costs than operating grants¹. In other words, this situation has moved the top management toward enhancing strategic resource allocation like president's discretionary budgets. Besides the

government policy has promoted to adopt the performance and incentive oriented management into NUCs through a soft instrument (OECD, 2004b). In practice, Ministry of Education, Culture, Sports, Science and Technology (MEXT)² indicates the guidelines for performance reporting in which the NUCs shall mention about the practices of strategic management such as competitive funding within the university, setting up a discretionary budget for the president, and incentive-based or performance-oriented budgeting. Also the Evaluation Committee for NUCs at MEXT examines the performance reporting in compliance with the guidelines every year, and as a consequence, budget policy of the national universities is greatly influenced by the ministry.

On the other hand, equation (6) indicates that the operating costs for overhead departments are financed by $\beta(1-\gamma)$ EC. Here EC is significantly affected by the government policy as discussed, the discretionary factors for the university are β and γ . Comparing equations (3) and (6), there can be two combinations of β and γ : the one is large β and large γ , the other is small β and small γ . At a glance, the first option looks good since the weight of strategic allocation will increase in accordance with the government policy. However, it results in decrease of the weight for basic allocation which might conflict with the traditional collegial culture (Millett, 1962) in the Japanese higher education institutions (Yamamoto, 1999). On the contrary, if the second option will be adopted, the weight of basic allocation will increase while the strategic allocation will decrease. In this case, the power of top management will be limited in resource allocation, in addition, will contradict the government promotion policy. Hence the president's decision will be sandwiched between developing strategic management and consideration of collegial culture. Therefore we hypothesize:

H4: The discretionary expenditures budget by top management might be weakened by a president's policy respecting harmonization rather than leadership.

NUCs are a hybrid model of higher education institutions and government agencies (Christensen, 2009). It means that NUCs are prohibited to do the business for profit like private universities, just allowed to implement the activities related to teaching and research. Consequently NUCs more and more seek to external funding and to cut administrative costs other than teaching and research. However, external income is excluded in the target of resource allocation due to its earmarked money for specific activities. The president can merely encourage faculties to get external funds through an incentive system in which the more a faculty receives external income, the more the basic budget will be allocated. The resource of this incentive system is a part of strategic budget, that is, each faculty competes to obtain the fixed money by increasing external money. This means that the more a faculty receives external fund, the faculty has larger money for its activities from the basic budget, i.e. resources will be concentrated into the faculties collecting

more money. As a result, faculties having less competence in collecting external money might run short of money for activities. Also increasing external money will not always result in better outcomes, if human resources are fixed or decreased. Hence, we hypothesize:

H5: Incentive-based or performance-oriented budgeting might have an adverse effect on faculties through a zero-sum game in which faculties compete for the fixed funds.

Performance-Oriented Budgeting: The Case of a National University

Although there are a lot research on funding to HEIs, the study of institutional budgeting is quite limited due to obstacles in accessing the relevant information. However, the real impact of performance-oriented budgeting must be investigated in terms of faculty behavior, because faculties or departments of the university have greater autonomy in making efforts to acquire external money and in conducting high-quality teaching and research, even though top management has become more power to faculties and departments. As a consequence, we adopt a case study approach to the standard scaled national university³, which is composed of five faculties, four attached schools, one university hospital, 13 overhead departments including university library, and head office in terms of budget unit. The staff excluding part-time job is approximately 1650 consisting of 600 academic staff, 350 administrative staff, 600 medical and nursing staff and other staff. The enrolled full-time students amount to 6000. Before examining the implementation and outcome process, let us review the background to introducing a performance-oriented budgeting system.

Development

In budgeting for FY 2005 that is the next year after incorporation in 2004, the university introduced a performance-oriented approach. By using a top-slicing model (CIPFA, 1997), the fixed amounts were secured to incentivise cost savings for administrative expenditures and improve performance. It was a rational response to the changing environment. Government operating grants decreased year on year, and enrollment for doctoral programs at the university did not reach the capacity. On the other hand, competitive funds from the government to the national university system were increased. In this regard, following budgeting for FY 2006, the university transformed its budget policy into a more income-oriented system aiming at increasing external revenue such as GSR and research contracts. Indeed, it was expected that generating more income would complement the decrease in government basic funds (operating grants). The president's discretionary expenditures budget was expanded to assist the internal projects which might be accepted as a large research project. In addition, the performance measures of research activities which link to budgeting were changed from the number of accepted projects to the total amount of

projects accepted. The budget policy for FY 2007 clearly declared that earning more external money was positioned as the most important and urgent financial management issue for the institution.

Budgeting for FY 2007

In response to the new budgeting policy, three schemes were implemented. First, the president's discretionary expenditures budget increased from ¥100 million in FY 2006 to ¥150 million. The allocation was basically determined by internal competition through examining the proposals from faculties and departments, and final decisions were made by the president.

Second, performance-oriented budgeting was adopted as the dean's discretionary expenditures budget (total amounts are ¥35 million). The allocation has two steps. The first is allocated at a starting point based on the entrance and examination fees of each faculty. Each faculty is given a fixed amount of money (that amounts to ¥17.5 million), which is adjusted according to the shortage of entrants or enrollments and the difference of applicants compared to the previous four-year average. This means that the allocated money in advance will be reduced when entrants fall short of the admission capacity, and might increase or decrease depending on the increase or decrease of new applicants. The second (¥17.5 million) is an additional allocation in the interim period based on performance. The first element is the budget for cost savings amounts to ¥12.5 million. The effort for savings is measured by the difference between the maximum or target, and the actual level achieved. The faculty that saved larger expenditures against the target in comparison with other faculties could be allocated more money. The second element (¥5 million) is performance related part which is measured by the number of students enrolled against enrollment capacity, completion of a master's degree, number of education programs which were successfully selected, and the amount of GSR and external funding granted. Each faculty is given a standardised point by item, then the score is adjusted by actual performance (see the Appendix for details). For example, in terms of student number, one point is added when the enrollment rate exceeds 100%, there is no adjustment when the rate is between 90 to 100%, and one point is deducted when the rate is below 90%.

Third, an incentive system was introduced to the basic teaching and research expenditures budget for each faculty. The objective is to increase external funding from the government and is related to performance-oriented budgeting. Fulltime academic staff is eligible to receive fixed amounts of money for academic activities from the head office. However, in order to promote external funding, those who do not apply for GSR, receive the core or basic budget for teaching and research reduced by 10%.

Outcomes

The president's discretionary expenditures budget is basically an internal competitive funding for each faculty, although some part of it is directly allocated at the president's discretion. In the budget of FY 2007, applications for 72 projects were received and 48 proposals were selected

(success rate is 66.6%), while direct allocation amounted to ¥23.985 million ($23.985/150=16\%$). Table 1 shows the budget structure by faculty.

The first group consisting basic teaching and research is a formula based budgeting item which corresponds to the first term of equation (3). The second group composed of president's and dean's discretion is a performance and program oriented budgeting item, which corresponds to the second term of equation (3). The third group consisting of special grant, GSR and external fund is a competitive funding accrued to the faculty: the special fund composing a small part of operating grants is a segmented competitive project scheme in which proposals of national universities are selected. This group corresponds to the third term of equation (3). From the table, we can see that the actual distribution among large faculties is essentially identical to that of the basic research expenditures budget: the share of faculties C and D in basic research is respectively 43.4% and 25.2%, while in case of president's discretion the respective shares are 39.2% and 25.2%. This means that allocations made at the president's discretion were generally based on organizational balance or equity rather than strategic decision making.

Table 1. Budget Income by Faculty (FY 2007, thousand yen)

Faculty	Basic teaching	Basic research	President's discretion*	Dean's discretion**	Special grant	GSR	External fund	Total
A	38,807	47,714	9,062	48,987	9,958	19,600	20,795	194,923
B	41,850	23,909	15,780	9,391	2,137	12,400	302,946	408,413
C	44,491	100,772	30,550	106,271	59,000	92,150	887,893	1,321,127
D	85,698	58,593	19,640	46,914	2,265	86,100	320,082	19,292
E	2,714	1,026	2,850	3,616	3,558	1,200	650	15,641
Total	252,753	232,014	77,882	215,179	76,918	211,450	1,532,366	2,559,396

A: Humanities, B: Social Sciences, C: Medicine, D: Engineering, E: Interdisciplinary.

*Total president's discretion budget amounts to ¥150 million. The other part allocated to faculties was distributed to head office and other overhead departments.

**The dean's discretion includes the directly distributed money to faculties by the head office other than ¥35 million.

On the other hand, as mentioned before, half of the ¥35 million was appropriated for increasing earned income in order to ensure satisfactory entrance and examination fees in the FY 2007 budget. In this case, only Faculty C fell short of the enrollment capacity, whereas examination fees fell below the average level in the four faculties other than the Faculty C. Accordingly, actual distribution to facilities was as shown in Table 2. Here the adjustment for entrance fees is calculated by shortage of enrollment fees multiplied by the coefficient (0.05~0.20) depending on the shortage rate. Likewise when the application rate is lower (larger) than four year average, the decreased (increased) examination fees multiplied by the coefficient (0.1) are negatively (positively) adjusted

(D in the Table 2). However, since the large part of the dean's discretionary expenditures budget is not strongly related to the level of fees, the impact is marginal. The impact of adjustment on budgeting is quite small (max=1.86%) other than Faculty B (10.55%).

Table 2. Budget Reflection of Ensuring Fees in Dean's Discretion (FY 2007)

Faculty	Appropriation for ensuring fees(A)	Others (B)	Adjustment for entrance fees(C)	Adjustment for examination fees(D)	Budget amount (A+B+C+D=E)	(C+D)/(E) %
A	3,900,000	41,292,000	0	-3,000	45,189,000	0.006
B	3,900,000	784,000	0	- 447,000	4,237,000	10.55
C	3,900,000	100,710,000	-1,917,000	0	102,693,000	1.86
D	3,900,000	39,626,000	0	-77,000	43,449,000	0.17
E	1,900,000	216,000	0	-5,000	2,111,000	0.23
Total	17,500,000	182,628,000	-1,917,000	-532,000	197,679,000	1.23

The second part of dean's discretionary budget which encourages actual administrative expenditures to be below the targeted level was appropriated. Total amount of ¥12.5 million was distributed to faculties in accordance with the effort level for savings except in the case of Faculty E where ¥0.9 million was directly allocated. The distribution rate of each faculty is based on the savings effort which composes of the standardized point ($25=100/4$) and reducing point. The reducing point is calculated by dividing the difference between targeted and actual usage by the target. Therefore latter point might be negative when actual expenditures exceeded the target, although the total is zero. Table 3 shows the reflecting result of the cost savings in FY 2007 budget.

Table 3. Budget Reflection of Cost Savings (FY 2007)

Faculty	Appropriated fund	Distribution (%)	Allocated money	Impact*
A	11,600,000	24.9	2,888,000	-12,000
B		34.0	3,944,000	1,044,000
C		23.0	2,668,000	- 232,000
D		18.1	2,100,000	-800,000
E	900,000	-	900,000	-
Total	12,500,000	100.0	12,500,000	0

*The impact is the difference between the allocated money and equal distribution.

The third part of dean's discretionary expenditures budget which amounts to ¥5 million is related to performance. Each faculty, as discussed earlier, is awarded some points when it has shown a good performance, such as obtaining a large amount of external money (see Appendix). The appropriation was distributed to faculties in accordance with the points awarded. For example,

Faculty A has six points which consists of 1 point on enrollment of undergraduate students, 1 point on enrollment of graduate students, 2 points on completion of master program, 1 point on external funding other than GSR, and 1 point on GSR. The points on competitive fund for education program and international students are zero. As a result, the distribution rate to Faculty A is 6/33 (=18.2%) and ¥910,000 ($=5,000,000 \times 0.182$) is allocated.

Table 4. Budget Reflection of Performance in Dean's Discretion (FY 2007)

Faculty	Appropriated fund	Points	Distribution (%)	Allocated money	Impact*
A	5,000,000	6	18.2	910,000	-90,000
B		8	24.2	1,210,000	210,000
C		6	18.2	910,000	-90,000
D		9	27.3	1,365,000	365,000
E		4	12.1	605,000	-395,000
Total		33	100.0	5,000,000	0

*The impact is the difference between the allocated money and equal distribution.

Finally, the basic research expenditures budget has a sort of deduction system where academic staff of each faculty does not apply to GSR. Firstly, ninety percentage of the standard appropriation for basic research which multiplies the number of academic staff and unit cost is allocated to each faculty. Then ten percent of the standard appropriation for research is distributed to faculties according to the ratio of applicants in the faculty to the total applicants. In other words, it is a negative economic incentive system in allocating core academic expenditures budget to each faculty and department, neither strategic allocation such as president's discretionary budget nor ex post performance related system. AS shown in Table 5, among five faculties, due to relatively lower application rate than those of faculties D and E, faculties A and B are negatively adjusted, while the other departments are positively adjusted.

Table 5. Budget Adjustment of Applications for GSR in Basic Research (FY 2007)

Faculty	Appropriation(F)	Adjustment for application(G)	F+G	G/F
A	48,811,000	- 1,097,000	47,714,000	- 2.24 %
B	24,159,000	- 250,000	23,909,000	- 1.03
C	100,183,000	589,000	100,772,000	0.58
D	57,553,000	1,040,000	58,593,000	1.80
E	996,000	30,000	1,026,000	3.01
Total	231,702,000	312,000*	232,014,000**	0.13

*Due to adjustment for other departments such as the information center, the sum of adjustments for the five faculties is not zero like in Tables 3 and 4.

**The amount equals to the total of the second column in Table 1.

Analysis and Discussion

The gross amount of current budgeting excluding external funds was ¥24.0 billion (including personnel costs and other operating costs like hospital expenditures) in FY 2007, while the performance or incentive oriented budgeting amounts to at the most ¥200 million. Therefore, the relative weight of incentive and performance mechanism to the total funding is quite small ($200/24000=0.833\%$). The impact, however, differs by faculty: the ratio of gross difference of the four schemes (ensuring fees, saving costs, reflecting performance and incentive allocation) to basic teaching and research expenditures ranges from $-9.82\% (= -370/[2741+1026]$:Faculty E) to $0.847\% (= 9571/(41850+23909)$: Faculty B). If we will exclude Faculty E having just two permanent academic staff due to considering the scale effect, the ratio ranges from -1.389% to 0.847% . This indicates the impact is so far marginal, and H1a is generally supported.

As shown in Table 1, however, the weight of competitive funds to total funds varies from faculty to faculty. In the case of Faculty C, external funding constitutes 74% of the total revenue, and the incentive- and performance-related factors in allocating revenues budget, therefore, have little influence on the total revenue ($-0.085\%^4$). Although Faculty A depends on external funds amounting to 20% of the total revenue, the impact is slightly negative to the total revenue ($-0.712\%^5$). Consequently, H1b is rejected.

The university has changed the performance-oriented budgeting in several ways every year since incorporation. One example is the change in the performance indicators used for external funds. From FY2004 to FY2006, the performance indicator for external funds was the number of external funds. However, as the Evaluation Committee for NUCs in the MEXT has used the amount of external funds in its annual evaluation, the measure was transformed into the earned income through external funds in the FY2007 budget. Therefore, H2 is confirmed.

Performance indicators must be developed and used so that they may motivate faculties to improve performance, while performance indicators need to encourage staff to move efforts on funding. From this perspective, the incentive-based performance indicator, that is cost savings in administrative expenditures over the target, looks suitable. However, the administrative expenditures for each faculty are lighting and heating expenses incurred through teaching and research activities. Academic activities are characteristic of a resource consuming in which higher activity leads to higher expenses. This means that the actual administrative expenditures might exceed the target when the academic activities are beyond the expected or planned level. In fact, Faculty D of the faculties failed to achieve the target of cost savings owing to its active research which took actual expenditures above the target. In practice, although Faculty D has the highest number of the total points (9/33) in performance evaluation, the effort level in cost savings of administrative expenditures is the lowest of the total (23.1/127.9). The vectors of evaluation are

opposite to each other, and thus, H3 is supported.

The genuine discretionary part which the president could directly decide and allocate was just 16% of the president's discretionary expenditures budget. Consequently the larger part is devoted to the internal competitive fund of research and education projects within the predetermined framework, although the final decision is made by the president. In practice, the share and ranking of each faculty in the president's discretionary expenditures budget is similar to those in basic research, while the ranking and order of Faculty A is contrary to Faculty B. Consequently, H4 is generally confirmed.

Performance-oriented budgeting is, in theory, related to performance level or performance improvement. This means that every budget unit could be allocated more resources if all units accomplish the targets or meet standards. However, NUCs are unable to allocate more funds to all faculties even if all units show maximum or targeted performance, because good performance by itself does not necessarily produce more income like companies. The budget as a partial reflection of the performance evaluation is ensured beforehand as indicated in Tables 3 and 4. Accordingly, the performance oriented budgeting is considered an allocation of a fixed amount of money to faculties.

The data from performance indicators show that the university's performance and activities have been improved or at least maintained by the adoption of incentive-based and performance-oriented budgeting, which started in the new scheme of FY 2006. The completion rate increased from 89.1% in 2005 to 94.4% in 2006⁴. The total amount of external funding other than GSR doubled in 2007 (¥1,531 million from ¥774 million in 2006). The GSR also increased in 2007 to ¥211.45 million, from ¥170.5 million. The number of competitive funds for good practices in education⁶ has remained at one since FY 2006 and is therefore stable. The number of international students is also little changed. In addition, the number of applications for GSR also increased to 138 in FY 2007 from 120 in FY 2006 after the introduction of the negative incentive system in which the basic research fund shall be cut unless the faculty members apply for it. As a consequence, it seems that the incentive system works well.

When we turn to the performance in terms of outcomes in Faculty C, however, the numbers of articles and books published has decreased somewhat since FY 2004 (658 in FY2004 to 532 in FY 2007) by contrast to an increase in external funds. This means that H5 is partly supported. The fact gives us lessons that the impact through a new scheme like performance oriented or incentive budgeting has to be evaluated in multiple and long term perspectives.

Conclusion

This paper has explored the development and implementation of performance-oriented

budgeting in the case of a Japanese national university. With the corporatisation of national universities, the funding and budgeting system has changed significantly; from line-item to global funding, and from incremental to performance-oriented budgeting as internal resource allocation. The transformation was caused by NPM and higher education reform across the nation. Considering the dual nature of the national university as a public entity and a higher education institution, we can predict that the transformation will entail difficulties. The element of it being a public entity narrows the resources available for rewarding good performers due to the consuming economy in the public sector. On the other hand, higher education is not simply a joint product of teaching and research but a co-production between staff and students. Therefore, performance measurement by activity or function is not an easy task, especially since it is difficult to separate the activities into programs.

Despite the associated constraints, the NUCs introduced performance-oriented budgeting with the encouragement of the government. The reasons behind the adoption can also be explained by the dual character of the NUCs. The fiscal stress of the government has reduced public funding to the NUCs as public entities, as well as required them to cut personnel costs. The spending cuts in public finance drove the NUCs to seek funding from the private sector and competitive funds from the government. In the funding formula, the operating grants are calculated by deducting earned income excluding external funding from the operating expenditures. Accordingly, each national university strives to acquire more competitive funds such as GSR and to save administrative expenditures. However, as indicated in the case study, the linkage between resource allocation and performance measurement within the university is limited in amount and strength, because the president's power in resource allocation has not been directly extended over the external money delivered to faculties, even though he or she has greater discretion in management after incorporation.

Besides, since personnel costs account for the larger part of expenditures in HEIs, the resources the president uses for the incentive system are relatively small. If the president intends to adopt a strategic allocation policy for all resources, the faculties or departments might not work fully in teaching and research due to the inevitable shortage in resources in some faculties. Evidently the incentive-based or performance-oriented system in which faculties showing better performance receive more money has, as expected, promoted greater earning from external funding as a whole. However, the dependency on external money differs from faculty to faculty. The weight and amount of incentive- or performance-based allocation are so far small against core- or eligible-based allocation. Consequently, the new scheme thus far has little affected the results of budget resource allocation in monetary terms, although it might have influenced the behavior and attitudes of faculty staff.

This article contributes to the study on public financial management by examining the entire

process of performance-oriented budgeting at institutional level where few such empirical studies exist. Generalization of the results has to, of course, be cautious even though a typical national university was selected as the subject of this case study. Also the impact of university reform takes a long time, while this study has focused on 4 years after corporatization. So, we must further investigate the following issues. First, we should examine how performance-oriented budgeting impacts on teaching and research other than funding behavior at faculty level. Second, since the supporting departments and head office play a major role in higher education services, the relationships between the indirect or supporting and academic departments should be explored. Third, national universities have two sides to their character composed of a public entity and a HEI, therefore whether the findings are specific to either should be examined. Fourth, as mentioned in the previous section, there might be conflict between the interests of head office and faculties. It will be therefore useful to interview the presidents, deans and academic staff on attitudes and behaviors. Fifth, we have to investigate the impact in a longitudinal way, whether expected and unexpected outcomes. Finally, other types of HEI (private universities) in Japan and other nations should be examined in relation to institutional budget reform and its impacts determined from an international comparative perspective.

Notes

1. From the incorporation in 2004 to 2008, for the national university system, the personnel costs (excluding part-time workers) decreased from ¥1113 billion to ¥1062 billion while the operating grants from ¥1087 billion to ¥1055 billion. By contrast the teaching and research costs increased from ¥283 billion to ¥359 billion.
2. MOE and the Science and Technology Agency were merged into MEXT in 2001.
3. The study was done under the condition of anonymous treatment for budgeting of FY 2005 to FY2007. Hence, the university and faculty names are not indicated.
4. $(-1,097 - 3 - 12 - 90) / 194,923 = -0.712\%$
5. $(589 - 1,917 - 232 - 90) / 1,321,127 = -0.085\%$
6. The latest figures in 2007 are the actual result in 2007. So, the data in 2005 and 2006 are compared.
7. This is highly competitive, and the successful rate is 10 to 15 %.

Appendix Points based on Performance Measurement

Item	Measurement and Point
Enrollment of undergraduate students/Capacity =EU	EU>100%=1, 90<EU<100=0, EU<90= -1
Enrollment of graduate students/Capacity =EG	EG>100%=1, 90<EG<100=0, EG<90= -1
Completion rate of master degree program =CR	CR>Average CR=1, 0.9 Average CR<CR<Average CR=0, CR<0.9 Average CR= -1, CR>1.1 Average CR=2
External funding other than GSR =EF	EF>Average EF=1, 0.9 Average EF<EF<Average EF=0, EF<Average EF= -1, EF>1.1 Average EF=2
GSR	GSR>Average GSR=1, 0.9 Average GSR<GSR<Average GSR=0, GSR>1.1 Average GSR=2, GSR<0.9 Average GSR= -1
Competitive fund for education program =GP	Selected=3, Non-selection=0
Number of International Students =IS	IS>Average IS=1, IS<Average IS=0

References

- Andresami, G. and E. Ferlie (2006). "Studying Governance within the British Public Sector and Without: Theoretical and Methodological Issues", *Public Management Review*, Vol.8, No.3, pp.415-432.
- Bernheim, B.D. and M.D. Whinston (1986). "Common Agency", *Econometrica*, Vol.54, No.4, pp.923-942.
- Bruijn, H.D. (2002). *Managing Performance in the Public Sector*, London: Taylor & Francis.
- Burke, J.C. (2002). *Funding Public Colleges and Universities for Performance*, New York: The Rockefeller Institute Press.
- Christensen, T. (2009). "University Governance Structure – An International Comparative Perspective on the Japanese National Universities". Working Paper, The Center for National University Finance and Management.
- CIPFA (1997). *Resource Allocation Models in Further and Higher Education: A Compendium*, London: CIPFA.
- Dixit, A. (2002). "Incentives and Organizations in the Public Sector. An Interpretative Review", *Journal of Human Resources*, Vol.37, No.4, pp.696-727.
- Fronlich, N. and B. Strom (2008). "Higher Education Funding and Incentives: Evidence from the Norwegian Funding Reform", *European Journal of Education*, Vol.43, No.4, pp.563-576.
- Holmstrom, B. and P. Milgrom (1991). "Multitask Principal-Agent Analysis: Incentive Contracts, Asset Ownership, and Job Design", *Journal of Law, Economics and Organization*, Vol.7, Sup. pp.524-552.
- Itoh, A. (2002). "Higher Education Reform in Perspective: The Japanese Experience", *Higher Education*, Vol.43, pp.7-25.
- Millett, J.D. (1962). *The Academic Community*. New York: McGraw-Hill.
- OECD (2004a). *On the Edge: Securing a Sustainable Future for Higher Education*, Paris: OECD.
- (2004b). *Communicating Environmentally Sustainable Transport: The Role of Soft Measures*, Paris: OECD.
- (2005). *Modernizing Government: The Way Forward*, Paris: OECD.
- Paradeise, C., E. Reale, I. Bleiklie and E. Ferlie (2009). *University Governance. Western European Comparative Perspectives*, Milton Keynes: Springer.
- Pollitt, C. and G. Bouckaert (2004). *Public Management Reform: A Comparative Analysis*, Oxford: Oxford University Press.
- Priest, M.D., W. E. Becker, D. Hassler, and E.P. St. John (2002). *Incentive-Based Budgeting in Public Universities*, Cheltenham and Northampton: Edward Elgar.
- Redburn, F.S., R. J. Shea and T.F. Buss (2008). *Performance Management and Budgeting: How Government Can Learn from Experience*, New York: M. E. Sharpe.
- Shattock, M. (2008). "The Change from Private to Public Governance of British Higher Education: Its Consequences for Higher Education Policy Making 1980-2006", *Higher Education Quarterly*, Vol.62, No.3, pp.181-203.
- Smith, P. (1996). "On the Unintended Consequences of Publishing Performance Data in the Public Sector", *International Journal of Public Administration*, Vol.18, Nos.2/3, pp.277-305.
- Teixeira, P., B. Jognbloed, D. Dill and A. Amaral (2004). *Markets in Higher Education: Rhetoric or Reality?*, Dordrecht: Kluwer Academic Publishers.
- Wilson, J. Q. (1989). *Bureaucracy: What Government Agencies Do and Why They Do It*, New York: Basic Books.
- Yamamoto, K. (1999). Japan: Collegiality in a Paternalist System" in D. Farnham (ed.). *Managing Academic Staff in Changing University Systems*, Buckingham: Open University Press.
- (2008). "Governance and Management of National University Corporations in Japan" in T. Aarrevaara and F. Maruyama (eds.). *University Reform in Finland and Japan*, Tampere: Tampere University Press.