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FINANCING HIGHER EDUCATION: APPROACHES TO FUNDING AT FOUR-YEAR PUBLIC INSTITUTIONS

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Abstract

This paper examines declining state support for higher education and explores various funding models that colleges and universities in the United States employ, including incremental budgeting, formula budgeting, zero-based budgeting, program budgeting, performance-based budgeting, initiative-based budgeting, and responsibility-centered budgeting. The mechanics, advantages, and disadvantages of responsibility-centered budgeting are emphasized. This paper looks at the literature on declining state support and the various budgeting models and provides an analysis regarding information on dwindling state support for higher education, the importance of budgeting, terminology discrepancies and application differences.

Introduction

One of the most contentious issues in American higher education involves finance and budgeting at four-year public colleges and universities. State support has declined significantly over the last several years, and "most state universities have gone from 'publically funded' to 'publically supported' to 'publically endorsed'" (Curran, 2009, p. 1). According to Hearn, McLendon, and Mokher (2009), state investment in higher education has declined significantly in relation to various factors, including enrollment increases. Hearn et al mention that "in some research-oriented flagship institutions, state revenues have declined to as little as one-third or even one-tenth of total institutional revenues" (p. 687).

While support for higher education varies by state, almost all public four-year institutions have had to cope with the reality of dwindling support, especially during the most recent recession. Many public institutions are now taking on ventures similar to those at private colleges, including fundraising campaigns, as well as increased fees for students, faculty, and staff, privatization of entities such as dining services and the bookstore. Public universities are also increasing pressure on faculty to bring in grant money (Curran, 2009).

Without state support, four-year public colleges and universities cannot achieve their goals and objectives. The manner in which a four-year public college or university allocates its state funding and tuition dollars reflects the institution's needs, mission, and strategic priorities. Budgeting becomes increasingly important as state support continues to decrease and as four-year public institutions move from state funded, to state supported, to state endorsed. Administrators at four-year public institutions need to understand various funding models, ranging from the most widely used model, incremental budgeting (IB), to the most recent trend in higher education finance, responsibility-centered budgeting (RCB). With fewer state dollars, public four-year institutions need to examine their mission and goals and choose an appropriate budgeting model or hybrid model that reflects their strategic priorities.

Significance of the Study

The objective of this paper is to examine the various funding models used within higher education, and to answer two research questions. These questions are: 1) what are the different types of funding models used by public four-year institutions, and 2) what are the advantages and disadvantages of moving to and using a responsibility-centered budgeting system at public four-year institutions?

This study provides readers with an overview of the different types of funding models used by public four-year institutions. These funding models include formula budgeting, incremental budgeting, zero-based budgeting, program budgeting, performance-based budgeting, initiative-based budgeting, and responsibility-centered budgeting. This paper

focuses heavily on responsibility-centered budgeting, including its mechanics and the advantages and disadvantages of implementing and using an RCB model. Although private institutions almost exclusively use RCB, only a handful of public four-year institutions have moved to this model. RCB focuses on accountability and can serve "as a way to restructure the administration of a college or university" (Zierdt, 2009, p. 348). With decreased state support, this model has become more popular within the past five years as part of an era focused on budget reform (Zierdt, 2009).

It is unlikely that state support for higher education will increase significantly in the future; therefore, more institutions may need to investigate moving to an RCB model not only to flourish, but to survive. Many public four-year institutions are considering new or improved budgeting tools "that will most effectively assist them in achieving institutional goals and objectives within their strategic plans" (Zierdt, 2009, p. 345), and are seeking to find the best ways to allocate scarce resources from state appropriations and tuition dollars. By providing a comprehensive overview of RCB as well as other types of funding models, this paper provides institutional leaders with ideas for budgetary practices or policies that may help them sustain their institution.

Review of the Literature

The demand for accountability and the decline in state support has required public four-year institutions to begin adopting new budgeting models (Serban, 1998). This paper provides a background, as well as a discussion of the advantages and disadvantages of seven budgeting models: incremental budgeting (IB), formula budgeting (FB), zero-based budgeting (ZBB), program budgeting (PB), performance-based budgeting (PBB), initiative-based budgeting (IBB), and responsibility-centered budgeting (RCB). An expanded section on the mechanics of responsibility-centered budgeting is also included toward the end of the literature review.

Incremental budgeting (IB)

Incremental budgeting, also known as line-item budgeting, is the oldest and most widely used form of higher education budgeting (Zierdt, 2009). According to Varlotta (2010), incremental budgeting "makes incremental upward or downward adjustments to budget allocations, expressed as percentage increases or decreases from the previous year's budget" (p. 15). Depending on the resources available, this form of budgeting either involves percentage adjustments that apply to all line items (e.g., colleges, programs, offices, departments, and other units), or involves incremental adjustments to specific line items (e.g., faculty salaries, new initiatives, facilities). Generally, colleges and universities will make unilateral downward adjustments when revenues decrease. When revenues increase, however, institutions may either apply a consistent upward adjustment to all line items, or they will adjust specific line items, such as faculty salaries (Varlotta, 2010). Institutions that use this method generally assume "the previous budget [has]

already been justified and it is used as a base upon which to make the decisions for the next fiscal year" (Linn, 2007, p. 21).

Incremental budgeting has a few advantages. Zierdt (2009) highlights that this method is the most efficient budgeting tool that institutions can employ because it makes simple incremental adjustments to each unit's budget. Varlotta (2010), who describes the model as "simple to operationalize and virtually automatic" (p. 15), mentions that because it applies consistent percentage adjustments to all units, conflicts are lessened and decision making is expedited. Incremental budgeting is best utilized when the institution's basic objectives have not changed (Zierdt, 2009). It is simple, efficient, and easy to understand.

Despite these advantages, incremental budgeting has several flaws. Varlotta (2010) mentions that the assumption upon which this budgeting method is based—that needs, priorities, and goals do not change from year to year—is flawed, and that because the incremental budgeting process is automatic, institutions that employ this model do not critically examine or challenge the previous year's needs, priorities, and goals. This budgeting method focuses on changes on the margins of an institution's budget, and because only small incremental changes are made, reallocation or "rightsizing" that could benefit some divisions, especially Student Affairs, typically does not occur (Varlotta, 2010). This model is "recognized as producing suboptimal results in terms of resources allocation" (Goldstein, 2005, p. 165).

While incremental budgeting may appear to treat all units equitably, this model gives no financial incentive for performance, nor does it increase funding for units that might support the institution's goals or priorities more than other units. As Varlotta (2010) mentions, "Units that are charged with or have taken the leadership role in addressing strategic priorities receive the same amounts of resources as units that have assumed none of these responsibilities" (pp. 15-16). This method treats each line item equally, and does not evaluate or challenge the status quo; however, relying on incremental adjustments to a historical allocation may no longer cover a unit's new services or programs. Also, a historical allocation may over-compensate an office that has downsized, reduced programs or recognized new savings from technology. Varlotta (2010) provides an example of how such changes might impact a particular office, suggesting that a unit that has historically spent money on delivering hard copy materials via mail but switches to electronic distribution may receive an allocation that significantly exceeds their expenses. This form of budgeting is the least likely form to bring about change and the most likely form to maintain the status quo. Goldstein (2005) suggests that because it is the most widely used budgeting method in higher education, we can imply that "the need for efficiency in some administrative areas outweighs the desire for effectiveness" (p. 165).

Formula budgeting (FB)

Formula budgeting (FB) is most often seen at higher education institutions in the Northeast and Midwest, as well as in elementary and secondary schools (Linn, 2007). This particular budgeting model is a quantitative approach to resource allocation that relies on complex formulas to distribute resources to units at an institution (Goldstein, 2005). Formula budgeting emerged in the 1950s and 1960s "as a means to ensure the equitable and rational distribution of resources" (Serban, 1998, p. 16). This approach estimates resources by relating program cost and program demand in the form of a mathematical formula. According to Serban (1998), this formula could "be as simple as a single student-faculty ratio or as complicated as an array of cost per student credit hour by discipline for many levels of instruction" (p. 16), and could be based on anything from historical data, to anticipated trends, to negotiated political agreements.

Like incremental and other budgeting models, formula budgeting has its advantages and disadvantages. One advantage that Goldstein (2005) mentions is that "the quantitative nature of most budget formulas gives them the appearance, if not always the reality, of an unbiased distribution" (p. 170). Formulas are often seen as objective and, in the absence of political influence, can be a way to equitably allocate resources to units. Once a formula is in place, an institution can "reduce political competition and lobbying" by not changing the formula, and can communicate an understandable model to its units and the state providing part of the allocations distributed to the institution's units via the formula (Serban, 1998).

Although formulas may provide the appearance of an unbiased distribution, Serban (1998) questions the assumptions of this model. In terms of allocating resources to academic programs, he suggests that formulas may reduce academic programs "to a common level of mediocrity by funding each one the same" (p. 17). Serban (1998) further contends that though formulas are based on data, they "are only as accurate as the data on which they are based" (p. 17). He also argues the model "may perpetuate inequities in funding that existed before the advent of the formula, because formulas may rely on historical cost data" (p. 17). If a formula is based on enrollment, incremental budgeting may not meet needs related to new initiatives or programs, or may not serve new demographics of students (Serban, 1998). Additionally, Zierdt (2009) mentions that formula budgeting sometimes create incentives to keep programs that contribute funding, even if these programs no longer relate to an institution's goals or objectives.

Zero-based budgeting (ZBB)

Zero-based budgeting (ZBB), when used in its most authentic form, recreates the institution's budget from scratch (Linn, 2007). Zero-based budgeting emerged in the 1970s when institutions started to demand that units justify their use of resources and to link resources and results (Serban, 1998).

Zero-based budgeting requires that units develop decision packages that describe the unit's activity, and involves administrators ranking the various decision packages in order of priority. The order of priority is typically based on institutional goals, cost/benefit analysis, or a subjective appraisal (Serban, 1998; Zierdt, 2009). Varlotta (2010) mentions that ZBB can be perceived as "the opposite of incremental budgeting [because it] starts from scratch every year [and] reconstructs each year's or cycle's budget anew" (p. 16).

Two of the advantages of zero-based budgeting include analysis and justification. When creating decision packages, units must think about how their programs relate to the institution's goals. If they do not analyze their courses and programs, their decision package may not receive priority. Units must justify why their programs relate to institutional goals, which is a benefit of this model. This model "not only initiates a budget-planning connectivity, but it also reexamines the basic elements—goals, objectives, measures, and benchmarks—of [a unit's] strategic plan" (Varlotta, 2010, p. 16). Zero-based budgeting requires units to re-evaluate their programs and create action plans that achieve their goals, while also keeping the university's goals in mind. With ZBB, this evaluation process should be completed before resources are allocated. Units must justify requests for resources and the final budget proposal "is directly correlated to the costs of implementing plans, reaching goals, and hitting benchmarks or objectives" (Varlotta, 2010, p. 16).

Literature on zero-based budgeting suggests that the main disadvantage of this method is "the time-intensive nature of the process" (Zierdt, 2009, p. 346). The process is also labor intensive because of its comprehensive approach, and it is not widely used in higher education (Varlotta, 2010). Goldstein (2005) suggests that this model might be better utilized at a unit level, after the unit receives an allocation from the institution, rather than at an institution-wide level. Goldstein (2005) also suggests that "it may be feasible or even productive to use the ZBB approach for a portion of the university's or division's budget" (p. 167).

Program budgeting (PB)

Program budgeting (PB) is a method of budgeting in higher education that involves three components: a program plan, budget, and analysis of costs and benefits (Zierdt, 2009). According to Zierdt (2009), the program plan establishes a unit's goals and objectives and relates them to the institution's goals. The program budget includes a cost-benefit analysis of how the program plan for each unit will relate to the institution's goals. The program plan may involve a number of alternate approaches for which the costs and benefits, as well as an estimation of resource requirements and benefits to the institution, are codified. The program budget projects costs over a longer term to provide a "long-term view of the financial implications" of a unit offering various programs (Goldstein, 2005, p. 167). An overarching theme of program budgeting is that units must specify not only how the resources they are allocated will be spent, but also why they will be spent in that manner (Linn, 2007).

Zierdt (2009) mentions that one of the advantages of program budgeting is that it relates budgeting with institutional priorities, as well as the institution's vision. Units must not only come up with a plan for the programs they offer, but also must discuss how their programs will align with the institution's goals, and must justify why they want to offer their programs. Because it involves a cost/benefit analysis, program budgeting may appear more objective (Serban, 1998). Despite this, Serban (1998) notes that this model cannot stand on its own, but should rather complement other budget models, such as formula budgeting and incremental budgeting. Serban's language implies that this model is rarely used in higher education anymore. Goldstein (2005) also discusses two flaws of program budgeting, mentioning that it is difficult to achieve consensus on what constitutes appropriate outcomes for each unit, and that occasionally, arbitrary allocations that do not relate to a unit's activities are made.

Performance-based budgeting (PBB)

Performance-based budgeting (PBB) dates back to the 1940s, but has reemerged as a response "to calls from stakeholders for greater accountability for all the funding they provide and as a way to bring together the strategic planning process with the budget creation process, which other tools can easily separate" (Linn, 2007, p. 347). According to Wellman (2003), performance-based budgeting came about to address internal incentive structures. As an outgrowth of program budgeting, performance-based budgeting addresses some of the concerns related to formula funding, incentive-based budgeting, and incremental budgeting by linking performance with resource allocation. Linking performance with resource allocation makes funding dependent upon accomplishments, since resources are allocated after a unit achieves satisfactory and desirable results (Serban, 1998). Unlike other budgeting methods, PBB, according to Serban (1998) focuses on results rather than activity or processes. Serban (1998) also mentions that "performance funding departs from traditional funding methods of higher education, which focus on inputs and processes and neglect outputs and outcomes" (p. 24). Ideally, performance-based budgeting involves a discussion of indicators for performance.

According to Zierdt (2009), performance-based budgeting's key advantage is that resources are allocated equitably to units that perform well. Although Zierdt (2009), Linn (2007), Wellman (2003), and Serban (1998) all note that performance-based budgeting is used more often at the state level than at the institutional or unit level, some of the tenets of this method are still applicable and might "correct some of the apparent flaws in traditional budgeting" (Serban, 1998, p. 24) by focusing on performance.

Performance-based budgeting focuses on results rather than needs, and this approach occasionally discourages units from reducing expenditures, restructuring, or reallocating resources (Serban, 1998). Serban (1998) also mentions that it is significantly easier to discuss and define performance-based budgeting and performance measures than it is to actualize the model. Additionally, Zierdt (2009) suggests that it is "difficult to define

performance criteria and performance measures when taking [into] account the diversity of various institutional missions" (p. 347). Although PBB can apply to resource allocation at the institution and unit level, all sources suggest that it may be more applicable in resource allocation by the state to state-supported institutions. In the 1990s, Tennessee and ten other states began implementing performance-based budgeting for state-supported institutions, and many continue to use some elements of this method today (Serban, 1998; Zierdt, 2009).

Initiative-based budgeting (IBB)

According to Linn (2007), initiative-based budgeting, also referred to as reallocation budgeting, is "an organized way of creating a pool of money for funding new initiatives" (p. 26). Unlike other budgeting methods, IBB is not a comprehensive system. Initiative-based budgeting contains many variations, but according to Goldstein (2005), a typical model involves "identifying resources that will be returned to central administration for redistribution in support of the priorities agreed upon during the institution's planning process" (p. 174). In other words, funding at the unit level for low-priority initiatives—generally "a small percentage of department or unit budgets" (Varlotta, 2010, p. 18)—is returned to a central pool, where money is then allocated to higher-priority initiatives. This approach indirectly connects funding and results because the money in the pool is used for awards that are used to execute programs related to objectives and goals (Serban, 1998). Varlotta (2010) mentions that institutions who use initiative-based budgeting "often require an individual unit to submit a proposal that illustrates how it will use a portion of the pooled funds to directly support a specific priority or actualize an important university goal" (p. 18).

One of the advantages of initiative-based budgeting is that it can fuel creativity, as units think of unique programs to offer that support the institution's mission. Initiative-based budgeting also integrates budgeting with planning, and "allows departments that are awarded funds to respond in timely and unique ways to a contemporary issue" (Varlotta, 2010, p. 18). Goldstein (2005) mentions that initiative-based budgeting ensures that units remain productive by reviewing their current programs and activities. Goldstein (2005) also mentions that initiative-based budgeting allows departments "to achieve their targets in various ways on an annual basis" (p. 175).

Although initiative-based budgeting may fuel creativity, programs sponsored by funding from an initiative-based budget may not be sustainable, since funds for initiatives are often allocated once, rather than on an ongoing basis (Varlotta, 2010). Varlotta (2010) mentions that initiative-based budgeting can be practical in the years in which institutions are flourishing, but will likely not work during a downturn, when it is difficult for units to "skim off a portion of their initial allocation without devastating their overall budget" (p. 18). Because initiative-based budgeting costs units money, units that do not receive any funding for initiatives will lose out, and allocating resources to any initiatives that other units consider superfluous could cause resentment between units (Varlotta, 2010).

Serban (1998), Goldstein (2005), Linn (2007), and Varlotta (2010) all indicate an additional weakness of IBB. They have each suggested that initiative-based budgeting is a short-term approach, not a system that a university can use long-term. Units that are required to give up a percentage of their budget annually will not be able to meet their institution's needs if they do not receive any of the initiative funds and thus, this model is not sustainable over a longer term (Zierdt, 2009).

Responsibility-Centered Budgeting (RCB)

Responsibility-centered budgeting, which originated at Harvard University, is also known as cost-centered budgeting, value-centered management, responsibility-centered management, profit-centered budgeting, incentives-based budget systems, and revenue responsibility budgeting (Zierdt, 2009). Common in the for-profit sector and at private institutions, RCB "is becoming more than a private institution phenomenon [as] public institutions are increasingly taking steps to study and implement RCB models" (Zierdt, 2009, p. 349). According to Hearn et al (2006), recent economic and political conditions have encouraged four-year public institutions to begin to revise budgeting tools and management processes and to become more adaptable and efficient in the midst of having to make challenging financial decisions. As a result, more institutions are beginning to consider responsibility-centered budgeting.

The overarching goal of responsibility-centered budgeting is guided by the statement, "Every tub has its own bottom" (Zierdt, 2009, p. 348). In this statement, the tub refers to academic units and the bottom refers to these units being responsible for their own revenue production. RCB shifts decision making and financial accountability to units, which the model refers to as "revenue centers," "cost centers," or "hybrid centers," each of which is responsible for covering its own expenses (Varlotta, 2010, p. 17). Hearn et al (2006) describe the goal of an RCB system: "to grant each unit a degree of fiscal autonomy for deciding how revenues will be acquired and spent and how expenditures will be chosen and managed" (p. 288). RCB systems shift authority and accountability to individual units (Hearn et al, 2006). Goldstein (2005) compares the idea of shifting responsibility to units with the way in which decision making is treated in other models:

Without RCB or one if its variants, many overhead costs are borne centrally and absorb institutional resources before allocations for other purposes are made. When costs are treated in this manner, faculty and staff tend to lack an appreciation of the true cost of the services being used on the campus. On the other hand, when they have access to this information, it changes the demand for services and resources. (p. 172)

With RCB, each cost center must use its share of the university's allocation to cover expenses such as faculty and support staff salaries, space within buildings and laboratories, and less-obvious charges, such as utilities, facilities, communication costs, and a tax on the external grant money it attracts (Varlotta, 2010). RCB gives units fiscal

autonomy and the ability to make more independent decisions. The mechanics of responsibility-centered budgeting models are covered in the next section.

RCB Mechanics

Academic units, as well as some or all support units, within institutions that employ responsibility-centered budgeting are expected to be self-supporting. These units are considered cost centers in which "projected expenditures must be supported by sufficient revenues by that center" (Zierdt, 2009, p. 348). Revenues include the institutional allocation to the unit, as well as the unit's endowments, grants, and other gifts. The institutional allocation to the academic unit is generally determined by enrollment within the unit, which incentivizes units to offer quality programs to sustain or increase their enrollments to cover expenses. Expenses include faculty and support staff salaries, charges for utilities such as electricity and for the use of space within university buildings, and a tax on revenues that is returned to the institution to fund units that do not generate revenue.

Units are expected to generate profits, especially because they are allowed to keep their surplus in future budget years. This should encourage administrators within units to control costs. According to Zierdt (2009), RCB discourages units from spending their entire budget. When a unit's revenue does not meet its expenses, it must scale back expenditures. Essentially, tuition and state allocation money are allocated to academic units based on enrollment, and when a unit is profitable, it is assessed a tax that supports other units that cannot support themselves.

Units that do not generate their own revenue, such as student support services and the president's office, receive their operating funds in two ways. First, it is common for central overhead costs to be recovered from revenues before funds are available to individual units" (Hearn et al, 2006). Second, these support units may receive their funding from the tax on the revenues of academic units. This tax rate varies between institutions. Also, according to Zierdt (2009), depending on the institution's model, support units, especially those for which services can be easily monitored, such as telecommunications, can charge for their services.

Salluzzo (1999) encourages universities planning to implement a responsibility-centered budgeting system to "keep the amount for strategic initiatives as a separate component of the overall budget" (p. 67), in order to ensure that key initiatives are funded before money is allocated to units. Hearn et al (2006) also noted that the success of a responsibility-centered budgeting model rests on a "clear understanding of roles and responsibilities, a stable environment, and clear rewards and sanctions for performance at the unit level" (p. 288).

Advantages of RCB

One of the biggest advantages of moving to a responsibility-centered budgeting system is transparency. Units will be able to see where their money comes from, why they receive money, and, if taxed, where the taxes on their profits go. RCB, according to Zierdt (2009), "Makes the campus community aware of the actual costs of relatively scarce campus resources, such as space, technology, and telecommunications" (p. 349). Hearn et al (2006) notes that proponents of RCB favor this model for its clarity and adaptability, noting that it is easier to track and monitor the funding flow, even as organizations change. Varlotta (2010) echoes the transparency benefit of this model, mentioning that "external stakeholders like parents, legislators, and community members may favor this approach as it makes visible costs that can otherwise be hidden" (p. 17). Varlotta (2010) also notes that RCB may be more popular during recessions, since funding models that are more transparent allow stakeholders to come up with plans for cost containment.

Another advantage of an RCB system is that it will allow unit heads to make decisions at the local level about courses, sections, and programs offered. Because decisions are made at the local level and because units want to attract students to their courses, deans and other unit-level administrators are incentivized to offer appealing courses. Hearn et al (2006) notes the difference between a college dropping a summer course in a traditional budgeting system, versus dropping the same class in an RCB system, which Hearn et al (2006) refer to as an incentives-based budget system (IBBS):

Under a traditional budgeting system, the local units of the organization may not even be aware of, or concerned about, the consequences of deleting a summer-session course from their program because of a faculty member's leave. Under an IBBS system, however, a local unit must decide whether and how to make up the lost revenue associated with dropping a course. (p. 291)

Although this model shifts decision making to the local level, it also demands that units offer appealing courses that will attract students, since units receive their funding through enrollment in their courses. If students do not like the courses offered in a department, or if they are upset with a college's large class sizes, they will stop taking these courses and switch to courses in other units, and the unit will lose a share of their allocation from the institution.

According to Zierdt (2009), "In the absence of RCB, units make many hurried, questionable and mission-unaligned purchases when there is no incentive to 'save' due to all surpluses being returned to central administration or the State treasury" (pp. 348-349). An RCB model allows units to keep any surpluses that remain after the institution imposes the tax that it uses to fund units that do not generate revenues. Units can then use this surplus to fund or sustain new initiatives. Units also become aware of their connection to support services and other units, and unit leaders come to understand how their decisions affect not just their unit, but also others within the institution (Hearn et al,

2006). RCB also brings together more people in the budgeting process. According to Varlotta (2010), "Rather than rest the university's financial responsibility in the hands of a few senior administrators, it distributes it widely about the campus, encouraging internal stakeholders to be engaged and empowered" (p. 17).

Whalen (1991) summarized three advantages of responsibility-centered budgeting: proximity, proportionality, and knowledge. In terms of proximity, Whalen advocates for decision making at the local level, which leads to better decisions. In terms of proportionality, Whalen suggests that larger institutions can benefit from decentralization even more than smaller institutions. Finally, Whalen discusses knowledge in an RCB model, mentioning that "decisions will be better in an environment that has accurate and timely information" (Whalen, 1991, pp. 10-17).

Disadvantages of RCB

Though responsibility-centered budgeting has many advantages (e.g., transparency, local decision making, and better utilization of more accurate knowledge), critics often point to a culture shift that can occur with RCB as its main disadvantage. RCB's focus on the bottom line can detract from academic rigor and quality if units only employ the most cost-effective approaches (Varlotta, 2010). This shift in culture can also create competition between different academic units. Since academic units only receive allocation for the courses they offer in house, "Duplication can arise when a course typically offered in one unit to robust and efficient class sizes is subsequently developed and offered simultaneously by other units" (Hearn et al, 2006, pp. 291-292). This can lead units to lower admission standards and to move toward "production-oriented logic" (Hearn et al, 2006, p. 292) as they try to enroll as many students as possible.

In addition, an incentive for larger classes might also exist, and departments may also begin funneling students through more required courses and through fewer electives in order to eliminate smaller classes. Academic units may begin offering courses that generate revenue, but do not fulfill the unit or institution's goals and mission, which Hearn et al (2006) refer to as "self-protective logic [that] may not only waste institutional resources but also slight the educational benefits of students taking courses in other units" (p. 292). Responsibility-centered budgeting also places certain academic units at a disadvantage. According to Hearn et al (2006), "Units with instructional missions may find themselves paying for non-instructional services without substantial influence over the quality and direction of those services" (p. 292).

Criticism also points to the business-like language that an RCB model employs. This language often does not resonate with higher education administrators. According to Hearn et al (2006), "Much of the debate about [RCB] concerns language and its implications… [it] can stimulate a cultural clash between the use of management concepts and terms (customers, products, outputs) and academic concepts and terms (students, courses, completion rates)" (p. 293). Hearn et al (2006) also is concerned that

RCB is a "management fad" that will pass (p. 287). In addition, Varlotta (2010) and Zierdt (2009) indicate that RCB can be extremely difficult to operationalize, depending on the institution. Varlotta (2010) mentions that "it does not lend itself easily to every type of organizational unit" (p. 18) and Zierdt (2009) mentions that responsibility-centered budgeting, "in its fullest approach, is extremely difficult to implement owing to the tedious and complex costing calculations involved" (p. 353).

Whalen, a proponent of responsibility-centered budgeting, counters a few of these disadvantages in his 1991 book, *Responsibility Center Budgeting*. Whalen (1991) suggests that institutions need strong leadership teams to monitor information and ensure it is accurate and timely. A strong leadership team also needs to balance different units' priorities, to serve as a watchdog and "defeat attempts by units to beat the system," and to ensure that the system avoids external influence and interference (p. 149).

Analysis and Recommendations

State Support for Higher Education

A number of the reviewed sources agree that state support for four-year public institutions has declined significantly over the past decade. These scholars also support Curran's (2009) statement that state institutions have moved from "publically funded" to "publically supported," and are moving closer toward "publically endorsed" (p. 1). Hearn et al (2009) argue that political factors contribute most to changes in state funding for higher education. Specifically, they state:

Public postsecondary institutions are embedded within a larger political environment, and it stands to reason that that environment will likely influence policy adoption patterns in postsecondary education in meaningful and measureable ways. (pp. 687-688)

> This statement suggests that not all states have experienced a decline in support for public four-year higher education because of different political factors across each of the fifty states. Hearn et al (2009) also mention that economic factors play a role in state investment in higher education. Some states may not have been adversely affected by the recession, and in these states, support for higher education may have not dwindled to the 30 or 35 percent figure that Zierdt (2009) and Curran (2009) mention. Due to these limitations in the literature, it is difficult to generalize findings from the present literature to all public state university systems.

Although researchers may not be able to apply the findings from Zierdt (2009) and Curran's (2009) study to all states, it can be can be assumed that states have been at least slightly affected by economic and political factors. Because of increasing demand for accountability (Curran, 2009; Alexander, 2000), awareness and application of various budgeting models seems to be an important topic in today's economic and political environment.

Importance of Budgeting

Salluzzo (1999), Varlotta (2010), and Hauser (2000) all highlight the importance of an institution's budget as a management tool. Hauser (2000) is more cynical about current utilization of institutional budgets in higher education, mentioning that most institutions typically choose a budgeting model that reflects the path of least resistance, which manifests itself in the form of hierarchical decision making and decisions that do not reflect the institution's mission. Salluzzo (1999) and Varlotta (2010) do not offer their thoughts on the way in which institutions currently use their budget; rather, they are more optimistic, and focus on the importance of budgeting in future fiscal years.

Additionally, several scholars (Salluzzo, 1999; Varlotta, 2010; Hauser, 2000; Alexander, 2000) discussed the importance of intentional budgeting and intentionally choosing a particular budgeting model. For example, Varlotta (2010) briefly mentions the importance of integrating planning and budgeting. Hauser (2000) refers to this integration as "strategic budgeting" (p. 76), and Salluzzo (1999) argues that strategic budgeting is important because it allows an institution to focus on achieving its goals, while also allowing institutions to communicate their direction to internal and external stakeholders. Alexander (2000) also argues in favor of strategic budgeting, which allows public institutions to focus on accountability. It is possible to generalize that strategic, intentional budgeting is important in the higher education environment because these four sources span over an eleven year period from 1999 to 2010.

Terminology

One of the recurring themes in the literature relates to terminology used for various budgeting models. Incremental budgeting, according to Zierdt (2009), is also known as line-item budgeting. Varlotta (2010) also comments that incremental budgeting is sometimes referred to as "decremental budgeting" in times when universities need to make cuts (p. 15). The literature agrees upon terminology related to formula budgeting (Goldstein, 2005; Serban, 1998; Zierdt, 2009), as well as zero-based budgeting and terms used within zero-based budgeting, such as "decision packages" (Goldstein, 2005; Linn, 2007; Serban, 1998; Varlotta, 2010; Zierdt, 2009).

In terms of program budgeting, all sources (Goldstein, 2005; Linn, 2007; Serban, 1998; and Zierdt, 2009) agree upon terminology used within this model, such as "cost/benefit analysis." However, Serban (1998) refers to program budgeting as PPBS, a planning-programming-budgeting system. Four sources (Linn, 2007; Serban, 1998; Wellman, 2003; Zierdt, 2009) use the same terminology to describe performance-based budgeting. Initiative-based budgeting, however, contains many variations and monikers, such as reallocation budgeting (Linn, 2007) and competitive funding and categorical funding (Serban, 1998).

The literature on responsibility-centered budgeting (Zierdt, 2009; Hearn et al, 2006; Varlotta, 2010; Dubeck, 1997; Salluzzo, 1999; Whalen, 1991) varies in use of terminology. Zierdt (2009) notes that RCB has also been referred to as revenue responsibility budgeting, value-centered management, profit-centered budgeting, and cost-centered budgeting. Hearn et al (2006) notes that RCB has been referred to as value-centered management, an incentives-based budgeting system, and responsibility-centered management. Hearn et al (2009) also note that various institutions have referred to the system of RCB that they have created in different ways; for instance, the University of Minnesota system refers to their implementation of responsibility-centered budgeting as IMG, Incentives for Managed Growth.

Application of Budgeting Models

The literature varied in its discussion of the applicability and usefulness of each of the models in various settings. In terms of incremental budgeting (IB), all sources (Goldstein, 2005; Varlotta, 2010; Zierdt, 2009) agree upon a basic working definition of this model; however, Zierdt (2009) and Varlotta (2010) disagreed on its applicability. Zierdt (2009) mentions that incremental budgeting "applies consistent percentage adjustments to all units" (p. 15), while Varlotta (2010) mentions that incremental budgeting can apply to all units, but can also only be used at the college, program, office, or department level. In other words, Zierdt (2009) examines incremental budgeting through a university-wide lens, while Varlotta (2010) examines it through a lens that may encompass a university-wide application, but could also include application at various levels within the university.

This study examined three sources (Goldstein, 2005; Serban, 1998; Zierdt, 2009) that describe the background and applicability of formula budgeting (FB). Linn (2007) is the only source in the literature that mentions the region in which formula budgeting is concentrated. Student Affairs is not mentioned in any of the literature related to formula budgeting. Although Serban (1998) and Goldstein (2005) mention that formula budgeting can appear equitable and can reduce competition, Serban (1998) questions the assumptions of this model, indicating that not all sources in the literature find this model useful.

In terms of zero-based budgeting (ZBB), all five sources (Goldstein, 2005; Linn, 2007; Serban, 1998; Varlotta, 2010; Zierdt, 2009) agree upon a working definition of ZBB as a technique that institutions use to recreate the institutional budget from scratch. Goldstein (2005) describes the usefulness of using a zero-based budgeting approach at the unit level instead of the institutional level, arguing that because of the time-intensive nature of the process, zero-based budgeting may be better utilized at the unit level.

The literature used in this study (Goldstein, 2005; Linn, 2007; Serban, 1998; Zierdt, 2009) varies in its description of how program budgeting (PB) is utilized at different institutions. Serban (1998) suggests that program budgeting is outdated and no longer

useful. Goldstein (2005), Linn (2007), and Zierdt (2009) analyze program budgeting at the institutional level, while Serban (1998) mentions that formula budgeting cannot stand on its own, but rather complements other budgeting models, such as incremental budgeting (IB) and formula budgeting (FB).

Sources used to describe PBB, performance-based budgeting, which include Linn (2007), Serban (1998), Wellman (2003), and Zierdt (2009), cite different reasons why institutions use this model. While Linn (2007) mentions that performance-based budgeting emerged to link budgeting and planning, Wellman (2003) proposes that it emerged to address concerns related to unit-level incentives. Although all sources agree about the basic tenet of performance-based budgeting—that units are rewarded after they perform well—all four sources also point to this method of budgeting as being more applicable at the state level. In other words, the literature indicates that performance-based budgeting is used more widely when states allocate money to institutions, and not when institutions allocate money to their units, which is the unit of analysis for this paper.

Regarding initiative-based budgeting (IBB), Linn (2007) is the only source that mentions that this method of budgeting is not a comprehensive system. However, Serban (1998), Goldstein (2005), Linn (2007), Varlotta (2010), and Zierdt (2009) all agree that initiative-based budgeting is not a long-term approach because units might not be able to meet their needs if they have to remit a percentage of their budget on an annual basis over a long period. Also, While Goldstein (2005), Linn (2007), Varlotta (2010), and Zierdt (2009) all discuss initiative-based budgeting at the institutional level, Serban (1998) discusses it at the state level, as a process states can use to allocate funding to the higher education institutions they support.

The six sources from the literature that describe responsibility-centered budgeting (RCB), including Zierdt (2009), Hearn et al (2006), Varlotta (2010), Dubeck (1997), Salluzzo (1999), and Whalen (1991), also have varying descriptions of the usefulness and applicability of RCB. One point of conflict is the way in which support systems are handled in institutions that utilize RCB. Zierdt (2009) is the only source to mention that these support units sometimes charge for their services, especially if their services can be easily monitored (p. 348). While all sources agree that an overhead tax on unit profits is returned to the institution, Hearn et al (2006) is the only source to mention how this tax is actually allocated to support units. According to Hearn et al (2006), these central overhead costs are often allocated to support units before funding is available for units that do generate revenue. In addition, each institution may apply a different tax rate to units, and some institutions may not apply any form of a tax to specific units, some of which may remain outside the model. Also in terms of applicability, Varlotta (2010) is the only source to mention that responsibility-centered budgeting may be more popular in recessions, because it allows units to come up with their own plans for cost containment.

Conclusion

All sources suggest that to some degree, state support for higher education has declined, and because of this, the way a four-year public college or university allocates the money it receives in tuition and state support has become even more important. The literature concludes that incremental budgeting, the oldest form of budgeting in higher education, is efficient but generally ineffective because it does not consider the institution's goals and mission. Formula budgeting, which relies on complex formulas to allocate funds to units, may appear to be as objective as incremental budgeting, but sources question the assumptions upon which this model is based, including the appearance of an unbiased distribution and the reliability of the historical data upon which the formulas in the model are based. Zero-based budgeting, which recreates the institution's budget from scratch, allocates resources base on the priority of the decision packages that units create for consideration; however, the literature suggests that this form of budgeting is time and labor-intensive, and may be more relevant for application in other contexts.

Program budgeting includes a cost/benefit analysis, and unlike incremental and formula budgeting, units must relate their program goals and objectives to the institution's goals and mission. The literature agrees that program budgeting can take many forms, but Serban (1998) suggests that unlike other models, program budgeting cannot stand on its own. The literature also agrees that initiative-based budgeting, which contains many variations, typically cannot stand on its own, and should not be utilized over a long period of time. Performance-based budgeting, an outgrowth of program budgeting, links accountability and funding and awards allocations to units that meet goals; however, this method may not be as relevant as other budgeting techniques because historically, performance-based budgeting has only been utilized at the state level, when states make decisions about awarding allocations to public institutions in the state.

While the literature does highlight some disadvantages of responsibility-centered budgeting (e.g., a potential "culture shift," units only employing cost-effective approaches, potential course duplications, incentives for larger classes, business-like terminology that may not resonate with higher education administrators, and the complexity of implementing this model), the advantages of this model far outweigh the disadvantages. Responsibility-centered budgeting brings accountability, local decision making, transparency, better course offerings, and more stakeholders into the budgeting and decision making processes. Considering the latest recession and the declining state support for higher education, a trend that does not seem as though it will reverse any time soon, institutions that have not moved to responsibility-centered budgeting should consider the model, or should consider a hybrid model that contains elements of responsibility-centered budgeting, that will meet their needs and will allow them to achieve their goals.

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