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Budget Ratcheting and Debtholders' Monitoring:

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ABSTRACT

This study examines whether budget ratcheting occurs in Japanese private colleges and universities (PC&Us) and how debtholders affect it. We predict that managers of Japanese PC&Us have incentives to increase their budgets in order to enhance their reputation from internal stakeholders; moreover, most of their stakeholders are less likely to strictly monitor the manager's behavior, which creates the opportunity for budget ratcheting. First, we find that the budget for program expense increases associated with prior year overspending is larger than for decreases associated with underspending of the same amount, consistent with the budget ratcheting hypothesis. Second, we also find that the extent of budget ratcheting is less pronounced in PC&Us with debtholders and earnings losses, suggesting that debtholders such as banks monitor budgetary practices. This study contributes to the budget ratcheting literature by adding new findings on the budget ratcheting practices of nonprofit organizations, namely, PC&Us.

Keywords: budget ratcheting; program expense; debtholders' monitoring; private colleges and universities

JEL classifications: I23, L31, M41, M48, H83

I. INTRODUCTION

Budget ratcheting is generally defined as the use of current performance as the basis for determining a future budget (Weitzman 1980; Lee and Plummer 2007; Indjejikian, Matějka, Merchant, and Van der Stede 2014a). This study examines the budget ratcheting in relation to expenses among Japanese private colleges and universities (PC&Us). Specifically, we investigate whether budget ratcheting occurs in PC&Us and how debtholders affect it. Most previous studies focus on for-profit firms and reveal that these firms engage in budget ratcheting for firm performance such as earnings and sales (Bowens and Kroos 2011; Indjejikian et al. 2014a; Leone and Rock 2002). However, there are few studies on budget ratcheting in nonprofit organizations, and their budget setting process is largely unexplored. This study fills the gap by highlighting budget ratcheting among PC&Us in Japan.

We focus on Japanese PC&Us because they provide a useful research setting in which to study budgeting practices. First, in general, budgetary data for nonprofit organizations are not readily available; this study, however, has access to sufficient financial data, including budget data for PC&Us. This is because, based on the public disclosure format imposed by the central government, most managers in Japanese PC&Us voluntarily disclose both financial and budgetary information. Second, although private school corporations are a major sector of nonprofit organizations, few studies examine their budgetary practices. Therefore, we expect that analyzing Japanese PC&Us will enhance our understanding of the budgetary practices of nonprofit organizations.[1]

[1] There are 174 *national, prefectural, and other public C&Us* in Japan (Higher Education Bureau, Ministry of Education, Culture, Sports, Science, and Technology 2012). Although they disclose mandatory actual and budgeted accounting information, their activities are strongly affected by the government and political context. They depend mostly on governmental grants and are required to obtain precertification from the Congress if they overspend. For this reason, we focus only on PC&Us.

We first examine whether budget ratcheting occurs in nonprofit organizations using data from 496 PC&Us (1,392 PC&U–year observations). We predict that managers of Japanese PC&Us have both incentives and opportunities to increase their budgets. Incurring higher expenses allows managers of PC&Us to provide benefits to their internal stakeholders, which enhances the reputation of the managers. There are generally three types of expenses at PC&Us: program expenses, administrative expenses, and human capital expenses. We expect managers to have strong incentives to increase *program expenses* in particular because they are closely related to the improvement of the educational and research environment, which in turn can significantly enhance the managers' reputation since such improvements are directly linked to the benefits realized by the major stakeholders. Furthermore, unlike managers of for-profit firms, managers of PC&Us do not have earnings-based compensation contracts, which means that they are not penalized for overspending.

We also expect that PC&U managers have a greater opportunity to increase their budgets, compared to for-profit firms, because most PC&U stakeholders are less likely to monitor the manager's behavior strictly. First, there are few stakeholder groups in PC&Us that have a strong interest in financial performance. This offers a striking contrast to the scrutiny that for-profit firms typically face from stakeholders such as shareholders and stock investors. Among the internal stakeholders, the board of trustees is expected to monitor the manager's behavior because it has the authority to approve the current year's financial statements as well as the next year's budget as presented by the manager. However, the board does not have the incentive to adequately discipline the manager's opportunistic behaviors because it does not have residual claims against the for-profit firm, which suggests that the constraints on the manager's overspending are weak.

These arguments motivate our budget ratcheting hypothesis that budgeted program expense increases following prior year overspending are larger than budgeted decreases following underspending by the same amount. Note that this budget ratcheting is different from the typical ratcheting of a for-profit firm with sales and earnings targets, which penalizes firms with good performance by increasing their future targets. On the other hand, our hypothesis, budget ratcheting of nonprofit organizations rewards overspending firms by increasing their future budgets. Our empirical findings are consistent with our hypothesis. We also find that budget ratcheting does not occur for the other two types of expenses (i.e., administrative expenses and human capital expenses). This suggests that budget ratcheting does not apply to all expenses, but only to those directly affecting the reputation of managers.

Second, we examine the effect of debtholders' monitoring on budget ratcheting. We focus on debtholders such as banks because they may be the only financial stakeholders of PC&Us that have an interest in their financial performance. We predict that debtholders have both the incentive and ability to monitor the manager's behavior closely. Japanese banks can monitor borrowing firms effectively using private information obtained from the firms due to their long-term and tight relationships (Aoki 1994). Further, prior studies show that Japanese "main banks" monitor their borrowers closely when they report extremely bad performance such as losses (Aoki 1994; Aoki and Patrick 1994; Sheard 1994a; 1994b). Therefore, we predict and find that the extent of budget ratcheting in relation to program expenses is less pronounced in PC&Us with debtholders and losses.

This study makes several contributions to accounting literature. First, it contributes to the budget ratcheting literature by providing new evidence on budget ratcheting in the nonprofit sector. While most prior studies have provided evidence of budget ratcheting in for-profit firms

(Bowens and Kroos 2011; Indjejikian et al. 2014a; Leone and Rock 2002), there are few studies on budget ratcheting in governmental and nonprofit organizations. Lee and Plummer (2007) is the only exception, although the authors examine budget ratcheting in a *governmental* organization (i.e., Texas school districts). Hence, this is the first study to examine the budget ratcheting practices of *nonprofit* organizations by focusing on PC&Us.

Second, we extend previous studies on budget ratcheting in governmental and nonprofit organizations by clarifying the effect of debtholders' monitoring on budget ratcheting. Although one study indicates that managers in nonprofit organizations are pressured by debtholders to avoid losses (Leone and Van Horn 2005), few studies examine the relationship between debtholders' monitoring and budget ratcheting. Our results suggest that debtholders may effectively constrain budget ratcheting when the PC&U's performance is poor.

Finally, we contribute to the research on accounting in higher education institutions by studying their budgeting practices. Several prior studies in this area examine disclosure practices (Gordon, Fischer, Malone, and Tower 2002; Fischer, Gordon, and Kraut 2010), or choice of investment accounting method (Chase and Coffman 1994), but there have been few studies on budgeting.

The remainder of this paper is organized as follows. Section 2 summarizes the prior studies and the institutional background of Japanese PC&Us. Section 3 develops the hypotheses. Section 4 presents the research method, while Section 5 describes the sample selection procedure and reports the descriptive statistics. Section 6 presents the empirical and additional test results. Section 7 concludes by describing the study's limitations and implications.

II. PRIOR STUDIES AND INSTITUTIONAL BACKGROUND

Prior Studies on Budget Ratcheting

The use of current performance as a basis for determining a future budget is often referred to as *budget ratcheting* (Weitzman 1980; Leone and Rock 2002; Lee and Plummer, 2007; Indjejikian et al. 2014a).[2] Theoretical studies analyzing the incentives for budget ratcheting suggest that it induces self-interested managers to withhold effort in the current period to avoid higher targets in the future (Milgrom and Roberts 1992; Laffont and Tirole 1993; Indjejikian et al. 2014a).[3]

Some empirical studies have examined the budget ratcheting and its effect (Bouwens and Kroos 2011; Holthausen, Larcker, and Sloan 1995; Indjejikian, Matějka, and Schloetzer 2014b; Leone and Rock 2002). They assume that it occurs when positive variances in performance from budget lead to greater absolute changes in the following year's budget than do changes associated with negative budget variances of the same magnitude. We also define this asymmetric response to positive or negative departures from the budget as budget ratcheting.[4]

Leone and Rock (2002) use business units' data from a large multinational corporation and find evidence of budget ratcheting, in which business unit managers adjust future earnings budgets more in response to favorable variances (actual earnings exceed budget) than to unfavorable variances. Further, Bouwens and Kroos (2011) use data on sales targets from a large specialty retailer and examine the occurrence of ratcheting in relation to sales targets. They find that managers with favorable sales performance in the first three quarters reduce their sales

[2] The term *budget ratcheting* is sometimes referred to as *target ratcheting* (Weitzman, 1980; Leone and Rock 2002; Indjejikian et al. 2014a). In this paper, both terms are used interchangeably.
[3] This adverse incentive effect is generally referred to as the *ratchet effect* (Indjejikian et al. 2014a).
[4] Weitzman (1980) proposes an analytical budget-ratcheting model, describing it as the symmetric response to positive or negative departures from the budget. However, subsequent empirical studies interpret budget ratcheting as an asymmetric response to positive or negative departures from the budget (Holthausen et al. 1995; Leone and Rock 2002; Lee and Plummer, 2007). Our definition of budget ratcheting follows that of the later studies.

activity in the final quarter. These managers are also more likely to beat their next-year sales targets than those who refrain from reducing their final-quarter sales, suggesting that the ratchet practice has a negative impact on the firm's incentive system. These studies provide evidence suggesting that, on average, targets are revised upward following favorable performance, but downward revisions following poor performance are limited (Indjejikian et al. 2014a).[5]

While most prior studies examine budget ratcheting in the context of for-profit firms, the study by Lee and Plummer (2007) is closely related to our study, as it focuses on budget ratcheting in public sector organizations. Specifically, Lee and Plummer (2007) focus on independent school districts to test for budget ratcheting in the local governments, which differs from that in for-profit firms. As the authors indicate, while for-profit firms target *earnings*, public sector organizations target *expenditures*. This implies that budget ratcheting in a for-profit firm refers to an asymmetric growth in earnings, while in a public sector organization, it refers to an asymmetric growth in expenditures. This is because the government's goal is not to maximize earnings—it does not have any incentive to do so. Thus, the authors expect that government administrators have incentives to increase their budgets, and that constraints on government spending are weaker than those found in the private sector. Consistent with budget ratcheting, they find the budget for expense increases associated with prior year government overspending (actual exceeds budget) to be larger than for decreases associated with underspending of the same amount. We extend their study to the nonprofit setting by examining PC&Us.

[5] Some recent studies have shown that target revisions for well-performing managers are less sensitive to past favorable performance and more sensitive to past unfavorable performance than those for poorly performing managers (Aranda, Arellano, and Davila 2014; Indjejikian et al. 2014b)

Institutional Background

Based on the Private Schools Act, Japanese PC&Us operate as private educational corporations called *Gakko-Hojin*, which are nonprofit, tax-exempt, and self-governing organizations (Kawashima 2006; Yamamoto 1998). As of 2019, there are 592 PC&Us with over 2 million registered students in Japan, accounting for approximately 77 percent of all Japanese colleges and universities, including national, prefectural, and other public colleges and universities. The total tuition fee collected by the PC&U sector is over annually 3 trillion JPY, and their total income amounts to approximately 5 trillion JPY, indicating that PC&Us are major actors in the Japanese nonprofit sector (PMAC 2019).

The general organizational structure of PC&Us includes a board of trustees and managers. The board of trustees is the highest decision-making body (Article 36, Paragraph 2 of the Private Schools Act), and comprises five or more trustees. It is responsible for improving and strengthening autonomous governance. It has the authority to approve the budget for the following year as well as the current year's financial statements.

According to the Private Schools Act, managers entrusted by the board of trustees with the management of a private university are expected to perform two functions related to budget practice: the allocation of resources at the time of budget setting and control of resource utilization after budget setting. As part of the allocation function, managers are required to present a proposal for the following year's budget during a board meeting held in March and obtain approval from the trustees before April 1, the start of the fiscal year (Article 49 of the Private Schools Act). In particular, at the meeting, managers submit both the following year's budget proposal as well as information on the current year's expenditures. The trustees approve the following year's budget based on the actual spending in the current year's budget.

In setting the budget, managers consider all revenue items (i.e., tuition fees, governmental subsidies, and donations) and expenses (i.e., educational and research, administrative, and human capital), in compliance with the Accounting Standards for Education Corporations of the Japanese government. Among these expenses, we focus specifically on educational and research expenses, defined as "program expenses" in this study, because we expect managers have a greater incentive to increase program expenses than they do to increase other types of expense, as explained in the next section.

As part of the control function, after setting the budget, managers are allowed to incur expenses only within the budgeted amount. If they expect expenses to exceed the budget or to be applied for another purpose, they must obtain approval from the board of trustees. In addition, at the end of the fiscal year, managers are held accountable to the board of trustees. They are required to submit financial statements for the previous fiscal year two months after it ends. While managers are required to make mandatory disclosure of financial information on the institution's website, the disclosure regarding budgeted versus actual financial performance is voluntary. The Japanese Institute of Certified Public Accountants (JICPA) recommends that managers in PC&Us provide proper financial reporting by referring to both budgeted and actual amounts, according to the format suggested by JICPA.

III. HYPOTHESES DEVELOPMENT

Incentives for Management to Increase the Budget

We predict that managers of Japanese PC&Us are likely to have incentives to expand their budget. Specifically, they seek to increase their budgets related to expenses because, unlike for-profit firms that set budgets on earnings, government and nonprofit organizations such as PC&Us tend to set their budgets based on expenses (Lee and Plummer 2007). Moreover, we

expect that the managers of PC&Us will have a stronger interest in expanding their *program expenses*—which include spending on student education, research, business travel, printing, and the depreciation of education—compared to other types of expenses. By increasing these expenses, managers can bring benefits to the internal stakeholders of PC&Us such as the board of trustees, faculty, staff, or students, and thus enhance their reputation (Hansmann 1980, 1996; Steinberg 2004). For example, if program expenses are ample, managers can implement new educational and research projects (e.g., the establishment of new departments, investment in new research areas, increased allocation of research funds to specific fields, etc.) and improve the environment for education and research during their tenure. Thus, they can enhance their own reputation. By contrast, managers cannot use other expenses—such as those relating to administration and human capital—to increase their reputation because they represent fixed costs and are difficult for the management to adjust at their discretion. Furthermore, previous studies suggest that an increase in the ratio of program expenses to overall expenses improves managers' evaluation of the operation of private universities and increases their donations (Weisbrod and Dominguez 1986; Okten and Weisbrod 2000; Parsons 2003). Hence, managers of Japanese PC&Us are likely to have incentives to increase their program expenses.

In addition, managers of PC&Us are generally not motivated to increase earnings due to the lack of earnings-based executive compensation contracts, which are widely used in for-profit firms. Earnings-based compensation contracts are a typical mechanism to control managers' behaviors (Healy 1985). However, more than 95 percent of PC&Us lack rules on executive compensation, and managers typically draw a fixed salary (Shikeiken 2014). This is because it is difficult for nonprofit organizations to measure a manager's performance, and to structure appropriate performance-based compensation contracts (Rose-Ackerman 1996; Handy and Katz

1998). Therefore, the compensation contracts of PC&Us do not penalize managers who increase program expenses.

Opportunities for Management to Increase the Budget

We predict that PC&U managers also have the opportunity to increase their budget because most of their stakeholders are less likely to monitor the manager's behavior strictly. As explained in the previous section, the board of trustees is expected to monitor the manager's behavior because it has the authority to approve the current year's financial statements as well as the next year's budget as presented by the managers, and monitor whether the management is operating within the budget.

However, the board does not have the incentive or means to adequately monitor the manager's opportunistic overspending in relation to the current year's program expenses. First, compared to the boards of for-profit firms, the boards of PC&Us have little incentive to monitor the manager's profit-making activities. In the case of for-profit firms, stakeholders such as shareholders and the board of directors are likely to monitor managers to restrict any increase in expenses that leads to a decrease in earnings, because they demand improved firm performance. On the other hand, unlike for-profit firms, the stakeholders of private universities, —mainly, the board of trustees—do not have residual claims against the for-profit firm.[6] Consequently, the boards have little interest in the maximizing financial performance of PC&Us and have little incentive to monitor management behavior.

Second, while board meetings provide an important opportunity for board members to monitor the PC&U's management activities, the Private School Act does not specify the ideal

[6] Fama and Jensen (1983) advance the same argument, namely, that stakeholders of nonprofit organizations do not have residual claims.

number of PC&U board meetings. In general, the boards meet only five or six times a year on average (PMAC 2018). In addition, from the 3,505 PC&U board members who responded to PMAC's (2018) “Basic Survey” in the fiscal year 2017, 35.1 percent of full-time board members and 66.2 percent of external board members had no defined responsibilities. The duties of full-time trustees were primarily focused on education and research (26.7 percent) and, to a smaller extent, on accounting and finance (7.8 percent). Few external board members paid attention to education and research or accounting and finance (2.4 percent and 3.3 percent, respectively). This evidence is consistent with our arguments that there is insufficient opportunity for trustees to monitor the management's behaviors, and hence, they may not be able to curb the management's opportunistic behavior.

It should be noted that the discussion so far has focused on managerial overspending, in which the management increases the current year's expenses in order to increase the next year's budget. If the management properly control their expenses within the budget (i.e., underspending), the budget for the next year might be reduced, making it more difficult to execute within the budget in the next period.[7] Therefore, managers who intend to maximize their budgets are likely to assert that overspending variances are permanent and underspending variances are transitory (Lee and Plummer, 2007). Although the board of trustees is expected to discourage the management from increasing program expenses, we conjecture that this will not be effective enough to prevent manager from engaging in asymmetric ratcheting because of the lack of incentives and ability to properly monitor the management as stated above.

[7] This phenomenon may be interpreted as a ratchet effect, since it implies a penalty for good performance in the past and a consequent reduction in effort.

Combined, the discussion above suggests that managers of PC&Us have both the incentives and opportunities to increase their budgets for program expenses, which leads to budget ratcheting. Thus, we set the following hypothesis.

Hypothesis 1: The budget for program expense increases associated with prior year overspending is larger than decreases associated with underspending of the same amount.

The Effect of Debtholders' Monitoring on Budget Ratcheting

Next, we investigate the effects of debtholders on budget ratcheting in Japanese PC&Us. Among the stakeholders of PC&Us, debtholders such as banks are the only ones who have both the incentive and ability to closely monitor a PC&U manager's behavior. As explained in the previous section, the stakeholders of PC&Us, especially internal stakeholders such as the board of trustees, do not have the incentive or means to monitor the manager. Furthermore, PC&Us in Japan do not generally use the securities market to raise funds, and thus, the managers are not under pressure from shareholders to improve their performance. Debtholders are essentially the only capital providers for PC&Us, and therefore, they are likely to have an interest in their financial performance and an incentive to discipline the manager. In the 1970s, owing to a rapidly growing youth population, PC&Us received large capital investments from banks (James and Benjamin 1988). Since then, PC&Us have continued to turn to banks for their capital requirements. Banks play an important role in the corporate governance structure of PC&Us because they have the ability to monitor the managers effectively using their superior information. Banks are also able to use private information obtained from its long-term and tight relationships with borrowers.

The close tie between a firm and a specific bank is often referred to as the main bank system (Aoki 1988, 1990; Aoki, Patrick, and Sheard 1995).[8] Main banks generally evaluate the financial performance of borrowers using internal ratings and credit screening. In addition, banks can use timely and detailed information on their borrowers through holdings of major payment settlement accounts (Aoki 1994, 118), which could help them monitor the managers effectively.[9]

Consequently, banks are the primary financial stakeholder of Japanese PC&Us and have strong incentives to monitor them. Therefore, we expect budget ratcheting to be less pronounced in PC&Us with debtholders than in those without them.

Hypothesis 2: The extent of budget ratcheting in relation to program expenses is less pronounced in PC&Us with debtholders than in PC&Us without debtholders.

Further, prior studies show that Japanese main banks exert greater monitoring effort when borrowers are performing poorly. Specifically, Japanese banks are likely to directly intervene in the management of borrowing firms when they report extremely bad performance such as losses (Aoki 1994; Aoki and Patrick 1994; Sheard 1994a, 1994b). Prior studies show that Japanese banks tend to conduct various management interventions such as recontracting, changing the CEO, and dispatching their chosen directors (Kaplan 1994; Kaplan and Minton 1994; Kang and

[8] The Japan University Handbook 2019 (Daigaku Shikiho), published by Toyo Keizai, Inc., provides information on the main bank of each PC&U.

[9] The Promotion and Mutual Aid Corporation for Private Schools of Japan (PMAC) also disburses loans to PC&Us. Approximately 60 percent of private universities received loans from banks, and about 40 percent from public lending institutions such as PMAC in 2014 (PMAC 2018; Nishii 2019). The PMAC was initially established as the Association for the Advancement of Private Schools in March 1952 to provide loans for the maintenance of private school facilities. Importantly, the PMAC monitors managers of PC&Us using the same credit screening and internal credit rating techniques as banks. For more information about the establishment and activities of PMAC, please refer to the following website (https://www.shigaku.go.jp/g_about_pmac.htm).

Shivdasani 1995). In some universities, the board members and directors are introduced by or seconded from the main bank (PMAC 2015), which allows the bank to maintain direct monitoring of managerial activities. Accordingly, we also expect that debtholders in Japan are more likely to closely monitor PC&Us that report poor performance, such as losses. Consequently, we predict that budget ratcheting will be less pronounced when PC&Us with debtholders report losses.

Hypothesis 3: The extent of budget ratcheting in relation to program expenses is less pronounced in PC&Us with debtholders and losses than in PC&Us without debtholders.

IV. RESEARCH DESIGN

Following Lee and Plummer (2007), we examine budget ratcheting in PC&Us by estimating the following model:

$$\begin{aligned}(BPro_{i,t+1} - BPro_{i,t})/BPro_{i,t} &= \gamma_0/BPro_{i,t} + \gamma_1 U_{i,t}/BPro_{i,t} + \lambda^{+}(APro_{i,t} - BPro_{i,t})/BPro_{i,t} \\ &+\lambda^{-}U_{i,t} * (APro_{i,t} - BPro_{i,t})/BPro_{i,t} + \gamma_2 \Delta STU_{pos}{}_{i,t+1} + \gamma_3 \Delta STU_{neg}{}_{i,t+1} + \gamma_4 \Delta Revenue_{i,t+1} \\ &+\gamma_5\, Subsidy_{i,t}/BPro_{i,t} + \gamma_6\, Property_{i,t}/BPro_{i,t} + \gamma_7 \Delta Population_{i,t+1} + \gamma_8 Research_{i,t}/BPro_{i,t} \\ &+\theta_{+}(ARev_{i,t} - BRev_{i,t})/BPro_{i,t} + \theta_{-} D_{Rev} * (ARev_{i,t} - BRev_{i,t})/BPro_{i,t} + \gamma_9\, D_{Rev}/BPro_{i,t} \\ &+\sum_{y=1}^{5} \gamma_{9+y} YEAR_{i,t} + \sum_{f=1}^{4} \gamma_{14+f} TYPE_i + \varepsilon_{i,t},, \end{aligned} \quad (1)$$

where:

$BPro_{t+1}$ and $BPro_t$ = budgeted program expense for year $t+1$ and year t, respectively;

$APro_t$ = actual program expense in year t;

U_t = 1 if the variance ($APro_t - BPro_t$) is negative, and 0 if otherwise

ΔSTU_pos_{t+1} = percentage change in the total number of students from year t to year $t+1$ with positive changes in ΔSTU_{t+1}, and 0 if otherwise;

ΔSTU_neg_{t+1} = percentage change in the total number of students from year t to year $t+1$ with negative changes in ΔSTU_{t+1}, and 0 if otherwise;

$\Delta Revenue_{t+1}$ = percentage change in the total revenue from year t to year $t+1$;

$Subsidy_t$ = amount of the subsidies for current expenses to PC&Us from the central government in year t;

$Property_t$ = surplus property in year t;

$\Delta Population_{t+1}$ = population change among 18-year-olds in the same prefecture from year t to year $t+1$;

$Research_t$ = total amount of Grants-in-Aid for Scientific Research in year t;

$BRev_t$ = budgeted total revenue for year t;

$ARev_t$ = actual total revenue for year t; and

D_{revt} = 1 if the variance ($ARevt - BRev_t$) is negative, and 0 if otherwise.

For each PC&U i, the dependent variable indicates changes in the budget for program expenses from the current year ($BPro_t$) to the following year ($BPro_{t+1}$), deflated by budgeted program expenses for year t ($BPro_t$). All financial variables and intercepts are deflated by the budgeted program expense for year t ($BPro_t$) to control for scale effects and allow for the direct interpretation of the coefficients as percentages. In terms of the independent variables, the variance between the actual and budgeted levels is calculated as $APro_t - BPro_t$. The variable U is an indicator variable that is equal to 1 if the variance ($APro_t - BPro_t$) is negative, and 0 if otherwise. In the model, γ_0 represents the average change in the case of over-budgeted program expenses ($APro_t > BPro_t$), and $\gamma_0 + \gamma_1$ represents the average change in the case of under-budgeted program expenses ($BPro_t > APro_t$).

To test Hypothesis 1, we focus on the ratcheting coefficient λ^-, which indicates the impact of underspending in relation to program expense budgets ($APro_t < BPro_t$) on the budget for the following year. Consistent with our hypothesis, if overspending has a stronger association with changes in the program expense budgets for the following year than underspending, the budget ratcheting coefficient λ^- will be significantly negative. In addition, we also expect that the coefficient λ^+, which represents the case of overspending on program expense budgets ($APro_t > BPro_t$), will be significantly positive.

In line with Lee and Plummer (2007), the model in Equation (1) includes several variables to control for the effects of budget growth: the percentage change in the total number of students (ΔSTU_{t+1}) and total revenue ($\Delta Revenue_{t+1}$), the subsidies for current expenses to PC&Us from the central government ($Subsidy_t$), property holdings ($Property_t$), population change among 18-year-olds in the same prefecture ($\Delta Population_{t+1}$), total amount of scientific research grants ($Research_t$), and the variance between actual and budgeted total revenue ($ARev_t - BRev_t$). ΔSTU_{t+1} helps distinguish variations in expense budgeting due to changes in the total number of students from variations due to budget ratcheting. ΔSTU_pos_{t+1} is the percentage change in the total number of students in the PC&U from year *t* to year *t+1*, with positive changes in ΔSTU_{t+1}, and 0 if otherwise. ΔSTU_neg_{t+1} is the percentage change in the total number of students in the PC&U from year *t* to year *t+1*, with negative changes in ΔSTU_{t+1}, and 0 if otherwise. We expect the coefficients on ΔSTU_pos_{t+1} and ΔSTU_neg_{t+1} to be positive. However, in the presence of cost stickiness, we expect $\gamma_2 > \gamma_3$.[10] $\Delta Revenue_{t+1}$ helps control for changes in expenses due to the revenue growth of PC&Us. We expect the coefficient on $\Delta Revenue_{t+1}$ to be positive and

[10] In addition to the number of students enrolled, we also looked for data on the withdrawal and graduation rates, but found that very few PC&Us publish these rates. Therefore, we adopted the number of students enrolled as the output measure.

significant. Governments with relatively high funding are characterized by a higher increase in their budgeted expenses. The proposed model includes the variable $Subsidy_t$, which refers to subsidies for current expenses from the central government. $Property_t$ indicates the level of surplus property owned by PC&Us based on the accounting standards for Japanese PC&Us. The population change among 18-year-olds in the same prefecture ($\Delta Pupolation_{t+1}$) is an important indicator of the university sector because most of the entrants to PC&Us in Japan are 18-year-olds who have graduated from high school (MEXT 2012). PC&Us with larger $Subsidy_t$, $Property_t$, and $\Delta Population_{t+1}$ have a greater incentive to increase their budgeted expenses; thus, we expect the coefficients on $Subsidy_t$ / $BPro_t$, $Property_t$ / $BPro_t$ and $\Delta Population_{t+1}$ to be positive. In addition, we include $Research_t$ / $BPro_t$ to control for the characteristics of research universities, which may tend to invest more in education and research as program expense budgets than non-research universities.[11] We expect the coefficients on $Research_t$ / $BPro_t$ to be positive and significant. The model also includes ($ARev_t$ – $BRev_t$) / $BPro_t$ to control for the effect of revenue variance on budget growth. This variable allows us to determine whether the variables ($ARev_t$ – $BRev_t$) / $BPro_t$ are positive or negative, while controlling for the measures of budget adjustment for negative revenue variance. To investigate the sign of revenue variances, we employ D_{rev}, an indicator variable that is equal to 1 if the variance ($ARev_t$ – $BRev_t$) is negative, and 0 if otherwise. Finally, we introduce *TYPE*, a dummy variable indicating one of the five

[11] Grants-in-Aid for Scientific Research is comprehensive research funds by the Japan Society for the Promotion of Science (JSPS) as an independent administrative institution, established by way of a national law for the purpose of contributing to the advancement of science. The research funds are intended to provide financial support for creative and pioneering research projects, encompassing basic to applied researches in all fields ranging from humanities and social sciences to natural sciences. The research projects are selected by peer-review process. In general, the more research funds a university receives from JSPS, the higher its research capability is considered to be. Please see the website of JSPS (https://www.jsps.go.jp/english/aboutus/index2.html) and Grants-in-Aid for Scientific Research (https://www.jsps.go.jp/english/e-grants/grants09.html) for detail.

university types (which are discussed in the next section), and the dummy variable *YEAR*, controlling for PC&U type and year effects, respectively.

Next, to test Hypothesis 2, we compare the extent of budget ratcheting in PC&Us with debt and those without debt. To determine whether PC&Us have debt, we focus on the existence of interest payment. Firms with interest payments are classified as having debt. Specifically, we divide the sample into two subsamples: PC&Us with interest payments ($Debt_t$) and without interest payments ($non\text{-}Debt_t$). To compare the extent of budget ratcheting in the two subsamples, we use the chi-square test to measure the difference in the λ^- coefficients between the *Debt* and *non-Debt* subsamples. If the λ^- coefficient of the $Debt_t$ subsample is larger than the corresponding λ^- coefficient of the $non\text{-}Debt_t$ subsample, and such a difference is statistically significant, we can conclude that budget ratcheting is less pronounced in PC&Us with debt than in those without, which is in support of Hypothesis 2.

Further, to test Hypothesis 3, we investigate whether debtholders' monitoring of budget ratcheting in PC&Us varies with financial performance. We distinguish the *Debt* subsample into two subcategories: *Profit* and *Loss.* The former subcategory is the group of PC&Us reporting profits, while the latter comprises those reporting losses. As discussed previously, we expect that debtholders in Japan are more likely to closely monitor PC&Us when they report bad performance such as losses. Thus, we expect the coefficient λ^- to be less pronounced in loss-making PC&Us with debt than those without debt.

V. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

Sample Selection

Our sample selection criteria are summarized in Panel A of Table 1. Our initial sample consists of data for 685 PC&Us (3,430 PC&U–year observations) from 2008 to 2013 obtained from the annual financial database of PC&Us released by Toyo Keizai, Inc.[12] This database includes data on each accounting item from all Japanese PC&Us' financial statements. We exclude PC&Us with missing item values (253) and medical or dental care PC&Us (380). There are six types of PC&Us in Japan: junior colleges, social science and arts universities, science and engineering universities, medical or dental care universities, nurses and nursing care universities, and universities with two or more colleges and universities. Medical or dental care PC&Us are excluded because most of their revenue (expenses) is generated from university hospitals, and thus, they have the characteristics of a hospital rather than PC&Us.

Next, we hand-collect data on the budgeted amount and the total number of students enrolled. Japanese PC&Us voluntarily disclose the most recent and final revised budget and the variance in each accounting item, through their financial statements. We collect the budget and student information—including total revenue and expenses, program expenses, and the total number of students enrolled—through the website of each PC&U from December 15, 2015, to February 28, 2016. In this sample selection process, we add to match the location of the PC&Us with the 18-year-old population data of the prefecture obtained from e-Stat, which is a portal site for Japanese Government Statistics. In addition, we match the names of the PC&Us with the

[12] Toyo Keizai, Inc. was founded in 1895 as a publishing company. Its flagship magazine is the *Weekly Toyo Keizai* (Japan's oldest business magazine); it also publishes *Kaisha Shikiho* (quarterly company databook of listed Japanese companies) and other books. The firm offers various types of economic and corporate information via multiple electronic platforms and provides financial summary data for all Japanese PC&Us, collected from the materials or websites of these PC&Us.

total amount of Grants-in-Aid for Scientific Research (KAKENHI) contributed by the Japan Society for the Promotion of Science. We exclude PC&Us without budgeted items or student enrollment data (322 observations) and those for which the data were not available for two consecutive years (1,048 observations). This process results in 355 PC&Us (1,393 observations) for the period 2008–2013. In the final sample, all variables are winsorized by the year at the 1 and 99 percent levels.

Panel B of Table 1 reports our sample by year. The number of observations has increased over the years because the number of PC&Us making voluntary disclosures has increased. In 2008, 128 PC&Us disclosed their budgets, with the number increasing to 289 in 2013.

[Insert Table 1 here]

Descriptive Statistics

Table 2 reports the descriptive statistics for the variables used in our regression model. The table shows that the mean ratio of changes in the budgeted program expenses $\{(BPro_{t+1} - BPro_t) / BPro_t\}$ is -0.008, indicating that budgeted program expenses decrease, on average, by 0.8 percent across the sample. The mean variance between actual and budgeted program expenses $\{(APro_t - BPro_t) / BPro_t\}$ is -0.041, meaning that in 85.9 percent of PC&Us, actual program expenses do not exceed the budgeted program expenses. These statistics suggest that managers of PC&Us mostly exercise budget control to avoid large increases in both budgeted and actual program expenses.

[Insert Table 2 here]

The control variables included in Equation (1) help clarify the features of the sample. In Table 2, the mean (medium) of ΔSTU_pos_{t+1} and ΔSTU_neg_{t+1} is 0.015 (0.000) and -0.080 (-0.011), respectively. In addition, the mean (medium) of $\Delta Population_{t+1}$ is -0.003 (-0.004). These results indicate that more substantial changes are observed in PC&Us with decreasing student enrollments and the population among 18-year-olds in the same prefecture. This decline also causes a decrease in total tuition revenues. By contrast, since the mean (medium) of $\Delta Revenue_{t+1}$ is 0.021 (0.012), PC&Us might rely on resources other than tuition fees, such as government subsidies or donations.[13] The variables *Subsidy* and *Property* in Table 2 show such proportion deflated by the budgeted program expense of the current year. The mean (median) of $Subsidy_t$ is 0.513 (0.417), implying that half of the budgeted program expenses are subsidy-dependent. However, the median of $Property_t$ is zero, which implies that most PC&Us do not own properties.

Table 3 reports the Pearson and Spearman correlation matrixes for the variables used in Equation (1). The correlation between $(BPro_{t+1} - BPro_t) / BPro_t$ and $(APro_t - BPro_t) / BPro_t$ is positive (r = 0.204), which is consistent with budget ratcheting since an increase in the actual budget over the planned budget in prior years is associated with an increase in the current year's budget.

[Insert Table 3 here]

[13] The means (medians) of the proportion of tuition fees, subsidies from the central government, and donations to total revenue in the sample for Equation (1) are 0.718 (0.742), 0.153 (0.135), and 0.018 (0.009), respectively. These results show that tuition fees are a critical resource for Japanese PC&Us, followed by subsidies; the impact of donations is smaller than that of the other resources.

VI. EMPIRICAL RESULTS

Tests of Hypothesis 1

Table 4 presents the ordinary least squares (OLS) regression results for Equation (1). We include PC&U fixed effects and use clustered standard error estimates in all regressions. The results in Table 4 show that the coefficient λ^+ is positive (0.868) and statistically different from zero (p<0.01). The result suggests that the budget is likely to increase following overspending. We also find that the sum of the coefficients $\lambda^+ + \lambda^-$ is also positive (0.320) and significant (p<0.01), suggesting that the budget is likely to decrease following underspending. In other words, managers who properly control their expenses within the budget will have their budgets reduced in the next period, suggesting the possibility that managers are penalized for prior-year underspending. However, our results indicate that the program expense budgets are adjusted more in response to prior year overspending than underspending. That is, the coefficient λ^- that is of our main interest is negative (-0.548) and statistically significant (p<0.01), which is consistent with Hypothesis 1. The results suggest that when the current year's program expenses exceed budgeted expenses, 86.8 percent of the variance is revised in the budget increase for the next year. In contrast, when the current year's actual program expenses are less than budgeted, only 32.0 percent of the variance is revised in the next year's budget decrease. This evidence supports Hypothesis 1 that overspending has a stronger association with changes in the program expense budgets for the following year compared to underspending.[14]

As for the control variables, the coefficients of Δ*Population* and *Research* have predictive signs, and the coefficient of Δ*Population* is significant. This result suggests that changes in the

[14] The intercepts do not have a major impact on the independent variable because the *Intercept for U=0 PC&Us* is not significant, and the *Intercept for U=1 PC&Us* is significant and positive (0.001).

population among 18-year-olds in the same prefecture affect changes in the budget. In addition, research universities tend to spend more on education and research.[15]

[Insert Table 4 here]

Tests of Hypotheses 2 and 3

Panel A of Table 5 presents the regression results for the *non-Debt* and *Debt* subsamples, respectively.[16] The results regarding budget ratcheting are different for the two subsamples. In particular, for the *non-Debt* subsample, the ratchet-related coefficient λ^- is significantly negative (-0.677), suggesting the existence of budget ratcheting in relation to program expenses. In contrast, for the *Debt* subsample, while the coefficient λ^+ is positive (0.635) and significant ($p<0.1$), the budget ratcheting coefficient λ^- is *not* significantly negative (-0.277). These results suggest that budget ratcheting is less pronounced in PC&Us with debtholders than in those without debtholders, which is consistent with Hypothesis 2. In addition, in both models, the sum of the coefficients $\lambda^+ + \lambda^-$ for underspending is much smaller than the coefficient λ^+ for overspending. For example, in the non-Debt subsample, the sum of the coefficients $\lambda^+ + \lambda^-$ is 0.266, which is smaller than the coefficient λ^+ (0.943). The results suggest that managers are not overly penalized for prior year underspending. Further, we conduct the Chi-square test to examine the difference in the ratchet-related coefficient λ^- between the *Debt* and *non-Debt* subsamples. Unlike the prediction, the results show that the difference in the coefficient λ^- is not

[15] It should be noted that several other variables do not have significant coefficients as predicted. Although we set the control variables based on the theoretical background and findings of previous studies, the ability of our model to control for future budget fluctuations is limited and may affect the interpretation of the results.
[16] Table 5 only shows the ratchet-related coefficients (λ^-) and the coefficients (λ^+) of our interest. Regression results for the full models are available from the authors upon request.

significant (χ^2 *statistic* = 1.21, $p > 0.1$). Therefore, our results provide only a weak support for Hypothesis 2.[17]

Panel B of Table 5 summarizes the results of examining the *Profit* and *Loss* subcategories in the *Debt* subsample. Hypothesis 3 predicts that budget ratcheting is less pronounced for PC&Us with debtholders and losses. First, we expect debtholders' monitoring to be stronger for PC&Us reporting losses than for those reporting a profit. Panel B of Table 5 shows the chi-square results that the ratchet-related coefficients λ^- (0.436) of the *Loss* subcategory in the *Debt* subsample is significantly higher than the coefficients λ^- (-0.543) of the *Profit* subcategory in the *Debt* subsample (χ^2 *statistic* = 3.07, $p < 0.1$). The result indicates that, for PC&Us with debt, budget ratcheting is less pronounced among those reporting losses than those reporting profits. Second, to test Hypothesis 3, we compare the ratchet-related coefficients (λ^-) for the *Loss* subcategory in Panel B and the *non-Debt* subsample in Panel A. The result indicates that the coefficients λ^- (0.436) of the *Loss* subcategory in the *Debt* subsample are significantly higher than the coefficients λ^- (-0.677) of the *non-Debt* subsample (χ^2 *statistic* = 10.52, $p < 0.01$).[18] Therefore, the results suggest that budget ratcheting in relation to program expenses is less pronounced in PC&Us with debtholders and losses than in those without debtholders, which is consistent with Hypothesis 3.

[Insert Table 5 here]

[17] To test the effect of overspending alone on budget setting, we also conduct the test the difference in the coefficient λ^+ between the *Debt* and *non-Debt* subsamples. However, as with the results for the coefficient λ^+, no significant difference is observed, as shown in Table 5.

[18] Further, we also find that the coefficients λ^+ (0.132) of the *Loss* subcategory in the *Debt* subsample are significantly lower than the coefficients λ^+ (0.943) of the *non-Debt* subsample (χ^2 *statistic* = 7.69, $p < 0.05$), which is consistent with Hypothesis 3.

Additional Tests

Budget Ratcheting in Relation to Other Expenses

When developing our hypotheses, we assumed that the managers of PC&Us have a stronger interest in expanding their program expenses because doing so can enhance their reputation by bringing benefits to the constituents (Hansmann 1980, 1996; Steinberg 2004). To confirm the validity of this assumption, we test budget ratcheting in other areas. Specifically, we focus on two other types of expenses in the regression model (2): those related to administration and human capital. We also examine net income in the regression model (3) since prior studies analyzing for-profit firms usually include it.

$$\begin{aligned}(Bexp_{i,t+1} - Bexp_{i,t})/Bexp_{i,t} &= \gamma_0/Bexp_{i,t} + \gamma_1 Uexp/Bexp_{i,t} + \lambda^{+}(Aexp_{i,t} - Bexp_{i,t})/Bexp_{i,t} \\ &+\lambda^{-} Uexp_{i,t} * (Aexp_{i,t} - Bexp_{i,t})/Bexp_{i,t} + \gamma_2 \Delta STU_{pos_{i,t+1}} + \gamma_3 \Delta STU_{neg_{i,t+1}} + \gamma_4 \Delta Revenue_{i,t+1} \\ &+\gamma_5\, Grant_{i,t}/Bexp_{i,t} + \gamma_6\, Property_{i,t}/Bexp_{i,t} + \gamma_7 \Delta Population_{i,t+1} + \gamma_8 Research_{i,t}/Bexp_{i,t} \\ &+ \theta_{+}(ARev_{i,t} - BRev_{i,t})/Bexp_{i,t} + \theta_{-} D_{Rev} * (ARev_{i,t} - BRev_{i,t})/Bexp_{i,t} + \gamma_9\, D_{Rev}/Bexp_{i,t} \\ &+ \sum_{y=1}^{5} \gamma_{9+y} YEAR_{i,t} + \sum_{f=1}^{4} \gamma_{14+f} TYPE_i + \varepsilon_{i,t}. \end{aligned} \quad (2)$$

$$\begin{aligned}(Bni_{i,t+1} - Bni_{i,t})/TA_{i,t-1} &= \gamma_0/TA_{i,t-1} + \gamma_1 Uni/TA_{i,t-1} + \lambda^{+}(Ani_{i,t} - Bni_{i,t})/TA_{i,t-1} \\ &+\lambda^{-} Uni_{i,t} * (Ani_{i,t} - Bni_{i,t})/TA_{i,t-1} + \gamma_2 \Delta STU_{pos_{i,t+1}} + \gamma_3 \Delta STU_{neg_{i,t+1}} + \gamma_4 \Delta Revenue_{i,t+1} \\ &+\gamma_5\, Grant_{i,t}/TA_{i,t-1} + \gamma_6\, Property_{i,t}/TA_{i,t-1} + \gamma_7 \Delta Population_{i,t+1} + \gamma_8 Research_{i,t}/TA_{i,t-1} \\ &+ \theta_{+}(ARev_{i,t} - BRev_{i,t})/TA_{i,t-1} + \theta_{-} D_{Rev} * (ARev_{i,t} - BRev_{i,t})/TA_{i,t-1} + \gamma_9\, D_{Rev}/TA_{i,t-1} \\ &+ \sum_{y=1}^{5} \gamma_{9+y} YEAR_{i,t} + \sum_{f=1}^{4} \gamma_{14+f} TYPE_i + \varepsilon_{i,t}. \end{aligned} \quad (3)$$

Where:

$Bexp_{t+1}$ and $Bexp_t$ = the budgeted amount of administrative or human capital expense for year $t+1$ and year t;

Bni_{t+1} and Bni_t = the budgeted amount of net income for year $t+1$ and year t;

$Aexp_t$ = the actual administrative or human capital expense in year t;

Ani_t = the actual net income in year *t*;

TA_{t-1} = total assets at the beginning of the year *t*;

$Uexp_t$ = 1 if the variance ($Aexp_t - Bexp_t$) is negative, and 0 otherwise; and

Uni_t = 1 if the variance ($Ani_t - Bni_t$) is negative, and 0 otherwise.

All other variables are as previously defined.

[Insert Table 6 here]

In Panel A of Table 6, we present the regression results of Equation (2), which focuses on other expenses. The expense variables are deflated by the budgeted expenses of each category.[19] We expect that budget ratcheting is less pronounced in relation to administrative and human capital expenses than in relation to program expenses. The results are consistent with our assumption. Panel A of Table 6 shows that, for administrative expenses, the ratcheting coefficient λ^- is positive (0.329), which is not consistent with the expected sign. For human capital expenses as well, the ratcheting coefficient λ^- is positive (0.028). These results suggest that budget ratcheting does not occur in relation to administrative and human capital expenses. In addition, our results of the Chi-square test indicate that there is a statistical difference in the ratcheting coefficient (λ^-) between program and administrative expenses (χ^2 statistic = 20.88, $p < 0.01$) as well as the coefficient λ^+ (χ^2 statistic = 7.91, $p < 0.01$). We also observe a statistical difference in the ratcheting coefficient (λ^-) between program and human capital expenses (χ^2 statistic = 15.73, $p < 0.01$) as well as the coefficient λ^+ (χ^2 statistic = 42.71, $p < 0.01$). The results

[19] Table 6 only shows the ratchet-related coefficients (λ^-) and the coefficients (λ^+) of our interest.

indicate that budget ratcheting is not as pronounced for administrative and human capital expenses as for program expenses.[20]

Next, Panel B of Table 6 shows the regression result of Equation (3), which focuses on net income. In Equation (3), the variables are deflated by total assets at the beginning of the year. We expect that managers in nonprofit organizations have fewer incentives to increase the budget for increasing net income, in contrast to managers of for-profit firms (e.g., Leone and Rock 2002). This is because nonprofit organizations do not tend to target earnings change (Leone and Van Horn 2005). In Panel B of Table 6, the regression result shows that the ratcheting coefficient λ^- is negative (-0.180) but not significant (p>0.1). Further, the coefficient on λ^+ is positive (0.334) and significant (p<0.01) for ΔBNI_{t+1}, while the sum of the coefficients $\lambda^+ + \lambda^-$ is positive (0.154) but not significant (p>0.1). These results indicate that budget ratcheting does not occur in relation to net income, which is consistent with our prediction.

Non-random Bias

We collected data on budgets that were voluntarily disclosed by PC&Us, which may cause a non-random bias (e.g., Jorgensen, Lee, and Rock 2014). To address this issue, we use the Heckman selection model (e.g., Jorgensen et al. 2014). In the first stage, we regress the probability of budget information disclosure using a probit model, controlling for factors such as strategy, capacity, and governance (Saxton and Guo 2011; Saxton, Kuo, and Ho 2012). In the second stage, we estimate the regression model in Equation (1) with the inverse Mills ratio (*IMR*) as a control variable, evaluated by the predicted individual probabilities from the first stage. Our

[20] Furthermore, the ratcheting coefficients are not different between the two subsamples of *Debt* and *non-Debt* entities. This indicates that budget ratcheting in relation to administrative and human capital expenses is not determined by debt.

untabulated results show that the signs on the coefficients and the regression model in Equation (1) are in line with our main results. Moreover, the difference in the coefficients λ^- between the *Loss* subcategory and the *non-Debt* subsample is significant, whereas the difference in the coefficients λ^- between the *Debt* and *non-Debt* subsamples is not significant.

Robustness Test

Finally, we conduct the following robustness checks and obtain qualitatively similar results as presented in this study: (1) handling outliers by winsorizing at the 0.5, 1.5, and 2.0 percent levels, or discarding outliers at the 0.5, 1.0, 1.5, and 2.0 percent levels; (2) replacing the deflators of the dependent and independent variables with total assets at the beginning of the year; (3) excluding PC&Us that reported huge asset management losses in 2008 or 2009 due to the 2008 global financial crisis.

VII. CONCLUSION

In this study, we investigate whether budget ratcheting occurs in PC&Us and how debtholders affect it. While most prior studies have revealed that for-profit firms engage in budget ratcheting (Bowens and Kroos 2011; Indjejikian et al. 2014a; Leone and Rock 2002), few studies focus on budget ratcheting in nonprofit organizations.

First, managers of Japanese PC&Us have both incentives and opportunities to increase their budgets on program expenses. They can enhance their reputation by increasing program expenses, because investments from these expenses are directly linked to benefits realized by the major constituents of PC&Us. Further, most stakeholders of PC&Us are unlikely to monitor the manager's behavior strictly, which creates opportunities for budget ratcheting. Specifically, we

find that the budget for program expense increases associated with prior year overspending is larger than for decreases associated with underspending of the same amount.

Second, we examine the effect of debtholders on budget ratcheting. We expect banks to have both the incentive and ability to closely monitor the manager's behavior by using private information obtained from their long-term and tight relationships with borrowers (Aoki 1994). Consistent with the prediction, we find that the extent of budget ratcheting in relation to program expenses is less pronounced in PC&Us with debtholders, especially when they report earnings losses.

Our study has several limitations. First, we cannot entirely exclude the possibility that our result of budget ratcheting is due to cost stickiness. Prior studies argue that budget ratcheting may result from managers' inability to reduce expenses (Banker and Chen 2006; Lee and Plummer 2007). Although we add control for the effect of cost stickiness changes following Lee and Plummer (2007), we might not have been able to address it completely. Second, we acknowledge we cannot fully eliminate potential sample selection biases associated with the choice to disclose data necessary for our analysis. Further, the endogeneity problem may also arise with respect to the implementation of debt financing. Addressing these issues is a subject for future research.

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Table 1 Sample selection criteria

Panel A: Sample selection for the budget ratcheting model	
Criteria	PC&U-years
PC&U–years for 2008–2013	3,430
Less:	
Medical or dentist PC&Us	(380)
Missing values of items in financial statements	(253)
Non-disclosed budget information	(322)
No budget data for two consecutive terms	(1,048)
Final observations of Equation (1)	1,393

Panel B: Sample of PC&Us in each year	
Year	PC&U-years
2008	128
2009	181
2010	240
2011	292
2012	263
2013	289
Final observations of Equation (1)	1,393

Note. Financial statement data for 2008–2013 are available from Toyo Keizai Inc. Budget information data for 2008–2013 are collected from December 15, 2015, to February 28, 2016. PC&Us = private colleges and universities.

Table 2 Descriptive statistics of variables in Equation (1)

Variable	Mean	Sd	Q1	med	Q3
$(BPro_{t+1} - BPro_t) / BPro_t$	-0.008	0.080	-0.045	-0.006	0.031
$(APro_t - BPro_t) / BPro_t$	-0.041	0.050	-0.069	-0.038	-0.014
U_t	0.859	0.349	0.000	0.000	0.000
ΔSTU_pos_{t+1}	0.015	0.036	0.000	0.000	0.015
ΔSTU_neg_{t+1}	-0.080	0.157	-0.058	-0.011	0.000
$\Delta Revenue_{t+1}$	0.021	0.259	-0.078	0.012	0.103
$Subsidy_t / BPro_t$	0.513	0.301	0.292	0.417	0.676
$Property_t / BPro_t$	0.241	0.781	0.000	0.000	0.000
$\Delta Population_{t+1}$	-0.003	0.028	-0.024	-0.004	0.012
$Research_t / BPro_t$	0.013	0.012	0.005	0.009	0.017
$(ARev_t - BRev_t) / BPro_t$	0.016	0.031	0.002	0.010	0.025

Note. There are 1,393 PC&U–year sample observations. All variables are winsorized by year at the extreme 1 and 99% levels.
Variable Definitions:

$BPro_{t+1}$ and $BPro_t$ = budgeted program expense for year $t+1$ and year t;
$APro_t$ = actual program expense for year t;
U_t = 1 if the variance ($APro_t - BPro_t$) is negative, and 0 otherwise
ΔSTU_pos_{t+1} = percentage change in the total number of students from year t to year $t+1$ with positive changes in ΔSTU_{t+1}, and 0 otherwise;
ΔSTU_neg_{t+1} = percentage change in the total number of students from year t to year $t+1$ with negative changes in ΔSTU_{t+1}, and 0 otherwise;
$\Delta Revenue_{t+1}$ = percentage change in the total revenue from year t to year $t+1$;
$Subsidy_t$ = amount of subsidies for current expenses to PC&Us from central government in year t;
$Property_t$ = surplus property in year t;
$\Delta Population_{t+1}$ = population change among 18-year-olds in the same prefecture from year t to year $t+1$;
$Research_t$ = total amount of scientific research grants in year t;
$BRev_t$ = budgeted total revenue in year t;
$ARev_t$ = actual total revenue in year t;
D_{revt} = 1 if the variance ($ARevt - BRev_t$) is negative, and 0 otherwise

Table 3 Correlation matrix of Equation (1) variables

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	$(BPro_{t+1} - BPro_t) / BPro_t$	1.000	0.086	-0.169	-0.181	-0.103	0.046	0.020	0.085	0.003	0.036
(2)	$(APro_t - BPro_t) / BPro_t$	0.204	1.000	0.078	0.062	0.045	0.115	-0.142	-0.081	0.018	0.055
(3)	ΔSTU_pos_{t+1}	-0.146	0.025	1.000	0.829	0.308	0.034	-0.062	-0.044	0.075	-0.024
(4)	ΔSTU_neg_{t+1}	-0.149	0.013	0.216	1.000	0.193	-0.026	-0.042	0.092	0.155	-0.017
(5)	$\Delta Revenue_{t+1}$	-0.042	0.007	0.253	-0.023	1.000	0.140	-0.009	0.034	0.058	-0.070
(6)	$Subsidy_t / BPro_t$	0.079	0.172	0.072	-0.082	0.135	1.000	-0.114	-0.085	-0.217	0.032
(7)	$Property_t / BPro_t$	0.012	-0.076	0.017	-0.005	0.037	-0.073	1.000	0.018	-0.039	0.050
(8)	$\Delta Population_{t+1}$	0.138	-0.047	-0.106	0.166	-0.001	-0.087	0.050	1.000	0.096	-0.003
(9)	$Research_t / BPro_t$	0.018	0.024	-0.002	0.183	0.030	-0.221	0.039	0.115	1.000	-0.028
(10)	$(ARev_t - BRev_t) / BPro_t$	0.055	0.108	-0.001	-0.007	-0.063	0.013	0.040	0.001	-0.031	1.000

Note. There are 1,393 PC&U–year sample observations. All variables are winsorized by year at the extreme 1 and 99% levels. The upper-right-hand portion of the table reports the Spearman rank-order correlations, and the lower-left-hand portion presents the Pearson correlations. See Table 2 for variable definitions.

Table 4 Test of budget ratcheting in relation to program expenses

Variable	Coefficients	Predicted sign	Program expenses	
Intercept (scaled) for U = 0 PC&Us	γ_0	(+/-)	-0.000	
			(-0.832)	
Intercept (scaled) for U = 1 PC&Us	γ_1	(+/-)	0.001	***
			(3.418)	
$(APro_t\text{-}BPro_t) / BPro_t$	λ^+	(+)	0.868	***
			(6.733)	
$U*(APro_t\text{-}BPro_t) / BPro_t$	λ^-	(-)	-0.548	***
			(-3.721)	
ΔSTU_pos_{t+1}	γ_2	(+)	-0.288	***
			(-4.508)	
ΔSTU_neg_{t+1}	γ_3	(+)	-0.097	
			(-0.960)	
$\Delta Revenue_{t+1}$	γ_4	(+)	-0.001	
			(-0.079)	
$Subsidy_t / BPro_t$	γ_5	(+)	-0.006	
			(-0.746)	
$Property_t / BPro_t$	γ_6	(+)	-0.001	
			(-0.368)	
$\Delta Population_{t+1}$	γ_7	(+)	0.357	**
			(2.023)	
$Research_t / BPro_t$	γ_8	(+)	0.225	
			(1.245)	
$(ARev_t\text{-}BRev_t) / BPro_t$	θ^+	(+)	-0.000	***
			(-4.361)	
$DRev_t*(ARev_t\text{-}BRev_t) / BPro_t$	θ^-	(+)	-0.010	
			(-1.610)	
D_{Revt}	γ_9	(+/-)	0.000	
			(0.753)	
YEAR			YES	
TYPE			YES	
N			1,393	
adj. R^2			0.120	
$\lambda^+ + \lambda^-$			0.320	***
F-statistics			(4.461)	

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% significance levels, respectively. All variables are winsorized by year at the extreme 1 and 99% levels. The results are estimated using the budget ratcheting models in Equation (1) and 1,393 PC&U–year sample observations. The table shows t-statistics of ordinary least squares (OLS) regressions in parentheses. The standard errors are adjusted by PC&Us cluster effects. See Table 2 for variable definitions.

Table 5
Results of testing subsamples and subcategories separated into net income above and below zero

Panel A Results of testing *Debt* and *non-Debt* subsamples

Variable	Coefficients	Predicted Sign	*Debt subsample* ($Debt_t>0$)		*non-Debt subsample* ($Debt_t=0$)	
$(APro_t-BPro_t) / BPro_t$	λ^+	(+)	0.635	*	0.943	***
			(1.967)		(9.195)	
$U*(APro_t-BPro_t) / BPro_t$	λ^-	(-)	-0.277		-0.677	***
			(-0.823)		(-4.509)	
N			925		468	
adj. R^2			0.097		0.155	
	$\lambda^+ + \lambda^-$		0.358	** *	0.266	**
	F-statistics		(3.545)		(2.578)	
	$\lambda^+_{Debt\ subsample} < \lambda^+_{non\text{-}Debt\ subsample}$, χ^2 statistic = 0.84					
	$\lambda^-_{Debt\ subsample} > \lambda^-_{non\text{-}Debt\ subsample}$, χ^2 statistic = 1.21					

Panel B Results of testing *Profit* and *Loss* categories in *Debt* subsample

Variable	Coefficients	Predicted Sign	*Profit sub*category ($ANI_t \geqq 0$)		*Loss* subcategory ($ANI_t<0$)	
$(APro_t-BPro_t) / BPro_t$	λ^+	(+)	0.815	**	0.132	
			(2.020)		(0.460)	
$U*(APro_t-BPro_t) / BPro_t$	λ^-	(-)	-0.543		0.436	
			(-1.234)		(1.348)	
N			648		277	
adj. R^2			0.114		0.072	
	$\lambda^+ + \lambda^-$		0.272	**	0.568	***
	F-statistics		(2.094)		(3.363)	
	$\lambda^+_{Profit\ subcategory\ in\ Debt\ subsample} > \lambda^+_{Loss\ subcategory\ in\ Debt\ subsample}$, χ^2 statistic = 2.01					
	$\lambda^-_{Profit\ subcategory\ in\ Debt\ subsample} < \lambda^-_{Loss\ subcategory\ in\ Debt\ subsample}$, χ^2 statistic = 3.07*					
	$\lambda^+_{Loss\ subcategory\ in\ Debt\ subsample} < \lambda^+_{non\text{-}Debt\ subsample\ (Panel\ A)}$, χ^2 statistic = 7.69**					
	$\lambda^-_{Loss\ subcategory\ in\ Debt\ subsample} > \lambda^-_{non\text{-}Debt\ subsample\ (Panel\ A)}$, χ^2 statistic = 10.52***					

Note: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are winsorized by year at the extreme 1 and 99% levels. The results are estimated using the budget ratcheting model in Equation (1) and 1,393 PC&U–year sample observations. This table shows t-statistics of ordinary least squares (OLS) regressions in parentheses. The standard errors are adjusted by PC&Us cluster effects. In the first (second) column of Panel A, the results are estimated by the subsample of PC&Us with (without) debt. In the first (second) column of Panel B, the results are estimated by the subcategory of profit-making (loss-making) PC&Us with debt. See Table 2 for variable definitions.

Table 6
Tests of budget ratcheting in relation to other targets

Panel A Results of testing other expense targets

Variable	Coefficients	Predicted Sign	Administrative expenses	Human capital expenses
$(Aexp_t - Bexp_t) / Bexp_t$	λ^+	(+)	-0.076	0.032 *
			(-0.694)	(1.688)
$Uexp*(Aexp_t - Bexp_t) / Bexp_t$	λ^-	(-)	0.329 **	0.028
			(2.376)	(1.041)
N			1,393	1,393
adj. R^2			0.022	0.072
	$\lambda^+ + \lambda^-$		0.253 ***	0.060 ***
	F-statistics		(3.627)	(3.300)

$\lambda^+_{Program} > \lambda^+_{Administrative}$, χ^2 statistic = 7.91***
$\lambda^-_{Program} < \lambda^-_{Administrative}$, χ^2 statistic = 20.88***
$\lambda^+_{Program} > \lambda^+_{Human}$, χ^2 statistic = 42.71***
$\lambda^-_{Program} < \lambda^-_{Human}$, χ^2 statistic = 15.73***

Panel B Results of testing net income targets

Variable	Coefficients	Predicted Sign	Net income
$(Ani_t - Bni_t) / TA_{t-1}$	λ^+	(+)	0.334 **
			(2.534)
$Uni*(Ani_t - Bni_t) / TA_{t-1}$	λ^-	(-)	-0.180
			(-0.853)
N			1,393
adj. R^2			0.069
	$\lambda^+ + \lambda^-$		0.154
	F-statistics		(0.882)

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% significance levels, respectively. All variables are winsorized by year at the extreme 1 and 99% levels. The table shows t-statistics of ordinary least squares (OLS) regressions in parentheses by using 1,393 PC&Us–year sample observations. The standard errors are adjusted by PC&U cluster effects. In the first and second columns of Panel A, the results are estimated using the OLS regression model in Equation (2), with the actual and budgeted administrative and human capital expenses, respectively. In Panel B, the results are estimated using the OLS regression model in Equation (3), and the actual and budgeted net income.

Variable definitions:

$Bexp_{t+1}$ and $Bexp_t$ = the budgeted amount of administrative or human capital expense for year $t+1$ and year t;

Bni_{t+1} and Bni_t = the budgeted amount of net income for year $t+1$ and year t;

$Aexp_t$ = the actual administrative or human capital expense in year t;

Ani_t = the actual net income in year t;

TA_{t-1} = total assets at the beginning of the year t;

$Uexp_t$ = 1 if the variance ($Aexp_t$ – $Bexp_t$) is negative, and 0 otherwise;

Uni_t = 1 if the variance (Ani_t – Bni_t) is negative, and 0 otherwise.