

Budgeting with the UB Model
at
The University of Michigan



Original authors:

Paul N. Courant
Associate Provost, Professor of Economics and Public Policy

Marilyn Knepp
Associate Vice President, Budget, Planning and Administration

We are grateful to Nancy Cantor, Provost and Executive Vice President for Academic Affairs, for her leadership in the design and implementation of the UB system and to Glenna Schweitzer, Director of the Office of Budget and Planning, who works with us every day to make the ideas in this paper actually happen.

Updated May 2008 by:*

Philip J. Hanlon
Vice Provost for Academic and Budgetary Affairs, Professor of Mathematics

Glenna L. Schweitzer
Associate Vice Provost and Executive Director of the Office of Budget and Planning

** Updates noted in italics*

Preface

Ten years have elapsed since the first UB model was enacted in 1998-99 and a number of changes have been made over the course of those years. In 2006 the budget system was the subject of an in-depth study examining the perceptions of deans, budget administrators and faculty who work with and in the system. Each provost and his or her staff continue to evaluate areas for improvement based on that study as well as areas that come to our attention from daily hands-on work. This document was written in 2000 and it still provides an excellent introduction to the conceptual basis for the UB model even while being incorrect in some details due to changes made after it was written. This revised version of the document has been updated to provide an accurate picture of the UB model as of 2008. Where the original version is no longer correct, the reader will see an Italicized paragraph inserted that provides information on the changes made.

The purpose of this document is to describe University budgeting practices, and specifically the University Budget (UB) model at the University of Michigan. The intended audience is users of the model—deans, vice-presidents, directors of administrative offices, and budget administrators at the University. However, we also hope that this document will have a somewhat wider audience, including people at other universities who are considering modifications of their budgeting systems, as well as faculty, students, staff, friends and others at the University of Michigan who are interested in how the University operates.

Drawing an analogy to automobiles (quite appropriate, given our State's role in that industry) this document is meant to provide information at the level of a good operator's manual, but not that of a detailed shop manual. In order to produce and use budgets to the point of really moving money around, one must be familiar with a myriad of administrative systems and data structures at the University. These are not described in any single place, but are generally well understood by the University's budget administrators, without whom neither the UB model nor any other budgeting system would actually work.

This document is meant to assist those in the University who make policy that is implemented at least in part through General Fund budgets. Thus, it describes in some detail how the budgets of different kinds of units are set, with special attention to the fiscal relationships between the various units and the Provost. The Provost is both the chief academic officer and the chief budget officer of the University, and, as chair of the Committee on Budget Administration, the Provost budgets the General Fund.

If this document accomplishes its purpose, it will enable the user to forecast reliably the fiscal consequences of budgetary actions undertaken by the Provost, by unit heads, or by other relevant actors (1). It will also give the reader a sense of what the designers of UB had in mind, and why they made some of the choices they did.

Budget Systems and Budget Models

Before going any further, it will be useful to distinguish between budget systems and budget models. A budget model, as understood in this document, is a set of rules for arranging the elements of a budget. For example, under the rules defined in the UB model that we describe below, Indirect Cost Recovery (ICR) is generally allocated as revenue to the unit(s) that generates the direct research associated with the ICR. Units are generally allowed to keep any balances in

operating funds across fiscal years, and units with students in the Rackham Graduate School are assessed for financial aid based on their students who are enrolled in Rackham programs. These are but a few of a long list of rules under which budgets are developed in UB.

The budget system is broader than the budget model. The system includes all of the discretionary elements (including the authority and values of relevant decision makers) as well as the budget model that policymakers use to help them with budgeting. One could imagine a perfectly mechanical world in which a university budget system was coterminous with a university budget model. In such a world, once the model was written down there would be nothing further for the central leadership to do, at least with regard to resource allocation. Of course, no budget system is that mechanical. Still, one can imagine a continuum anchored by a completely mechanical system at one end and a completely discretionary one at the other. On such a continuum, the budgeting system at the University of Michigan is some distance from either extreme. The UB model has a number of highly consequential rules (rules that could be changed by the leadership, of course) but it is also designed to leave a fair amount of room for Presidential and Provostial judgment.

Discretion for discretion's sake is not the only reason why budget models and budget systems differ. As a practical matter no set of rules can encapsulate all possible contingencies and policy responses to those contingencies. Thus, even if the leadership of a university were disposed to prefer that their budget system was based as much as possible on a budget model, there would still be cases where the outcome from such a model would create an unintended consequence, requiring leadership intervention.

As a general matter, we believe that budget models should get in the way of good decision making as little as possible, but we recognize that there will always be cases where the model will generate incentives that are not consistent with the best policies and practices. Thus, we take it that any budget system should include the principle that when the model seems to be getting in the way of making sound decisions, units should have an easy route to alert the budget authorities to the problem, and the budget system should have sufficient flexibility to override the budget model.

Budgeting models in general do not and should not determine budgets, any more than the specific characteristics of an automobile determine (except in the most general way) where and how fast it is driven. As we shall see, the UB model is a modification of the general class of "activity-based" budget models, in which resources tend to flow towards places that increase their research and instructional activity. At the same time, the Provost and President retain considerable discretion in this process, and the system is designed to produce flexible resources that can be reallocated across units each year. How this discretion is used will generally depend on a variety of factors, not the least of which is the vision of the University that animates the Provost, the President, and other central academic leaders.

The budget model itself neither knows nor cares whether its administrators are committed to, for example, building up the arts, or allowing all incremental resources to flow automatically to those units that enroll the most students, or producing across-the-board changes in budgets that leave every unit's share of resources the same as last year, or aggressively courting potential Nobel Prize winners, or any other specific set of policy commitments. All of this is as it should be; the purpose of budgets is to implement policies, not to substitute for policymaking.

We view our budget system, of which the UB model is one part, as a cohesive whole—it is by definition a system. As with any system, it's important to consider the whole as well as the parts because, in general, tinkering with any single aspect will have consequences elsewhere in the system. Individual parts may appear to serve separate and distinct functions but their inter-relationships require that one understand the system and its goals in order to fully understand each of its parts. The analogy to automobiles is again instructive; increasing the horsepower without adding to braking capacity and strengthening the suspension is likely to be dangerous. Complicated systems are often criticized piecemeal. Evaluating criticisms intelligently requires that proposed improvements be examined in light of all of their potential consequences.

Activity-Based Budget Systems

In broad outline, the UB system, which was first implemented for the FY 1998-99 budget, is an "activity-based" budget system, in that increases in certain activities lead to automatic flows of resources and costs to the units that do the work and obtain the revenue (2). Put simply, revenue follows revenue-generating activity and units that engage in revenue-generating activity are given (at least) the lion's share of those revenues. At the same time, increased activities generally create increased costs, both directly in those units and indirectly in other University administrative areas, and so associated costs generally also rise as revenues increase.

The basic logic in support of activity-based budgeting models is that the costs and benefits of various activities can be most clearly seen where the activities are undertaken—in the schools, colleges and research units. Thus, for example the question of whether the School of Business Administration should increase tuition in order to provide resources that would enhance the quality of its faculty can be most clearly framed and answered (at least in the first instance) by the leadership of the School.

What was then known only as the School of Business Administration is now the Stephen M. Ross School of Business.

Activity-based budgeting models allow both the local leadership and the central administration to envision both budget opportunities and potential budget threats. If a school is losing enrollments, an activity-based system calls the problem to everyone's attention immediately. The appropriate policy response is still a matter of judgment, of course, but being alerted to the problem early and seeing it clearly is much enhanced by a model that attributes revenue to the unit of enrollment. Similarly, if a research unit is generating large increases in sponsored research, it will have the ability to reinvest the accompanying indirect cost recovery revenue in unit activities that support its research mission, and the central administration will clearly see that the unit's areas of research are ones that are seen as valuable by relevant external communities.

It's interesting to note that most of the potential problems with activity-based budgeting derive directly from its strengths. By providing support for activities that are directly attributable to individual units within the University, there exists the possibility that activities where such attribution is difficult or contested will be under-supported. In addition, many vital parts of the university, including libraries, the campus police, and a number of academic departments cannot possibly survive based on revenues that they generate directly. For these reasons many universities that have implemented activity-based models have conducted campus-wide debates on possible negative consequences of the implementation on collaborative work, interdisciplinary research and teaching, for activities whose compass is campus-wide and for activities that are

academically vital but not especially popular. Indeed it is just this set of concerns that led Michigan to adopt an activity-based system that leaves considerably more room for central discretion and for support of campus-wide activities than is the norm for such systems.

This principle of maintaining central discretion was particularly helpful in recent years as it encouraged the creation of a contingency fund that could be used to buffer mid-year rescissions in State appropriations. The eventual goal is to build the fund to equal approximately 1% of the General Fund budget.

A related potential negative outcome of activity-based based systems is that users of the system often assume that each activity-based revenue stream must be adequate to support the associated activity. Academic leaders are sometimes prone to strict interpretation of the "rules" as fully embodying institutional values or viewing their budget in discrete components rather than as a whole. These views can lead to their turning back grants or cutting back on curricula because the ICR on the grant or the tuition costs associated with the curriculum will not cover the full costs. This is both detrimental to the accomplishment of mission and is at odds with logic and the intent of the system. The unit encompasses a range of activities, some of which may not only cover full costs but may even subsidize others. In order for an activity-based system to work well, there needs to be enough overall revenue in the system to allow academic leadership to choose among activities based their overall merit, recognizing that the net financial cost or benefit, while often relevant, should never be dispositive. That a grant or a gift comes with strings attached such that it does not cover its cost does not in itself imply that the grant or gift should not be accepted. Similarly, a unit should not engage in activity simply because it is profitable when the activity is inconsistent with the accomplishment of the University's missions.

How the Model Works

As a technical matter, General Fund revenues all flow to the central administration and it is the Provost's task to determine budget allocations in order to make the most effective use of the resources available to accomplish the University's missions. In explaining the UB model, we refer to "automatic" flows of revenues and costs. It is important to note that in fact, allocation and attribution decisions made in the model and the "rules" in place today do not create a forever-after entitlement to those particular methods of allocation.

The Provost uses the UB model as an aid in developing the General Fund budgets of both academic units and service units--for units that have significant activity-based revenue, and for units that don't. The Provost budgets only to units at a fairly high level, i.e. a school or college, (not the departments within it); or an executive officer area (not the separate offices or functions within it). This is seen quite clearly in the level of detail within the UB model. Note that the system, as distinct from the model, represents a rich and detailed sharing of both qualitative and quantitative information among the Provost, the Deans, Executive Officers, and other academic leadership. Throughout the annual budget cycle, the Provost seeks, develops, and is provided with information on faculty quality, salary pressures, national trends in the various fields, legal requirements, etc. She also learns a great deal about individual departments and offices that are within the larger units to which she provides budgetary support. All of this information affects the budget system and the decision-making within the system, even when it has no direct impact on the activities to which revenue flows in the UB model.

When technical changes are made to the budget model, the components are adjusted so that the net funding for a unit remains the same. Examples of these types of change include changes in the tuition shares going to the unit of enrollment/unit of instruction, changes in tax rates, moving a category of expenditures out of the tax calculation, and eliminating the charge for rental space from within the model to a direct pay method. This “hold harmless” adjustment is done so that no unit benefits or is penalized at the moment of change but does begin to see the effect on the margin moving forward. To understand the possible impact, imagine a shift in attributing tuition revenue for undergraduates from 75% to 50% to the unit of enrollment (and associated changes from 25% to 50% in the unit of instruction) with no initial adjustment. Schools and colleges that had resources to cover their costs would suddenly find that they might have significantly more or less budget with no change in their activity level. All changes can thus be examined in light of future impacts and focus on the appropriate set of incentives without having to worry about immediate windfalls or holes.

Types of Units

The way in which units are budgeted depends on their position on each of two dimensions. Units can be classified according to function—direct providers of academic services (teaching departments, research units, libraries) vs. other units, including service units and auxiliary units (financial operations, admissions, campus police, residence halls). Units can also be classified according to whether or not they generate activity-based revenues. The resulting 2 by 2 matrix yields entries in all four cells. Examples are shown in the table below.

	Academic (Direct providers)	Nonacademic (Other units)
Activity-Based	Schools Research Units	Health Service
Centrally Budgeted	Libraries Museums	Public Safety Admissions General Counsel's Office

From a budget model perspective, units divide according to whether their budgets are activity-based or not. Activity-based units receive a significant portion of their revenue as a function of what they do—whether it be enrolling students, obtaining NIH grants, or selling football tickets. As a result, the budget model treats the University Library much as it treats the General Counsel's office. Both have their budgets determined centrally, because neither directly generates sufficient revenues to cover an appreciable portion of its operations. But the far more important division is based on whether a unit contributes directly to the University's core missions, and therefore, the budget system treats these two units very differently. The Library is an academic unit and as such its activities are viewed as valuable in their own right. The General Counsel's Office is an essential unit, but its value is derived entirely from the support that it provides to the academic missions of the University.

Against this backdrop, we consider first the three types of academic units and then those that are not academic, starting with the activity-based units in each category.

Academic Units

1. **Schools and Colleges** (and, to complicate matters, the Division of Kinesiology, which, to save ink and electrons, we include henceforth in the term "Schools and Colleges") enroll students, provide instruction, grant degrees, conduct research, and perform public service and outreach. Their activities are responsible for the University's receipt of revenue from student tuition and fees, recovery of indirect costs of sponsored research, and some interest from the balances they hold in the General Fund. Their activities create direct costs in the school or college itself, but also create costs in the many administrative and service units that support their activities and that provide services to their students.

All the schools and colleges, with the exception of the Rackham School of Graduate Studies have their budgets developed using an activity-based approach.

Although the Provost creates a school's General Fund budget with the aid of the UB model, there is no expectation that a dean will follow UB model rules or, for that matter, any other set of similar rules when making resource allocation decisions for the separate departments and areas within the school. Our budget system is very effective in determining the budgets of the schools. It was not, however, developed to provide a standard template to guide budgeting within our schools. We believe in the principle expressed earlier, that the academic leadership closest to the particular circumstances make the best decisions concerning those circumstances. In the case of a school, the dean will have a much better sense of the budgets needed to accomplish the sets of activities undertaken in it than would the Provost.

2. **Research Units.** Organized research units exist to conduct research and to provide centers of collaborations in areas of University emphasis. These separately budgeted research units generally report to the Vice President for Research. These units have their budgets developed using an activity-based approach. Although other "research units" exist as areas within schools and colleges, they are not budgeted by the Provost but rather by the dean who is the chief academic and budgetary administrator for a particular school. So, the set of research units within the UB model are only those that exist organizationally outside of the schools and colleges.
3. **University Academic Units.** These are the museums and libraries, including the University Library, that are not organizationally a part of a school, college or other unit. This grouping also includes the Officer Education Programs and the Matthaei Botanical Gardens & Nichols Arboretum. Although the University Academic Units (UAUs) are units that do not grant degrees, they have academic missions that cut across the various schools and colleges. The Provost has aptly described these units' missions as the production and enhancement of the University's shared public culture. The UAUs' activities are essential to the accomplishment of the University's academic missions. However, their activities are rarely associated with the generation of direct revenue. Therefore, the UAUs are not budgeted using the activity-based model components. The

Rackham School of Graduate Studies, although firmly within the set of schools and colleges mentioned above, is like a UAU in this respect. Because its activities cannot be associated directly with the generation of revenues, it does not receive an activity-based budget.

Non-Academic Units

1. **Auxiliary Units.** Auxiliary units are those whose activities are maintained by their own revenues. These units provide a set of services to students and staff, and to other external constituencies. They are quite disparate, including the Health System, Housing, and Athletics among their number. In the main, their budgets lie outside of the General Fund and are, inherently, activity-based. However, these units impose a set of costs on the University in areas supported primarily by the General Fund and so a component of the University's overall General Fund budget is a recovery of a portion of these costs. The details of how Auxiliaries are budgeted varies and is discussed in more detail below. Although a General Fund allocation could be made to support particular activities and programs in these units, it happens only rarely.
2. **Central Administrative and Service Units.** These include everything else—from the President's Office to the Department of Public Safety and the Center for the Education of Women. These units' budgets are not activity-based but rather are set so that they are sufficient to allow the unit to accomplish the set of activities and tasks that comprise its support of the academic enterprise. The UB system provides an incentive to the Provost to keep these budgets low, as doing so allows her to allocate more resources to the central academic missions of the University.

Components of an Activity-based Budget

An activity-based budget is developed using a set of rules for the attribution of a set of revenues and costs. Although the components are consistently included in all activity-based budgets, those that apply to students have no effect on the budgets of research or auxiliary units.

Revenues

Before describing the activity-based components of the budget model, it is worth mentioning the impact that the State of Michigan economy has had on our system. Beginning in fiscal year 2002-03, the University of Michigan experienced a series of one-time rescissions, base appropriation reductions and delayed payments of enacted appropriations leading to considerable uncertainty in building and retaining budgets. Almost any budgetary system can produce reasonable results with an expanding resource base but the true test of the structure comes when resources are being squeezed. During this period it has been essential to place academic unit funding as the highest institutional priority and to provide differential changes in funding for academic units while at the same time providing funding for new initiatives and directions. The flexibility of the budget model has been a critical element in our ability to continue to make progress in high impact areas.

Tuition

Under the UB model, tuition attribution follows the unit of enrollment rather than the unit of instruction as it does at many other universities that practice activity-based budgeting. Thus, the School of Music has attributed to it the tuition paid by students who are

registered in the School, regardless of how many courses those students take outside the School of Music or how many students from other units take courses in the School of Music.

The reason for this choice was to eliminate the incentives for duplicative course offerings or the possibility of "pandering" that might arise on a credit hour based system. However, the enrollment-based system gives rise to a prima facie incentive to enroll students and then forgo the costs of teaching them. As a result, under UB the Provost's office takes careful steps to assure that units continue to contribute their share of total teaching in the University. The Provost is also receptive to proposals that increase a unit's base support if that additional support measurably increases the amount of teaching the unit provides to other units' students.

In 2002-03, the tuition attribution formula for undergraduates was changed to a combination of the unit of enrollment and the unit of instruction and the percentages will be further changed in fiscal year 2009. At the same time the tuition attribution formulae for masters, pre-candidates, and graduate professional levels will be changed to a combination approach.

Undergraduate student tuition is attributed such that all undergraduate units get credit for the university-wide average in-state/out-state mix, regardless of the unit's actual distribution of enrollment by residency. The purpose of this attribution formula is to remove any unit's incentive to admit and enroll based on residency, as overall residency limitations are managed centrally. On the other hand, our tuition rate structure is differentiated, so that students enrolled in Engineering, for example, pay a higher rate than students in LSA, who pay a higher rate than those in Art and Design. Although undergraduate tuition attribution is based on averaged amounts by residency status, it does incorporate the differential tuition rates paid by students across units. This means that the average attributed tuition of a full-time student in Engineering is more than that attributed to LSA for one of its full-time students.

In the earliest years of the budget model, undergraduate tuition was distributed entirely to the unit of enrollment. Beginning with fiscal year 2002-03, budgets were restated to shift the attribution to 75% to the unit of enrollment and 25% to the unit of instruction. After careful deliberation with the deans, their budget administrators, faculty and executive officers, the shares are changing again beginning with fiscal year 2008-09 with an even split (50% - 50%) between the unit of enrollment and the unit of instruction.

Graduate and professional student tuition is attributed such that the unit receives what students are actually charged, incorporating both rate differentials and residency differentials.

Up until fiscal year 2008-09, graduate and professional student tuition flowed to the unit of enrollment. This is being changed such that the unit of enrollment will receive 75% of

the tuition with the remaining 25% going to the unit of instruction for all graduate students except candidates. Revenue resulting from candidate tuition will continue to be attributed totally to the unit of enrollment. As with the undergraduates, this change is being implemented to more closely link the revenue to the cost of providing the instruction as well as to provide greater incentives for schools and colleges to offer courses that will benefit students from other schools and colleges.

There is good reason for handling tuition attribution differently at the graduate and undergraduate levels. The cost to a unit for an enrolled undergraduate is basically the same regardless of whether the student pays resident or non-resident tuition. Attributing average tuition provides consistent revenue for the number of students enrolled, which is the main driver of the unit's costs. In contrast, because units often use their own funds to provide substantial amounts of financial aid to graduate students, the cost of a student to a graduate unit is often directly related to residency status because of the differential tuition charged. The cost of a tuition grant rises with the actual cost of the tuition charged, and in order to provide such grants a unit requires the revenue in the first place. So, unlike enrollments at the undergraduate level, an important set of costs associated with graduate and professional student enrollments is related to the residency mix in the unit.

A student's unit of enrollment is determined by the unit in which they register in a given term. The tuition charged to a student registered in more than one unit in a term is split among the units in which he registers.

In general, a student's unit(s) of enrollment is determined by the "career" in which they register in a given term. Students pursuing an "approved joint program" are the exception to this rule because they are automatically considered registered in both programs for attribution purposes.

Other Student Fees

We attribute registration fees according to students' units of registration, again splitting the fee revenue evenly if students are registered in multiple units. Application fees are attributed to the unit to which a student applies.

Registration fees now are attributed according to tuition shares. Forfeited enrollment deposits, where a student pays the deposit but then does not enter the program, are attributed to the school or college (or multiple schools/colleges) where they were expected to enroll. The distribution of these modest revenues are not part of the projections on which the unit's budget is based but are provided at the end of the fiscal year.

Indirect Cost Recovery (ICR)

A part of the negotiations for sponsored research contracts and grants is the determination of whether the sponsor will pay an amount to cover some portion of the estimated indirect costs imposed by the grant activity in addition to the direct expenditures of the grant itself. These indirect cost recoveries represent a revenue source to the General Fund. If a grant carries such recovery, then this ICR is attributed to the unit where the grant's direct expenditures occur. A system of subaccounts permits both direct costs and ICR to be shared among any number of units.

Interest

Imputed interest to units is calculated and paid based on their monthly general fund balances. A unit's balances are carried forward across fiscal years and the current fiscal year's General Fund allocation is credited to the unit in *August*. The monthly balance reflects these revenue sources, and other expenditures and transfers as they occur in the accounting system. The rate paid is the T-bill rate lagged a quarter and is the same rate paid to our units on their balances in other operating funds accounts. Paying interest on General Fund balances ensures consistency between it and the other operating funds. This means that units have no specific financial incentive to spend from one fund rather than another, as was the case when all balances except those in the General Fund earned interest for the holder.

The General Fund allocation now is credited in August, interest is calculated on the cumulative fraction of overall General Fund revenue so that the interest paid on unit balances more closely mirrors the actual interest earned on university General Fund balances.

Costs

Financial Aid

The costs of centrally awarded financial aid are attributed to units based on the same distribution as tuition. That is, units are assessed a charge for centrally awarded financial aid on the basis of the *proportion* of students whose tuition flows to them. We have two central units that award General Fund aid. The Office of Financial Aid administers the University's need-based awards to undergraduate students so the aid it awards is charged to the schools that enroll undergraduates. The Rackham School of Graduate Studies administers General Fund aid to students enrolled in Rackham programs and so the aid it awards is charged to the schools that enroll Rackham students. Both of these assessments are based on averaged amounts; that is, a unit is assessed a charge for financial aid calculated as if all the unit's students received the average aid package awarded to students of that type. The UB model incorporates this *averaging* approach rather than one based on the actual aid furnished to a unit's students for two reasons. First, we hold the view that financial aid is a university priority that should be supported across the campus. Second, our aim is to admit students based entirely on relevant academic criteria, independent of the students' financial circumstances.

In the case of centrally awarded Rackham aid, different attributions are made for masters students and for doctoral students reflecting the budgeted aid available to each group.

Space

In the UB model, the direct operating costs of "General Fund space" are assessed directly to the units that occupy the space. There are *two* components to the space costs we assess: (1) utilities and (2) plant operations, which includes maintenance, custodial, grounds and landscaping, refuse and recycling. Almost all of our buildings are separately metered for utilities so we can charge the actual costs of electricity, steam, natural gas, water, and

sewer for the buildings occupied by a unit. We assess a charge per square foot occupied for the costs of maintenance, custodial, refuse/recycling, and grounds. This charge is building specific and is based on the historical expenditures for that building. For both of these items, the charges levied on a building that is shared by multiple units are split based on their proportion of occupancy. When a unit occupies non-University rental space, the costs of the rental are directly charged to the unit.

The direct charge to the unit occurs through the University's accounting system.

Space is expensive. Not only are the costs of our current space (operating, upkeep, and renewal) one of our largest areas of fixed costs, the costs associated with expanding our facilities are enormous. If we can make better use of existing space, we can save substantial funds that would otherwise need to be devoted to new buildings. Although we do not fully cost space in the UB model, even this modest set of charges provides units with an incentive to economize on space, somewhat countering the traditional incentive for units to grab as much space as they can get. In our system, if one unit leaves space and another picks it up, the Provost does not generally transfer the funds to cover the operating costs of the space. Rather, the first unit gets to keep the savings that arise from occupying less space, and the second unit pays for the increase in costs from existing resources.

As the system evolves and measurements improve, more space costs, including long-term maintenance, implicit rent, or depreciation may also be charged to the units. When new elements of space costs are imposed in this way, funds to pay them will generally be made available to the units that face the new charges. However, the incentive to reduce the use of space will become more powerful, because units that economize on space will be able to keep the new revenue but shed the new, higher cost.

While this has been a goal of the budget system, the current incentives have, to date, failed to dampen any unit's desire for increasing its space. Each unit arriving at a budget conference has typically indicated that building a new facility is a high priority.

Taxes

Activity-based units pay a set of expenditure taxes. These taxes flow to the Provost and increase the funds that are available each year for flexible allocation. All taxes are levied on an adjusted expenditure base, with a two-year lag. The adjusted base is designed to assure that an expenditure is taxed once and only once, and to exempt expenditures on financial aid, capitalized equipment, construction, subcontracts over \$25,000, and general transfers from tax. The formula also subtracts internal rebillings from the taxed expenditure base so that expenditures incurred in one unit on behalf of another are taxed only once and are paid by the ultimate user of the service. The University's standard source/use financial categories are used to construct the tax base.

Expenditures that are exempt from tax have been expanded to include bad debt expense and direct space rental costs.

The two-year lag is used because it makes taxes in the coming fiscal year, the year that units are budgeting for, entirely predictable. By early fall of, say, the year 2006, we will know actual FY 2004-05 adjusted expenditures exactly, and hence we will know FY

2006-07 taxes exactly. For most of our units, it is clear that the predictability of their taxes is a net plus although taxing contemporaneously has two advantages: (1) The current year's expenditures measure more accurately than lagged expenditure both a unit's fiscal capacity and the costs that a unit imposes on the rest of the university; (2) Since in general, revenues are growing, lagging the tax base two years makes the tax rates seem higher than they actually are and the size of the tax does occasionally invite complaints.(3)

There are three types of taxes and six different tax rates imposed on different activities and different types of units. In all cases, the taxes are levied on adjusted expenditure lagged two years. There are also a number of special provisions that apply to specific activities in specific schools.

1. University Participation. All of the units that pay taxes pay a 2% tax called "University Participation (UP)" on their fully adjusted expenditure base. UP can be thought of as a payment for the general benefit of being able to use the University of Michigan name, for being affiliated with this remarkable institution and all the benefits it offers, and for receiving very general services (e.g., the President's attention) from the University's central administration.

Beginning with fiscal year 2007-08, this separately identified tax was rolled into the rates assessed for General Taxes and while we no longer talk about this tax, it remains one of the guiding principles of the budget system.

2. Research Taxes. All externally sponsored research undertaken is taxed at the rate of 9%. The base for this tax is constructed using the same categories of included and excluded expenditures noted above, but includes only those expenditures on externally supported grants (research and training) and contracts.

The Research Tax rate is now 11%.

3. General Taxes. A General Tax is levied on the adjusted expenditure base other than externally sponsored grants and contracts. The general tax rate varies according to the type of unit. Auxiliary units pay a rate of 2%, as do significant auxiliary-like activities undertaken in academic units. Research units pay 21% on their expenditures that are not sponsored research. Schools and Colleges are taxed at 24 percent. In all cases adjusted general expenditure is the residual after externally sponsored research and auxiliary-like activities are subtracted. (The Medical School, consistent with a seemingly universal principle that they are always different from everyone else, has somewhat different treatment of its auxiliary activities. The purpose of this is to prevent changes in fiscal relationships between the Medical School and the *Health System* from having major effects on tax revenue.)

A modest number of auxiliary units pay a rate of 4%, as do significant auxiliary-like activities undertaken in academic units. Other auxiliaries pay an administrative fee that changes each year based on the overall change in executive officer budgets for the prior year. Given the State's recent economic hard times, this has meant that assessments have been extremely modest or have fallen.

The tax system plays two important roles in the budget system. Because the tax base grows at approximately the same rate as expenditures within the University, growth in tax revenues creates an automatic mechanism for reallocation. That is, the year-to-year increases in tax revenues create an automatic amount of reallocation in activity-based units' budgets and the funds freed up by this mechanism become available to the President and Provost to reallocate beyond within-unit reallocation if appropriate. At the same time, the system provides the potential to redistribute some resources from those units that are gaining wealth, both from general fund sources and from such activities as sponsored research, sale of services, and success in fundraising, to other units that are, for whatever reasons, not as well-situated financially. The Provost and President may choose based on their priorities and values, to make such reallocations or not, but the tax system permits them to make such choices without explicitly cutting budgets in one place and raising them in another.

The increased tax base is also a source to fund changes in central administrative unit budgets.

The General Fund Supplement (GFS)

The last item in this discussion of the components of the activity-based budgets is perhaps the most important of all the components. The General Fund Supplement (GFS) represents the additional support provided to a unit beyond the net of the revenues and costs mentioned above. The UB model was designed so that most units would still need supplementation rather than function as "a tub on its own bottom." It is this element that gives the Provost leverage in determining the budget and, therefore, the sets of activities undertaken by units. The GFS represents both the historical measure of a unit's necessary funding and the accretion (or decline) of funds provided through subsequent policy and programmatic decisions.

A difficult concept to put forward to units with negative general fund supplements has been that this somewhat artificial number should not be viewed as an evaluation of the worth of the unit to the university. Instead, some activity-based units have far more capacity to capture the necessary resources to fund their activities through the revenue streams that flow to them through formulaic calculations and thus do not need a positive GFS.

At the initiation of our activity-based model, (which replaced a system of incremental budgeting), the GFS was determined to be the residual needed to create the identical bottom line for a unit once all the revenue and cost items had been calculated. Since that time, the GFS changes have been based on deliberate additions or subtractions. This is where central policy decisions are reflected.

In addition, hold harmless adjustments have been made as budget model changes were introduced.

On occasion portions of units change their reporting relationships and because they have a general fund budget, model changes are necessary to reflect that. These restatements are made in such a way that the net funding (the General Fund budget) moves from the old unit to the new. When the activities are shifting between the same types of organization operating under the same model rules, the adjustment is very easy. In some cases however, the restatement will involve changing a unit from an administrative one to an activity-based one or changing the tax rates

because the shift is from a research unit to a school/college. In every case, the net funding remains the same with a detailed depiction of the impact of the budget model on the funding components. The GFS is the item that balances the various components to ensure the same bottom line.

Budgeting, Projections and End-of-Year Adjustments

The budgets that are activity-based are the algebraic sum of a number of debit and credit items for the year, some of which are known in advance and some of which must be projected. Those that are firmly known are the GFS, the facilities plant operations charge and the General and Research taxes. The projected items include tuition, application and registration fees, indirect cost recovery, General Fund interest, and utility costs. Projected items are adjusted after the close of the fiscal year. For each of these items the unit (or Office of Budget and Planning) projects an amount for the coming year that is incorporated into the budget itself. At the end of the year, we calculate the value of each of those items and then a transfer of funds is made either to or from the unit to true up to actual. For instance, suppose that at the start of a year the unit projects that its ICR will total \$10 million that year and the unit's budget is developed with that assumption. If at the end of the year, we find that the actual ICR attributable to that unit is \$11 million, we would transfer an extra \$1 million to it. On the other hand, if actual ICR were only \$9 million, the unit would transfer \$1 million back to central accounts. The actual year-end transfers are the combined net of all of the items that were initially projected.

Clearly, wildly inaccurate projections or circumstances of extreme unpredictability would create situations that put a unit at significant financial risk. In general, this is not a concern here. Our enrollments are highly predictable and stable in aggregate and are managed and measurable at the unit level. The volume of research and ICR moves steadily upward. Spending patterns for operations don't vary much year to year. Utility costs fluctuate due to weather but even years with hard weather do not result in swings that create significant overall financial vulnerability. Even so, we are not complacent. We have three types of safeguards in place to ensure that the inclusion of projections in budget development does not lead to eventual bankruptcy. First, our units are generally well managed and aware of their own circumstances. The academic leaders, assisted by professional budget administrators, have proven to be capable of accurate forecasting. Most of our units have implemented conservative approaches that lead to both budget stability and a flow of year-end money that can be allocated to high priority one-time needs. Second, the central budget office staff pay a great deal of attention to projected figures and create secondary analyses whenever an item looks questionable. In this way, a second set of experts vets the work of the first and questions and presses in areas where our projections diverge. During the year, central and unit staff monitor the flow of actuals so that variances are identified early, so that immediate responses can occur. Third, both units and central administration hold a set of reserves that can be called on to supplement shortfalls in critical areas. The Provost's and deans' interest is to ensure adequate resources to mount the academic programs deemed essential to a unit's mission. If a shortfall occurred that put those programs at risk, we would identify a short-term option to ensure viability while longer-term planning occurs to create a lasting fix.

Budgeting Units that are not Activity-Based

Units whose budgets are not activity-based receive a budget developed through a more traditional style of incremental budgeting. Typically, these units are provided with an annual increase-the

General Operating Program (GOP)-that is somewhat less than the rate of wage growth. In addition, the relevant Director (for a UAU) or Vice President submits a budget request, and the Provost and her staff evaluate these requests, weighing them against the requests for support that have been made for the activity-based academic units. The formal system is thus incremental (the GOP) at the same time augmented by discretion.

Putting the Budget Together—the Provost's Sources and Claims

The Provost has four significant sources of allocable revenue in any given year—the increase in the state appropriation, increases in facilities-related charges, increases in taxes, and planned reductions in units' General Fund Supplements or (for administrative units) General Fund budgets. With these sources, she must support the General Operating Program, cover any increases in mandatory charges such as debt service or insurance costs, fund increases in imputed interest, honor any base commitments made in prior years, and provide other base allocations to both academic and nonacademic units. The allocation decisions must incorporate the entire set of University needs and desires and explicitly weigh the trade-offs between academic and support priorities.

Hard economic times have made it more difficult to accumulate a reasonable pool of resources for university initiatives and operating support for administrative units. We have used a tool known as “tuition recapture” to extract the equivalent of a small portion of the net change in tuition revenue. The technique continues to provide 100% of the tuition revenue to the activity-based units but with an offsetting reduction in the General Fund Supplement equal to the tuition less the associated financial aid. If, for instance, resident undergraduate tuition is increased by 6%, we may recapture 1.5% for allocation. Conversely, in one year where the State held us to a very low tuition increase, we provided the equivalent of additional tuition revenue as an increase in units' GFS. We have only used this practice with undergraduate tuition revenue, never with graduate.

One Time Funds

All of the discussion so far has taken place in terms of presumptively recurring base budgets. However, at every level of the University the ability to make budget decisions using flexible one-time or time-limited funds are of great value, for everything from upgrading wiring and repairing buildings to seeding new academic initiatives, helping to provide laboratory facilities to a new hire, or helping a unit to weather a temporary fiscal crisis. Having flexible funds also allows the leadership to respond to opportunities that arise unpredictably, that is, outside of the regular budget cycle. Such items can be funded on a contingency basis until they can be incorporated into a unit's base budget.

One-time funds appear in two different ways. Some of them are budgeted directly. Thus, the Provost budgets a line of flexible funds for her use in making one-time allocations, as do many of the deans. In this case, the total amount of these flexible funds is actually a recurring budget item in the existing base budget. It is the specific projects and items that these funds support that change year to year. The second source of flexible funds is the year-end adjustment of projected items mentioned above. This is essentially the under-budgeted amount of a recurring revenue source available as a lump sum for one-time items in the year earned and is generally then incorporated at the higher expected level in the following year's base budget.

General Fund Budget System Review

In 2005, a consultant, with support from a graduate student, engaged in a review of the budget system and model. Interviews with 111 individuals were conducted including the deans, their budget administrators, faculty and administrators. A Budget Review and Oversight Group of faculty and administrators was formed to guide the study team and provide feedback on the report. The report documented the observations of the study team and respondents' viewpoints rather than verifiable facts. Key findings included the following.

- *Unit autonomy that encourages self-management, entrepreneurship and innovation needs to be balanced with alignment to university goals and priorities.*
- *Balancing financial responsibility with the encouragement of risk is essential.*
- *Communicating the principles of the budget system and the components of the budget model to the wider university community is important.*
- *The perceived complexity of the budget model discourages some individuals from attempting to understand it, hinders certain initiatives and may provide an excuse for avoiding decisions or innovations.*
- *Too much emphasis was placed on year-to-year changes rather than taking a longer view of strategic allocations of resources.*

Changes to the budget model have been debated and implemented over the past several years. Real efforts have been undertaken to be transparent and to uncover the complex workings of the components as well as the rationale for budget decisions made by the Provost and President.

Conclusion

The UB system provides a mix of activity-based and discretionary budgeting. Relative to its immediate predecessors, it has provided the Provost considerably more discretion than did VCM or incremental budgeting, while generating a far greater variation in percentage changes in unit budgets than did the old incremental system. The system allows the University's leadership to see clearly the fiscal implications of the activities at the school/college/research unit level, while allowing considerable flexibility to determine how best to adjust to fiscal circumstances in light of the University's missions. The system is well designed for an active Provost who is willing to reallocate resources towards the academic mission and among academic units.

Footnotes:

1. Note that the "official" statements of budget policy and practice can come from the Provost or her budget staff, specifically the *Vice* Provost and *members of* the Office of Budget and Planning. This document is meant to get almost everything right almost all of the time, but it is far too brief to cover every potentially relevant case or all of the details of current budgeting practice. Moreover, the system is always subject to change. Thus, no warranty is implied or expressed.
2. The UB model represents a substantial revision of its immediate predecessor, which was called "Value-Centered Management," or VCM. Readers who want a detailed discussion of VCM, its strengths and weaknesses, as well as a detailed set of rationales for the change to UB may want to examine Provost Nancy Cantor's Nov. 19, 1997 speech to the Senate Assembly and a companion paper on budgeting written by Cantor and Paul N. Courant. See "New budget system will counter barriers to collaboration" and "Budgets and Budgeting at the University of Michigan—A Work in progress", respectively.
3. The two-year lag means that in present value terms expenditure undertaken today and taxed at rate t , faces a present value of taxes of about $.9t$, assuming an interest rate of five percent. If taxes were imposed contemporaneously they could all be cut ten percent without materially affecting either the units' or the Provost's fiscal position. Yet absolutely no one (with the exception of one of the authors of this document) sees, for example, that 24 percent tax currently imposed on professional schools and colleges (with a two-year lag) as "really" being a 21.6 percent tax on current expenditures.