Report on the State of the Budget Model and Budget System at the University of Michigan (*abridged version*)

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EXECUTIVE SUMMARY

The goal of the University of Michigan budget model is to facilitate the missions of the university. It does this by both ensuring sufficient resources centrally to fund required central services and to allocate resources to the schools, colleges and centers to continually advance the mission through teaching, research, and services. A budget model alone does not and should not determine budgets; rather, the budget model is employed by leadership in alignment with the mission of the university.

In 2014, the provost revised the budget model that is used to develop the university budget. The principal change in the model was a revision of the tax system from a multi-tiered system (with sponsored research taxed at a lower rate) to a single tax system. At the time the change was implemented, Provost Pollack promised a review of the new regime to be undertaken in five years. This document is an abridged version of the promised review

The principal authors of this report and the work upon which it relies are Paul Courant, former provost and recently interim provost, and Amy Dittmar, vice provost for academic and budgetary affairs. Tammy Bimer, associate vice provost for academic and budgetary affairs and executive director of the Office of Budget and Planning, played an integral role providing analysis and insights on implications. Our work benefitted greatly from extensive conversations with a group of deans and directors on a task force advisory group and from conversations across campus.

Two of the major findings of this report may appear somewhat contradictory, but in combination they lead us to believe that improvements can be made that would reduce the contradictions and improve the quality of university budgeting. In short, things are pretty good and things could be better.

One finding is that the current system is generally working quite well. Deans and directors of major academic units have a great deal of programmatic and budgetary authority and flexibility. U-M has been financially and programmatically successful through periods of declining state support, recessionary periods, and systemic changes in demand at several schools and colleges, and there is general agreement that part of this success derives from the conjoining of academic and budgetary authority, both in the provost's office and in the academic units. The budget system is an integral part of that conjoining.

At the same time, there are important elements of budgeting at U-M that are opaque to deans and other leaders, and there is a lack of consensus regarding the purposes of the university budget as administered by the provost, and of the relationships between those purposes and the design of the budget model. We heard concerns about excessive complexity and a lack of transparency in the operation of the model, and also about a lack of transparency on how the budgets of administrative units are determined and evaluated.

As such this report provides a set of principles that were agreed to by the committee and should guide budgetary decision making and the budget system. These are detailed in section IV. We further discuss a number of ongoing issues related to the transparency, efficiencies, and incentives at the university. These are discussed in section V. In regards to the tax model, we do not recommend a return to a multi-tax model with a lower tax on research. Doing so would either reduce resources to the center or create winners and losers across the university. Further, based on the robust continuing growth we see in sponsored research, we do not believe that such activity is generally suffering from a lack of incentives. The university currently receives over $125 million a year in grants that carry ICR of 21.4 percent or less. We discuss the tax model broadly and how it relates directly to research and research institutes in section VI.

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> *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. – Courant and Knepp*

I. INTRODUCTION

The goal of the University of Michigan budget model is to facilitate the missions of the university. It does this by both ensuring sufficient resources centrally to fund required central services and to allocate resources to the schools, colleges and centers (where the mission is most directly enacted) to continually advance the mission through teaching, research, and services. A budget model alone does not and should not determine budgets; rather the budget model is employed by leadership in alignment with the mission of the university. This requires a budgeting system that facilitates advancing the university's priorities via investment in and flows to units. Figure 1 provides an illustration of this investment over the last decade. The purpose of this document is to step back and review the budget system that allocates these resources to determine if it can or should be changed or improved.

In 2014, then-provost Martha Pollack (following the work begun by Provost Phil Hanlon) revised the budget model that is used by the provost to develop the university budget. The principal change in the model was a revision of the tax system. Taxes on expenditures in activity-based units had previously been levied at three different rates – eleven percent on research expenditures and for the expenses of the Life Sciences Institute (LSI), four percent on clinical revenues and revenues from continuing education (exempting hospital revenues,) and 24 percent on all other taxable expenditure.[1] Following the change, these rates were made uniform on all taxable expenditures beginning at a rate of 19.3 percent in FY14 and increasing to a rate of 21.4 percent in FY18, although Medicine continues to enjoy a complete exemption of taxation on clinical expenditures. The Institute for Social Research (ISR), which was tax free before this change, was brought into the base. Units whose tax liabilities increased as a result of this change were given permanent, base allocations ("hold-harmless adjustments") to compensate for the increased taxes, while units who experienced reductions in tax liability were also held "harmless" from what would have been a windfall. The change in tax rates was phased in so that it applied only to new spending and, thus, the marginal tax rate in the years following the change differed (sometimes dramatically) from the average tax rate.

The stated goals[2] for the single tax rate were:

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[1] In this multi-tax system, UM Office of Research (UMOR) had a differential rate of 21%.

[2] The revised tax model was presented and discussed in APG February 2013.

1. To collect sufficient resources so that the provost could fund new initiatives and cover mandatory cost increases.
2. Achieve greater stability and predictability so that varying combinations of tax assessments, base reductions and tuition recapture and other tactics could be avoided. (It is worth remembering that tuition recapture and base reductions had been used frequently, at varying and essentially unpredictable rates, to the considerable frustration of the deans.[3])
3. Reduce or eliminate varying rates and special deals. The goal here was predictability and transparency. A second goal was preventing units from gaming the system by labeling some general expenditure in categories subject to lower rates, a phenomenon that is of more than purely theoretical interest. Note that multiple rates always provide at least potential opportunities to game the system. Special deals, in contrast, may be essential in recognition of the fact that the business models of academic units vary greatly and thus differences in treatment can be beneficial to the university as a whole in some instances. We discuss issues around both kinds of variable treatment at some length, below.

At the time the change was implemented, Provost Pollack promised a review of the new regime to be undertaken in five years (2017-18). This document is an abridged report on the promised review. In implementing this review, a holistic approach was taken to evaluate not only the current tax rate but also the complete budget model, because the university's budget is a highly interdependent system; looking at tax rates or other features in isolation can be misleading.

[3] Base reductions and tuition recapture occurred and the motivation for the change in the taxes was due to declining state support. When the original tax model was developed state appropriations were increasing: 10-year CAGR of 2.9% (FY89 to FY99). When the single tax model was developed state appropriations were decreasing: 10-year CAGR of -2.8% (FY03 to FY13). Base reductions to activity-based units were implemented each year between FY04-06 and FY10-13 and Tuition recapture was implemented in FY02, FY03, FY06, and each year between FY08-12. Many deans saw the 1.5 percent increase in tuition for presidential initiatives to advance academic excellence in FY 2016, which was not allocated out to the units, as a violation of this purpose. In fact, the Regents approved the 1.5 percent explicitly for presidential initiatives and would not have approved the additional increase otherwise and thus it would not have been available to the school and colleges.

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Our two major findings are (at least on the surface) somewhat contradictory, but in combination they lead us to believe that improvements can be made that would reduce the contradictions and improve the quality of university budgeting. In short, things are pretty good and things could be better.

One finding is that the current system is generally working quite well. Deans and directors of major academic units have a great deal of programmatic and budgetary authority and flexibility, and the university is well served by a budgeting system that allows the major academic units to have such autonomy. U-M has been financially and programmatically successful through periods of declining state support, recessionary periods, and systemic changes in demand at several schools and colleges, and there is general agreement that part of this success derives from the conjoining of academic and budgetary authority, both in the provost's office and in the academic units. The budget system is an integral part of that conjoining.

At the same time, there are important elements of budgeting at U-M that are opaque to deans and other leaders, and there is a lack of consensus (or sometimes even awareness) regarding the purposes of the university budget as administered by the provost, and of the relationships between those purposes and the design of the budget model. We heard a great deal about excessive complexity and a lack of transparency in the operation of the model, and also about a lack of transparency on how the budgets of administrative units are determined and evaluated.

While these two major findings do not call for major changes in the allocation of funds in the budget, many of the leaders with whom we spoke as we worked on this project expressed a desire for articulation of a coherent set of principles that would guide budgeting practices and that would inform the choice of the parameters and structure of the budget model. This, in turn, requires us to begin at the beginning, to address the question of what budgets are for, and to examine the broad relationships between budgeting systems and resource allocation in research universities.

II. BUDGETS AND BUDGETING – BASIC PRINCIPLES AND PURPOSES

The goal of the budget and of budget administration is to support the missions of the university – Research, Teaching, and Service. In many cases, notably the teaching and research programs undertaken in the schools, colleges, and research units, activity is directly in support of these goals. Other activities have only indirect connections but are of value because they bring resources to the core missions and enhance the reputation of the university and its ability to bring resources to the core missions. The university engages in many activities that bring in revenue, and as long as these activities are consistent with mission and the maintenance of high standards of research and teaching quality, that revenue can and should be deployed in support of the core academic missions.[4] At the same time, we are a nonprofit by choice and our purpose is not to maximize revenue or wealth per se. Effective budgeting and planning will seek sources of revenue (including cost savings), but these goals are instrumental in the service of advancing the institutional mission. Generally, including subsidies and charges from the center, each major unit and the university as a whole should break even overall, but some activities within a unit will run at a loss and others will produce a margin for reallocation aligned with mission.

In brief, university budgeting is a set of activities and rules that bring resources to programs and activities that advance the purposes of the university. A good budget system makes it (relatively) easy for the students, faculty, and staff who constitute the institution to do high quality and valuable work. Later in this discussion, we will translate this rather vague desideratum into a set of actionable principles for design and implementation of a budget system.

There are many ways to organize a public university budgeting process. All of them have the same basic setup. Revenue (tuition, state appropriation, sponsored research, clinical activity, housing, athletics, concerts and other

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[4] All revenue sources have some adverse side effects, but we cannot escape the truth of the axiom, 'no margin, no mission.' No school's unprofitable social mission – to educate the poor, to advance basic knowledge and disseminate its fruits, or to contribute to community development – can be advanced without revenue. The … debate over the acceptability of each form of revenue that colleges and universities develop should continue, and, indeed, be elevated. (Weisbrod et al page 293)

entertainments, and many other sources) comes to the university under a myriad of restrictions and expectations. The university's budgetary and financial authorities, acting as the corporate entity (in our case, every dollar we receive or spend is on behalf of the "Regents of the University of Michigan") meet the payroll, maintain the physical plant, provide stewardship for the university's assets, and provide central services (snow removal, library collections, DPSS, student life, office of the general counsel, and many others). There are many choices to be made and determination of the loci of these choices is at the heart of budget models and budget systems. There is no natural default. Rather, there must be some set of mechanisms to process the flows of resources in and out and to determine the activities that the institution undertakes, at all scales, while meeting regulatory, governmental, and constitutional requirements and to manage the university's business interactions with the rest of the world.

Broadly, there are three ways commonly used to organize financial flows to, from, and within the university.

<u>Incremental Budgeting.</u> Especially in public universities, the most common way of organizing things is via a budgeting method called "incremental budgeting," although incrementalism is generally an emergent property rather than a design desideratum. In this model the CFO almost always serves as the Chief Budget Officer (CBO) and is in charge of the budget as well as responsible for the institution's financial health and probity. All of the university's financial flows are managed by the CFO, who works as an agent of the President and board, subject to substantial advice from the provost, deans, and other academic leadership. But, crucially, tuition and other general fund sources flow to the center and decisions about their allocation are made there.[5]

These systems are often characterized as "incremental budgeting systems" because the normal treatment is to take the bulk of the annual change in revenues to the university and allocate it approximately uniformly (in percentage terms) to all of the units – academic and administrative -- that perform the business of the university. Generally, there will be a normative percentage increase with variation – positive or negative increments – relative to that norm.

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[5] Note that the academy has lots of influence here, and that competitive considerations matter – you can't just take all the tuition and reallocate. The customers won't stand for it. But in this kind of system the CFO has lots of control.

The principal virtue of incremental budgeting systems is their predictability. The biggest drawbacks are two: (1) It's difficult to make allocation decisions that deviate very much from average – response to both threats and opportunities tend to be slow. (2) There is little incentive for units to take steps that would increase their revenue or reduce their costs, because the benefits and costs of such actions accrue to the center, rather than to the units undertaking the work.

Responsibility Center Management. At the other extreme[6] are so-called "Responsibility Center Management" (RCM) systems. Here, essentially all of the revenue and all of the expenditures undertaken by administrative units flow through the CBO and are attributed to responsibility centers – generally schools, colleges, and research units. RCM budget systems use formulas to determine assessments and cover costs of services, e.g., how much the School of Education (SoE) should be "charged" for the operations of University Library, the Department of Public Safety and Security (DPSS), and Transportation and Parking. Those formulas are generally based on assumptions about the use of such resources. RCM systems are often complex and highly sophisticated, taking into account the fact that many units draw upon services provided by many others. For example, in an RCM system a portion of the costs incurred in running DPSS will be charged to other units, including the Office of General Counsel (OGC). At the same time a portion of OGC's costs will be attributed to DPSS. Sophisticated RCM systems use computational techniques to make sure that the full cost – as well as it can be measured -- of all activities is accounted for in the RCM budget model, without double counting.

One of the problems with pure RCM systems is that it is invariably the case that there is a good deal of arbitrariness to the allocations – we really don't know how much of OGC's expenditure is attributable to the activities of DPSS, or the College of Engineering (CoE), or any other unit. Good cases can be made that any set of attributions has errors, leading to a good deal of conflict over the formulas. A second problem with RCM systems is that although they can allocate shares of expenditures undertaken in administrative units they have no built-in mechanism for determining the levels. How big should DPSS, Parking and Transportation, the President's Office, Central Development, and the Library be? And what are the incentives for efficient and effective levels of production from these units in

[6] Actually the other extreme is a system with every tub on its own bottom (ETOB) where each of the academic units has almost complete control of how resources attributable to its activity can be spent or retained. This kind of structure is primarily used by wealthy private institutions. No one in the Big Ten practices ETOB; much of the Ivy League does.

an RCM environment? Further, RCM models provide limited mechanisms to support different business models and needs of units and can lead to a regime of 'survival of the fittest' that may not align with the university mission. Ideally decisions about the relative sizes of the OGC or Financial Operations or the Classics department or the Law School ought to be made by academic leadership in support of the fundamental missions. RCM systems generally do not build such features in, although it's possible in principle to give full or partial responsibility for the size and scope of administrative activity to a council of deans and other informed leadership.

When working well, RCM systems enable deans and directors to see clearly the financial consequences of developing, expanding, or contracting their own programs, thus assuring that those who are best situated to evaluate the academic merit of academic activities are also able to determine the level of such activities. The strategic direction of the university is thus the sum of the units' strategies.

<u>Mixed Models and U-M.</u> RCM is one of many activity-based budgeting models in which resources generally flow towards the units that generate them, and where costs are generally assessed where they are incurred. The University of Michigan's current model is basically an Activity-Based Budgeting model. The transition to this model began in 1997-98, when the University of Michigan implemented an RCM system, in which all operating costs and revenues were attributed across the institution to the schools, colleges, institutes, administrative units and other offices that incurred the costs and generated the revenues, as discussed above in the RCM model section. After the first year of RCM, the provost and president (with the general agreement of the deans) revised the RCM model, replacing full attributed costs and substituting a set of expenditure taxes. The resulting budget model, which is generally similar to the model currently in use (although with many differences in detail), is activity-based, similar to RCM.

Tuition revenue is attributed to the units that generate the tuition, increasing with increases in enrollment and tuition rates, and decreasing with reductions in enrollment and tuition rates. Indirect Cost Recovery follows direct costs and is attributed accordingly. Changes in the cost of running activity-based units flow to (or from) the units, providing direct incentives, essentially identical to those inherent in RCM, for units to implement cost savings and to find ways of increasing revenue relative to cost. To be clear, the activity unit receives revenue and bears the cost associated with the activity that generated the revenue.

Costs that are not directly linked to revenue-producing activity are paid centrally, funded through taxes or assessments that are clearly measurable (such as utilities) or deemed vital to mission (such as undergraduate financial aid). The tax rates in successful activity-based budgeting systems are generally sufficient to support central administrative functions and to provide some flexible resources that allow the provost to support academic innovations and to respond to emergencies and initiatives that arise in the schools, colleges and institutes. This allows the provost to influence the strategic direction of the university rather than leave it to be the sum of each unit's strategy. The provost, as chief budget officer, also determines the levels of expenditure undertaken by the major central administrative units. These levels are not activity-based. Rather, the central units are budgeted to mission (as are some academic units, such as libraries and museums, that do not have any substantial sources of revenue other than allocations from the provost.) Not surprisingly, it is a continuing source of some contention whether the budgets and performance of centrally budgeted units are, in combination, cost-effective. In other words, the U-M activity-based model shares many of the characteristics of RCM in the activity-based units but many of the characteristics of incremental budgeting in the non-activity based units.

One of the desirable incentive properties that is built in to the U-M activity-based system is that any money saved via administrative cost reductions in central units is available to the provost for reallocation to academic units and other functions associated with the primary mission of the university. Thus, there is an incentive on the part of the academic leadership to control costs incurred centrally, just as there is an incentive for each of the activity-based units to control its own costs.

III. BUDGET SYSTEMS AND BUDGET MODELS[7]

The University Budget model (UB) is designed to be as consistent with our values as it can be, but, like any set of mechanical rules for resource allocation, it does not dictate our values and cannot embody our values perfectly or even near-perfectly. Thus, it is vital that the model operates within a budget system that guides the resource allocation and mission of the university.

It is the budget system, rather than the budget model, that determines the budget. The distinction is essential to understanding how budgeting works at U-M. A budget model is a set of rules for arranging the elements of a budget. For example, under the rules defined in the UB model, Indirect Cost Recovery (ICR) is generally allocated as revenue to the unit(s) that generates

[7] This discussion is largely an excerpt from Courant-Knepp (https://www.provost.umich.edu/budgeting/ub_model.pdf)

the direct research associated with the ICR. Units are generally allowed to keep any balances in their operating funds across fiscal years, and units with students are assessed for financial aid based on the number of students who are enrolled and not the number that receive aid. These are but a few of a long list of rules under which budgets are developed.

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 effective 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 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, as well as scope for academic leadership at all levels.

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 outcomes from such a model would create 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; indeed they should, for the most part, make it easy to make good decisions. 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 the system should be able to override the 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. We have noted that the model used at U-M 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 retains 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, other central academic leaders, and the Board of Regents.

The budget system is much broader than the model that it incorporates. 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 interrelationships 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.

IV. PRINCIPLES FOR EFFECTIVE BUDGETING AND BUDGET ADMINISTRATION

We now turn to a set of principles that we believe should be embodied in the budget system at U-M and which should guide budgeting and budget administration.

1. The budget model (and system) should be consistent with and supportive of university missions and values. Insofar as possible, the missions and values should themselves be clearly articulated and transparent, especially when their achievement requires that university-wide interests are in conflict with individual unit interests. (For example, to guide the U-M mission, we attribute net tuition based on average residency status, so that units do not have an incentive to admit out of state students. Similarly, we admit need-blind and assess financial aid based on the average student, meaning that units do not benefit from having relatively few students who receive central financial aid.) In these instances, it requires adequate flows to central administration to implement the mission of the university.
2. Revenue and cost attribution in the model should provide incentives for individual units to control costs and bring revenue to the university (consistent with mission).
3. Insofar as is practicable, decisions should be made by the people with the best understanding of the effects of those decisions. This is especially true for the academic missions of teaching, research, and

service. The costs and benefits of activities should be visible to the decision makers. We note, however, that there are occasions when what is best for the unit or units to undertake(s) is not what is best for the university. This is an element that highlights the importance of the difference between model and system.

4. Deans and directors should be called to and judged on their contribution to the university as well as to their units. This will impact both budget allocations and personnel reviews. Each unit is not a tub on its own bottom either as a budgeting strategy or as a norm for behavior.
5. The same general principle should apply to central administrative units; they should be relied upon to be the university's expert in relevant legal, regulatory, and business functions. However, these units should be budgeted to mission, rather than seeking to produce a "profit" margin or to expand their activity from their "own" resources and activities. Their resources derive from the university's budgeting authority. This requires that the provost's office has adequate funding to allow these units to assist the university in delivering its mission. It is entirely plausible that in some cases a central unit will not be the lowest cost provider of a commodity service but rather will provide a level and quality of service and structure essential to the mission of the university. In other words, not all services can or should be considered for outside provision. [8]
6. The budget model should get things mostly right – 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.
7. There are instances where the budget model does not provide the right flows or incentives and in these instances the budget system should attend to cross-unit and campus-wide benefits and costs in the following ways:
    a. Exploit synergies where we see them.
    b. Don't waste time and resources on zero-sum transfers where there is no net gain to the university.

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[8] For instance, a unit may be able to contract for legal services at a lower price or speedier delivery than is provided by OGC. However, the university's mission requires that legal services and legal risks be evaluated and managed centrally. Similarly, a unit may be able to recruit students as incoming freshman to their school without coordinating with central admissions, financial aid, and housing, as well as other functions, but in order to ensure alignment with mission, coordination is required.

   c. Organize incentives and move resources around to improve outcomes (note that there will be inevitable disagreements here, especially around central initiatives v. local initiatives).
   d. Look for the most efficient producers, campus-wide, and organize things so that the work is done by those producers, such as exploiting economies of scale and scope and avoiding wasteful duplication of capacity and activity.

8. Central administration activities should be predictable, transparent, and cost-effective at delivering on mission-consistent services. This isn't so much about the budget model but a principle of effective budgeting and administration. Its achievement requires trusted mechanisms for evaluating central activities. Put simply, deans and directors and the provost should be confident that they are approximately "getting their money's worth" out of centrally supplied services. The provost's role as chief budget officer is an essential part of effecting this principle. In doing so, it is important to note that "getting their money's worth" must be defined as service and cost efficiency to the whole. It is entirely possible that a unit would be better off not using a particular service while the university as a whole will be best off if all units use this service. [9]
9. Units should not seek to break even or generate margins on each of their activities. If units only do things that have zero or positive margins, they will run at a profit, and will be abjuring activities that contribute to unit and university missions in order to grow their balances. Rather, units should break even on average across all of their activities, including revenue from gifts, grants, the General Fund Supplement, taxes and assessments and all other sources. This implies that some activities will generate positive or negative margins. The key to this principle is to be mission-driven subject to a budget constraint. It is perfectly consistent with this principle to establish academic programs of good quality that produce a margin. This is indeed desirable, provided that the margin is then re-deployed to producing excellent research, teaching and service or other valued goals, such as access and outreach.
10. Though the central decision making process differs, capital renewal and large investments in infrastructure such as the addition of new buildings, additions, major renovations and IT capital investments are inextricably related to the budget system. Projects may be funded with unit reserves or gifts, which flow through the budget system. Further, central decision making to approve capital projects consider the

[9] Note that in cases like this it should be possible to use some of the benefits that accrue to the university as a whole to add support to the individual unit in question.

implications of these projects on the unit's ongoing operating budget. Decision-making and central funding for academic capital projects are determined by the provost working in conjunction with the CFO and President. In this decision-making, allocations of central funding for academic unit capital projects should be determined based on academic priorities, other university capital needs, and alternative available funding. The provost will seek counsel from the deans and directors (through the Provost's Capital Project Review Committee) to determine the academic priorities. The availability of capital (internal capital and debt capacity) is determined by the CFO. The provost will work closely with the CFO to make funding decisions for capital projects for academic units. Decisions of which projects to put forth to Regents will be determined by the provost and the president.

Summary. A budget model and system that follows all of these principles would look something like a market-based mixed economy, with "firms" (Schools, Colleges and Institutes) seeking sources of funds to advance their individual missions and bearing responsibility for paying for the locally-borne cost of running their operations. The "firms" in this setup are explicitly mission-driven and not-for-profit, which is an important difference between the university and a market-based economy. There is also a central government, supported by expenditure taxes, (on the logic that expenditures are a pretty good indicator of the costs imposed on the collective enterprise by activities undertaken in units).[10] The central government – the provost and the administrative units – is charged with producing collective goods that would tend to be under-produced by individual maximizing agents and with assuring that valued entities that cannot survive in the marketplace receive sufficient resources to be able to survive. Also, the central government articulates the collective values of the institution and allocates resources and makes rules accordingly. The central government also undertakes to assure that collective goods (administrative services) are efficiently and effectively produced. Within this setup, activity-based units have substantial autonomy, including the ability to mount programs together and to seek ways to fund programs with revenues drawn from many sources, inside and outside the

[10] One could imagine having tax rates tailored to estimates of the level of cost incurred in different types of activities. The original model had four tax rates. The differences were derived from average tax rates for different types of expenditure inferred from the "pure" RCM model that was developed in 1997. Alternatively, taxes could be based on revenue rather than expenditures.
U-M uses an expenditure tax because expenditures drive activities that require funding through taxes.

university, subject to the constraints imposed by the central government to advance mission.

We now turn to consideration of ways in which the current system does or does not meet these principles. The Office of the Provost is working with deans and other campus leadership to make recommendations for improvements and implement changes where appropriate.

V. OPEN ISSUES AND AREAS FOR POSSIBLE REFORM

In the course of deliberations and discussions with each other, the advisory task force, and others, we identified a number of difficulties with the budget model as well as other issues relevant to improving the general fund budget and its administration.

There are several broad flavors of concern about the budget system, each raising specific issues of administration and model rules and parameters. We outline these below. In several cases, the issues are not directly related to the budget model but relate to central administration more broadly. We note in all cases the concerns stem from places where it is perceived that we have moved away from one or several of the guiding principles in Section IV.

1. Complexity and Lack of Transparency

The first set of issues can be summarized as involving complexity and transparency.

1.1 The budget model is often taken as normative. That is, because the model is designed to provide incentives for units to generate revenues and to reduce costs, it is often taken that a dean or director's principal goal should be to produce margin for the unit or that each program should produce margin. It's an important goal, but should not be the principal goal. In a complicated and intertwined organization like U-M, especially one that is positioned to take advantage of talent and expertise across many disciplines, the configuration that emerges when each unit tries to optimize its local fiscal circumstances generally will not be the configuration that optimizes the overall product of the institution and its goals of teaching, research and service. Moreover, agreements among dyads and triads are subject to the same coordination failures as individual units. The optimum requires that at times the university should innovate away from some of the financial incentives implicit in the budget model. This is the purpose of utilizing the budget system rather than only the budget model.

1.2 Tuition attribution and financial aid assessment are difficult to understand, especially for joint programs. Units find it difficult to determine the marginal financial effect of one more student in various programs. This weakens the power of the budget model as a mechanism to produce efficient and effective resource allocation. This is particularly a concern as it relates to planning and managing joint programs.

1.3 Deans, directors, and budget administrators do not have a clear or shared understanding of what services should be provided at what quality and quantity levels, nor is it clear what can and should be done when units are unhappy with the services they are getting relative to the cost of providing those services and the levels of tax revenue attributable to their units. More generally, deans and directors do not know how the budgets and missions of central units are determined. This relates to the concern discussed earlier regarding the lack of transparency. Lack of transparency leads directly to weakening of trust between units and the central administration.

2. Misalignment of Revenues and Costs

Several items were raised that relate to the misalignment of revenue and costs and thus cause a failure of the model to facilitate mission. These challenges relate to almost all of the guiding principles in Section IV.

2.1. ICR flows to 'where you do the research' but this is not always clear or relevant in some of the social sciences or other fields that don't require labs and extensive research infrastructure. In these instances, the faculty has some choice where to run the grant, particularly if the faculty has a joint appointment or is involved with a research center. Thus some units may be bearing costs of research but not getting revenue from ICR while others are getting revenue out of proportion to the costs they bear. Ideally, the work should be done in the most cost-effective place and the benefits and costs would be reasonably apportioned to the units whose faculty are doing the work. In practice, there is conflict among schools and colleges and between schools and colleges and research institutes, which can result in bidding for faculty on bases that have little to do with efficient allocation or the quality of the research.

Increasingly, research on the part of tenure-track faculty is supported by startup packages (including leaves) that are paid for by schools and colleges. In cases where sponsored research undertaken by such faculty takes place in research units, the dean of the relevant school or college legitimately seeks some recompense, but this will not occur straightforwardly under the standard rule that the ICR follows the locus of the research. Again, the issue leads to conflict among units.

2.2 Another important example of misalignment arises with student services that are not provided by schools and colleges. Such services (e.g., Counseling and Psychological Services, or CAPS) may be essential elements of the student experience and would seem to be appropriately and/or effectively delivered centrally. The budget system as applied to enrollment is built on the assumption there are sufficient funds and quality of judgment so that the provost can adequately support these activities. As the number of students increases, however, there is nothing to assure that tax revenue increases by enough to meet the increased demand (nor can we assure that increased tax revenue doesn't generate more than is required).

2.3 Many schools and colleges want to increase their enrollments in part to increase revenue. As things stand now the relevant deans do not directly see all of the costs that would be incurred if the student body were to grow, and thus favor growth, even though the net effect on the university as a whole may be negative. Increasing the size of the student body also has implications for classroom construction and maintenance, for transportation, and many other university activities. It was discussed at some length that this is a natural tendency of the current budget system, where units have an incentive to grow revenue and do not always bear the full costs of this growth.

2.4 Because differing budget systems exist for central versus activity-based units and the current cost containment strategies differ (with reductions in central expenditures reallocated by the provost while cost reductions undertaken in the units being reallocated by the units themselves), the incentives facing each group differs. Further, years of cost containment has led to low growth in central units while less so in activity-based units (overall). This may be what we want. However, a possible side effect is a feedback loop where central staff is cut, resulting in deteriorating quality of service. This lower service quality creates a need in the units (as well as frustration), resulting in adding staff to the unit to provide the service. If this loop is repeated over many years, inefficiencies and duplication could result. The question is therefore raised - how do we stop duplication of services between central and the units.

3. Distortion to Incentives

3.1. Some units prevent or discourage faculty from taking low ICR grants such as those from private foundations because the tax on the grant leads to a reduction in net revenue. A similar problem arises with gifts in support of research. These behaviors are especially consequential when the grants or gifts are in support of research activity that is otherwise weakly supported (e.g., the Gates Foundation and education).

The issues of taxes on sponsored research and of low ICR grants and gifts are frequent points of criticism about the budget model, and we discuss these questions at some length below.

One approach to partially address this began in FY18 when the provost funded a pilot program to provide funds to units that increased low ICR grants to remove the disincentive to take these grants. Specifically, the program provides 10% of the increase in foundation grant over the three-year average level of foundation grant funding. This program is administered through UMOR and is a pilot that should be reviewed after 3-5 years to determine if it helped to alleviate the financial disincentive to take low ICR grants. The program has not yet had any funds released and it is too early to determine its impact. However, several deans did express a concern that the backward-looking nature of the program is less than optimal to address the underlying concern.

3.2. Gift funds for financial aid in the units are typically applied to the last dollar of aid and provided over and above the need-based aid determinations made centrally (i.e. not inside the gift aid max or GAM). This results in a student receiving more grant than in the original packaging (replacing work study or loans). Thus, the unit aid does not reduce the overall university grant provided and thus the unit is still assessed in full for centrally awarded financial aid. Given this, there is limited incentive to raise gift funds for need-based aid because units are not given credit for this in current financial aid assessment.

3.3. The 50-50 split for undergraduate tuition (instruction-enrollment) encourages the creation of ‘shadow programs’ where there are not many credits or services provided to students. Is 50-50 the right split? The university has employed other splits in its history. The current 50-50 split was implemented in FY09 after a review of the cost of instruction of large introductory courses. The task force engaged in rich discussion of this issue and determined that there are good arguments for changing the split in both directions.

3.4. Inconsistency in what is taxed creates odd incentives. Some examples: GRSA/GSI salaries are taxed but stipends are not, so fellowships are attractive relative to settings in which graduate students learn how to do research and teach. Computing expenditure on cloud services is taxed but central computing is not. By all accounts, a great deal of computing can be done more efficiently in the cloud, so we shouldn't bias ourselves away from the more cost-effective producer.

There are reasons for each of these inconsistencies, but as a general matter, we should have a set of procedures that make it easy to assess possible needs to adjust the tax base in response to relevant technical and economic changes, such as the advent of cloud computing, weighing the costs and benefits of such changes.

3.5. The activity-based system creates incentives for schools and colleges to attract students or protect revenue in ways that may not benefit students, such as proliferation of minors and not allowing double majors. Additionally, schools may engage in unproductive competition with each other. The budget model cannot fix this problem by formula. The provost can help alleviate it, via close monitoring and an "open door."

3.6. Central will assist units when in financial difficulty, core to protecting mission. Repeatedly doing so has the potential to create a moral hazard problem where there is limited incentive for the unit to balance revenue and costs. At the same time, it makes sense for the provost to provide university-wide insurance against financial exigency, rather than have each unit responsible for its own "rainy-day" fund.

This is a classic problem in the design of insurance systems, and its solution requires ongoing attention on the part of the provost and the budget team and is an excellent example of why the budget should be operated as a system.

VI. TAXES ON RESEARCH EXPENDITURE

The most salient problems with the budget model arise from the taxation of expenditures on sponsored research. We briefly mentioned this issue earlier in this report but turn now to a more detailed discussion of the issue and some of the units most affected by it.

Research Units and Taxation

While a single tax rate applied to all units appears uniform, the impact of a single tax rate may vary considerably. The budget model review examined several recalculated tax rates to more clearly understand the impact on the University's research units.

Calculating an average tax rate on expenditure captures the effect of the previous tax rate (relevant due to the hold harmless provided to all units), and offsets, if any, provided by the Provost to individual units. This resulting average rate tends to be low for any unit with a high research expenditure relative to their overall budget, such as is the case for research units. Calculating net taxes as a percent of unrestricted revenue reveals variations that arise from the differing revenue mix of units. Some research units have a very high resulting net tax rate; others do not. It is also useful to compare the marginal tax rate on sponsored research for each unit. All units with higher volumes of research experience high marginal tax rates on research, and research institutes are especially affected as they have little or no access to other funds. This can make it difficult to break even overall while paying taxes and providing the research support that is a sine qua non of research institutes.

Taxes on Research and Low Overhead Grants

The challenges described above for research centers are an issue for all units with low ICR grants. Low ICR grants generally lead to fiscal stress in the sense that expenditure taxes plus required direct expenditure add up to more than the total grant award. Thus, in the most straightforward sense, they lose money. Of course in this they mirror the university as a whole. Most of the activities that we engage in lose money; without the state appropriation, payouts from endowment, and philanthropy the university could not function at its current levels of activity. If we abjured all activity that did not "pay for itself" from the point of view of the active unit, we would run at a profit, but to what end? One of the purposes of the budget model is to encourage fiscal responsibility and development on the part of academic leadership, but producing positive margins on operations – especially on each operation – is not the fundamental purpose of the model.

This issue is discussed at length in the paper on the budget model written by Paul Courant and Marilyn Knepp 20 years ago:

> *A … 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.*

These observations support the most widely-used mechanism for dealing with low overhead grants, which is to find resources outside the grant itself (including, if necessary, via getting help from the provost) in order to help support research that is also being supported, albeit incompletely, by external funds. Indeed, the university currently receives over $125 million a year in grants that carry ICR of 21.4 percent or less. As we stated previously, a unit should break even but not on each research project, course, etc. This may mean that cost containment strategies must be employed in one area to support another area in a unit to achieve the mission of the university. Often, foundation grants cover as direct costs items such as clerical support. Academic units and centers should be encouraged to employ these strategies to manage their budgets.

The above discussion leads to the question that initially prompted this review: should the university return to a multi-tax system with a lower tax on research?

In considering this question, we refer back to one of the principles that we adduced earlier in this discussion: that the budget model should get things mostly right – if the provost has to consistently adjust the model to correct for systematic errors it would suggest that the model should be revised. In the case of research centers and institutes that have essentially no flexible sources from which to pay taxes other than ICR, and the case of low-ICR grants, a reduction in the research tax rate would reduce the fiscal strain on the relevant units. Of course, reducing the research tax rate would increase the fiscal strain elsewhere.

There are several potential approaches to reducing research taxes, each of which has drawbacks:

We could reduce research taxes without raising other taxes. This would reduce resources available to the provost for academic initiatives, emergent problems, and support of central activities. Further, it would provide incentives for sponsored research and windfalls to units that engage in sponsored research. Based on the robust continuing growth we see in sponsored research, we do not believe that such activity is generally suffering from a lack of incentives.

We could cut the research tax and raise the general tax while keeping revenue approximately constant. The opportunity cost of the research tax being reduced will be apparent across the university. The numbers are a bit daunting. Cutting research taxes to 16 percent and raising general taxes to 24 percent would about break even. This would create clear winners and losers with units that have a high percentage of expenditures related to grant-funded research benefitting and those with lower percentages providing the offsetting subsidy. We should remember that grant-funded research is not the university's only mission. Moreover, research volume is generally growing, implying that the university does not suffer from a paucity of incentives and support for sponsored research in general.

We could try to design a specific policy or set of practices that target the low ICR/Gift problem without doing a broad budget model repair. As it happens, this would be very expensive, because the current volume of low-overhead grants is high, and any general policy to subsidize such grants would therefore generate substantial windfalls. We currently do about $125m per year in sponsored research on grants that carry less than 21.4 percent ICR. So it's already the case that the units are doing the heavy lifting in arranging their sponsored research activity to take advantage of low-overhead grants.

In the end, it is our opinion that the costs outweigh the benefits of changing to a multi-tax system. And, after discussing each of these points, it is our recommendation that the university should not revert to a lower research tax. To do so without increasing the general tax rate would move the university closer to a pure RCM model with fewer resources for the provost to allocate to support the mission of the university. To lower the research tax and have a higher other expenditure tax would result in winners and losers as described above. We therefore recommend that the tax rate remain a single tax rate and (for now) at its current level.

It is however important for the provost to recognize the challenges and balancing required of the units to support research consistent with mission.

This again highlights the importance of employing the budget *system* and not relying on the budget model exclusively

Capping Taxable Expenditures

We recognize that units with limited sources of funds outside of grants are constrained in a single-tax model. This issue was highlighted above in the description of research units but is an issue all units, at some level, face and can broadly be described as a constraint on unrestricted funds relative to taxes. To address this concern, a tax cap was imposed in 2015 in response to this concern and following the 2014 change to a single tax rate. Taxes are capped at 35% of unrestricted revenue. As of FY18, only one unit (UM Transportation Research Institute) has reached this level of taxation. Other units' taxes as a percentage of unrestricted revenue vary from 5% to 27%.

VII. CONCLUSION

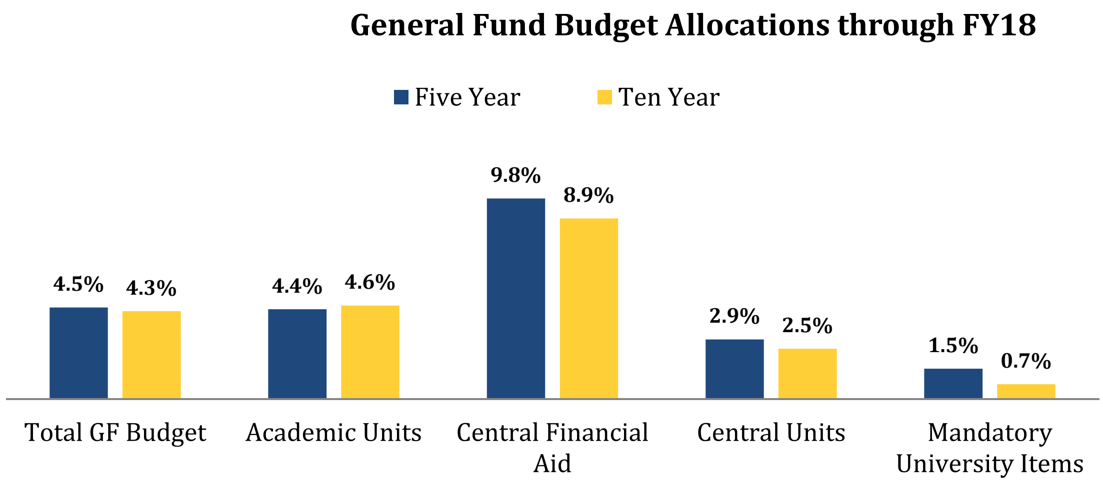
In summary, we end where we began – many of the challenges with the U-M budget model derive from its strengths. Two themes that emerge repeatedly are the desirability of an improvement in transparency in the allocation of funds and the importance of improving the effectiveness of and efficiency of central services. An important element of such improvement will be better understanding of mechanisms for coordinating and allocating services between central units and the schools and colleges.

Taxes on research are a challenge and discussing this issue fully requires attention to taxes paid as a percentage of unrestricted revenue, but we do not recommend a change to the current single tax model.

We also highlight that the budget *system* (and thus the provost) is vital in addressing the constraints that come from taking mission critical low ICR grants and other mission critical investments that do not generate adequate revenue to be self-supporting.

Deans discussed the idea that the incentives in the model should be considered imperatives by the deans, and viewed as fundamentally desirable university policy. We suggest that budgeting and administration should instead be guided by a fairly small set of well-understood and agreed upon principles. As much as possible, the model should be consistent with these principles, but it is inevitably the case that there will be circumstances in which the model, without the intervention of other policy instruments, will lead to undesirable and unintended consequences. Provosts, directors and deans should be quite comfortable with principled deviations from the mechanical working of even the best of budget models.

Figure 1


General Fund Budget Allocations through FY18
Five Year
Ten Year
4.5%
4.3%
4.4%
4.6%
9.8%
8.9%
2.9%
2.5%
1.5%
0.7%
Total GF Budget
Academic Units
Central Financial Aid
Central Units
Mandatory University Items