

# **Higher Education Policy and Corporatisation of National Universities in Japan: Impact on Funding and Management**

Kiyoshi Yamamoto

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**Kiyoshi Yamamoto \***

## **1 . INTRODUCTION**

Higher education policy and management in Japan have turned into a new phase in sector and institutional levels. The big change was presented by the Education Minister, Ms. Atsuko Toyama as the Structural Reform Policies for Universities in June 2001. The policies, called “Toyama Plan” proposed three reforming schemes, restructuring and merger of national universities, introducing business management methods into national universities, and adopting a competitive principle in universities by using third party evaluations.

These schemes were evidently influenced from the global movement towards marketisation and managerialism in higher education (Amaral et al, 2003; OECD, 2004), although it was directly the reaction of the Education Ministry to the Structural Reform Agenda under the strong leadership by Prime Minister, Mr. Junichiro Koizumi. The Council on Economic and Fiscal Policy chaired by Prime Minister firstly mentioned in Structural Reform of the Japanese Economy: Basic Policies for Macroeconomic Management of 2001 that the idea of the new public management (NPM) should be considered in order to promote the administrative reform. Corporatisation of national universities is considered the development of Toyama Plan. However, the new schemes have two meanings for the same term. The Education Ministry stressed the reforming for the universities, while the Prime Minister and the Ministry of Finance regarded it as the structural reform in higher education for prioritizing and increasing efficiency and effectiveness like in other fields.

Of course, the Education Ministry also recognized the necessity of reform in higher education for a long time. Through corporatisation, the Ministry expected enhancing autonomy for national

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universities would promote the international competitiveness. Although the Plan seemed to be a drastic change of higher education policy, the options for Education Ministry were quite limited due to massification in higher education, demographic change of decreasing 18 years old population, and fiscal stress. The maturing higher education services naturally lead to restructuring national universities. At the same time, universities were expected to have a greater economic role as engine of growth by not only the Education Ministry but also the Ministry of Economics, Trade and Industry (METI). Accordingly, it was not surprising that the Toyama Plan was very similar to the statement by the Minister of Economics, Trade and Industry, Mr. Hiranuma, which was called Hiranuma Doctrine and published in May 2001.

In 1980s, the Ad Hoc Council on Education already proposed educational reforms in four perspectives: liberalization, diversification, internationalization, and flexibilisation. As Okada (2005) indicates, liberalization involved proposals for competition, diversification means the introduction of ability streaming into the system, internationalization includes the provision of education with a global perspective, and flexibilisation means more parental choice. Consequently, it is appropriate that corporatisation of national universities was not happened suddenly but the long-cherished reform agenda was triggered by external and internal factors.

The process of corporatisation has been studied by many scholars (Yamamoto, 2004), since the establishment in 2004, there is however few empirical research on the outcomes, especially whether or not the intended results have been produced through a pressured route, is not found. In this perspective, this paper analyses the results of corporatisation and whether the proposed schemes have worked well. Before moving into the main issues, the next section briefs the framework of national university corporations (NUCs). The third section sets up the theoretical hypotheses, then explains the methodology and the data used. The fourth section shows the findings and discussion by testing the hypotheses. Finally, the last section is dedicated to conclusion and future research issues.

## 2 . FRAMEWORK OF NUCs

### *Performance Management*

Each national university is required to prepare a draft of medium-term (six years) goals in enhancing the quality of academic activities, improving operations and efficiency, finance, and ensuring accountability to the public. The Education Minister shall stipulate the goals, taking into account the draft submitted. Based on the medium-term goals, each university shall prepare the draft for the medium-term plan which will be approved by the Minister, also will prepare the

annual plan submitted to the Education Ministry.

The performance of NUCs is periodically evaluated by the Evaluation Committee for National University Corporations. Every year the Committee examines the progress of achieving the goals. At the end of the term, the Committee completes a comprehensive evaluation whose results will be linked to funding from the government for the next medium-term.

#### *Personnel Management*

The selection committee made up of members of both the administrative council and the academic council shall nominate the candidate who will be appointed by the Education Minister as the president. The president shall make final decisions and have ultimate responsibility. The board of directors comprises of vice-presidents and other external persons other than the president. The executive members other than auditors are appointed by the president. Other employees such as academic and administrative staff working under the former system were transformed from civil servant into non-civil servants. In addition, a performance related pay system is applied to all employees including executives.

#### *Financial Management*

NUCs receive two types of financial supports from the government, operating grants for current expenditures and subsidies for capital expenditures. The grants are delivered in compensating the deficits which are difference between current expenditures and own revenues by university. NUCs have full discretion in using the operating grants, by contrast to line item or input based budget control in the previous system. Also the unspent operating grants are able to carry over to the next year. On the other hand, the flexibility of the subsidy is fairly constrained. The accounting adopts an accrual basis, which corporate accounting is partly modified, while budgeting remains a cash basis. The financial statements are audited by accounting firms in addition to examination by the Board of Audit (National Audit Office).

### 3 . METHOD

#### *Theoretical Hypotheses*

The system of National University Corporations was, as mentioned earlier, designed by using the Toyama Plan as the guideline. In order to present the hypotheses for testing, we need to investigate the presumed theoretical causal relationships between the planned and the intended outcomes. Firstly, the restructuring and mergers of national universities have two supposed scenarios. The one is that restructuring would respond to the changing social and industrial needs towards national universities. The expectation gap is expected to be resolved by scrapping and building the departments. The other is to seek economies of scale by consolidating or merging the

universities. It is expected that the overhead costs such as head office or administration and the unit cost of teaching given some conditions will be saved through consolidation, owing to these costs have a character of fixed costs. The former is come from policy perspective, while the latter from management principle.

Secondly, the introducing business management methods also have two perspectives. From the policy perspective, it is expected that business management methods such as corporate accounting and management by objectives will transform the married culture with collegial and bureaucratic character into more result-oriented and innovative organizational culture. On the other hand, in the institutional level, it is supposed that strategic resource management and performance related pay system would improve performance by promoting efficiency, effectiveness and quality. Evidently, the assumptions are based on the principles of NPM, in which giving much autonomy in operations in exchange of strengthening accountability for results will improve performance.

It is presumed that outcomes of higher education services are measurable in a quantitative term in spite of the character in combined services of teaching and research. In addition, it is assumed that economic incentive would motivate the staff to work harder: the higher wage or reward the staff, the harder they work. However, there is the opposite opinion in which business management tools do not work in case of higher education like in the public sector, because the aims of higher education institutions are neither profit seeking nor measurable in an objective way except for profit private universities. Besides, in financial management system, the prior research (Pfeffer and Moore, 1980; Pfeffer and Slancik, 1974) indicates resource allocation or budgeting in universities is not rationally determined but a political process, although NPM is considered a rational model. Accordingly, the formula of operating grants might significantly affect the resource allocation within universities, as many studies (Berry, 1994; Massy, 1996; Lopez, 2006) found in universities. Therefore, it is uncertain whether the intended outcomes would be caused by adopting the business methods into the national universities. In personnel system, performance related pay system will expand the reward dispersion. Pfeffer and Langton (1993) however showed that the greater the degree of wage dispersion within academic departments, the lower is individual faculty members' satisfaction and research production, namely the negative effect. In this regard, the performance of the institution might decrease as a whole.

Thirdly, the introducing competition into universities is to aim at linking government funding with performance evaluation by the third party. Competitive funding has been growing in amount by contrast to decreasing in public funding for current expenditures. It might be said that the change will strengthen the movement. Theoretical background lies in the market mechanism which

makes providers to promote efficiency and quality of services in order to win the competition. After the announcement of the Toyama Plan, the Program for Center of Excellence started in 2002, which was a competitive research funding for the study group in the same university. The research funding policy affects the internal allocation system for research fund. Many national universities have already adopted an incentive system for research money financed from the operating grants in which the more apply or get the competitive fund, the greater the allocated money from the internal fund for the staff. The incentive system also presumes that the effort in seeking the competitive fund for academic staff will increase the total revenue for the university.

The above considerations give the following hypotheses.

- Hypothesis 1 (H1) : When universities become larger in size, the unit costs are more likely to be decreased.
- Hypothesis 2 (H2) : The use of performance related pay system will lead to improving performance.
- Hypothesis 3 (H3) : Resource allocation within universities will be greatly influenced by the government funding model.
- Hypothesis 4 (H4) : The higher the ratio of competitive funding among total funding, whether in sector level or institutional level, academic activities will be enhanced while substitute effect between competitive and basic funds would weaken the impact.

### *Data, Measures and Methods*

The data used in this analysis are drawn from the annual reports, financial statements and some supplementary documents including the information of personnel costs, which every national university is required to publish in terms of public accountability. We examine the hypotheses using bivariate analysis except for H1. As described earlier, it is difficult to not only measure the performance of higher education institutions objectively but to identify what factors affect the outcomes. Also, there are several variations in activities among national universities. When we classify national universities into some groups, the sample number is not enough to implement multivariate analysis by group.

If we test the hypothesis 1 in teaching costs, the total costs have to be separated into teaching, research and administration costs. However, since higher education services have a character of joint product of teaching and research, the separation of costs inevitably involves some biases or

manipulations. In practice, personnel costs are just measured in total, not divided into functions like operating costs, which are classified into teaching, research, supporting and medical treatments according to the accounting standards for national university corporations. Therefore we exclude teaching costs and test H1 in case of the administrative, supporting for teaching and research costs, which appeared in the financial statements. The measure of scale was the number of students.

Further, even if national universities would be divided into some groups, the performance, costs and management of universities would be determined by the composition of departments. Despite the stipulation of segment reporting in the standards, however, for the time being, each university is just required to publish the segment information that divides the financial information into the university hospital and others. As a result, we test the hypotheses 2, 3 and 4 in management and finance by institution, not department.

To test the hypothesis 2, we analysed the relationship between pay difference and performance for academic staff. However, in the first year 2004 NUCs adopted the former seniority system in which the wage level of academic staff was subject to the wage table determined by the National Personnel Authority. This means that pay difference is mainly caused by the age and position such as professor, associate professor or lecturer, not performance. Consequently we used the data of bonus payment in the report on personnel costs, that is, the difference in the appraisal part of bonus. The performance of academic staff was represented by the competitive research fund per staff owing to the data constraints, although the measurement excludes the performance of teaching.

The resource allocation in the hypothesis 3 was examined in the relationship of actual funding and formula based funding for the university hospitals. Here the operating grant for university hospital based on formula funding is calculated by adding the expenses of medical treatments for teaching and research to the deficits<sup>1</sup> in the standard year. The data was adopted from the segment information in the financial statements and the budget documents. As for the hypothesis 4, the data on competitive and basic funds were also used from the financial statements, while the academic activities were measured by the competitive fund per academic staff.

#### 4 . FINDINGS AND DISCUSSION

In order to test the hypothesis 1, we estimate the following administrative costs and supporting costs for teaching and research with regression model<sup>2</sup>.

$$CA_i = \alpha_0 + \alpha_1 X_i + \alpha_2 X_i^2 + \alpha_3 F_i + \alpha_4 A_i \quad (1)$$

$$CS_i = \beta_0 + \beta_1 X_i + \beta_2 X_i^2 + \beta_3 F_i + \varepsilon_i \quad (2)$$

Where CA is the administrative cost, CS is the supporting cost;  $\beta_0, \beta_1, \beta_2, \beta_3, \varepsilon_i$  are the coefficients for the independent variables; X represents the number of students as the scale measure; F is the number of faculties;  $\varepsilon_i, \varepsilon_i$  are the error terms.

And the unit of analysis i is the national university.

In Equations (1) and (2),  $X_i^2$  represents non-linear impact on the costs,  $F_i$  is the control variable for the costs taking into account of economies of scale. The results with OLS regression are presented in Table 1. In case of the administrative costs, the coefficients for X and F are not statistically significant, while the coefficient for  $X^2$  is significant at  $p < 0.01$ . Therefore the unit cost of CA is the increasing function of X. Also the constant factor is not significant. Obviously the finding conflicts with the hypothesis 1, where it is supposed that the unit cost will decrease with the number of student (X).

In case of the supporting costs, the coefficient for neither X nor F is not significant as in CA. On the other hand, the coefficient for  $X^2$  is significantly positive at  $p < 0.01$ , and the constant factor is also significant at  $p < 0.01$ . Accordingly, the unit cost of CS is increasing function of X. This is inconsistent with the hypothesis 1. Consequently, the hypothesis 1 was not supported.

Table 1. Results of Regression Analysis

Variable	Administrative Costs		Supporting Costs	
	Coefficient	t-value	Coefficient	t-value
X(student)	62.523	1.366	5.401	0.142
$X^2$	0.0054	3.743**	0.0061	5.181**
F(faculty)	-22580	0.506	-60118	1.670
Constant	181058	1.390	292401	2.780**
$R^2$	0.7632		0.6904	
Adjusted $R^2$	0.7547		0.6792	
N	87		87	
F	89.18**		61.69**	

\*  $p < 0.05$ , \*\*  $p < 0.01$

Table 2 shows the differences between maximum and minimum percent of appraisal weight for bonus payments by group and staff. Although the pay difference is not so large, there are significant differences in average among former seven imperial universities, science and technology and large universities with hospitals, and other universities. It is worth to note that normal



universities have the least different bonus payments in both administrative and academic staff. On the other hand, the nursing staff has the smallest different payments in bonus, compared to administrative and academic staff in the same university group. The situation might be affected by the specific character in medical treatments, which team work is required.

Table 2. Differences in Bonus Payments for FY 2004

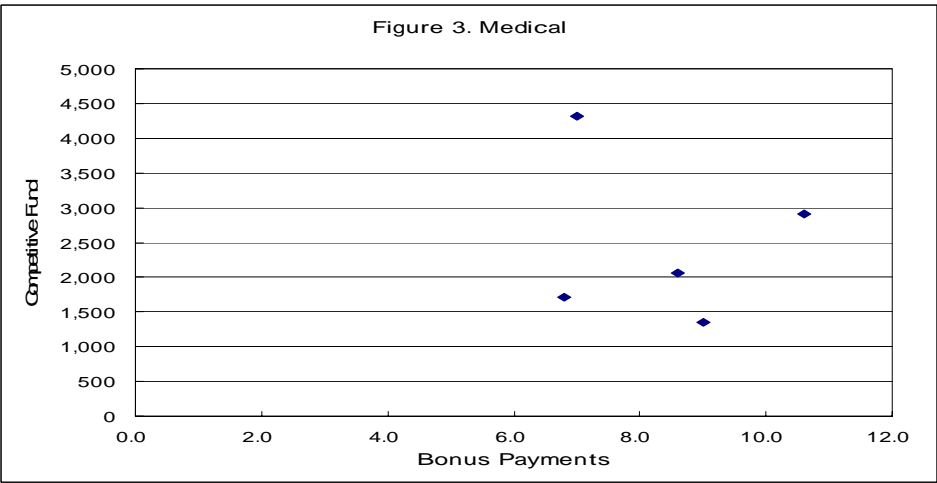
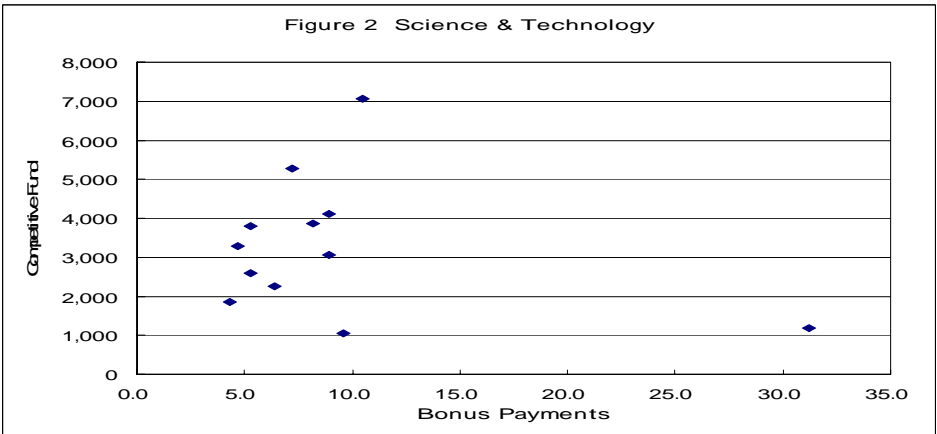
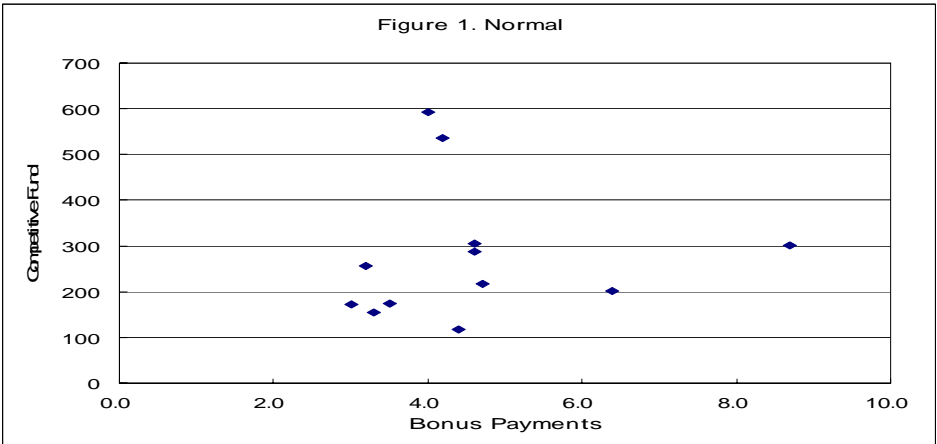
Group	Administration	Academic	Nursing
Former Imperial	12.07(3.95)	11.67(3.52)	8.85(4.40)
Normal	5.20(1.38)	4.53(1.52)	-
Science & Technology	7.05(1.96)	9.20(6.69)	-
Humanities & Social Sciences	6.78(3.05)	6.00(2.81)	-
Medical	5.96(0.34)	6.52(1.87)	5.14(1.54)
Large Univ. with Hospital	6.24(1.71)	8.42(3.99)	5.53(1.59)
Large Univ. without Hospital	5.65(1.69)	6.71(3.10)	-
Graduate Institute	7.02(2.87)	5.75(6.93)	-

Notes 1: Parentheses shows the standard deviations.

2: Former Imperial group composes of Hokkaido, Tohoku, Tokyo, Nagoya, Kyoto, Osaka and Kyusyu.

To test the hypothesis 2, we analysed the relation between the competitive fund received per academic staff and the difference in bonus payments by the university group. Taking account of university characteristics, analysis was limited to the universities holding a single faculty school or an integrated academic field, namely, normal, science and technology, and medical school.

Figures 1, 2 and 3 indicate the relationships by group. At a glance, there is no significant association between competitive funds and differences in bonus payments in either group. However in case of science and technology group if one set of extraordinary data was deleted from the sample, the competitive funding per academic staff was significantly associated with the bonus differences (correlation coefficient is 0.659,  $p < 0.05$ ).



The finding indicates that in some academic fields, performance related pay system might

improve the performance. Consequently the hypothesis 2 was partly supported.

Table 3 shows the analytical results of differences between actual funding and formula based funding for the university hospitals. Since funding is composed of the operating grants for the university hospitals and revenues from the medical treatments, the difference is determined by the allocation policy of the operating grants: the president can allocate the university hospital more than the operating grants for university hospital and the medical revenues. Reversely the allocation might be less than the funding level, because the president is given a full discretion in allocating the operating grants including those for the university hospital and own generated revenues into the activities or objectives.

The results indicate that in most of the national universities the difference between the formula based and the actual funding lies between 80 percent and 120 percent of the formula based. In just 3 universities, funding level differs more than 30 percent of the funding formula based. Therefore it can be said the formula plays a standard model for allocating resources in the university hospital, despite there is no limitation in using the operating grants. In nine universities among 42 universities having hospitals, the actual funding for university hospital was less than the formula based funding. However, the bias towards less funding was not always caused by the social background of the presidents, because 5 of 9 presidents have come from the medical doctors and 4 from other fields. Accordingly the hypothesis 3 was generally supported.

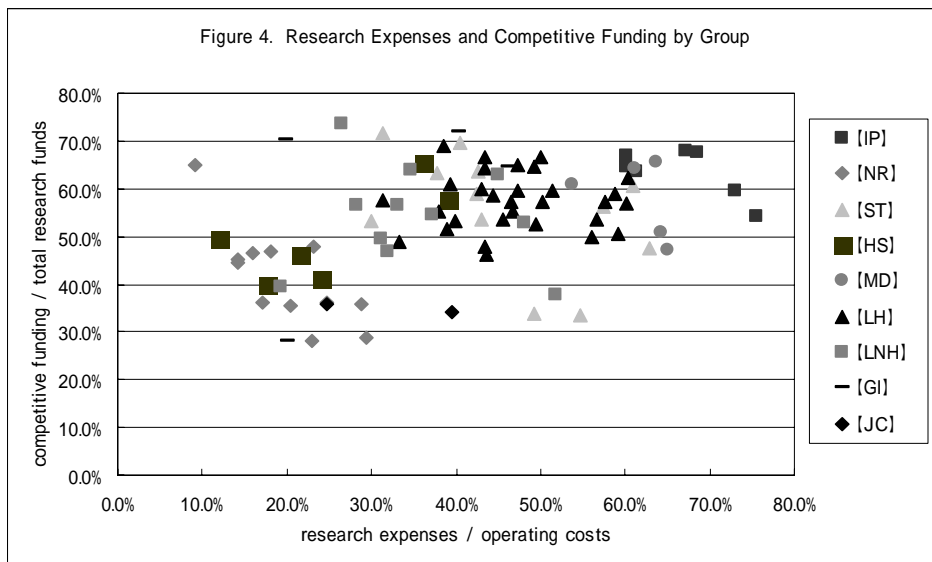
Table 3. Differences between Actual and Formula Based Funding for University Hospital

Range	Number	Percentage
Less than -30 %	1	2.38%
- 30 ~ - 20 %	2	4.76
-20 ~ -10 %	3	7.14
-10 ~ 0 %	3	7.14
0~10 %	20	47.62
10~20 %	8	19.04
20~30 %	3	7.14
more than 30%	2	4.76
Total	42	100.0

Note: The percentages are calculated by the following equation;

$$(\text{Actual allocation} - \text{Formula based allocation}) / \text{Formula based allocation}$$

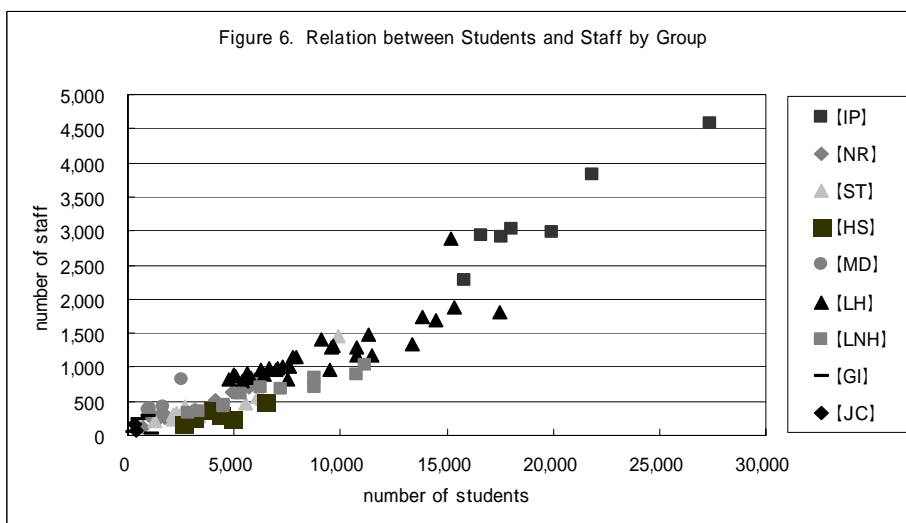
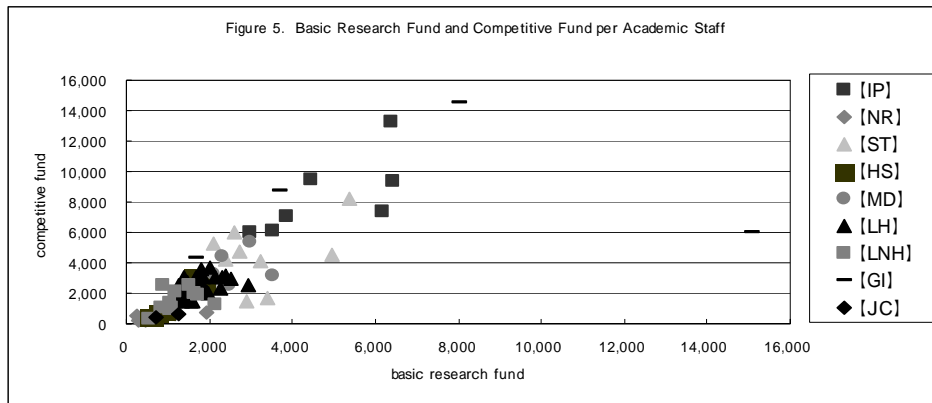
Figure 4 indicates the relationship between the ratio of research expenses to operating expenses (research, teaching, and supporting expenses) and the ratio of revenues from competitive funding to total research revenues. It is found that there are somewhat weakly negative relations between two variables by the group. In the institutional resource management, therefore, it might be said that decreasing research money from the basic funding or internal allocation would encourage effort to increase the competitive research fund.



IP: Former Imperial, NR: Normal, ST: Science & Technology, HS: Humanities & Social Sciences, MD: Medical, LH: Large Univ. having hospital, LNH: Large Univ. with no hospital, GI: Graduate Institute, JC: Junior College

On the other hand, Figure 5 shows the positive or linear association with the revenues from competitive funding per academic staff and the research expenses from internal allocation per academic staff. That means that the competitive research funding system has resulted in the same function as the basic money for research from the formula based funding in the sector level or the national university system. From the perspective of total funding from the government, the increase in competitive funds has been replaced by the decrease in basic funds. Of course, the situation is externally caused by the budget policy strengthening competition with performance among universities. At the same time, the actual result in which the dual funding system for research has little changed the resource allocation pattern, can be explained by the differences in the potentials of resources for the national university: the more talented academic staff and facilities the university has, the more likely to get the competitive fund through winning the competition.

Figure 6 shows that the resource constraints would determine the research time for the staff, given the other conditions were identical. The facilities per academic staff also largely differ from university to university (min=¥323m, max=¥24,723m, mean=¥4,986m). It is noteworthy the universities not holding the facilities which are necessary to implement the research are practically unable to apply the project proposal to the government and others. Consequently the hypothesis 4 was generally supported, although the unintended outcomes were found.



## 5 . CONCLUSION

Corporatisation of national universities is the system and management reform in Japanese higher education. From a macro perspective, the corporatisation aims at making national universities competitive in the global market as a frame shift (Schön and Rein, 1994; Pick, 2006). The

shift towards more competitive funding policy is considered an instrument for building global competitiveness, partly through consolidating and differentiating. From a micro perspective, business management thought and methods are introduced to make the internal management system more result-oriented and efficient. In addition, in order to strengthen public accountability and more transparent, disclosure and audit systems were improved.

Analysing the data from the first year of corporatisation, we have tested whether or not the intended policy outcomes have been presented. The findings showed that in the macro perspective, economies of scale was not found in case of administrative and supporting costs, also the competitive research funding so far has resulted in the same pattern from the formula-based funding. In this regard, it might be said the macro policy at least has not succeeded in funding.

On the other hand, in the micro or institutional level, firstly, it was found in science and technology university group, there was somewhat positive relationship between the bonus payments and earned competitive funds, while in other groups, bonus payments were not associated with competitive funds. Secondly, it was recognized that the formula of operating grants for university hospitals have played a reference resource allocation model in case of university hospitals. Thirdly, it was found that there was negative association between competitive funding and research expenses by the university group. This means that the revenues from competitive research funds might substitute for the internal funding to research activities. In this regard the policy for corporatisation has succeeded. The results are consistent with a survey result (Asahi Shimbun, 2006) in which approximately 75 percent of the president assessed the corporatisation "positive" or "somewhat positive".

The mixed outcomes would be caused by public funding level from the government and the immature management practices or qualities. The budget cuts are not exceptional in higher education under the high fiscal stress. The situation in downsizing is likely to adopt the resource allocation policy, considering the past performance rather than future potential owing to the resource limitations. Besides, most of the presidents and directors have not sufficient knowledge and experience in managing university. Because, before corporatisation, the president had no responsibility in finance and management, since the head of administration was directly accountable for finance and administration to the Education Ministry. Accordingly, the strategic management has not yet been advanced in every national university.

This study has first analysed the outcomes by corporatisation of national universities in terms of funding and financial management. However, there are some limitations in data and methods. The

definitions of administrative and supporting costs remains ambiguous despite the setting the guidelines in the accounting standards. As a result, the costs could be manipulated and might be not comparable each other. In addition, this analysis is based on cross sectional data, therefore, we have to test the hypotheses using panel data in order to identify the causality. Further, the impact on education other than research and management should be investigated.

### Notes

1. In case of the surplus, this element is zero.
2. The regression analyses were done in case of linear model without  $X^2$ . The explanatory power was lower in both CA and CS, adjusted  $R^2$  was respectively 0.716 and 0.580.

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