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Budget System Design: Choosing Among RCB, ZBB and Incremental

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This essay examines the institutional characteristics that determine the most appropriate choice for a college or university budget system. Budgeting system choices include zero-based budgeting, incremental budgeting, formula budgeting, and resource center budgeting. Three characteristics are of greatest importance to the choice: the preferences for planned or market decisions, the degree of willingness to fully reallocate funds, and the confidence invested in a single decision maker. Each budget system scores on these characteristics along a continuum. In the end, a successful system is one that allows the institution to better meet its goals with less stress than other budget system choices.

Measuring a Budget System

The first continuum resembles that used to class the economies of the world: from planned systems to market systems. The second continuum measures the degree of allocation: from the allocation of only new increments or decrements (marginal[1]) to the allocation of all dollars from the bottom up (full). Finally, we measure participation. This is the dimension that illustrates the breadth of the opportunity to decide from single decision makers[2] (low) to complex negotiations (high).

There has been a major shift in world economic systems from planned to market. Nevertheless, even markets are human constructs and as constructs have flaws that make them impractical for some situations. The further from the ideal that a market must be, the less workable it becomes. In world economies the flaws of unequal power, leading to exploitation, and inadequate costing for depleting resources, leading to deforestation and species extinction, have not been rectified. Similarly, colleges and universities may not always be in a situation that allows successful market-style budgeting.

The figure below illustrates the planned/market continuum, the marginal/full continuum, and the participation ratings. The more to the left a system is, the more planned it is. Going to the right indicates an increase in the response to markets by the system. The center of the line designates systems where only marginal resources are distributed. As we proceed toward the ends, greater proportions of the budget are allocated, until the system determines the allocation of all dollars. Potential participation levels are indicated by labels.

[1] Marginal refers to the increase or decrease in total available budget funds (from expected revenues or reserve sources) over the amount budgeted in the previous year (sometimes after adjusting for compulsory expense changes—like new debt service).

[2] Decision makers may be individuals or groups. Individuals are generally in positions that administer the units receiving allocations. The teams may be made up of administratively senior administrators, stakeholders, and/or disinterested parties. To the degree that decision making is done by a group made up of individuals who hold a stake in allocation units, the decisions are negotiated. The more disinterested the parties, the more the decisions beg for rational justification.

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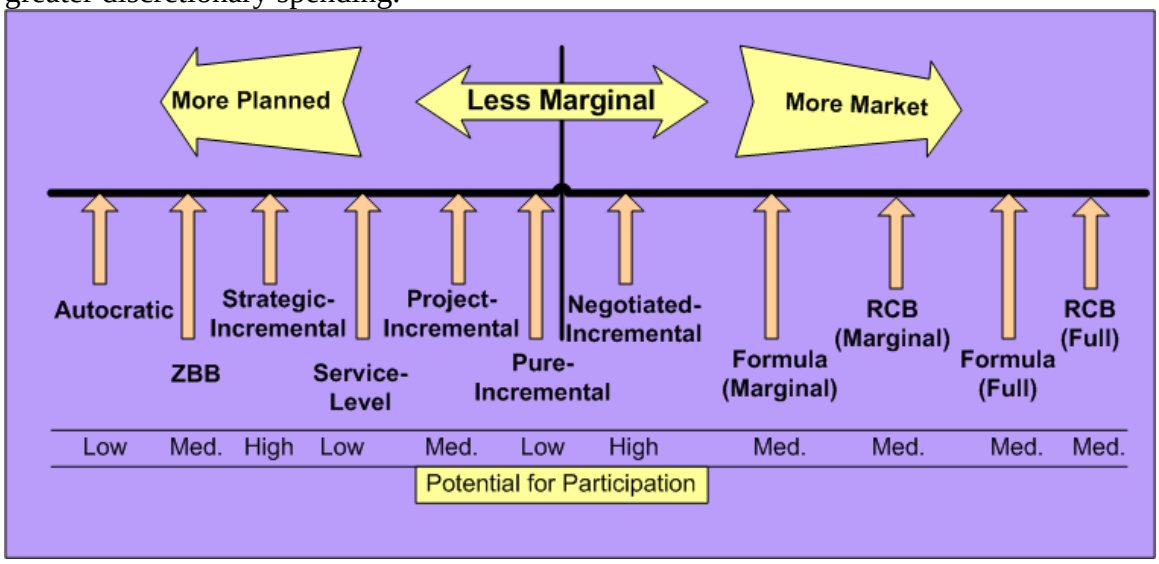
In examining the first continuum, we should note that colleges and universities seldom utilize systems that can be described as pure markets. At best, we see "quasi-market" budget systems. These are systems that react to some elements of a marketplace. Only diploma mills might be said to set prices solely on what the market will bear.

On the left side of the line, pure-incremental budgeting, project-incremental budgeting, service-level budgeting, strategic-incremental budgeting, zero-based budgeting (ZBB), and autocratic budgeting are listed as examples of planned budget systems. Allocations are based on the judgments of individuals or committees. Incremental budgeting and service-level budgeting are primarily used to make changes to a base budget. ZBB and autocratic budgeting generally focus decisions on the entire allocation. In all planned systems unit[3] administrators have an incentive to please the allocation decision makers.

On the right side of the line, negotiated-formula budgeting, formula budgeting and resource center budgeting (RCB—a special case of formula budgeting) are listed as examples of quasi-market systems. The formulas may drive either the entire budget or be limited to marginal changes. In quasi-market systems there is a strong incentive for unit administrators to please the market (buyers and funders). Because formulas are often driven in part by enrollment elements, and RCB is driven in part by revenues, RCB is further down the market continuum than formula budgeting.

Autocratic, service-level, and pure-incentive budgeting are generally undertaken without wide institutional participation. ZBB tends to push budget decisions into the organizational hierarchy, although unit influence is high. Project-incremental decisions are often driven by representative task forces. Formula and RCB budgeting require extensive up-front negotiations among unit representatives. Strategic- and negotiated-incremental budgeting can involve all members of the campus community in planning efforts (strategic-) or lobbying during negotiations (negotiated-).

Success by a unit within any of these systems is defined as obtaining a larger budget, allowing greater discretionary spending.



[3] A unit is an organizational group, like an office, department, school, or university that operates on a budget, which is determined within the mechanism of a budget system.

Budget System Descriptions

Planned systems:

Pure-incremental budgeting. Pure-incremental budgets add marginally increased or decreased resources to the previous budget base for all units. These increments (or decrements) are equal percentages (across-the-board incremental) in pure incremental budgeting. The intervention of decision makers is minimal, other than in projecting resource change.

Project-incremental budgeting. Here a portion of the incremental resources may be allocated across-the-board, while the remainder is awarded to proposed projects that have immediate priority.

Service-level budgeting. In service-level budgeting the number and quality of current services is assumed to be determined by the base budget. The cost of steps-up in the number or quality of services and the savings in steps-down in the number or quality of services are viewed as budget increments and decrements. The value of all such increments and decrements are traded off by decision makers to arrive at a new budget. Decision makers fund the most valued services' upward steps and sometimes decrease funding, using the least critical downward service steps.

Strategic-incremental budgeting. A portion of the marginal resources, once again, may be allocated across-the-board, but the remainder is allocated to "strategic," high priority or centers-of-excellence areas as defined in the strategic plan.

ZBB. Zero-based budgeting requires each unit to present the cases for funding each of its activities to the decision makers who set or recommend the unit's budget allocation (usually the administrator over all parallel units, but committees and task forces may be substituted). The case usually consists of information on expenses, outcomes, and output for each of the unit's activities. If decision-maker values have been previously presented (for example, strategic initiatives or priorities), then each unit must demonstrate the alignment of the activities with these values. Decision makers may decide not to fund some or all of a unit's activities in order to increase or sustain funding to more valued activities.

Autocratic budgeting. A single person (or cabal to be even more pejorative) allocates funds, not necessarily with reference to plans or even to justifications.

Quasi-market budget systems

Negotiated-incremental budgeting. This variation may be the most common budget system in use. The units individually negotiate budget changes (making the system incremental) with the decision maker or makers. Negotiating power depends on the unit's market strength, the size of unit-controlled reserves, and the unit administrator's bargaining skill. The less clear the information on market strength and reserve levels, and the greater the negotiation strength disparity between the unit and the decision maker, the less workable this system becomes. This system has minimal market characteristics because the apparent market size and revenue potential of a unit is an ambiguous factor in determining a unit's negotiation strength.

Formula budgeting. These allocation formulas generally have sufficient demand elements (for example, numbers of students, full-time equivalents, majors, student credit hours generated) to categorize them as quasi-market. The formulas may include revenues, expenses, demand, load, and quality measures. The formulas are generally negotiated among funders and the receiving

units. Coefficients on particular elements generally benefit the receiving units differentially, making the negotiations multi-party, not bi-party. The formulas are generally linear and may include step-functions. There are rarely any negative coefficients to control spending behavior. The incentive in formula budgeting is to increase unit budget allocations by increasing any (or all) elements in the formula. All budget resources may be calculated by the formula (full) or the annual shifts in the product of the formula may determine marginal allocations above or below the previous budget base (marginal).

RCB. With resource-center budgeting, the budget formula is driven by revenues less allocated expenses. Nevertheless, the definition of revenues (for example, setting the portion of tuition to be allocated based on the student's home unit and the portion to be based on student credit hours taught), the assignment of direct expenses and the allocation of indirect expenses (or "taxes") must be negotiated. Each unit has a different configuration of majors, course points taught, and expense consumption. This leads to strong preferences for particular revenue distribution and indirect cost allocation schemes. The unit is given an incentive by RCB to increase the unit's defined revenues and decrease the unit's direct and allocated expenses. All budget resources may be defined by the RCB formula (full) or the annual shifts in the product of the formula may determine marginal allocations above or below the previous budget base (marginal).

Conditions for Choosing a System

Basic requirements by dimension

Basic requirements for planned systems. The success of the more "planned" methods depends on the quality of the information available on outputs, outcomes and costs, and on the wisdom of the decision makers. Allocations are generally justified in "investment return" terms, both quantitative and qualitative. Outcomes are compared to expenses. The best judgments can be made when an investment expense can be related to an expected outcome. Planned systems rely on good cost information, clear production systems, and shared values for the outcomes.

Basic requirements for quasi-market systems. The success of quasi-market systems depends on the institution's ability to match a unit's expenses required for the generation of revenues to those revenues. Making this match depends on unit independence, the quality of public/market information on price and on the value/worth of the product, the portion of value of the outcome exchanged during the transaction, and the degree to which the market price covers the cost of production. When departments are interdependent with students taking many courses out of their major areas and with central services providing recruiting and fund-raising, market systems are untenable. Quasi-market systems tend to fail when the production system is unclear, as when the effort of advising majors in one area and the effort of teaching them in another cannot be easily compared. If the price paid for the transaction, like advising or doing departmental research, is unknown, quasi-market systems are unstable. When the outcome of the transaction is difficult to measure, matching a cost to a revenue is ambiguous. Payroll checks as an outcome are easier to assign to units and match to revenues than is presidential leadership. Gifts from alumni can be interpreted as delayed payments on educational transactions. The larger the portion that such gifts make up of revenues, the more difficult it is to construct a true market system, because payments cannot be timed with costs. Finally, when tuitions are low and appropriations are made in lump sums (which is especially the case during economic downturns), conditions for a useful market are impaired.

Basic requirements for full-allocation systems. The success of full-allocation variations of many of these systems (as opposed to marginal allocations) depends on the political possibility of program/function elimination and the effectiveness of transition planning. Effective transitions allow "redundant" employees a graceful change of role. In formula systems, effective transitions may also allow a redundant unit to improve its formula result (often the same as its market position), forestalling elimination.

Basic requirements for team decision making. The success of team decision making variations of many of these systems (as opposed to individual decision makers) depends on the willingness of the hierarchy to give up some power, the willingness of stakeholders to compromise, and the ability of team members to bring constituencies to the same result as that found by the team. Success here depends partially on organizational culture, and partially on organizational structure and team functioning.

Apt conditions for each system

Pure-incremental. Incremental budget systems are preferred where the case for change is weak, decision maker judgments are not trusted, information on the costs and outcomes of functions cannot be made available at a reasonable cost, and where function elimination or reduction is not viewed as probable or necessary. To use a more complex planned system, like ZBB, in situations with these characteristics would probably not result in an allocation any different than that determined by incremental funding. With change unlikely or resisted, trust low, and information weak, major allocation shifts are unlikely, even with ZBB. The major difference is that the effort to gather information under ZBB would divert resources that would have been available under incremental budgeting. When plans or project lists exist, the incremental budget system variations below are more consonant with conditions. This method is one of the few that works equally well under conditions of increasing and decreasing resources. Proportionately equal decrements are (simplistically, perhaps) often viewed as "fair."

At a small, liberal arts college, where all academic departments contribute to the required curriculum where the effort of evaluating the cost and value of outcomes would be unreasonably expensive, and where a decline in enrollments has lowered both revenues and trust, a pure-incremental budget system is likely to be more successful than other systems, especially if no plan has yet been developed to counter the enrollment fall.

Project-incremental budgeting. While success conditions are similar to pure-incremental systems, this system is more successful (that is, it is accepted, and it results in desired change) when constituencies agree on the new efforts that must be undertaken. Success with this method requires increasing resources. Project lists (containing projects like renovations, new academic programs, or investments in fund raising) with priorities may result from a planning process or from "presidential leadership." Effective planning processes appear as often as do effective presidents and both seem equally likely to gain campus acceptance.

A comprehensive university with revenue growth, many interdependent academic departments, increasing—but not total—trust in its administration, a weak cost accounting structure, a weak outcomes assessment process, and a lot of ideas on projects necessary to improve the university will often turn to project-incremental budgeting.

Service-level budgeting. This system works best when a high level of efficiency has already been reached and the focus is on the appropriate level of service delivery. The units also need to have definable service steps. Service-providing areas, like the Bursar, Registrar, and Financial Aid Offices, are best suited for this method. These areas are not well-related to market functions, although formula budgeting with a load coefficient can also be effective, especially during high growth periods when loads are changing quickly. When load is relatively constant and the offices waste few resources, service-level budgeting can be successful.

A public university with shrinking appropriations and growing dependence on student tuitions may adopt service-level budgeting for administrative offices with student contact. They may use this system along with RCB for school budget allocations.

Strategic-incremental budgeting. This method results in marginal but unequal budget changes among units. To be accepted, the changes in support need to be viewed within a framework, whereas project lists can be created without a framework. A strategy, or an intended direction of change, provides such a framework. As in the project variation, the strategy may result from a planning process or from leadership. This is a major variation from pure-incremental budgeting in that the case for change must be strong and decision maker judgment trusted. As with the pure-incremental system, information on the cost of functions is generally not available and function elimination is generally viewed as unlikely or unnecessary. This method can be used, in theory, during a period of declining resources. Nevertheless, political cultures shift during a decline and decision-maker trust often declines as well. This makes it likely that pure-incremental will replace strategic-incremental during a decline. In certain situations, however, the case for change strengthens sufficiently to allow retention of the strategic-incremental system.

A small college looking for a budgeting method to use to allocate among academic departments can have the following characteristics: institutional strategies that are out-of-line with market rewards (for example, the institution has a strategy to offer greater personal development to students without enrollment growth), departments do not control their economic fate, departments are interdependent, revenues are not well related to costs, information on the cost of outcomes is weak, and the institution does not intend to close any departments. Strategic-incremental budgeting appears to be the most compatible choice of budget systems.

ZBB. ZBB improves its own probability of success by including as a major component the gathering of information on functions, outcomes, output, and costs. In higher education this information, however, is difficult to gather and usually imprecise. Outcomes are not as easily measurable as are outputs. Nevertheless, if available, the information can improve the quality of decision making significantly over decisions within any incremental system.

The key to success with ZBB is making available the information that decision makers require to make allocation decisions. If the process is not structured to gather useful information, then decisions are not improved. The decision maker must request information clearly and specify the types of outcomes that are of interest. Methodologies for costing these outcomes must be developed.

When organizations seek strategic change, certain outcomes have priority. Relating graduate career success (a plausible strategic improvement outcome) to the payroll department's functions

and expenses is not possible. Strategically irrelevant functions are not necessarily expendable, however. This makes the construction of a decision structure in a higher education environment difficult. Few administrative functions have outcomes that can be easily compared with the outcomes of other areas or with strategic intentions.

Thus, ZBB works best where assessment initiatives have already elevated appropriate data gathering, where organizational priorities are clear, where there is trust that the decision makers will use the priorities, and where there is some probability that certain functions will either be eliminated or have funding reduced.

A large university with a strong culture of assessment and uncertainty over the effectiveness of the budget as currently configured may employ ZBB with all units in a staggered fashion over a number of years. This university will understand the way expenses are used to generate outcomes much better at the end of the process. It may even eliminate a few functions where the investment is high and the outcomes low.

Autocratic budgeting. The likelihood of preference for this method increases during periods of resource decline. In some organizational cultures, responsibility for decremental decisions is refused by stakeholders. This budgeting method is most useful in conditions similar to those that foster pure incremental budgeting, except the decision maker either has great trust with or great power over the units. I am including here systems where the decision makers request advice and counsel from units but are under no obligation to follow the advice.

In a university school (of business or of law, for example), departments may have few resources to support administration and may have trust in the dean. The dean may be expected to make departmental allocation decisions autocratically.

Negotiated-incremental budgeting. During the last twenty years many universities have moved away from autocratic decision systems. As decision responsibilities have become more decentralized, budget determination structures have also decentralized. The absence of university-wide plans or even project lists, low support for cost and outcome information gathering, strong protection of existing units, and units willing to negotiate provide the conditions necessary for this budget system. Decentralization often results in a culture that supports negotiations. Autocratic decisions are viewed as old-fashioned. Unit willingness to negotiate also improves as units gain power, through revenue strength and the build-up of restricted reserves.

As an example, let us consider a small university where a number of the schools are interdependent (because Business School undergraduates must take Arts and Sciences courses, for example), where strategic planning is still in its early stages, and cost and outcome evaluations are viewed as troublesome. If a new president has replaced a powerful president, schools will naturally move toward negotiated-incremental budgeting, away from autocratic budgeting. This will be the most practical system until better information is available or until the schools become more independent of one another.

Formula budgeting. Formula budgeting succeeds best when desired change can be advanced by improving formula elements. When enrollment growth is an important element of a strategy, formula budgeting can help drive the strategy. This system also succeeds best when decision

makers are unwilling to render allocation judgments based on available information, but willing to allow stakeholders to negotiate the formulas. Because no judgment is allowed in determining the allocations (although it is very much a part of formula determination) and all elements are quantitative, this system also succeeds when it is viewed as a replacement for an "unfair" system (one that was based on the qualitative judgments of a less-than-trusted decision maker).

This system works better during periods of resource growth than during periods of resource decline. Often these formulas are based on average costs and over long periods, average cost levels tend to be equilibrium points. During declines, fixed costs prevent reductions at average levels. Cost reductions at the much smaller marginal cost level are only possible. (That is, it is easier to reduce the number of adjuncts, a marginal cost, than tenured faculty, a nearly-fixed cost.) Thus, the formulas are often abandoned during a decline and allocations revert back to the judgments found in "planned" systems.

To the extent that elements in the formula are not under the control of the allocation unit, the formula provides no incentive. For example, when scholarship programs are set by the system, but provide an element in the formula, no behavioral change by the unit can be expected to control scholarship expenses. Formulas are generally intended only to approximate cost reimbursement and are not intended to change behavior. Success depends on the accuracy of cost analysis.

A community college looking for a system of allocating budget among academic divisions might have the following characteristics: a strategy that is roughly in line with measurable elements (better service to the county as a strategy is evidenced by enrollment growth, for example), divisions that are moderately independent with little course export or import, a cost of education that far exceeds the market price, a culture and transition methodology that would allow full re-allocations, but information on the costs of outcomes that is difficult to gather. Formula budgeting appears to be a likely candidate.

RCB. This variation of formula budgeting places an incentive on increasing revenues and decreasing expenses in units where revenues can be assigned. This system works well when financial management information and markets are best understood at the unit level, where a large degree of control can be exercised on revenues and expenditures, and where units are operationally independent. A school within a university that recruits and admits its students, that sets its tuition price, student aid policies and faculty salaries, and that sends few students to other schools (while teaching few students from other schools) is a good candidate for this method of budgeting. A department within a small college where central college functions manage recruiting, tuition setting, financial aid policy, and salary levels, where majors take many courses outside the department and/or where many outside majors come into the department to take courses is not a good candidate for RCB.

Different Systems at Different Levels

At each level in the organization (for example, distribution among universities in a system, distribution between academic and administrative sides of the university, distribution among schools in a university, distribution among departments in a school) the organization must have a resource allocation mechanism—a budget system. The mechanism need not be the same at all levels. In fact, it seldom is the same at all levels.

It is very conceivable that a system may allocate budgets to its universities via a formula, that one of these universities could allocate between administrative and academic areas using pure-incremental budgeting, that allocations of academic funds among schools might employ RCB, and that allocations to departments within a school might be autocratic. Cultures, strategies, information availability and understanding, and independence may differ at each level.

Summary

Thus, designing a budget system requires a large number of assessments. These assessments lead to choices along four dimensions. These choices determine the direction of change along the line in the first figure, which indicates the basis for budget system design. This array is summarized in the table below:

Determinants	Dimension Consideration	Direction of System-Choice Movement
More alignment between strategic direction and revenue growth	More market	Toward RCB (away from incremental)
Higher control over unit revenue and expense levels	More market	Toward RCB (away from incremental)
Imprecision of market information, because of unit interdependencies or inability to assign expenses to revenues	Less market	Toward formula (away from RCB)
Higher cost of information matching revenues and outcomes	Less planned	Toward incremental (away from ZBB)
Decreasing resources	More planned	Toward autocratic (away from formula)
Trade-offs among services to set allocations is more likely to be viewed as necessary	More planned	Toward service-level (away from pure-incremental)
Culture favoring authority	More planned, fewer decision makers	Toward autocratic (away from negotiated-incremental)
More strategic change required	Less marginal and more planned	Toward strategic-incremental (away from pure-incremental)
Probability of ending an activity	Less marginal	Toward either RCB (full) or ZBB (away from incremental)
Stronger case for change (stronger planning systems)	More full (less marginal)	Toward strategic-incremental (away from pure-incremental)
Greater power balance within organization	More negotiated decision making	Toward negotiated-incremental (away from pure-incremental)

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