

# The Effects of Results-Oriented Budgeting on Government Spending Patterns in Thailand

Arwiphawee Srithongrung

## ABSTRACT

*This article investigates the immediate and permanent effects of the most recent budget reform, a results-oriented budget, on a government's spending levels across functions. Under the new budget format, the resource allocation process is influenced by departments' program planning and performance data, including objectives, strategies, outputs, and outcomes. The theoretical literature is unclear on the role of this new reform in pinpointing whether it is a rational budget in which resource allocation is tied to policy priorities and whether there has been a benefit in enhancing the government's planning capacity. Using time-series data from 1965 to 2005 on Thai government spending, the empirical results indicate that the new budget reform enhances government planning capacity in two service functions, national defense and general administration, by shifting resources permanently between functions and cutting spending immediately on the function that is irrelevant to the country's master plans.*

## INTRODUCTION

Budget reforms have been undertaken across the world (Miller, Hildreth, and Rabin, 2001). In the 1990s, the OECD countries—including New Zealand, Australia, Great Britain, and Germany—adopted performance-based budgets as a mechanism to improve their budgeting decisions and management (Schick, 2001). Performance-based budgeting (PBB), or results-oriented budgeting, refers to the budget process in which objectives, resources, strategies, outputs, and outcomes are tied together in order to make informed decisions and derive systematic budget management (Schick, 2001). Is a performance-based budget the same old liquor in a new bottle? This is the question for this study.

From a theoretical standpoint, the answer to the above question depends on the perspective of user. A performance-based budget may revisit previously budget systems as it shares the features of program and performance budgets. The overlap between a performance-based budget and a program budget can be found in that both budgets focus on desirable outcomes in the resource allocation process through the use of cost-benefit analysis, functional ranking against a country's top policy priorities, and performance evaluations (Joyce, 2001). In order to promote operation efficiency (least cost per unit), a performance-based budget also shares the feature of performance measurement with the traditional performance budget. Viewed from optimistic eyes, a performance-based budget is promising since it steers the decision-making toward overall strategic goals of a government while at the same time using past performance data to tie the appropriation with program activities and accomplishments. Mikesell (2007) contends that a performance-based budget is different from a program budget in that although it uses quantifiable results as criteria to rank budget allocation jurisdiction-wide, the resource allocation in this reform does not cut across agencies, as the program budget does. As a result, duplication among programs with similar goals

may occur. Mikesell (2007) also points out that while the traditional performance budget measures only workload and outputs, the performance-based budget is one step ahead by measuring agencies' outcomes in a meaningful relationship to those of top management's priorities.

For practitioners, a performance-based budget is viewed as a budget tool to hold agencies' accountability in terms of service production and delivery, while at the same time, enhancing the systematic budgeting process in which the desirable outcomes link the country's top policy with agencies' missions and spending levels. Critiques of a performance-based budget include: the difficulties in measuring outputs and outcomes; difficulties in cost accounting in which direct and indirect costs are accounted differently across programs even though the program goals are the same; and the lack of valid and reliable linkages between agencies' performance measurement; and resource allocation decisions<sup>1</sup> (See for example, Kettl, 1996; Kettunen & Kriz, 2006; Mullen, 2006; Dixon, 2005). These technical problems may prevent governments from receiving the full benefits of PBB's planning function, which aims to enhance allocation efficiency across service functions.

Inspired by the two contrasting perspectives usually found as the main theme in performance-based budget literature, this study aims to examine the dynamic and cumulative effects of various budget reforms, including performance-based budget, on the resource allocation process in one developing country, Thailand. From an empirical standpoint, a performance-based budget is absolutely new if it can 1) direct the resource allocation process in a way that ties meaningfully with the country's overall goals through strategic management and cost effectiveness analysis, and 2) enhance the quality of service delivery and operation efficiency through performance measurement. Since a performance-based budget system has been implemented for less than ten years (firstly adopted in 1999) in Thailand, it might be too premature to assess the outcome of the budget planning and management functions—the program effectiveness (or allocation efficiency) and operation efficiency, respectively. However, the finding in the early period should add to the pool of information available to decision-makers and scholars regarding the choices as to whether to continue the use of this budget format or not. The unit of analysis is the Thai budget during the period of 1965 to 2006. There are three reasons to select the Thai budget as a unit of analysis.

First, Thai budgeting and related fiscal policy processes have been dominated by economic technocrats in the Bureau of the Budget, The Bank of Thailand, the National Social and Economic Development Board Committee, and the Ministry of Finance since the beginning of the democratic era in this country (Compos & Pradhan, 1996). Since the beginning of the budget era in 1957, national policy priorities have been set toward economic growth and better living standards as obviously mentioned in all nine versions of the National Social and Economic Development Plan (NSEDPlan) throughout the period of 1961-2006. Due to the economic orientations in the four budget institutions, the Thai government has pursued ways to allocate the country's resources to fulfill the NSEDPlan through various resource allocation approaches including a line-item budget, a planning-programming budget system (PPBS), and a performance-based budget (PBB). This condition makes budgeting in Thailand suited to the research

---

<sup>1</sup> For example, if the agencies' performance is worse, should they be granted a greater or smaller budget, given that the poor performance may be due to either an overwhelming workload or the agencies' unproductive operation?

questions: “*Do the reforms, including the most recent one—the performance-based budget—have any impact on the decision-making process, corresponding with VO Key’s (1946) classical question, on what basis shall it be to allocate X dollars over program A or B?*” The theoretical argument for the effects of budget format on appropriation levels across service functions is that different budget formats present different facets of budget information, data, and recommended spending choices. For example, line-item budgeting, PPBS, and PBB budgets present the cost of public service by objects or inputs, aggregated functional service area outcomes, and departmental programs’ targeted outputs and outcomes, respectively. Since the decision-makers use information in the budget document as a frame of reference, the budget debates and consideration are tailored toward the information present in a budget document, yielding different spending outputs across budget formats (Grizzle, 1986; 2001).

Second, the country’s top-policy priority—to enhance economy and quality of life— is clearly written in all nine versions of the NSEDP and is regarded as an unchanged goal over a five-decade period (regardless of unstable political situations, see the summary of nine NSEDPs in Appendix I). Due to this context, an empirical exercise to find the linkage between budget reform and appropriation decisions can be internally valid throughout the period as the top policy priority of the country has not changed over time, at least on the official master planning documents.

Last, Thailand has experienced three budget reforms from the beginning of the democratic period from 1959 to the present; each period is well partitioned and clearly stated in budget documents (Bureau of Budget, Thailand Budget Documents, 1959-2007). This situation makes the time-series analysis in the country possible since the single unit of analysis at different times of reform creates treatment and control groups that have exactly the same basic characteristics except for the variables of interest. The answer to the question: whether the decision-making process, in practice, is influenced by budget formats or not, should come from empirical evidence rather than descriptive arguments. If the formats influence the decision process, then a significant causality between a specific format and spending level should be found in an empirical exercise.

The second section of this paper presents theoretical concepts of performance-based budgets and the linkages of the reform to the top policy priority found by positive studies in the U.S. and Great Britain. The section ends with a background of the Thai budget process. The third section describes methodology and data. The fourth section presents results and discussions. The last section provides the conclusion, implications, and future studies.

## **BACKGROUND**

### **PBB and Some Results**

At the micro-management level (i.e., agencies’ budget preparation, central budget office’s request consolidations, agencies’ budget operation, and performance evaluation), performance-based budgeting shifts the focus from inputs and activities to societal outcomes. The main activities in this level include: 1) identifying agencies’ goals, missions, and objectives that are tied with the national policy priority; 2) developing a service contract in which the resource amount that is proposed and indicators to measure the program outputs and outcome correspond to the identified objectives are mutually defined between the central budget office and agencies; 3)

monitoring agencies' execution and encouraging technical efficiency and managerial accountability by allowing budget re-programming and carrying-forwarded unspent resources; and 4) auditing program performance and financial transactions at the end of fiscal year in order to use such information in the next round budgeting (Mikesell, 2007, p. 215-219). At the macro-management level (i.e., legislative review, and appropriation decisions), the distinguishing feature of performance-based budgeting lies in the community's overall strategic planning and the ability of decision-makers at the top management level to translate the overall strategic goal (or top policy priorities) into budget appropriations (Poister & Strieb, 1996; 1999). In theory, appropriations by the policy makers at the top level should be steered by spending and encourage public service toward the desirable outcome previously determined by the strategic plan. In practice, this means the identified outcomes are used as a criterion in ranking service programs and functions through the use of performance measurement data (Kamensky, 1993).

In reality, however, adopting a performance-based budget may or may not mean that strategic management, planning, and allocation are adopted and integrated into the appropriation process by top management and policy makers because of the different budget institutions in each country. For example, in Great Britain, the Financial Management Initiative (FMI) which was launched in 1982 to develop the practical implications of a performance-based budget, does not prescribe that the performance measurement outcomes are used to tie the objectives and targeted outcomes of the agencies with the country's overall strategic goal. Instead, the FMI views that performance measurement is only a service contract that holds public managers accountable for their service delivery and production; and, thus, the funds are appropriated according to the goals independently set by the public managers (Schick, 2001, Boex, Martinez, & McNab, 2000). This setting implies that the strategic budget in Great Britain is not meant to serve the planning function of a budget, but to serve only the management function in terms of enhancing accountability and technical efficiency in agencies' service provisions and delivery.

In the U.S. federal budget system, functional classification is used to set the aggregated level of budget allocation to different service areas. The functional classification and ceiling do not exist for the purpose of ranking service functions based on the country's policy priority, but on targeting national deficits. The first is the budget function in planning to enhance allocation efficiency (or spending effectiveness through the ranking process among service areas competing for funds), while the latter is the budget function in accounting to enhance fiscal discipline. The U.S. federal government does use a performance measurement called the Program Assessment Rating Tool (PART), which was used for the first time in the FY 2004 appropriation process. According to Mullen (2006), the assessment by the Government Accountability Office (GAO) for the use of PART indicates that it is a very useful tool to focus on agencies' efforts to improve program management and created and enhanced evaluation within agencies, but "*PART does not currently evaluate similar programs together to facilitate trade-offs or make relative comparison....By design, OMB has not prioritized them [agencies' identified program goals] within or among agencies* (Mullen, 2006, p. 86). In other words, performance measurement data, at present, are used to hold agencies accountable, but play a very limited role in enhancing the government's strategic resource allocation.

In the case of state governments, Reddick (2003) used pooled budgeting data for the fifty states' during the period from 1989 to 1996 to examine if a budget output in each function is influenced by the form of decision-making. Two decision-making approaches were tested in this study: incrementalism, based on line-item budgets, and the rationality approach, which mainly relies on program and zero-based budget (ZBB) formats. The results indicate that the budget decisions are influenced by both incremental and rational approaches. However, the size of the rational approach effect on total spending output is relatively small compared to the effects of incremental approach and another political variable, partisan ideology. This finding suggests that decision-making is driven by mixed imperatives including rational, incremental, and political approaches. However, since the size of the rational effect is relatively small, compared to the political ideology and incremental approach, the rational approach tends to be overshadowed by pragmatism in budget preparation (i.e., baseline budget with incrementally increased or decreased spending) and political decisions.

At the U.S. county level, the problem associated with the rational approach is the same as those at the state level. When macro management processes are examined, the appropriation decision at the legislative decision phase is influenced by the voting process. Using a survey method, Wang (2000) found that performance measurement data are used by a majority of the county governments in terms of budget formulation and recommendations, but in the legislative process, the county commissioners did not integrate the performance data (in terms of outcome accomplishment) in the decision-making process. This finding is inconsistent with Willoughby's (2004) research results. Using survey data completed by 121 state and local budget officers in 2000, she found: in the PBB users' opinions, when information is available, the budget actors including governors, legislators, and budgeting officials, use such data to interpret and understand agencies' operations and expected outcomes. Thus, performance data accommodates rational resource allocation. Therefore, there is a mixed answer to the question as to whether or not a performance-based budget aids resource allocation despite a government's societal goals in the western countries, namely the U.S. and Great Britain.

#### Thai Budget Reforms: 1959-2007

Thailand adopted a performance-based budget at about the same time as Great Britain and the United States did in the late 1990's (Thailand Development Research Institution—TDRI, 2004). The unique characteristic of the performance-based budget in Thailand is that it focuses on strategic management in order to achieve the full benefits of performance measurement data—both in terms of holding public agencies accountable and also aiding the executive's decisions in resource allocation, in which the overall policy priorities are officially identified and tied with the expected outcomes of the agencies' budget requests (Bureau of Budget, Strategic Performance-based Budget Presentation to Bhutan Government, June 10, 2007, Bangkok Thailand). Based on interview data with the BOB planning officials in the summer of 2007 and 2008, performance measurement had not been officially used to aid the decision-making process. However, according to the planning officials, the use of strategic budget planning—in response to the national master plan—has been used since 2001. The strategic performance-based budget was launched officially in 2001 with full knowledge of PPBS failures and incremental budget practices (in terms of supporting strategic resource allocation). From 2001 to 2007, the Thai budget has been under the PBB reform's framework in which resource allocation has been tied to strategic plans and

identified policy priorities (Thailand, Bureau of Budget, Strategic Performance-based Budget Presentation to Bhutan Government, June 10, 2007, Bangkok, Thailand, Interview with Kulapajit, 2008).

Historically, when the democratic regime was introduced in 1933, budget preparation was conducted by the Bureau of Budget through technical assistance from the U.S. government. By 1958, the Bureau of Budget was reorganized as an executive department to review, analyze, and consolidate agencies requests. The fundamental principle of budget preparation in Thailand's budget institutions throughout history is that the budget should be the rational tool to allocate resources in a way that can maximize societal welfare to citizens in the country (TDRI, 2004)<sup>2</sup>. Judging from the message in the budget documents, this view has been used as the major rationale for various budget reforms throughout the modern period, from 1959 to 2007.

National public policies throughout the modern era (TDRI, 1998) in Thailand are manifested in the National Economic and Social Development Plan (NESDP) set by the National Economic and Social Development Board (NESDB). From 1961 to 2006, there were nine versions of the NESDP; each version is used for a five-year period and approved by the Parliamentary. Each version is comprised of major goals, targeted outcomes, previous development outcome reports and analyses, e.g., economic growth rate, literacy rate, and broad strategic plans for the next five-year period. From version one to nine, the major goal is to enhance the country's economic performance and standards of living through better socio-economic environments. These major goals remain unchanged throughout the nine versions of the plan. Economic growth, income gap reduction, and better living standards are written clearly as a fundamental purpose in plan (See Appendix I for a summary of the major content areas in the nine versions). The differences in the nine versions lie in the detailed execution plans which seem to be flawed depending on the appointed NSEDDB members and social problems in the year in which the plans was written<sup>3</sup>. The National Plan is used as a reference for the budgetary process as mentioned in every budget document in the period from 1961 to 2008. As written in the narrative of the annual budget document's summary schedules, the broad goal identified by NSEDDB are incorporated in setting spending priorities. These policy priorities are then translated to the ministry heads through budget instructions; and subsequently, each ministry develops its own plan in accordance with the National Plan (Veerakul, 2004). Government projects are approved by the Bureau of Budget if they are consistent with National Plan (Personal interview with Budget Planning Officer, 2007 and 2008). In practice, as TDRI (1998) assesses, the National Plan does not set priorities or strategic planning based on cost-benefit analysis or take annual budget constraints into consideration. This is related to the fact mentioned above that the National Master Plan address remitting execution plans to accomplish the same

---

<sup>2</sup> This fundamental value reflects the core ideology of the budget function viewed through the countries' economic technocrats and elected officials—that the budget should be the main blueprint in planning the country's economy and society through allocation efficiency derived from rational approaches such as cost-benefit analysis and management analysis.

<sup>3</sup> For example, the first version of the plan focuses on economic development and education in the central regions, while the second version designates the same activities as well as income equity in rural areas. The executing plans were to address socio-economic problems at hand; rather than being multi-yearly continuous plan in working toward the major goals. The appointed board members in NSEDDB were changed in every version and citizen inputs were used limitedly in composing the plans. This fact likely affected the action plans (Thailand Social and Economic Development, Version 10, 2007-2011, p. 236).

traditional goals—socio-economic development. Further, the plan is too broad to be translated into an operational level without a central coordinator, such as the Bureau of Budget. As a result, all ministers tend to include as many ideas and projects as possible, assuming that the proposed projects will be considered as responsive to the National Plan; and, thus, they hope to receive a reasonable share in the national annual budget (TDRI, 1998). This situation reflects the main failure of the PPBS during the period of 1982-1997.

In the democratic period (1959-2008), the Thai budget has experienced three reforms: the line-item budget, the planning-programming budget system (PPBS), and the strategic performance-based budget (PBB). The line-item budget was used during the period ranging from 1959 to 1981. The annual budget documents in this period report service inputs by departments under the views that the appropriation law should be an effective tool to control agencies' spending. Inspired by the disadvantages of the line-item budget—e.g., a lack of agency flexibility and an inability to aid the country's economic-oriented resource allocation—the Thai government adopted the PPBS in 1982 with the main goal of using the new budget to rank functional appropriation in a way that enhances the country's traditional goal of social and economic development (TDRI, 2004). From the Thai government experience, one can see that in theory, the PPBS is supposed to link resource allocations with the country's overall goal. However, in practice, one finds that the agencies' missions and service goals are not well-coordinated with service strategies, are redundant, and lack meaningful connection across departments (TDRI, 2004). This situation results in an incremental resource allocation process in which the decisions are fragmented and rely mainly on negotiations between the parliament and ministry heads that are appointed by the parliament (TDRI, 2004).

In 1997, PBB was implemented as a pilot project within two agencies<sup>4</sup>. In 2001, PBB was fully adopted government-wide through the public law requirement that all ministries plan and submit their budgets according to PBB frameworks (Veerakul, 2004). The reform demands the Bureau of Budget to mutually plan and identify agencies' goals that are responsive to the national master plan. The NSEDP of 1997 calls for analysis, consolidation, and preparation of the executive budget according to its ranked policy priorities. Due to the budget reform in this period, the Bureau of Budget has restructured its budget preparation and evaluation process since 1997.

Under the performance-based budget starting in 2001, the process of linking the national Master Plan with the resource allocation strategy is summarized as follows. The country's overall strategic goal, which corresponds to the national economic and social development plan, is used as a common guide by every ministry to identify their individual strategic plans (TDRI, 2004). At the planning level, the Public Service Agreement (PSA), which identifies key indicators to measure the ministry's budget

---

<sup>4</sup> In 1997, Thailand faced a fiscal and economic crisis where the Thai Bath was depreciated in the world capital market. As a result, the country's reserved funds declined and the revenue bases dramatically eroded due to private businesses' bankruptcies. Historically, Thailand's fiscal policy is conservative since it focuses on saving, rather than using deficit finances during poor economic periods. However, this practice brought in an overwhelming supply of money from foreign investors and eventually led the country into a fiscal crisis when foreign debts were high and beyond the private sectors' capacity (Veerakul, 2007). This crisis catalyzed the new budget reform which is expected to produce the fiscal policies (tax and spending levels) that can revitalize the economy after the crisis (Veerakul, 2007).

performance (in terms of output or outcome), is regarded as a performance contract between the prime minister and individual ministries. Then, the ministries' Public Service Agreements are translated into a Service Delivery Agreement (SDA) for each agency within each individual ministry to further guide program planning, budgeting, and operation. The SDA, which contains key indicators to measure the agencies' budget performance, indicates how each agency contributes to the ministry's strategic goal accomplishment. At the technical level, agencies plan their programs and budgets according to their ministries' strategic goal and propose a budget according to cost analysis and program evaluation. The Bureau of Budget is responsible for evaluating agencies' performance by comparing targeted with actual outcomes identified by the indicators in PSA and SDA. The Bureau of Budget's performance measurement results are used to: 1) allocate resources through various ministries and agencies; and 2) motivate agencies to accomplish targeted outcomes (Interview with Kulalpaijit, 2008; Na Songkla, 2007).

According to the TDRI study of 1998, the strategic performance-based budget is expected to reduce fragmentation in the decision-making process, especially at the legislative consideration stage. The fragmentation is due to "*the country's political system in which the ministers are largely parliamentarians from various provinces who think locally rather than nationally*" (TDRI, 1998, p.6; TDRI, 1992). The theoretical literature is unclear on the roles of PBB in pinpointing whether it is a rational budget and whether there has been a benefit in enhancing the government's planning capacity. Kamensky (1993); Grifel (1993), Miller, Rabin, and Hindreth (1987); Poister and Streib (1999), Streib (1992), and Kettl (1997) view strategic budgeting and performance management as beneficial in the sense that each used performance measurement to inform the decision-making process in order to ultimately steer governments' activity and allocation plans toward the achievement of societal outcomes. The systematically analytical approach focuses on program effectiveness and integration of all managerial activities (planning, organizing, directing, coordinating, supervising, and budgeting) in order to direct them toward advancing organization-wide strategic goals or fundamental policy agendas. Program outputs are used as implementation benchmarks and foundations in identifying implementation means or directions. Koteen (1989) summarizes that the strategic planning and management approach shape and guide the organizational missions, courses of actions, and justifications for actions. However, in practice, Willoughby and Melker's (2000) survey results indicates that PBB is viewed as an effective resource allocation tool to the budgeters in the executive branch, while being rejected as an effective and rational tool by the users in the legislature at the U.S. state level.

Per the question why PBB is not adopted in all budget phases, Joyce (2001) identifies two main barriers. First, objectives and policy priorities are difficult to gain unanimous agreements, given that the roles of governments in fiscal policies revolve around two poles, equity and efficiency. As a result, agencies' targeted objectives can be multiple and too vague to be used as a criteria to rank the functional spending. Joyce (2001) asserts that this problem may be alleviated in a country with a parliamentary system, since goals and objective setting can be centralized and concentrated on by a political group in only one branch of government. Last, there is a problem in measuring outcomes since they are not directly related to programs, but instead they have an impact on program outputs and external factors in society (Joyce, 2001; Grizzle, 1993; Kettl, 1996). Output measurement is more valid, but it does not provide an informed

decision that facilitates the allocation process (Kettl, 1996). From this perspective, Joyce summarizes that performance measures have “*limited ability to influence resource allocation but benefit managerial and financial reporting*” (p. 537). This summarization generates the main hypothesis for this study: in a country, such as Thailand, where a parliamentary system has absolute power over the decision-making process, where its major goals in the master plans is traditional and stable over five decades in terms of social and economic development, and where government-wide strategic planning is the focal point of PBB, PBB should influence resource allocation patterns in a way that is consistent with the National Plan’s broad goal.

## METHODOLOGY AND DATA

In order to understand the Thai government budget allocation by functions, Tinakorn and Sunsakarn (1996) established a model to estimate an international benchmark for resource allocation among 28 developing countries whose socio-economic and political profiles are compatible<sup>5</sup>. Using Wagner’s law as an underlying framework, the study specifies government spending as a function of income, social development level, democratic influence, social influence, economic structure, and errors. According to Tinakorn and Sunsakarn’s (1996) study results, the international expenditure comparison index (IEC) (which is the ratio of a country’s actual share of functional spending on GDP to the country’s empirically predicted share of functional spending on GDP or the normatively benchmark level) indicates that in 1990, Thailand’s total expenditure is below the predicted level identified by the developing country econometric model for about 33%. The country’s resource allocation pattern is skewed toward national defense (31% above the predicted level) and away from health (49% below the predicted level), social welfare (66% below the predicted level), and housing and community development (66% below the predicted level). The country’s educational spending is below the predicted level by about 4 percent. In other words, except for the education function, Thailand’s resource allocation is not optimal according to the 28 countries’ empirical benchmark. National defense is overspending, while education is under-spent, and health and social welfare are severely under-spending compared to the empirical benchmarks.

Tinakorn and Sunsakarn (1996) also argued that the findings fit well with the country’s qualitative data. According to these researchers, it is not surprising that the country’s total expenditure is far below its normative level given that the country’s fiscal policy favors contraction rather than expansion policies for almost five decades after the country adopted democracy. The high spending level in national defense is also unsurprising since Thailand’s administration and politics have been under military rule for most of the democratic-regime period. Coupled with incremental budget practices (even though PPBS was regarded as the official budget process, as mentioned above), defense spending has *rarely declined* (TDRI, 1996)<sup>6</sup>. The resource allocation patterns

---

<sup>5</sup> The 28 countries include Bangladesh, India, Indonesia, Republic of Korea, Malaysia, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Cameroon, Egypt, Kenya, Malawi, Morocco, Sierra Leone, Portugal, Turkey, Argentina, Bolivia, Brazil, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Paraguay, and Uruguay.

<sup>6</sup> The spending measurement in all seven functions comes from revenue sources, which include various forms of taxes, sales of assets and services, state enterprises, other revenue and borrowing funds. Foreign aids are excluded in all functional spending since they may reflect bias in spending level due to borrower’s terms and conditions.

found in this study imply that the National Plan and budget reforms in the PPBS period, unlikely influenced the spending trading-off between defense and other needed functions including education, welfare, and community development, which are the main avenues to social and economic development repeatedly prescribed by the nine versions of the National Plan.

In order to examine if any budget reform, including the PBB, influences the Thai government resource allocation pattern, this study uses functional spending in the seven service areas (one function which is “other spending” is omitted) reported in the Thai budget document from 1965 to 2005 as the unit of analysis. The model is specified for each functional spending area according to the previous model (Tinakorn & Sunsakarn, 1996). Unlike the previous study, this paper incorporates budget reforms as a binary variable in the model and uses the dynamic causal effects technique to examine immediate and cumulative effects of the reforms in budget decisions in the contemporaneous as well as future years. The use of this technique is based on the rationale that budget formats and processes are a government’s institutional rules; and, thus, they have both immediate and persistent effects on future spending decisions. Such institutional rules can be deposited and affect the decision-making for many years in the future; and, thus, the estimating model should be able to capture these effects both in current and future years. Given that Thailand is the unit of analysis, the spending level in various government service functions (or unit of analysis) is observed over 40 years<sup>7</sup>. According to Stock and Watson (2004), the advantage of using time series data for a single subject in a dynamic causal model is that the same subject examined at different times can be treated as a control and the same holds true for the treatment groups whose characteristics are the same except for the treatment.

Based on Wagner’s Law of public spending and the socio-economic influences and the spending factors found by Tinakorn and Sunsakarn (1996), the dynamic causal effect model (Equation 1) is specified as follows:

---

<sup>7</sup> According to the Central Limit Theorem, when the sample size is larger than 30, sampling distribution of the average spending level is approximately normal, yielding the observed mean that is close to those of the population distribution and thus the normal distribution curve can be used in the significance test (Ott & Longnecker, 2001, p. 175). When the sample size is smaller than 25 and the standard deviation is unknown, the student t distribution curve with the appropriate degrees of freedom must be used, instead of the normal curve, in the significance test. The student t distribution curve and the degrees of freedom are not the case for this study given that the sample size is larger than 30 according to the law of large number (see Freeman, Pisani, & Purves, 1998, p. 494).

$$g_t = \beta_0 + \beta_1 y_t + \sum_{i=j_0}^j \beta_2 e_{t-j} + \sum_{i=j_0}^j \beta_3 o_{t-j} + \sum_{t=j_0}^j \beta_i l_{t-j} + \sum_{t=j_0}^j B_j p_{t-j} + \sum_{t=j_0}^j \beta_k s_{t-j} + \sum_{t=1966}^{k=2004} B_h T_t + u_t \quad (1)$$

Where;

- $g_t$  is the percent of spending according to the government's service functions to total expenditures in the general revenue fund at time  $t$
- $y_t$  is the country's income at time  $t$
- $e_{t-1}$  is the vector of economic influence on total and functional spending at time  $t-1$
- $o_{t-1}$  is the vector of social influence on total and functional spending at time  $t-1$
- $l_{t-1}$  is the vector of the dynamic multiplier of line-item budget in the  $l$ -period
- $p_{t-1}$  is the vector of the dynamic multiplier of PPBS in  $l$ -period
- $s_{t-1}$  is the vector of the dynamic multiplier of Strategic PBB in  $l$ -period
- $t_{t-1}$  is the vector of time trends during the period ranging from 1965 to 2005

According to previous findings, the vectors of social and economic influences in Thailand are comprised of:

- The total population in year  $t$
- The share of agricultural value added to total the GDP in year  $t$
- Numbers of residents per square mile in year  $t$
- Percent of population age 65 and above in year  $t$
- Percent of population age 0-14 in year  $t$

The model specified in Equation 1 is a finite distributed lag model in which the lagged budget formats,  $l$ ,  $p$ , and  $s$ , or line item, PPBS, and PBB, respectively are incorporated into the vector of dynamic multipliers to capture both the dynamic and permanent effects of the budget formats on functional spending. The finite distribute lag model is beneficial in testing the following hypotheses:

- *Does institutional practices, i.e., budget format, affect spending level immediately in the same year?*
- *How long lasting is the affect of a reform on functional spending?*
- *Does a budget format permanently affect functional spending levels?*
- *Whether different budget format affects spending level differently across functions and how?*

The significance and size of the coefficients in each vector of the dynamic multipliers for the budget formats ( $l$ ,  $p$ , and  $s$ ), in Equation 1 must be empirically examined in order to test the above hypotheses. In order to specify the model in the equation, the lag length in the vectors of dynamic multipliers must also be determined by a statistical method. The lag length test was conducted and the results are presented in Table 1. The results indicate that the dynamic effects occur within the maximum six year period. In other words, the budget institutional practices immediately affect the spending level decision in the same year when the budget is decided and has a similar fluctuating affect each year. At time  $t+6$ , the level of functional spending reverted back to its initial

level—that is, in year seven, the functional spending has reverted back to the spending level at the time  $t - 1$  (Wooldridge, 2006, p. 345).

**Table 1: Akaike Information Criteria<sup>8</sup> (13 lags were tested)<sup>9</sup>**

Lags	Akaike
0	1.645
1	1.669
2	1.615
3	1.563
4	1.476
5	1.366

The ordinary least square (OLS) method with heteroskedasticity-and autocorrelation-consistent (HAC) was used to test the finite distributed lag model of lag order 5 as mentioned above. The main assumption for using the OLS method in estimating the dynamic effects is that the regressors are not correlated with the error terms. That is, the independent variables are exogenously determined, instead of endogenously determined by other variables in the models. Based on careful thoughts, the decision-making process occurs before the appropriations are enacted; and, thus, the appropriation does not determine budget formats in the current year. Furthermore, it is unlikely that the budget formats in the future years, i.e.,  $t + 1, t + 2, t + 3, t + 4, t + 5$  would affect the spending level in current year  $t$ . However, the appropriation levels in future years may influence the adoption of a budget formats in the current year, given that the government may be prospective-oriented in predicting revenues and expenditures. If the government perceives constraints in future years, it may be possible that it will adopt certain budget formats as a preventive tool. From this view, budget formats and processes are exogenously determined (the spending and error terms do not determine the budget formats in the same year *and* the budget formats in the future years do not determine spending level in the current year). But, the budget formats and decision processes are not strictly exogenous (the budget format in the current year can be influenced by spending in the next year if the government forecasts the future economy and plans spending levels in advance). According to Stock and Watson (2004), when the regressors are exogenous, but not strictly exogenous the OLS method can be used

---

<sup>8</sup> AIC test was performed by regressing functional spending against 13 lagged of budget formats in 13 separate regressions. The ratio of sum of square residuals to total time period and a fraction of time period multiplied by numbers of coefficient parameters were summed to derive AIC statistics for each model with specific maximum lag order. The smallest AIC value indicated the most appropriate lag order since this value shows the smallest standard errors at the specified maximum lag compared to the increasing numbers of coefficient parameters given in each maximum lag model (See Stock and Watson, 2002, p. 553 for AIC formula).

<sup>9</sup> Thirteen lags were incorporated in the AIC test since the time series data are relatively short, 40 year-period, and since the performance-based budget was implemented for only 7 years in the series starting in 1997. The AIC statistics shown in the table indicate that the regressors, which are the three budget formats, influenced decision making for a maximum of five years forward. Thus, the  $j$  in Equation 1 of the vectors  $l$ ,  $p$ , and  $s$  is 5.

with the Heteroskedasticity-and Autocorrelation–Consistent (HAC) since the OLS standard errors are unreliable<sup>10</sup>.

Following Wooldridge’s (2006, p. 345) finite distributed lag model and using the line-item budget as an example, the mechanism for the dynamic multipliers in vector  $L$  of the equation (1) can be illustrated as follows.

Holding other variables in Equation 1 constant, the dynamic and permanent effects of the line-item budget in Vector  $L$  is,

$$g_t = \beta_0 + \sum_{i=L_0}^L \beta_4 l_{t-5} + u_t \quad (2)$$

Given the exogeneity property of the independent variables, budget formats, the expected value of the error term  $u_t$  is zero as shown below.

$$E(u_t | l_{t1}, l_{t2}, l_{t3}, l_{t4}, l_{t5}) = (Eu_t | l_t) = 0 \quad (3)$$

When the expected value of the error terms at time  $t$  is zero, the dynamic effects of the line-item budget, on functional spending  $g$  can be written as follows.

$$\begin{aligned} g_{t-1} &= \alpha_0 + \gamma_0 k + \gamma_1 k + \gamma_2 k + \gamma_3 k + \gamma_4 k + \gamma_5 k \\ g_t &= \alpha_0 + \gamma_0 (k+1) + \gamma_1 k + \gamma_2 k + \gamma_3 k + \gamma_4 k + \gamma_5 k \\ g_{t+1} &= \alpha_0 + \gamma_0 k + \gamma_1 (k+1) + \gamma_2 k + \gamma_3 k + \gamma_4 k + \gamma_5 k \\ g_{t+2} &= \alpha_0 + \gamma_0 k + \gamma_1 k + \gamma_2 (k+1) + \gamma_3 k + \gamma_4 k + \gamma_5 k \\ g_{t+3} &= \alpha_0 + \gamma_0 k + \gamma_1 k + \gamma_2 k + \gamma_3 (k+1) + \gamma_4 k + \gamma_5 k \\ g_{t+4} &= \alpha_0 + \gamma_0 k + \gamma_1 k + \gamma_2 k + \gamma_3 k + \gamma_4 (k+1) + \gamma_5 k \\ g_{t+5} &= \alpha_0 + \gamma_0 k + \gamma_1 k + \gamma_2 k + \gamma_3 k + \gamma_4 k + \gamma_5 (k+1) \\ g_{t+6} &= \alpha_0 + \gamma_0 k + \gamma_1 k + \gamma_2 k + \gamma_3 k + \gamma_4 k + \gamma_5 k \end{aligned} \quad (5)$$

Where,  $g$  is functional spending in various years ranging from  $t-1$  to  $t+6$ ,  $\alpha_0$  is a constant term in a linear regression model,  $\gamma_0$  is a coefficient parameter of a line-item budget, and  $k$  is constant parameter of a line-item budget.

According to Wooldridge (2006, p. 346), in the systematic equation (5), each of these equations indicates that 1) at any period before the current period specified by subscript  $t-1, t, t+1, t+2, \dots, t+6$  of the dependent variable  $g$  on the left side, the constant parameter is equal to  $k$ , 2) the constant parameter  $k$  will increase for one unit (from  $k$  to  $(k+1)$ ) at any current year specified by the subscripts in dependent variable  $g$ , and 3) the constant parameter  $k$  will revert back from  $(k-1)$  to  $k$ , the initial level, then the current year is passed. The last line in the system equation (5) indicates that at the end of the

<sup>10</sup> Unreliable errors can result in inconsistent prediction and forecast activity, resulting in an inefficient OLS test, but hypothesis testing is still valid for the purpose of testing causal relationship between the independent and dependent variables as long as there is no correlation between the independent variables and the errors terms (Wooldridge, 2006). When heteroskedasticity and autocorrelation are taken into account, the standard errors is higher resulting in a lower chance to commit Type I errors, i.e., rejecting the true null hypothesis, which is important for internal validity in hypothesis testing.

dynamic system which is year seven ( $t + 6$ ),  $g_{t+6}$  is returned to its initial level  $g_{t-1}$ . In the system equation (5), viewed diagonally from left to right, the coefficient parameters  $\gamma_1, \gamma_2, \gamma_3, \gamma_4,$  and  $\gamma_5$  of the constant parameter  $k + 1$  in the system equation (5) is a “dynamic multiplier” which is the change in  $g$  one period, two period, three period, four period, and five period, respectively, after the immediate change  $\gamma_0$  at year  $t$ . The permanent effect of the budget format in any six year period is thus equal to  $\gamma_0 + \gamma_1 + \gamma_2 + \gamma_3 + \gamma_4 + \gamma_5$ . Thus, the individual coefficient parameters  $\gamma_0, \gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5$  and aggregated parameter  $[\gamma_0 + \gamma_1 + \gamma_2 + \gamma_3 + \gamma_4 + \gamma_5]$  are the main parameters to test the role of the budget formats on spending in this study.

Annual expenditure data by service functions were derived from the Thai budget documents from years 1960 to 2007. The years 1960 to 1964 and 2006 to 2007 were dropped since there were no Gross Domestic Data reported by the World Bank for this country during these periods. All socio-economic data for the years 1965 to 2005 were derived from the World Bank (2007). Table 2 provides summary statistics for the data used in this study.

**Table 2: Summary Statistics: 1965-2005**

	Mean	Maximum	Minimum
National defense (% to total expenditure)	15.6	20.6	7.1
Education (% to total expenditure)	19.3	25.7	6.26
Economic development (% to total expenditure)	23.2	32.7	15.6
General Administration (% to total expenditure)	4.2	7.6	2.6
Public Safety (% to total expenditure)	5.9	7.5	4.4
Public Welfare (% to total expenditure)	13.9	35.7	10.3
Population Age 0-14 (% to total population)	35.7	46	24.1
Population Age 65 and over (% to total population)	4	7	3
Density (residents per square mile)	92.6	124.6	61
Total Population (million)	49.1	63.6	31.2
Gross Domestic Product (Thai Bath, Real 2000 Base, Trillion)	1,994.60	6,503.50	91.2

## ANALYSIS AND FINDINGS

The data in Table 3 presents the estimated dynamic effects  $\gamma_0, \gamma_1, \gamma_2, \gamma_3, \gamma_4,$  and  $\gamma_5$  of the budget formats on five government service functions: national defense, education, public welfare, public safety, economic development, and general administration for the current period and the five years following the adoption of the budget format in the current year. A unit change in GDP results in a decrease in national defense and education and an increase in general administration. A 10% increase in GDP is associated with a 1.2% decrease in national spending, a 0.4% decrease in educational spending, and a 0.5% increase in general administrative service, holding other variables in the models constant. The decreased spending in national defense and education by increasing GDP implies that the Thai government tends to be fiscally conservative: given that education and the national defense are discretionary budget items. Hence, the Thai government chooses to cut the budget in the two functions in order to balance the budget rather than increasing spending. Since the administration spending is mainly for daily operations, it is difficult to control; and, thus, this spending increases according to the country's purchasing power. This finding implies that the tax smoothing theory by Barro (1994), which explains that a government tries to smooth the tax rate over a period by saving surplus funds in prosperous periods in order to spend the surplus during poor economic times, is likely to be true in Thailand. This finding and analysis is consistent with the TDRI's (1992) fiscal and macroeconomic policy study.

**Table 3: Dynamic Causal Effects of Budget Reforms on Functional Spending**

	National Defense	Education	Economic Development	Public Welfare	Public Safety	General Administration
Constant	-1086.7*** (232.7)	5489.2*** (1210.3)	3888.8** (1682.1)	1644.7** (648.3)	1042.22*** (241.5)	445.6*** (107.7)
Gross Domestic Product (log)	-11.736*** (2.25)	-3.636* (2.16)	10.12 (8.83)	-3.23 (2.17)	-2.11 (2.48)	4.627*** (1.05)
Population (log)	80.6*** (16..5)	-34.73*** (7.9)	-24.335** (9.3)	-95.4** (40.5)	-59.8*** (12.4)	-32.18*** (7.687)
Density (log)		6.161*** (1.28)	1.801 (1.87)	1.348** (0.45)	.82** (0.33)	
Population Age 14 (% to Total)		5.07*** (1.42)				
Population Age 65 (% to Total)				3.977** (2.08)		
Share of Agricultural (% to total GDP)			-907** (0.42)			
<b>Line-item Budget</b>						
(Period 0 to 6, where $\gamma_0$ is a current year multiplier or immediate impact and $\gamma_1, \gamma_2, \gamma_3, \gamma_4,$ and $\gamma_5$ are the lagged multipliers or the lagged impacts for lagged years 1 through 5, respectively).						
0	-.042 (0.77)	.316 (0.653)	4.972*** (1.14)	1.498*** (0.38)	.547** (0.26)	1.142*** (0.35)
1	-.20** (0.09)	-.884** (0.29)	-.259 (1.35)	.218** (0.09)	-.20 (0.14)	-.59*** (0.04)
2	.77*** (0.12)	.777** (0.31)	3.082*** (0.44)	-.013 (0.12)	-.20 (0.2)	-.0001 (0.05)
3	.874*** (0.12)	1.358*** (0.31)	2.55*** (0.41)	.572*** (0.12)	.458** (0.2)	-.214*** (0.05)
4	.985*** (0.11)	.771** (0.27)	.631 (0.88)	.684*** (0.12)	.417** (0.20)	-.05 (0.37)
5	.280*** (0.49)	.323 (0.46)	.326 (0.66)	.541 (0.3)	.292 (0.18)	-.018 (0.37)
<b>Performance-based Budget</b>						
(Period 0 to 6, where $\gamma_0$ is a current year multiplier or immediate impact and $\gamma_1, \gamma_2, \gamma_3, \gamma_4,$ and $\gamma_5$ are the lagged multipliers or the lagged impacts for lagged years 1 through 5, respectively).						
0	-2.852*** (0.572)	.593 (0.58)	1.07 (1.8)	-1.17 (1.0)	-.847*** (0.37)	-.088 (0.21)
1	-1.404*** (0.22)	0.018 (0.28)	1.635 (2.06)	-2.91*** (0.53)	0.178 (0.35)	.413*** (0.1)
2	-2.063*** (0.158)	1.02*** (0.21)	-6.473*** (0.78)	-2.093*** (0.48)	-.128 (0.27)	.344*** (0.07)
3	-.524*** (0.03)	-.754*** (0.17)	-2.51*** (0.623)	-.311 (0.35)	.141 (0.13)	.452*** (0.01)
4	-.782*** (0.065)	-20.8*** (0.2)	.728 (0.94)	16.13*** (0.37)	-.502** (0.17)	.080*** (0.03)
5	-.680*** (0.08)	13.83*** (0.57)	-1.571 (1.68)	-19.33*** (0.85)	-0.707*** (0.2)	.193*** (0.03)
Adjusted R Square	0.936	0.905	0.76	0.963	0.606	0.473
Observation	40					

The numbers of citizens in the population significantly decrease all functional spending, except national defense whose percent to total expenditure is significantly increased when the population increases. A 10% increase in the country's total population results in an 8.6% increase in national spending, with everything else equal. A 10% increase in the country's population results in a 3.5% and 2.4% decrease in educational and economic development spending, respectively, when each of these variables and the other variables in the model are controlled. A 10% increase in total population is associated with a 9.5%, 6%, and 3% decrease in public welfare, public safety, and general administration, respectively, while holding everything else equal. The relatively large effects of the population compared to those of GDP indicate that the country's spending decision is likely to be demand driven, rather than revenue driven. The total population's positive effect on national defense and negative effect on the rest of the five functions implies that there is a competing demand for different spending choices and national defense tend to be the winner in spending trade among such functions. As a result, per person spending in each of the five function areas decline. This finding confirms the results of the spending benchmark study by Tinakron and Sunsakarn (1996) that Thailand has been overspending in national defense and under spending in welfare, education, and economic development programs.

A 10% increase in density per square mile is associated with a 6%, 1%, and 1% increase in education, economic development, and public safety respectively, while holding other variables in the model constant. These results indicate that the urban areas tend to receive a greater portion of the budget when compared to the more rural areas. This situation may lead to uneven economic development when the majority of the population moves into the capital city and other urban areas. Unfortunately, this seems to be the case in Thailand. The population age 0 to 14 significantly affects educational spending—a 1% increase in school age population results in an increase of about 5% in the educational service function. A 1% increase in the population age 65 and over results in an increase in public welfare spending of about 4%. A unit increase in the ratio of agricultural production results in a decrease in economic development spending at about 1%. This finding reflects the high level of competitiveness for the country's resources between the agricultural and other industrial sectors.

The dynamic coefficients of the line item budget and the PBB presented in Table 3 respond to the research question: does the budget formats make any difference on spending levels across functions and how? In general, the significance of the dynamic multipliers in the results for the line-item and the PBB models show that these two formats significantly affect spending levels across functions compared to the PPBS variable which is omitted from the regression. Furthermore, in almost all functional spending, while the dynamic multipliers of line-item and the PBB are both significant, they affect spending differently. As shown in Table 3, while the line item tends to dynamically increase all spending, the PBB tends to dynamically decrease spending in all functions except general administration in which the PBB increases spending. A line-item budget does not immediately increase national defense and education spending, but it does immediately increase economic development, welfare, safety, and general administration over the year in which line-item format was adopted for about 5%, 1.5%, .5%, and 1.1% respectively. Table 3 also shows that the effects of the line-

item budget on economic development, welfare, safety, and general administration are sporadic in the later years, but do persist for about 4 to 5 years at the maximum range.

For national defense and education, the line-item budget is not significantly different than PPBS in the year in which this format was adopted. This result confirms the TDRI (1998) assessment that in practice, the budget period in the PPBS is not different than the line-item since all proposed programs were not funded as ranked. The line-item budget reduces spending in defense and education by about 0.2% and 0.9%, respectively after the budget format is adopted for one year, but then significantly and consistently increases the spending from year 3 to year 6 and from year 3 to year 5 in defense and education, respectively. Note that the positive lagged effects in these two functions in later years are larger than the negative lagged effect in year two (lag 1). These results suggest that for the discretionary spending in the service areas in which the government has special agendas (i.e., national defense reflects military control over Thai government and education is the main focus in all nine National Plans), a line-item budget does not influence the decisions in the current year, but do affect the appropriation in later years since the baseline is carried over from year to year. This means that spending in the two functions is agenda-driven, rather than resource-driven in the current year decision. But in the following period, the two functions are affected by the baseline budget which tends to increase spending across the board. The signs of the multipliers in Table 3 are all positive and thus there is no spending trade across functions to align spending with policy priorities. This finding is consistent with Reddick's (1996) results that line-item budgets influence incremental spending (Wildavsky, 1960).

As shown in the first row (lag 0) under the PBB section of Table 3, the empirical results indicate that the PBB has an immediate impact on defense and public safety as the dynamic multipliers of these two spending are strongly and negatively significant at .01 level. The PBB format used in the budget formulation immediately cut 3% and 1% on defense and public safety spending, respectively, over the same year in which the budget is adopted. The PBB does not have an immediate impact on spending level in other functions including education, economic development, welfare, and general administration which were found under spent compared to the benchmark by Tinakron and Sunsakarn (1996). The results in this row indicate that for an immediate impact, the PBB has a strong role in cutting national defense spending that was: 1) empirically found to be over spent, 2) did not align with policy priority as national defense never appeared in the nine master plans, 3) grew incrementally with the line-item budget, and 4) was subject to military control in parliament for a long period. The empirical evidence shows that while the PBB cut defense and safety, it does not increase the budgets in education, welfare, economic development, and general administration which are demanded by the national master plans and were under spent in the past. Thus, the PBB immediately enhances operational efficiency by cutting defense whose producing and delivery cost tend to be identifiable with relative certainty in the budget proposal and enhance the planning function by reducing the defense spending which does not directly correspond to national plans. But, the PBB does not significantly increase the trade-off (or allocation efficiency—budget planning) among spending functions since the defense cut does not increase education and welfare spending in the same year.

The lagged effects of the PBB on national defense persist consistently in a descending direction through year six (lag 5). Defense spending is cut 1.4%, 2%, .5%, .8%, and .7% after the PBB was implemented for years one, two, three, four, and five respectively.

All dynamic multipliers are significant at .01 level. These empirical results indicate that the PBB supports multi-year planning as the cut for this function is continuous, given that this function was overspent and is not listed as policy priorities in the master plans. This finding is relevant to the interviewing results, because since PBB was implemented in 1997, the Bureau of Budget has conducted a 3-5 year revenue and expenditure projection and targeted spending in each function in order to be responsive to the national master plans (Kullapaijit, 2008, Na Songkla, 2007). Furthermore, as explained by Veerakul (2004), the BOB analyses for each budget request focuses on the cost of the program spending under each function which is then used to compare with the immediate and intermediate outcomes relevant to national plan proposed by agencies' requests. According to the two planning officials, the BOB submitted the ranking criteria, program cost, asset management, and procurement data along with budget recommendation to the Thai Parliamentary; the interviewees noted that these pieces of information significantly reduced political debate when some programs with relatively less merit got cut. This information, combined with empirical results, strongly suggests that the PBB, 1) permanently enhances the planning function in the aspect that it dynamically cuts the defense budget (in lag 1 to 5) which is not ranked as the first priority due to cost and outcome benefit analysis, and 2) it immediately enhances technical efficiency or managerial accountability by cutting defense and safety spending through the Bureau of Budget's reviewing and analyzing agencies' asset management plans and procurement data over the year in which the PBB is adopted (lag 0). However, the empirical results in lag 0 of the PBB do not support the notion that the PBB *immediately* enhances allocation efficiency among defense, safety, education, and welfare since the cut in the first two spending does not bring about the increase in the latter two functions.

Interestingly, the PBB continuously increases spending in general administration in lag 1 to 5. The increasing effects of PBB on general administration are relatively smaller than those in defense, ranging from .08% in lag 4 to .4 % in lag 1. All lagged parameters are significant at the .01 level, indicating that in the lagging period, the PBB permanently encourages spending trade-offs between the two functions, general administration and defense. This feature may result from three-year planning and linking the immediate outcome with program costs adopted by the BOB in the PBB period. When combined this finding with those in defense, the empirical evidence likely to support the notion that in a multi-year period, the PBB enhances budget planning by cutting spending in the programs that are not in first priority and trading off such cutting with increasing spending in administration to be responsive to increasing service demand (as mentioned above a 10% increase in the GDP results in a 5% increase in the demand for general administration and 1.2% decrease in the demand for defense spending). Combining the PBB analyses and results in the lag 1-5 with those in lag 0, it is likely that the PBB does not immediately enhance allocation efficiency by trading spending between functions over the year in which it was adopted, but do so in the later years for the two functions, defense and general administration.

For the management function, the PBB exhibits the capacity to cut the national defense throughout the six year period, immediately cut public safety, and increasing administration spending in the lagged period. Meanwhile, the PBB does not affect education, economic development, and welfare spending in a consistent pattern. These empirical results can be explained using the concept of controllership capacity of a government budget in different service areas as asserted by Thompson and Jones (1986;

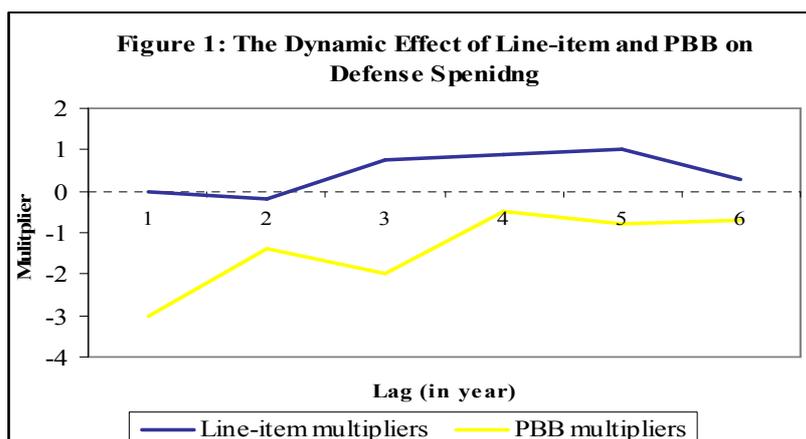
see also Jones and McCaffery, 2008: 137-198). According to Thompson and Jones, PBB is an ex-post controlling system in which the budget is awarded according to proposed and adopted service contracts; managerial accountability is held through output measurement and outcome monitoring after the budget is awarded, and service is produced and delivered. Based on these authors' concepts, the ex-post budget is likely to be effective in such service functions as defense whose production process exhibits a constant return to scale (i.e., cost of service production and output unit increase proportionately when more numbers of unit output is produced), cost is controllable before the budget is awarded as it does not increase or decrease due to the number of entitlement during the fiscal year, output and outcome are quantifiable and measurable, and demands for service is definable. In contrast, the ex-post controlling the budget such as the PBB may not be effective in enhancing managerial accountability and technical efficiency in the service areas such as education, economic development, and welfare. In these areas, services are unique depending on: the types and numbers of clients served<sup>11</sup>, the clarity of service contracts, and the validity of outcome measurements<sup>12</sup>. For these programs, according to Thompson and Jones, service outcome is not only difficult to measure but should also be meaningfully comparable to other programs' results since such government human service areas are in a unique market. Thus, supported by Thompson and Jones' concepts, the empirical results in this section suggest that the PBB is effective in cutting inefficiency and enhancing managerial accountability only in the areas whose demand is definable, where cost per unit is relatively certain as output increases, and immediate outcome is measurable for meaningful interpretation to link spending with targeted outcomes and strategic policy priorities.

Figure 1 presents the dynamic effects of a line-item budget and PBB on national defense spending from 1965 to 2005. The line-item budget does not have an impact during the first year that it was implemented and only a very small impact thereafter. The PBB however has an immediate impact over the six year period. The figure shows that the effects of both budget formats persist through a six year period in an opposite direction. While the line-item budget continuously increases spending, the PBB continuously decreases spending.

---

<sup>11</sup> The number of clients may vary due to the socio-economic environment and social problem at hand.

<sup>12</sup> There are several external factors and inherent or inert characteristics of individual clients that affect outcomes. For example, it is difficult to measure public school teacher performance. Why? One measure of a teacher's success is determined by student performance. However, evidence shows that students from higher income families tend to score higher than those from lower income families on standardized exams. Unfortunately, this low performance is reflected in the teacher's performance.



This empirical evidence indicates that information in budget documents derived from executive formulation and recommendation influences spending. Furthermore, results-oriented budget and PBB, are different from traditional budget/line-item budgets, in that they cut spending that was found to be over spent, regardless to national policy priorities, and controllable through public service agreement contracts conducted under the PBB plan (Interview with Kullapajit, 2008, Bureau of Budget). Meanwhile, the line-item budget fails to do so in the same function, national defense. These results support the notion that a PBB is different than other budgets in that it immediately and permanently enhances the planning and management functions in one specific spending area, national defense, compared to line-item.

Table 4 presents the permanent effect of the line-item and the PBB over the entire period. As shown in the table, the line-item budget increases spending in all functions, except public safety and general administration. Over the six year period, the line-item budget document and recommendation permanently increase spending in defense, education, economic development, and welfare for about 3%, 7%, 11%, and 2%, respectively. While the empirical results cannot reveal the valid reason why the line-item increases spending in such functions, the theory of the line-item budget (Shick, 1966) and instrumentalism (Wildavsky, 1960) as well as previous findings (Christensen, 1999) suggest that since the line-item presents inputs rather than outcomes, the budget is allocated across the board in a fair share manner. This is because when program outputs, outcomes, and benefits cannot be seen through the input lists, resources are allocated across the board according to the proposed program merits which seems to be equally important. When the ministers in Thailand proposed their budgets claiming that their programs are relevant to the national goals and when the line-item format does not encourage outcome analyses compared with program cost and master plans, allocation efficiency is unlikely to occur. In such situations, the budget is not shifted across function based on the rational alignment with national policy priorities and performance outputs, and program outcomes.

<b>Table 4: Summary of Linear Combination of Coefficients (Lags 0 to 5)</b>				
	Coefficient	HAC	Standard Error	t-stat
National Defense				
Line-item Budget	2.675***		1.14	2.345
Performance-based Budget	-8.308***		0.56	-14.818
Education				
Line-item Budget	6.695***		1.64	4.08
Performance-based Budget	-2.407		3.41	-0.705
Economic Development				
Line-item Budget	11.3***		2.65	4.254
Performance-based Budget	-7.12		7.71	-0.923
Public Welfare				
Line-item Budget	1.716***		0.46	3.701
Performance-based Budget	-9.697***		3.38	-2.865
Public Safety				
Line-item Budget	1.715		0.93	1.829
Performance-based Budget	-1.865		1.47	-1.266
General Administration				
Line-item Budget	0.253		0.59	0.426
Performance-based Budget	1.396***		0.27	5.168

*\*\* Statistical significance at .05 level, \*\*\*statistical significance at .001 level.*

Table 4 also shows that in the long-run, PBB permanently cut spending in defense and public welfare for about 8% and 10%, respectively, while increasing spending in general administration at about 1%. Although, it is unclear based on the empirical results why welfare in the Thai budget is cut. This topic deserves further investigation. The empirical results clearly show that the effects of PBB are in the opposite direction to the line-item budget in defense and general administration. This suggests that PBB tends to be effective in realigning the budget with national policy priorities for defense and general administration in which the budget is controllable before the resource is awarded and outcomes in such spending that is measurable and meaningfully interpretable. Per the question, why does PBB not achieve planning and management effectiveness in education, economic development, and safety? Two answers are temporarily proposed. First, as mentioned, PBB, which is an ex-post controlling system, may be appropriate in only a service area where performance contract and economic analyses in terms of cost and benefit measurement are possible. Second, as suggested by Andrew (2006), Thailand may not be ready for PBB since its basic practices in financial reports and audits are poorly performed. According to Andrew (2006), the poor performance in reporting and auditing system hinder performance monitoring and transparency which are important pieces of information in allocating the budget in the following fiscal years and in long-term planning. This postulation is supported with the interviewing information that the Thai Bureau of Budget had not accomplished a systematic performance measurement yet in the 2006-2007 fiscal year and that Thailand's corruption index score is reportedly relatively high among the East Asian Countries (Kaufmann, Kraay, & Mastruzzi, 2008).

## CONCLUSIONS

This article investigates the effects of budget formats on government spending in Thailand across functions including defense, education, economic development, welfare safety, and general administration during the period from 1965 to 2005. The three research questions are: 1) whether budget formats significantly affect government spending across functions; 2) if yes how; and 3) are there any difference among the three budget formats, namely line-item, PPBS, and PBB? The empirical results indicate that budget formats significantly influence spending in different ways. Over a year in which the two formats were adopted, the line item budget immediately increased spending in economic development, welfare, safety, and general administration, while PBB immediately decreased spending in national defense and safety. These results, combined with interviewing results, suggested that PBB practices including the service contract agreement mutually written by the Bureau of Budget and agency heads, immediate outcome and cost analyses, asset management and procurement control through ex-post system effectively enhanced management efficiency and budget planning in a functional spending areas which over spent and was irrelevant to the master plan. In the later years, PBB continued cutting defense spending, while consistently increasing general administration through the period ranging from lag 1 to lag 5. These results revealed the planning capacity of PBB in shifting the budget from defense to administration in the long-run. This finding is consistent to the BOB interviewees' note that since PBB was adopted, the BOB has projected revenue in a three to five year cycle and set aggregated functional spending to align available resources with national priorities. Thus, in the long-run, PBB can enhance planning capacity of a government budgeting practice in the two service areas, defense and administration. These PBB results are different than those of line-item which tends to add to the budget incrementally across functions and across periods.

These findings add to the budget literature that through linkage between program goals and master plans, service contract agreements, performance monitoring, and cost versus outcome measurement, PBB is effective in cutting inefficiency over the same year in which the format was implemented. Furthermore, due to how PBB features in long-term revenue projection and functional spending planning, PBB permanently enhances budget planning in shifting budget between functions. Finally, PBB tends to be effective in budget planning and management in such particular service areas as defense and administration whose costs are measurable, controllable, and comparable across programs under the same goals. The findings add to the comparative budget literature that PBB is effective in specific service areas when used in parliamentary system where budget processes are centrally controlled, the master plan is unique and consistent through out the period, and the service contracts can be identified and monitored by the central agency. For practices, PBB is a promising approach to re-align resource allocation with national strategic planning in a multi-year time frame, especially in the defense and general administration. Thus, based on this result, it might be too premature to terminate PBB especially in the defense and administration sectors in Thailand. Since PBB was implemented for less than ten years at the time this study was conducted, the results of this study are limited by the short time frame. Further study should re-examine the effect of PBB in a longer time frame and investigate how and why PBB is effective only in some specific functional areas such as defense

administration (Jones and McCaffery, 2008). Finally, the impacts of PBB on spending should be compared across countries.

*Arwiphawee Srithongrung, D.P.A., Assistant Professor, School of Public Administration, University of Nebraska at Omaha, NE 68182 USA:  
asrithongrung@mail.unomaha.edu*

## **APPENDIX I: SUMMARY OF NSEDPS EXCERPTED FROM:**

### **Plan 1: 1961–1966**

The plan has a single goal, to increase the country's economic growth rate. The policy priorities were identified by foreign and Thai experts at the top management level. Action plans are supply-side economic development in which public infrastructure and incentives are used to attract foreign investment.

### **Plan 2: 1967–1971**

The plan still has a single goal, to increase the country's economic growth rate, but it is more specific by focusing on rural areas. The policy priorities were identified by foreign and Thai experts at the top management level. Action plans are supply-side economic development in which public infrastructure and incentives are used to attract foreign investment.

### **Plan 3: 1972–1976**

The plan still has a single goal, to increase the country's economic growth rate, but is focused more narrowly on reducing income gaps throughout the country. The action plans range from increasing economic stability through conservative government finance to increasing national saving and reducing population growth rates.

### **Plan 4: 1977–1981**

The plan still focuses on enhancing the economic growth rate. Action plans include industrial and agricultural development, brown-field development, natural resource conservation, income distribution, foreign trade, and reducing national trade deficits.

### **Plan 5: 1982–1986**

The plan focuses on economic growth and stabilization. This plan designates that PPBS must be prepared for budget allocation, public service production, and delivery, especially for the rural development and eastern seaboard industrialization programs. The plan still is decided at the top management level where the technical experts are foreigners and Thai elites.

### **Plan 6: 1987–1991**

The plan has multiple goals in social and economic development. Action plans include sciences and technology development, workforce literacy, conservative public finance to increase national saving, and state-enterprises' structural development. In addition to Thai and foreign experts and Thai elites, media representatives and private sector chief executive officers were involved in writing the plan.

### **Plan 7: 1992–1996**

The plan focuses on a sustainable economy and social quality. The action plans include expanding the economy, income distribution, human development, better quality of life, and better environments.

**Plan 8: 1997–2001**

The plan focuses on enhancing the economy and quality of life through such actions as increasing education standards and accessibilities throughout the country, creating sustainable environments, and preserving the country's natural resources. This plan officially designates that such actions must be considered seriously and adapted by ministers and public sector employees. In addition to foreign and Thai experts, private sector leaders, media representatives, and representatives from various professions were involved in writing the plan (direct input from citizens was not solicited). Service contracts between top management level, Thai Bureau of Budget (BOB), and ministries, as well as the department heads and agencies called Public Service Agreement (PSA) and Service Delivery Agreement (SDA) were implemented in some selected ministries and departments as a pilot project for new budget reform.

**Plan 9: 2002–2006**

The plan resembles the previous plan, reasoning that the country's policy priorities should be continuous. During this period, strategic goals were set in budget documents and were translated into departments' goals. Service contracts between top management level, Thai Bureau of Budget (BOB), and ministries, as well as the department heads and agencies called Public Service Agreement (PSA) and Service Delivery Agreement (SDA) were implemented across departments.

## REFERENCES

- Andrew, M. 2006. "Beyond Best Practice and "Basics First" in Adopting Performance Budgeting Reform." *Public Administration and Development* 26: 147-161
- Boex, J., Martinez-Vazquez, J., & McNab, R. 2000. "Multi-year Budgeting: A Review of International Practices and Lessons for Developing and Transitional Economies." *Public Budgeting and Finance* 20(2): 91-112.
- Christensen, S. 1992. "The Public Policy Process and Political Change in Thailand: A Summary of Observation." *Thailand Development Research Institution—TDRI \ Quarterly Review* 13(1): 3-11.
- Compos, E. and Pradhan, S. 1996. *Budgetary Institutions and Expenditure Outcomes: Binding Governments to Fiscal Performance*. Policy Research Working Paper No. 1646. The World Bank, Public Economics Division.
- Dixon, G. 2005. "Thailand's Quest for Results-Focused Budgeting." *International Journal of Public Administration* 28: 355-370.
- Freeman, D., Pisani, R. and Purves, R. 1998. *Statistics*. 3<sup>rd</sup> Edition. New York: WW Norton & Company.
- Grifel, S. 1993. "Performance Measurement and Budget Decision Making. *Public Productivity & Management Review* 16(4), 403-407.
- Grizzle, G. (1986). "Does Budget Format Really Govern the Actions of Budget Makers?" *Public Budgeting and Finance* 6(1): 60-70.
- Grizzle, G. 2001. "Linking Performance to Funding Decisions: What is the Budgeter's Role?" Pp. 245-260 G. J. Miller, B.W. Hildreth, & J. Rabin, eds., *Performance-Based Budget: An ASPA Classic*, Boulder CO: Westview Press
- Jermprapi, R. 2005. *Outcome-based Budgeting System*. Thailand Bureau of Budget Internal Study Report Available in print at Thailand Bureau of Budget Library.
- Jitsuchon, S. and Kingkeaw, R. 2004. "The Development of a Fiscal Model to Determine the Appropriate Budget Allocation." *Thailand Development Research Institution TDRI Quarterly Review* 11(2): 3-9.

Jones, L. R. and McCaffery, J. L. 2008. *Budgeting, Financial Management and Acquisition Reform in the U. S. Department of Defense*, Charlotte, NC: Information Age Publishing.

Joyce, P. 1993. "Using Performance Measures for Federal Budgeting: Proposals and Prospects." *Public Budgeting and Finance* 13(4): 3-17

Kamensky, J. 1993. "Program Performance Measures: Designing a System to Manage for Results." *Public Productivity & Management Review* 16(4), 395-402.

Kaosa-ard, M. 1998. Economic Development and Institutional Failures in Thailand. *Thailand Development Research Institution—TDRI Quarterly Review* 13(1): 3-11.

Kaufmann D., A. Kraay, & M. Mastruzzi. (2008). Governance Matters VII: Governance Indicators for 1996-2007). The World Bank. Retrieved from [http://info.worldbank.org/governance/wgi/mc\\_chart.asp](http://info.worldbank.org/governance/wgi/mc_chart.asp), dated October 6, 2008.

Kettl, D. 1997. The Global Revolution in Public Management: Driving Themes, Missing Links. *Journal of Policy Analysis and Management* 16(3): 446-462.

Kettunen, P. & K. Kriz. 2006. "Logic Modeling and the Theory of Performance Measurement." *Unpublished paper* (Cited by the author's permission)

Key, V. O. 1940. "The Lack of a Budgetary Theory." Pp. 109–178 J. M. Shafritz and A. C. Hyde, eds., *Classics of Public Administration*, 4th Edition, Orlando, FL: Harcourt Brace & Company.

Koteen, J. 1989. *Strategic Management in Public and Non-profit Organizations*. NY: Praeger.

Miller, G., B. Hildreth, and J. Rabin. 2001. "Strategy, Value, and Productivity." Pp. 245-260 G. J. Miller, B. W. Hildreth, & J. Rabin, eds., *Performance-Based Budget: An ASPA Classic*. Boulder CO: Westview Press

Mikesell, J. L. 2006. *Fiscal administration: Analysis and Applications in the Public Sector* (7th ed.). CA: Thompson: Wadsworth.

Mullen, P. (2006). "Performance-based Budgeting: The Contribution of the Program Assessment Rating Tool." *Public Budgeting and Finance* 26 (4): 79–88.

Ott, L. R. and M. Longnecker. 2001. *An Introduction to Statistical Methods and Data Analysis*. (5<sup>th</sup> ed.). Pacific Grove, CA: Thomson:Wadsworth.

Reddick, C. 2003. "Testing Rival Theories of Budgetary Decision-making in the US States." *Financial Accountability & Management* 19(4): 315-339.

Poister, T. and G. Streib. 1999. Strategic management in the public sector. *Productivity & Management Review* 22(3): 308-325.

Schick, A. 2001. "Budgeting for Results: Recent Development in Five Industrialized Countries." Pp. 129-146 G. J. Miller, B.W. Hildreth, and J. Rabin, eds., *Performance-Based Budget: An ASPA Classic*, Boulder CO: Westview Press.

Schick, A. 1966. "The Road to PPB: The Stages of Budget Reform." Pp. 220-236 J. M. Shafritz and A.C. Hyde, eds., *Classics of Public Administration*, 1997, 4<sup>th</sup> Edition, Orlando, FL: Harcourt Brace & Company.

Academic Department of Skybook Publishing Company. 2008. *Thailand's Socio-Economic Development Plans*. Bangkok, Thailand: Skybook Publishing Co. Ltd.

Sopchokechai, A. 2000. "Public Sector Reform to Eradicate Poverty." Thailand Development Research Institution Study Report, dated November 24-25, 2000. Chonburi, Thailand.

Stock, J. and M. Watson. 2007. *Introduction to Econometrics*. 2<sup>nd</sup> Ed. Boston, Massachusetts: Addison-Wesley.

Streib, G. 1992. "Applying Strategic Decision Making in Local Government." *Productivity & Management Review* 15(3): 341-358.

Thailand Development Research Institution—TDRI. 2004. *A Study Report of New Budgeting System*. Retrieved from <http://www.bb.go.th/bbhome/index.asp> , dated June 11, 2007.

Thompson, F. and Jones, L. 1986. "Controllorship in the Public Sector." *Journal of Policy Analysis and Management* 5(3): 547-571.

Tinakorn, P. and C. Sunsangkarn. 1996. "Study of the Thai Government Budget Allocation: An International Comparison." *Thailand Development Research Institution—TDRI Quarterly Review* 11(2) 3-9.

Tujinda, T. 2003. *A comparative study of Netherland's and Thailand's results-oriented budgets*. Thailand Bureau of Budget Internal Study Report, Available in print at Thailand Bureau of Budget Library.

Wang, X. 2000. "Performance Measurement in Budgeting: A Study of County Government." *Public Budgeting & Finance* 20(3): 102–118.

Wildavsky, A. 1964. *The Politics of Budgetary Process*. Boston, MA: Little Brown

Willoughby, K. 2004. Performance Measurement and Budget Balancing: State Government perspective. *Public Budgeting and Finance* 24(2): 21-39.

Willoughby, K. and J. Melkers. 2000. "Implementing PBB: Conflicting Views of Success." *Public Budgeting & Finance* 20(1):85-120.

Willoughby, K. and J. Melkers. 2005. "Models of Performance-measurement Use in Local Governments: Understanding Budgeting, Communication and Lasting Effects." *Public Administration Review* (March/April): 180–190.

Wooldridge, J. 2006. *Introductory Econometrics*. Mason, OH: Thomson South-Western.

Veerakul, K. 2005. "Cost Calculation in Strategic Budgeting System." Thailand Bureau of Budget Internal Study Report. Available in print at Thailand Bureau of Budget Library.

## ABOUT IPMR

IPMR	<p>The International Public Management Review (IPMR) is the electronic journal of the International Public Management Network (IPMN). All work published in IPMR is double blind reviewed according to standard academic journal procedures.</p> <p>The purpose of the International Public Management Review is to publish manuscripts reporting original, creative research in the field of public management. Theoretical, empirical and applied work including case studies of individual nations and governments, and comparative studies are given equal weight for publication consideration.</p>
IPMN	<p>The mission of the International Public Management Network is to provide a forum for sharing ideas, concepts and results of research and practice in the field of public management, and to stimulate critical thinking about alternative approaches to problem solving and decision making in the public sector.</p> <p>IPMN includes over 600 members representing sixty different countries and has a goal of expanding membership to include representatives from as many nations as possible. IPMN is a voluntary non-profit network and membership is free.</p>
Websites	<p>IPMR: <a href="http://www.ipmr.net/">http://www.ipmr.net/</a> (download of articles is free of charge)</p> <p>IPMN: <a href="http://www.inpuma.net/">http://www.inpuma.net/</a></p>