

**Worldwide Trends in Higher Education Finance:
Cost-Sharing, Student Loans, and the Support
of Academic Research**

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I.

Introduction: Current Trends in Higher Education Finance

Increasing Austerity

The financing of higher education throughout the world has seen dramatic—and also intellectually, ideologically, and politically contested—changes in the last decades of the 20th and the first decade of the 21st centuries. In the main, these changes in financing are responses to a worldwide phenomenon of higher educational costs tending to rise at rates considerably in excess of the corresponding rates of increase of available revenues, especially those revenues that are dependent on taxation.

These diverging trajectories of costs and available revenues, in turn, are a function of three principal forces: (1) rapidly increasing unit, or per-student, costs; (2) increasing tertiary level participation, or *massification*, greatly exacerbated in many countries by the combined forces of university-age population growth and the increasing higher educational participation rates of these increasing cohorts; and (3) a dependence on what in most countries is increasingly inadequate governmental revenue. These forces vary by country, but the result in most countries—and especially low and middle-income countries—has been increasing austerity in both universities and other institutions of higher education as well as in national systems of higher education. This nearly universal—and growing—higher educational austerity in turn has affected:

- *Universities and other institutions of higher education*: manifested by e.g. overcrowding of lecture theatres; restive and otherwise unhappy faculty; insufficient or outdated library holdings, computing, and Internet connectivity; a deterioration of physical plants; less time and support for faculty research; and a loss in the quality of both teaching and learning as well as of research.
- *National systems of higher education*: manifested by capacity constraints, the inability to accommodate all graduates of academic secondary levels who are capable and desirous of further study, a loss of the most talented faculty to countries with fewer financial troubles, and an increasing inability to compete in the global knowledge economy.
- *Students*: facing tuition fees where there used to be none, or very rapidly rising fees where they have existed, in addition to the rising costs of student living—all contributing to the need to work and earn while studying or the need to go into

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debt, or both, for those fortunate enough to find a place at all (with many having left the system long before secondary school completion, never experiencing even the possibility of tertiary education).

This austerity has been most crippling in Sub-Saharan Africa but is serious throughout the developing countries, as well as in many of the so-called *transitional* countries, especially those emerging from the former Soviet Union. But the kind of austerity manifested in serious overcrowding can be seen as well in much of Europe and Latin America, with students unable to find seats in lecture theatres and with instruction reduced to didactics and only rarely open to discussion or the opportunity to ask questions. And the kinds of austerity manifested in the loss of secure faculty positions and faculty morale or in students leaving higher education with burdensome levels of debt can be seen in countries as affluent as the United States, the United Kingdom, Sweden, and Canada.

Beyond this sheer austerity, and especially noticeable in countries that have moved toward the political right, is a diminution of trust in government and in the public sector generally, including (perhaps especially) public universities. This governmental mood goes beyond a mere insufficiency in public budgets to a loss of the esteem in which public universities were once held, to calls for additional and frequently burdensome systems of accountability, and to new forms of governmental intrusion into the management of universities (sometimes contradicting the more general trend away from over-regulation and toward greater university autonomy).

In response to these financial pressures and increasing demands for accountability, universities and national systems have sought solutions. Those solutions on the *cost side*—for example, increasing class sizes and teaching loads, deferring maintenance, substituting lower cost part-time faculty for higher cost full-time faculty, and dropping low priority programs—are both difficult, academically problematic, and heavily contested, especially by the faculty and their political allies who frequently reject outright the claims of insufficient public revenues and who, even if they accept the basic economic principle of scarcity, may have very different notions of proper academic priorities from either their governments or their university leaders. Solutions on the *revenue side*—instituting or rapidly increasing tuition fees, encouraging faculty and institutional entrepreneurship, encouraging philanthropy, and allowing and then encouraging a demand-absorbing private sector—tend to be more favored by faculty and staff, but are also difficult, politically contested (especially cost-sharing, or the shift of costs to students and/or parents), and not always as successful as planned or hoped for.

Trends and Problems Extending to University-Based Research

Within this caldron of higher educational finance, in which most of the problem lies in the combination of high and rising costs, exacerbated in most countries by high and increasing enrollments, the public and governments alike tend to think of universities and colleges mainly as places for *instruction*. The important *research* missions of those institutions that are properly labeled universities may thus drop to an even lower priority or become otherwise distorted by the rising student-faculty ratios and the need to spend more time teaching or searching for entrepreneurial revenue or both—in any event, to the likely detriment of the quality of both teaching and research. Research may fall to only a

few universities in a country, or fall mainly to the universities and research institutes in the advanced industrialized countries—especially in the United States (Herbst 2007, pp 167-185)—or may fall mainly to business and private investment (Vincent-Lancrin 2006). Such scenarios carry serious implications to the role of research at non-elite universities (indeed to the very missions of such institutions), to the already heightened economic and cultural—and now the academic and scientific—hegemony of the wealthy nations, and to the balance between research that is *applied* and is more commercially supportable and research that is more *basic* and *curiosity-driven*. Thus research, which is increasingly important not simply for the knowledge economy but for the preservation of cultures and for solutions to social and political problems—and which is dependent on universities for the training of scholars as well (in most countries) as a venue for much of the research that is basic—is also at risk from these trends in financing. In short, solutions to the financial threats to universities and other institutions of higher education in their *instructional* missions must also address the financial threats to their *research* missions—especially that research that is basic or risky, or otherwise not likely to be given sufficient attention if left solely to the commercial market.

Caveats

This monograph is an attempt to address these trends in the financial status of universities and other institutions of higher education and the policy dilemmas and varying solutions thereto. We will pay special attention to one of the most increasingly implemented, yet still highly contested, policy solutions, which is the shift of portions of the costs of instruction, which in most countries has been born substantially or sometimes even exclusively by government (or taxpayers), to parents and/or students, as well as the policies then designed to preserve or even to expand accessibility in the face of this shift.

We present this summary with four caveats. First, like other UNESCO monographs in this series, it is to be brief and accessible, yet worldwide in scope. Given the complexity of the subject of finance—not to mention the complexities of universities as organizations and the diversity of institutional forms throughout the world—the brushstrokes must necessarily be exceedingly broad, even at times superficial.

Second, trends, almost like the future itself, are always difficult to discern and are inevitably colored by the vantage points and experiences of the authors. Even more so are the perceptions and explanations of appropriate solutions. In this case the authors are Americans whose experiences and recent scholarly excursions into international comparative higher education have been largely into the worldwide phenomenon of cost-sharing (which term, in reference to the financing of universities may well have been coined by the senior author in the mid-eighties).¹

Third, the very complexity of higher (or tertiary or postsecondary) education in its worldwide setting and the rapidity and unevenness of changes therein make generalizations difficult and always subject to qualifications, which in turn become distracting and tedious in a monograph meant to be a brief overview. We hope that our readers will be generous in their assessments of our descriptions of these worldwide trends and policies.

¹ Johnstone, 1986.

Finally, this complexity is exacerbated by the difficulties of quantification. Such difficulties begin with the fact that the products of higher education—that is, the instruction, the scholarship, and the service—are properly both multiple and difficult if not virtually impossible to measure with precision. These difficulties become even greater when attempting cross-national comparisons such as in:

- Comparisons of total country expenditures on higher education, which are complicated by differing proportions of public and private expenditures, as well as differing accounting conventions, especially in the public sector, for expenditures such as capital depreciation; pension, insurance, and other elements of non-salary compensation; auxiliary enterprises such as university lodging and restaurants; externally or institutionally financed research; and the treatment of hospitals and other university based clinical enterprises.
- Comparisons of percentages of GDP devoted to tertiary education, which are complicated by all of the factors noted above plus differing and sometimes inconsistent definitions of what constitutes higher—as opposed to post-secondary, or all of tertiary—education.
- Comparisons of higher educational costs per student (or *per* any other measure of product or output), complicated especially in the classical research university by the divisions of expenditures among the multiple products of universities as well as the cross-subsidization between faculties, programs, and levels of higher education.

II.

World-Wide Trends Underlying the Financing of Higher Education

Six trends in the latter years of the 20th and early years of the 21st centuries—each with economic, political, and social roots and consequences—are noteworthy for their impacts on the financing of higher education. These trends, while varying both among countries and within each country, form the context for higher education's currently widespread financial austerity as well as for the emerging policy solutions which, while again varying both among and within countries, exhibit some very distinct and similar patterns.

1. *Increasing unit, or per-student, costs of instruction.* The fundamental financial problem of higher education all over the world, and the reason that even wealthy institutions can feel the pinch of austerity, begins with the fact that universities face a *trajectory* of annual cost increases, the natural and quite appropriate rate of increase of which is the rate of increase of their wages and salaries, which in turn tends to track the rate of increase of faculty and staff wages and salaries in the general economy—or, if there is any real growth in the economy, at *inflation plus*. This is the so-called *cost disease*, or the phenomenon of the *rising relative unit costs* in the labor intensive, productivity immune (or at least productivity resistant), sectors of the economy—which include symphony orchestras, schools, and universities, and which phenomenon was first articulated by Baumol and Bowen (1966). Accelerating this natural rate of unit (or per-student) cost increase are other factors peculiar to many universities, but further accelerating annual costs in varying degrees in different countries depending mostly on available revenues:

- Technology, which in higher education tends not to lower costs by substituting capital for labor and driving down unit costs as it does in the private, for-profit, goods-producing sector, but as an add-on to higher education's unit costs, altering the very nature (and supposedly improving the value) of the product, but still requiring more, not less, revenue;
- higher education's tendency to change as new programs are added, new research commenced, and new capacities are acquired faster than old ones can be shed (quite contrary to a popular and political misconception of higher education as only resistant to change);
- the already high and rapidly increasing costs of world class research, especially in the physical and biomedical sciences with their huge technological expenses;
- the aforementioned increasing costs of research further accelerated by faculty and administrative ambitions not simply to be content with a constant share of prestige or of the enrollment market, but (at least among the elite universities) to seek greater scholarly recognition, better and more academically qualified students, and higher rankings on such international league tables as the Times Higher Education Supplement's *World's Top 200 Universities* or Shanghai Jiao Tong University's *Academic Ranking of World Universities*;
- particularly in the US, where competition is so keen and parents prepared to spend so much on their children's higher education, the student and parental demands for attractive accommodations and grounds, a new gymnasium and a new student center, and a totally wired campus.

Higher education finance, then, is burdened with a natural unit cost trajectory that in normal years will exceed the average rate of increase of consumer prices generally: that is, *will naturally exceed the rate of inflation*. Year-in and year-out. Not, as some politicians and journalists would have it, at a rate of increase that “...*just can't continue to rise like this,*” but at a rate of increase that very well can and probably will continue to rise at such rates as long as either taxpayers, parents, or students, or all of them together are willing to pay.² This natural unit cost increase of *inflation plus* is not a mark of managerial ineptitude or of faculty inefficiency. It is, rather, the entirely natural consequence of the nature of higher educational *production function*—along with the fact that in any set of measures that are to be averaged, approximately one-half of them will be above, and about one-half below, this average. And since an official rate of inflation is nothing more (or less) than an average of a great many price increases, it should be no surprise that the cost and price increases of about one-half of the goods and/or services produced in any economy—including higher education with its limited capacity for the replacement of faculty with technology—will be in this “*greater than*” half.³

² This does not mean that spending *will* increase: indeed, it usually does not—and this is the widespread condition of austerity that we are trying to explain. In short, this *natural* per-student expenditure is what it would take to truly “keep up” and *not* be plagued by the aforementioned *manifestations of austerity*.

³ This explanation for the increasing costs of higher education does not take into consideration the possibility that the cost and the price of the higher educational product may be increasing because the *quality of the product is improving*. Or that the *cost* of the product—say, public higher education—may

2. *Increasing enrollments.* Increasing enrollments, which accelerate the financial impact of the naturally increasing per-student costs, are a function of three forces that vary greatly among countries. The first of these is demographics: specifically the change (generally the growth) over time in the numbers of youth within the conventional college or university age cohort (ages 18 through about 24). Some countries such as Italy, Germany, and other countries in Southern Europe, Russia, and Japan are experiencing demographic declines. Most countries, however, are experiencing increases in the traditional university age cohort (UNESCO-UIS/OECD 2005).

The second force affecting enrollments is the participation rate of this (generally increasing) university age cohort (UNESCO Institute for Statistics 2006). Increasing participation, in turn, is a function of: (a) increases in enrollments at secondary levels; (b) changing employment opportunities and a perception of increasing competition for these fewer “good” jobs which will be enhanced by higher education; and (c) an increasing regard for social and economic mobility and justice, leading to policies designed to increase higher educational participation, particularly among those traditionally less represented, such as ethnic and linguistic minorities, girls (in some cultures), or students from poor secondary schools or otherwise thought to be educationally deprived.

A final factor affecting enrollments in some countries is the increasing amount, or final level, of education per entering student. This, too, is an *accelerating* factor, as first degree graduates perceive a need for even higher levels to be competitive (e.g. the growth of MBAs and other professional masters degrees) and as professions (especially licensed professions such as teachers, and the non-MD health professions) endeavor to raise their stature and limit the numbers allowed to practice (thus limiting competition and enhancing status and remuneration).⁴

The impact of increasing enrollments on the financing of higher education, at least in the first instance, is to increase the cost, and thus to increase yearly the public resources required to maintain the quality of the educational product—the likely shortfalls of which are be the focus of much of this monograph. At the same time, increasing enrollments also makes more possible the kinds of management actions—for example, raising student: faculty ratios, or implementing new and more cost-effective pedagogies—that are extremely difficult in a mode of stable or declining enrollments, where such measures inevitably mean terminating jobs and the extraordinary levels of resistance and demoralization that attend any downsizing of an institution.

3. *Faltering governmental (tax) revenues.* Governments everywhere struggle increasingly under escalating burdens of pensions and the rising costs of elementary and secondary education, health care, public infrastructure, security, and other social welfare costs. Electorates in many highly industrialized countries have been getting more conservative, particularly in their distaste for taxation and what they perceive to be wasteful government spending. Many European countries, with their high social welfare costs, and typically spending from one-third to more than one-half of national gross

actually be *decreasing*—as labor costs are cut through wage and salary freezes and the substitution of cheap part-time labor for fully qualified (but expensive) full-time labor, or as productivity is forced to increase simply by “speeding up the line” through larger class sizes or increased teaching loads.

⁴ This may be countered in the E.U. Bologna region with a shortened (bachelors) first degree on the Continent. But the growth of professional masters degrees is likely to show there as well.

domestic products in the public sector, are trying to shift productive resources to the private sector and to reduce public deficits to comply with the requirements of the European Community and the Euro Zone. Russia, the rest of the countries that have emerged from the former Soviet Union, and the former Communist countries of Central and Eastern Europe all labor under the enormous costs of building an internationally-competitive productive infrastructure and weaning a labor force away from its deeply rooted dependence on state enterprises and governmental employment. The United States struggles with an over-consuming, under-saving population that is unwilling to tax itself for the public benefits it demands.

Taxation in the developing countries, where production and incomes often tend to be low anyway, is technically difficult. The financial challenge to governments is how to get a share of purchasing power when relatively little wealth comes from large, stable enterprises that can be taxed and that can also be counted upon to withhold taxes from their employees. Former Communist countries, once dependent on easy and extensive turnover taxes on state-owned enterprises, now need to tax personal or corporate incomes, retail or commercial transactions, and/or property—all of which are difficult to calculate, expensive to collect, and easy to evade. Businesses and individuals in many countries seem increasingly able to hide incomes and the value of their taxable assets. And even in the wealthy highly industrialized countries with efficient tax systems, the increasing globalization of the world economy encourages productive enterprises and wealthy individuals to flee to countries with lower taxes.

Finally, governments everywhere are contending with politically and socially compelling competing needs for these increasingly scarce tax revenues. In much of the developing world and in many transitional countries, the competitors for public revenue include the replacement of decrepit public infrastructure, unfunded pension obligations, the need in most countries for a workable social safety net, and the cost of reversing generations of environmental degradation. In Sub-Saharan Africa, the competition for the extremely scarce public dollar is truly formidable and includes, in addition to the needs listed above, public health, the old scourge of malaria and new pandemic of HIV-AIDS, elementary secondary education, and assistance to a badly faltering economy. As a result, although the government (or taxpayer) will continue throughout the world to be the principal revenue source for public higher education, most or even all of whatever limited additional revenue can be squeezed out of the public treasuries will be absorbed by the need to accommodate the inevitably expanding higher educational enrollments, leaving little or nothing to accommodate what ought to be the rising unit, or per-student, costs (much less allowing investment in new programs and pedagogies) and even less the costs of academic research.

4. *The increasing knowledge economy.* The fourth factor affecting the financing of higher education in virtually all countries is the increasing share of world production, especially in the already industrialized countries, that is moving either into services or into the so-called knowledge-based economy of high tech, design, finance, management and the like (and even in manufacturing, moving into modes that are less labor- and more capital-intensive). The result is to increase the value, both to countries and to individuals, of at least some forms of higher education (especially management, finance, law, and the so-called STEM fields of science, mathematics, engineering, and technology).

The financial impact of this increasingly knowledge-based economy on higher education is manifested by the new (and usually more expensive) educational programs offered and by a redistribution of faculty and students among these new programs—both effects tending to further accelerate the increase in per-student costs—and also by the increased premium to individuals who have the requisite higher education and to countries that have a higher education system that is high quality, oriented to needs of employers, and broadly inclusive. This lays the groundwork, then for increased higher educational investments both of students (or parents) and, where possible, of governments.

5. *Increasing globalization.* Globalization is not well-defined and is almost certainly an overused term in the discourse of higher education and of the economic, political, and social trends that form the backdrop for this review of financing trends. For our purpose, globalization is the increasing internationalization (which implies a diminishing significance of national borders and even of nation states themselves) of: (a) *information and knowledge* (greatly facilitated by telecommunications that can send billions of digitized bits of information per second by optical fiber or microwave for fractions of pennies per mile); (b) *capital* (or the flows of claims on wealth between savers and borrowers, or investors, including students); and (c) *production* (which is increasingly sophisticated, technical, and capital-rich and is thus increasingly mobile and predisposed to locating where politics are stable, labor costs are low, contracts are enforceable, and tax and regulatory climates are benign). Thus in the globalized economy, wealth and power increasingly flow less from the location of natural resources (with the exception of oil and gas) and the production of goods, and more from the ownership of capital and knowledge, protected by enforceable contracts, patents, copyrights, and licensing agreements. Globalization further brings a *thinning* of the significance of that which is (or was) national and local, whether it be language, culture, traditions, or norms, and a correspondingly hegemonic flow of language and culture from the highly industrialized and technologically sophisticated countries represented by the members of the OECD (especially the United States and the other English-speaking members).

The impact of globalization on higher education finance is to further raise the stakes to both nations and individuals of having or obtaining high levels of knowledge and skills—and thus to the sufficiency and quality of higher education. Globalization also applies directly to higher education in its ability to transmit the knowledge as well as the teaching/learning process itself across borders electronically and without much, if any, control or even regulation by local or nation state governments. Finally, globalization has a profound impact on the financing of all publicly financed agencies, including universities (both public and private), in its limiting effect on the ability of governments to tax and thus to keep up with higher education's voracious and continuous revenue needs (and so underscoring the imperative of increasing non-governmental revenues).

6. *Decentralization, devolution, and deregulation:* A final trend or set of related trends in most (not all) countries (most wrenchingly in the former Communist countries) is a movement of governments in the direction of smaller public sectors, the decentralization of governmental authority and institutions, the privatization of agencies that remain governmental, and the encouragement of private agencies to perform part or

all of what certain public agencies used to do. Although large public sectors, generous economic safety nets, and redistributive taxes remain in many countries (e.g. the Nordic countries), and public ownership and heavy regulation of factories and financial institutions remain in most formerly communist countries (e.g. Russia and China), the governmental ownership of all means of production and the *dirigisme* of governmental bureaucracies in most countries are giving way to governmental *steering* and to the policies and procedures associated with the *New Public Management* (Barzeley 2001, Almaral 2003).

Finally, the impact of decentralization, devolution, and deregulation on higher education finance is to encourage the development of private higher education and, equally important, the *privatization* of *public* higher education. Regardless of the legal *publicness* of their missions or of their continued dependence on public revenue, universities around the world, including both public and private institutions, are moving (or being moved) from a status very much like all other state agencies—that is, with clear governmental ownership, substantial governmental/ministerial control, and governmental or civil service employment of faculty and staff—toward the status of *public corporations*, empowered to raise and keep supplemental revenue, employ and compensate staff, make contracts, incur debt, and sue and be sued in court of law.

III.

Political and Ideological Context

The trends that so affect the financing of higher education occur within country-specific as well as global political and ideological contexts. At the risk of gross oversimplification, at the extreme political and ideological left remain those views accepting the appropriateness of governmental ownership of virtually all institutionalized means of production (including universities and colleges) as well as governmental allocation of resources, the establishment of prices, and the remuneration of workers. However, as the former *command* economies have given way to the so-called *transitional* economies, which accept a large role for private enterprise and the useful place of markets in the allocation of resources and rewards, the political left has become characterized (among other ways) less by its adherence to an old Soviet system of production, distribution, and reward and more by its continuing advocacy of high levels of taxation, governmental regulation, and public employment, and by its criticism of the income disparities, economic instability, competition, and commercialism associated with markets and capitalism. This *critical* left is preoccupied with what it sees as the pervasive role of race/ethnicity, gender, and socio-economic class in the distribution of power, status, and wealth in those countries that embrace markets and private enterprise, and it tends to view poor countries (similar to the way it views poor people) as victims—of the World Bank and other agencies of international finance and of the investment and trade policies of the advanced industrialized nations.

At the other extreme are the views associated with the far right that would diminish public employment and the size of the public sector generally, including publicly owned and financed higher education. The political right tends to view *government*, including both politicians and civil servants, as less productive and more frequently self-serving, preoccupied with maintaining the salaries and other emoluments that go with governmental employment, and generally oblivious to the view that

governmental employees must live off the products created mainly in the private sector and purchased by governments (which is to say, effectively confiscated by direct and indirect taxes or by inflationary deficit financing). In keeping with this mistrust of governmental institutions (including public universities) and governmental employees (including faculty and staff of these public universities), those on the right tend to be more critical of what they perceive to be governmental waste and more insistent on greater measures of accountability. At the same time, the political right is more accepting of the economic instabilities and the disparities in income and wealth that follow capitalism as a necessary price for the dynamism and high productivity of private enterprise. The right generally prefers private higher education—although most will accept some governmental cash transfers to *their* private institutions in order to “level the playing field” and to provide constructive examples to the public universities. The political right also tends to emphasize the need to recognize and select primarily or even exclusively for “merit, and therefore favors more rigor and “merit”—and less or no compensatory preferences, or affirmative action, in selecting those who are to go on to higher education. (Correspondingly, the right tends to downplay the role[s] of race, class, and gender in the determination of who comes into power, privilege, and remuneration.)

As in any portrayal of a range, most countries and most governments and most polities are somewhere near the center, generally vacillating between a center right and a center left, but always feeling pressures from the extremes. Universities—especially public, but private universities as well—operate always in a country-specific political and economic context as well as in an historical context and in an increasingly globalized international context. The financial problems as well as the possible solutions and their likelihood of adoption all occur within these larger contexts. At the same time, and unlike many scholars of comparative higher education (who are tend to be non-economists and mainly to our political left), we believe that the aforementioned factors most directly affecting the financing of higher education—the inexorably rising per-student costs, the increasing participation and consequent increasing enrollments, the limits in most countries on governmental taxing capabilities, and the lengthy queue of socially and politically compelling competing public needs—are beyond politics and ideologies.

Politics and ideology are not immaterial; aggressively capitalistic United States and the United Kingdom had different priorities and put forth different solutions to the problems of higher educational austerity than did the former Soviet Union under its Marxist-Leninist command economy and will probably continue to differ from the new transitional countries, with their socialist-market systems, or from the social welfare democracies of Scandinavia. However, the increasing reach of tuition fees and other forms of revenue diversification and the increasing pressures for accountability, or more institutional autonomy owe far more to a virtually universal underlying higher education production function, to the increasing demand for higher education, and to demographics than to political abstractions like globalization or capitalism (academic or otherwise) or to any prescriptions of the World Bank, multinational corporations, or a hegemonic Anglo-America.

IV. Cost-Side Solutions

Cost-side strategies deal with the diverging trajectories of costs and revenues by lowering instructional costs (or at least flattening, or lessening, their otherwise anticipated increases). At the most simplistic and least strategic level—for example, when the government simply does not send to the institution what had been budgeted because the government either overestimated revenues (promising to spend money they know they will not have) or underestimated other non-discretionary expenditures (such as payment on debt, or security)—the government may simply not pay salaries or other expenses when they become due. A little less crude, but still potentially damaging and decidedly non-strategic, are such relatively easy actions as the freezing of salaries or student bursaries (especially when increases are expected and counted upon as in a highly inflationary economy), or the termination of only those staff that are part-time or less senior regardless of their contributions to the mission of the university, or the elimination of expenditures on books, equipment, and other current non-salary expenditures, or the cutting of all maintenance and repair work. All of these have been documented in universities in the poorest of developing nations (e.g. Task Force 2000; Ziderman and Albrecht 1995).

More strategic expenditure reductions attempt to reduce the largest university expenditure, which is invariably salaries and benefits (constituting total compensation) in a way that maintains high priority programs and eliminates the least productive faculty and staff. Of course the least cost-effective faculty may well be some of the most senior and politically powerful, whose scholarly productivity and/or teaching effectiveness may have seriously declined. Or, they may be administrative staff whose days may be spent in hard work—but in work that no longer (if it ever did) adds commensurate value to the mission of the institution. These may be politically difficult and at times impossible actions. Strategic cost cutting cannot ignore contractual obligations or be oblivious to sensitivity and decency when it comes to the excruciatingly difficult task of terminating faculty and staff. At the same time, if the future needs of the university and the quality of the instructional programs are to take precedence, universities must be allowed to make such difficult decisions: in short, to maintain mission and quality—if necessary at the cost of foregoing popularity or widespread political support.

The management of governmental agencies and the norms of civil service employment—which prize continuity of employment above all else—are generally incompatible with strategic cost-side solutions to financial problems. Typical problems with government agencies are laws, contracts and political “considerations” that forbid terminating staff (for any but the most egregious reason), hiring part time or temporary workers, contracting out services, carrying unspent funds forward from one fiscal year to the next, or shifting available funds from one budget category to another.

There has been a clear shift in governmental laws and regulations in the last decade or two, especially in Europe (e.g. the Netherlands and the UK), in many Canadian provinces and American states, and very recently in Japan in the direction of greater managerial autonomy and flexibility to public universities, frequently transforming them from simple governmental agencies into public corporations with the new authorities described under point #6 of the *worldwide trends*, above. These new trends in the

direction of greater managerial autonomy and flexibility—essentially moving toward managerial models associated with private enterprise—are collectively sometimes referred to as *New Public Management* and are designed to serve the end of maximizing the university's outputs of teaching and research for the public, or taxpayer, dollar, as well as to provide incentives for maximizing other-than-governmental revenue (Amaral, Meek, and Larsen 2003; Herbst 2006).

In New Public Management, the university, rather than the ministry or the state budget office, may be given authority, for example, to:

- establish wage and salary policies (formerly reserved to the ministry or parliament and to the government's financial, personnel, and civil service bureaucracies);
- reallocate expenditures from one category to another in response to institutionally-determined priorities (formerly generally forbidden);
- carry forward unspent funds from one fiscal period to the next, thus encouraging savings and institutional investment and discouraging spending for no reason other than avoidance of loss or the appearance of an excessive budget;
- enter into contracts with outside agencies and businesses expeditiously and competitively (formerly too frequently politicized and prolonged); and
- receive and own assets and sometimes even borrow and incur debt (not allowed in ordinary government agencies).

With such authority (increasingly vested, as in the United States, the United Kingdom and in other non-European countries, in a president or chief executive officer selected by a governing board rather than in a faculty-elected rector (the model prevailing on the European Continent), cost-side solutions to financial shortfalls may seek to lower the average per-student costs of instruction in any of the following ways:

1. *Substituting lower-cost junior or part-time faculty for higher-cost senior faculty.* This makes possible more instructional faculty for the available instructional budget. The advantage to this strategy is that faculty-student ratios need not be compromised by the budget reductions. In turn, this assures maintenance of prevailing instructional work loads and allocation of time between instruction and research, at least for the regular faculty, as well as the mix of class sizes and instructional modalities--e.g., as between seminars and large lectures. The disadvantage of this strategy is that it diminishes the size of the regular, full-time, scholarly-oriented faculty, which presumably diminishes the scholarly output of the university as well as the scholarly mentoring of students, especially at the advanced levels that require the time, institutional commitment, and expertise of full-time regular faculty. Finally, the smaller numbers of regular faculty diminishes the contributions to institutional and departmental governance that can only be done by regular faculty.

2. *Lowering the faculty-student ratio by increasing average class size.* The theoretical advantage of such a strategy is that it seems to be able to lower per-student costs with minimal alteration in the nature of, or the fundamental scholarly expectations upon, the faculty or the time and attention they are expected to devote to research. The disadvantage of a strategy of higher student-faculty ratios and larger average class sizes is

that it diminishes the time the professor can spend with individual students and limits the possible instructional modalities, favoring large lectures (perhaps enhanced by instructional technologies) over small-classes. The most practical disadvantage, however, is that this strategy has already been used throughout much of the world—with hugely overcrowded classes and the generally predictable results on instructional quality—and there are arguably few if any further gains to be made in most institutions in most countries even if the effect on instructional quality is to be ignored.

3. Increasing teaching loads. A third way to lower average per-student costs is to alter the currently prevailing mix of instructional and research expectation upon all faculty and to place a greater premium upon instruction. Such a change would require alteration of the most basic reward structure of the university: not just those rewards under control of the institution, such as salaries and the requirements for gaining tenure and promotion, but also, or even more importantly, the kinds of rewards, mainly prestige and reputation, that are bestowed by the community of scholars outside the institution.

Whether such a change is right may be less important than whether such a change is even possible or whether such cost-side “solutions” may have already run their course. In most countries, and with the exception of a handful of well endowed US private research universities, a few exceptionally well funded European universities, and a few universities selected for major upgrading in China and elsewhere, increasing average class sizes and teaching loads have already taken place.⁵ Further across-the-board increases in teaching load sufficient to lower the average per-student cost of instruction may be possible, although almost certainly at a further deterioration in the quality of teaching and learning. But a more important limitation on such a cost-side strategy is that it would also clearly change the nature of the institution. The result would be less a *more productive* institution than it would be a very *different*--and inevitably far less scholarly and less attractive—one.

4. Differentiating faculty workloads. Such a strategy would expect more teaching (and less research) only from *some* faculty, presumably those deemed less productive in their scholarship. This strategy could, in theory, lower average instructional costs and still preserve the fundamental scholarly orientation of the university and, at least for most faculty, preserve the prevailing teaching loads and instructional paradigms. It would require more instruction only from those faculty who have, for whatever reason, become unwilling or unable to contribute to the dominant research orientation of the classical Western research university. Those faculty from whom more instruction would be expected would include those who would simply prefer to teach more and be expected to produce less genuine research, as well as (and more controversially) those whose scholarly productivity was judged by university leaders and/or their peers to be insufficient to justify a workload and a salary that presuppose a continuous level of high-quality research.

⁵ For example, Herbst (2006, pp. 34-35) cites increases in student-faculty ratios in German universities between 1960 and 2000 from 47: 1 to 55:1 (as compared to the ratios in US universities of between 10 and 25 students to 1 faculty).

Limitations of Cost-Side Solutions

Solutions to higher education's financial austerity that feature expenditure reductions appeal to many on the political and economic right, who are more likely to believe that public universities are wasteful and who can be counted upon to resist claims from the faculty and from many on the political left that the problem can be solved with more public revenues. And there may be, or more likely may once have been, elements of truth—at least in certain more affluent universities in more affluent countries, and however much exaggerated—to views of waste, bad management, and self-serving and unproductive faculty. At the same time, in most countries, several decades of budget cuts and of absorbing more students and instituting new academic programs with little or no additional public funding has arguably taken most if not all of the “low hanging fruit” of obvious waste and budget cuts.⁶ *Cheaper* is not the same as *more efficient* or *more productive*, and it is at least an arguable proposition that most of the easy expenditure reductions have been already forced upon most universities in most countries.

There remains, still, a view in many countries that much more fundamental changes must be made, if not necessarily to all institutions, then to at least some institutions or to some higher educational systems, and therein lies the answer to higher education's increasing austerity. Such more fundamental, radical, and systemic changes, for example, might include:

- ***More radical sector diversification:*** especially in those countries (e.g. Italy, Spain, and elsewhere in Southern Europe) where the classical research university still predominates, with its leaders elected (and allegedly dominated) by the faculty and where virtually all faculty are oriented to research and to their disciplines rather than to their institutions and their students. Sector diversification—or the relative shift in the direction of short cycle, less expensive, less selective, more vocationally-oriented, and more hierarchically managed institutions, whose faculty are oriented to teaching rather than to research—is commonly viewed as a partial solution to higher education's increasing austerity in that both the per-student instructional costs and the average length of stay can be lower.
- ***Mergers:*** Mergers can, at least in theory, lower unit costs by increasing the scale of operations and achieving savings on such overhead expenditures as physical plant, libraries, and administration. But actual savings requires cutting faculty and staff, including top-level, highly-paid administrators, as well as closing facilities, eliminating some academic programs, and giving up precious

⁶ The senior author writes with the experience of nine years as president of the largest comprehensive college of the State University of New York system and another six years as chancellor of that system (which consisted of 29 state-operated institutions, 30 community colleges, and 5 "contract colleges" of private universities totaling more than 400,000 students and a consolidated budget in 1990 of some \$5 billion). In almost every one of those fifteen years, from 1979 to 1994 (and frequently more than once in a single fiscal year), I and my administrative team had to cut faculty, staff, and operating expenses (on more than one occasion extending to the removal of tenured faculty), totaling approximately 20 percent of the full-time faculty and staff of the State-operated system. And this was in the most affluent country with the most affluent higher educational system in the world!

institutional identity--measures that are often bitterly resisted, both institutionally and politically. If the “merger” is only nominal—i.e. retaining most facilities, programs, and faculty, and merely eliminating a president or rector and a few other top-level administrators—the result is more likely to be more a complicated and less effective management, a demoralized faculty (of both institutions), and a failure to realize the potentially significant savings of either a genuine merger or the outright closure of one of the supposedly “merged” institutions. At the same time, institutional mergers may be both necessary and possible—and indeed have occurred—in countries where many universities and colleges developed on very small and frequently narrow scales for historical reasons that are no longer relevant or that have been discredited: for example, South Africa’s Apartheid division of higher educational institutions by race, or the old Soviet Communist model of constructing small and narrow universities according to the research and employment requirements of a single industrial sector or production ministry.

- ***Technologically-assisted instruction, distance learning, and virtual universities:*** There has been an explosion of interest in most countries in technologically-assisted and distance learning, although the most successful applications have been principally at the margins, or peripheries, of higher education rather than radical transformations of existing universities. New *virtual* universities sometimes arise with great fanfare and then subside, as students of traditional university age seem to continue to want a fuller university experience (and some speculate that many enrollments in distance and/or virtual universities may consist more of initial matriculates than of actual completers). However, there will undoubtedly continue to be great interest on the part of existing universities in instructional technologies of all sorts principally to supplement traditional modes of instruction, but also to deliver true distance learning to older or returning students, as well as to mid-career professionals needing efficient refresher learning (perhaps to maintain licensure, as required by physicians, teachers, and lawyers). In developing and low income countries, the potential may be more from traditional-age students in remote locations, where the principal costs of higher education are the living expenses away from home (although a lack of personal computers and good Internet connectivity may continue to be major barriers).

Whether new developments in instructional technology can ease the financial austerity of institutions is unclear, although experience from more affluent industrialized countries suggests that instructional technologies may enrich the teaching and learning, but rarely lower—and more frequently substantially increase, at least in the short run—the per-student costs of instruction. In theory, one professor, with considerable technological investment and extensive staff support, can teach to many locations and possibly to far more students, than he or she could teach “face-to-face” at a single site. And if the goal is to reach out to otherwise place-bound students, unable to travel to a common site for any number of reasons, but able to get to remote sites to receive a transmission, distance learning can extend access at considerable savings over the alternative of placing faculty and a full facility at each remote site. In countries with surging enrollments, financially unable to build and staff more institutions, virtual or

distance learning universities may be a key to relieving some of the enrollment pressures, especially in areas remote from the metropolitan centers. China, India, Indonesia, Turkey and Sub-Saharan Africa (The African Virtual University) all claim large enrollments in distance, or virtual, universities (World Bank 2002, Herbst 2006)). However, for a single institution or even a national system seeking to cope with diverging trajectories of costs and revenues, most applications of distance learning can enrich the learning but will actually cost more rather than less.

In the end, while cutting instructional expenses needs to be part of the solution to higher education's underlying financial dilemma, cost-side solutions alone will be insufficient for both substantive and political reasons. They are too divisive and too easily politicized *from both sides* (that is, from those on the outside who believe there are far more cuts yet to be made, as well as those on the inside who believe that the cuts that have already been made were unnecessary and have virtually destroyed their universities). But more importantly, the gap from the diverging trajectories of higher educational costs and available revenues is simply too wide to be closed by further cuts in expenditures, even with some of the more radical cost-side "solutions." In short—and as segue to the next section—higher education in almost all countries must turn to non-governmental revenues to supplement the increasingly insufficient revenue available from governments.

V Cost-Sharing

Revenue supplementation as an alternative to cost cutting and as a preferred route to financial viability may take the form of faculty and institutional entrepreneurship, as in the selling of specialized and marketable teaching or scholarship, or in the renting of university facilities, or in the commercial marketing of research discoveries. It may take the form of fund raising, appealing to alumni and other donors. Or—and the most sustainable and potentially lucrative—it may take the form of what has come to be known as *cost-sharing*.

Varieties of Cost-Sharing

The term *cost-sharing* as it has been developed in large part through the works of the senior author (Johnstone 1986, 2003, 2004b, 2006a) and the University at Buffalo's International Comparative Finance and Accessibility Project⁷, refers to a shift of at least some of the higher educational cost burden from governments, or taxpayers, to parents and/or students. Cost-sharing is thus both a statement of fact—that is, that the costs of higher education are *shared* among governments (or taxpayers), parents, students, and philanthropists—and also a reference to a policy shift of some of these costs from a predominate (sometimes a virtually exclusive) reliance on governments to being shared among parents and/or students in addition to taxpayers. Cost-sharing is most associated with tuition fees and "user charges," especially for governmentally- or institutionally-provided room and board. However, a policy shift in the direction of greater cost-sharing can take several forms:

⁷ See: <http://www.gse.buffalo.edu/org/IntHigherEdFinance/>.

1. *The beginning of tuition (where higher education was formerly free or nearly so).* This would be the case in China in 1997, or The United Kingdom in 1998, or Austria in 2001.
2. *The addition of a special tuition-paying track while maintaining free higher education for the regularly admitted, state-supported students.* Such a dual track tuition fee preserves the legal and political appearance of free higher education, which is particularly important (and is frequently enshrined in a constitution or a framework law) in formerly Marxist countries such as Russia, most of East and Central Europe, and other countries that were once part of the former Soviet Union, as well as to countries in East Africa with their legacy of African Socialism.
3. *A very sharp rise in tuition (where public sector tuition already exists).* A shift in the direction of greater cost-sharing requires that the rise in tuition be greater than the rise in institutional costs generally in order for the government's, or taxpayer's, share to be lessened, and the parent's and / or student's shares to rise commensurately. This has been the case recently in most of the states in the United States and most of the provinces in Canada as many state and provincial governments have failed to maintain their former "shares" of public university expenses and as public university tuitions have been increased very rapidly to "fill in the gaps" left by the failure of government funding to keep pace with the rising costs of higher education.
4. *The imposition of "user charges," or fees, to recover the expenses of what were once governmentally- or institutionally- provided (and heavily subsidized) residence and dining halls.* This has been happening in most countries, including virtually all the formerly Communist/Socialist countries, and most notably and controversially, most of the countries in Sub-Saharan Africa, where subsidized living costs at one time absorbed the bulk the higher educational budgets. In the Nordic countries of Sweden, Norway, Finland, and Denmark, where higher education remains "free," the expenses to students are exclusively the expenses of student living, which are very high in those countries and which are "shared" neither by taxpayers nor (at least officially) by parents, but rather are borne mainly or entirely by the students, largely in the form of student loans (which costs are still shared by the taxpayer in the form of repayment subsidies).
5. *The elimination or reduction of student grants or scholarships.* This is sometimes accomplished simply by "freezing" grant or loan levels, or holding them constant in the face of general inflation, which then erodes their real value. This began happening to the once very generous grants in Britain (which were later abandoned altogether) and has happened to the value of the maintenance grants in most of the communist or socialist countries of the former Soviet Union, Eastern and Central Europe, and Asia, as well as many countries in Africa.
6. *An increase in the effective cost recovery on student loans.* This can be accomplished through a diminution of the subsidies on student loans (similar to the diminution in the value of non-repayable grants) and might be accomplished through an increase in interest rates, or a reduction in the length of time that

interest is not charged, or through a reduction in the numbers of loans for which the repayments, for any number of reasons, are forgiven. Or, the effective cost recovery might be accomplished through a tightening of collections, or a reduction in the instances of default (as in the United States in the 1990s) with no change in the effective rates of interest paid by those who were repaying anyway.

7. *The limitation of capacity in the low or tuition free public sector together with the official encouragement (and frequently some public subsidization) of a tuition-dependent private higher education sector.* A number of countries—notably Japan, Korea, the Philippines, Indonesia, Brazil, and other countries in Latin America and East Asia—have avoided much of what would otherwise have been significant governmental expenditure on higher education by keeping a limited public sector—usually elite and selective—and shifting much of the costs of expanded participation to parents and students through the encouragement of a substantial and growing private higher education sector.

Although cost-sharing may take on these different forms, the imposition of, and/or large increases in, tuition fees provides the greatest financial impact. This is because tuition fees, aside from the need to rebate some of the aggregate income in the form of grants or discounts to preserve accessibility, can be both financially significant and on-going, and can even be designed to regularly increase, thus keeping pace with the inevitably rising per-student costs of instruction. Also, unlike most forms of faculty entrepreneurship, tuition fees do not divert faculty from the core instructional mission (and according to many observers, actually have a beneficial effect of improving the quality of teaching and the relevance of the curriculum). Perhaps for these reasons, tuition fees are also the most politically charged and ideologically resisted form of cost-sharing and thus have become a symbol of the conflict between those who believe that government must continue to provide higher education free of any charge, and those who believe in the imperative of cost-sharing and especially of tuition fees.

Table 1 shows the current (2007) status of tuition fees in a variety of countries. Note that we are calling a *tuition fee* any mandatory charge for attendance:

- whether paid *up front* (usually by parents, as in Japan, China, or Canada) or *deferred* (and paid as a loan, as in Australia, Scotland, England, or Ethiopia);
- whether officially acknowledged to be a tuition fee, or disguised under some euphemism such as a *mandatory contribution*, or a *graduate tax*;
- whether openly flowing directly into the operating account of the university or indirectly offsetting direct governmental expenditures.

Although we do not have good internationally comparable statistics on the full costs of instruction for public sector first degree education (see caveat #4, p. 4 above), we know that in-state, four-year, public sector tuition fees in the United States, which are rightly presumed to be high by international standards and where the full costs of undergraduate instruction are well documented, are generally in the range of 30 to 40 or 45 percent of actual costs—before the offsetting \$134.8 billion in financial assistance is factored in. Most other countries that have any tuition fees charge a comparable or smaller percentage of full instructional costs. Thus, virtually all countries that have

Table 1. First Year Tuition fees in various countries for first degree, recent academic year (National currencies converted to US dollar by Purchasing Power Parities)

Country	Public Tuition Fees			Special Fee Paying Track
	Low	Medium	High	
Australia (2007)	\$3,172 ¹	-	\$6,238 ²	\$9,500
Austria (2004-05)	\$815	\$815	\$815	NA
Canada (2006-07)	\$1,380	\$3,535	\$6,030	NA
Chile (2006)	\$5,670	\$7,000	\$9,270	
China (2004-05)	\$1,640	\$2,960	\$3,820	NA
England (2006-07)	\$4,077 ³	\$4,077	\$4,077	
Ethiopia (2006-07)	\$128 ⁴	\$128	\$180 ⁵	NA
Hong Kong (2006-07)	\$6,398	\$6,398	\$6,398	NA
Hungary (2003-04)	\$0	\$0	\$0	\$351 ⁶
India (2005-06)	\$25 ⁷	\$479 ⁸	\$479 ⁹	NA
Indonesia (2004-05)	\$133		\$443	
Japan (2005)	\$4,060	\$4,060	\$4,500	NA
Kenya (2004-05)	\$457	-	\$2,857	\$5,753
Korea (2003-04)	\$1955	-	\$7,743	NA
Mongolia (2002-03)	\$1,125	\$1,125	\$1,688	NA
Netherlands (2005-06)	\$1,664	\$1,664	\$1,664	NA
Russia (2001-02)	\$0	\$0	\$0	\$2,630
Scotland (2006-07)	\$731 ¹⁰	\$731	\$731	
Singapore (2005-06)	\$1,340	\$3,875	\$4,800	NA
South Africa (2005)	\$2,575	\$3,370	\$7,385	NA
Taiwan (2004)	\$1,440	\$1,200	\$980	NA
United States (2004-05)	\$3,000	\$6,000	\$12,000	NA
Vietnam (2002-03)	\$0	\$0	\$0	\$410-683

¹First year tuition fee (A\$4,996) for band one course of study deferred for four years with interest compounded at 2.8 percent (per government policy) and discounted back at 6.25 percent.

²First year tuition fee (A\$7,118) for band two course of study deferred for four years with interest compounded at 2.8 percent (per government policy) and discounted back at 6.25 percent.

³First year maximum tuition fee (£3,000) deferred for five years with interest compounded at 2.4 percent and discounted back at 6 percent.

⁴First year tuition fee (US\$320) (Yizengaw 2007) deferred for five years with interest compounded at 3.14 percent and discounted back at 8 percent.

⁵First year tuition fee (US\$450) (Yizengaw 2007) deferred for five years with interest compounded at 3.14 percent and discounted back at 8 percent.

⁶Set by institutions and called "cost-refunding" for those students who are not state-financed. Indicative only as varies by institution and field of training.

⁷Central University

⁸State University

⁹University or Government College

¹⁰One-fourth of Graduate Endowment Contribution of £2,289 discounted back at 6 percent.

established the applicability of cost-sharing in their public colleges and universities continue to subsidize the instructional costs even of non-needy undergraduates by at least 50 percent. Expressed another way, there appear to be no countries (save, perhaps,

Mongolia) that charge a tuition fee in their public universities that is so high as to effectively deny a substantial public benefit to undergraduate higher education.⁸

Examples of Cost-Sharing and its Worldwide Growth

As seen above, cost-sharing takes on many different forms. But in whatever form or forms, cost-sharing is generally increasing throughout the world at the start of the 21st century—as in:

- ***The United States:*** In the United States, the costs of higher education—high and rapidly rising over time to begin with—have been rising even faster in that share borne by parents and students in the form of tuition fees as the share borne by governments, or taxpayers, has been diminishing. Four-year public sector tuitions and fees as reported by the College Board (2006a, p.4) vary widely—mainly by state and type of institution rather than by degree program—but range for undergraduates from \$3,000 or \$4000 at the low end to \$8000 to \$12,000 and more at the high end (and at least double that amount for students from other states). Living expenses are even more variable, but average at public four-year colleges and universities approximately \$7000 for room and board. Total expenses to students in US public colleges and universities range from a low of between \$3000 to \$5000 for students at community colleges living with their parents to \$15,000 to \$18,000 for students in residence or living independently. These expenses, then, would rise to a wide range of between \$25,000 to \$40,000 or more per year for students in private colleges and universities.

The United States, however, has extensive programs, both at the state and federal levels of government, from colleges and universities themselves, and from foundations and other private sources, of financial assistance in the form of grants, tuition fee discounts, and loans totaling in the 2005-06 academic year some \$134.848 billion (College Board 2006b, p.6). With such extensive financial assistance—although just over one-half is in the forms of loans, some of the grants are for merit as opposed to financial need, and more than 4 percent is in the form of tax breaks—the net effect is that all US students of traditional age and without dependents can, in theory, afford at least some public college or university. And the most able students, regardless of the income of their family, can be assured of sufficient financial assistance to attend an expensive private college or university, albeit with extensive loans and part-time employment.

- ***The United Kingdom:*** The UK in 1998 became the first European country to impose more than a nominal tuition fee (although it is still low by US public college and university standards). With the devolution of higher education policies to the constituent entities of the UK, the tuition fee in England and Wales is now as high as £3000 [\$4,854] but is deferred for all students and repaid after graduation (along with other cost-of-living loans) as a portion of earnings, or *income contingently*, until the loan is repaid at a rate of interest equivalent to the then prevailing rate of inflation (i.e. a zero *real* rate of interest). This provision, put in place in 2006, brings England and Wales much closer to Scotland, which was allowed in 2001 to replace its “up

⁸ It may be that Mongolia has the highest tuition fees in comparison to average family income of any country in the world.

front” tuition fee, which was paid for by parents (albeit means tested), with a mandatory income contingent loan, which is paid for by students (and is called a *contribution to the Scottish University Endowment Fund* rather than the *repayment of a student loan*).

- **Japan:** Japan, with one of the largest higher educational systems and highest participation rates in the world, has fully adopted the principle of cost-sharing and may have the highest and most willing levels of parental contributions of any country in the world. Most of Japan’s national universities charge the maximum tuition fee allowable under law (¥535,800 [\$4580] in 2006-07). Japan also depends greatly on a mainly tuition fee-dependent private sector, absorbing in 2006 more than 73 percent of all students and consequently providing a high level of national higher educational participation at far less expense to the state than could be provided with all public institutions. Financial assistance is mainly in the form of low interest loans capped by law at 3% and repayable over 20 years. Thus, the effective subsidy of the low interest rate (that is, the cost to the government) is magnified by the very long repayment period. In spite of this subsidy, the take-up rate of student loans is low.
- **Australia:** Australia inaugurated the Higher Education Contribution Scheme (HECS) in 1989, officially described as a “... fair and equitable way of ensuring that students contribute to the cost of their higher education.” The tuition in 2006-07 is set at A\$4,996 (US\$3,594] for undergraduate arts and sciences, which can be deferred, or borrowed, and repaid as an income contingent loan at a rate of interest mirroring the prevailing Australian rate of inflation.
- **Latin America:** In much of Latin America, as well as much of East Asia, cost-sharing and revenue diversification generally have taken the form of increasing reliance on a tuition fee-dependent private higher education sector, with the public universities continuing to feature either no, or very low, tuition. This leads to the anomaly of students from upper and upper-middle income families, benefiting from their more abundant social and cultural capital as well as their generally superior (often private) secondary education, and thus able to pass the rigorous public university entrance examinations, attending “free,” or at the expense of the taxpayer, while “ordinary” students and students from middle and lower-middle income and rural families are either excluded altogether or must pay for tuition-dependent (and frequently inferior) private higher education.
- **Russia:** Russia, where higher education by law must be without cost to the student, in the early years of the 21st century is securing up to 50 percent of all university revenue from tuition through the *dual track* tuition, as described (Bain 2001). Efforts have been made to revise the law and allow comprehensive tuition fees, but as yet there are none, at least for *regular*, or officially enrolled, state-supported, students. Efforts to establish a generally available student loan program have also not yet been successful, although some private bank loans are available for credit-worthy students who can provide multiple co-signatories.
- **China:** China is still officially a Socialist country, in which higher education was once assumed to be just another part of the vast public sector, like health care or retirement pensions, the costs of which were supposed to be born by the government.

Since 1997, however, China has charged tuition to nearly all students—by the 2005 in the neighborhood of 3500-5000 Yuan [US\$400-600]. New forms of student loans and means-tested grants begun in 2003 are still in 2006-07 being developed. Higher education has grown extremely rapidly, at least in gross enrollments, but the government has also begun a concerted effort to target public revenues on a limited number of universities under the Central Government in order to bring them into the coveted rank of *world class*.

What these and countless other illustrations show is that governments throughout the world are embracing—however tentatively, and frequently with euphemisms for such still controversial policies like *tuition fees* and *student loans*, and employing other forms of political “spin”—some version of cost sharing in the forms of tuition, user fees, and official encouragement of a tuition-dependent private higher education sector.

Rationales for Cost-sharing

The economic rationale behind the case for *students* bearing a portion of the costs of their higher education is that there are substantial private benefits, both monetary and non-monetary, that accrue to the student from higher levels of education and that these benefits therefore justify a tuition fee (especially one that can be deferred and repaid through a loan or through some form of surtax upon future earnings). The case for *parents* bearing a share of the costs of their children’s higher education (entailing an *up front* tuition fee) is based on two quite different rationales: (1) that parents, too, benefit from the higher education of their children (as corroborated by the fact that so many parents throughout the world take great pride and pleasure in the higher education of their children and willingly buy them the best they can afford); and (2) that parents (at least those who are financially able) have a financial obligation to pay something for those students who can plausibly be thought of as *financially dependent children*. (Interestingly, this officially expected parental contribution, while the veritable bedrock of cost-sharing in e.g. the United States, Canada, Japan, and China and a legally enforceable expectation in Germany, is not at all the expectation in the Nordic countries, and is a deeply contested and weakening expectation in the UK.)

Most economists maintain that some element of cost-sharing—assuming some means-tested grants and/or sufficient available student loans—is actually more equitable than free higher education in that students everywhere are at least disproportionately from the middle and upper-middle classes while the taxation required to support a free higher education tends, at least in most countries, to be proportional or even regressive.⁹ However, just as powerful a case for cost-sharing—and less ideologically contestable—can be made on the twofold bases of: (1) the difficulty and / or unlikelihood of tax-generated revenue being able to keep pace with the fundamental underlying cost trajectory of higher education (that is, at a pace considerably in excess of the rise in prices generally), and (2) the very long and compelling queue in virtually all countries of pressing public needs for the limited tax revenues even if governments should be willing

⁹ Taxes on most retail sales and taxes business, which are passed on to consumers in the form of higher process, are generally thought to be regressive, as are the *hidden taxes* of deficit spending-induced inflation, which falls heavily on the poor and on those living on fixed incomes.

and able to raise taxes significantly. By this argument, significantly higher annual tax revenues are unlikely, should they occur, to significantly benefit higher education.

VI Student Loans

Within the theory and practice of cost-sharing, the increasingly accepted notion that a portion of the costs of instruction is appropriately borne by the student rather than—or in addition to—the parents presents the need for ways to allow much or most of this student-borne share of costs to be deferred into the future, when the individual is likely to have entered the full-time workforce (presumably aided by his or her higher education) and is able to begin repaying a portion of the costs that were advanced either by the government or by the private capital market. Thus, more and more countries are looking to student loan schemes as ways to allow (or require) students to bear a portion of the costs of their higher education. Shen and Ziderman (2007) report more than 70 separate governmentally-sponsored student loans schemes in operation in the early 21st century, and were able to report in some detail on 44 student loan schemes in 39 countries.

Student loan schemes that are reasonably comprehensive and conventional (i.e. are repaid on a fixed schedule of payments) and that have been operating long enough to be considered an established part of a total cost-sharing-and-student-finance policy would include governmentally-sponsored student loan schemes in, for example, the United States, Canada, Japan, South Korea, and the Netherlands. To these, we could add the principal *deferred tuition fee cum income contingent repayment* schemes such as those operating in Australia, New Zealand, Scotland, and England, as well as the more discretionary income contingent loans that can cover living costs as well as tuition fees but which are also repaid on an income contingent basis, such as the programs in South Africa or Chile.

Student loan schemes are established to promote several goals, not all of them explicit or consistent throughout the lives of the programs and not all of them strictly compatible. For example, the two principal goals of most established student loan schemes are the dual and somewhat contradictory goals of: (1) promoting accessibility by putting money into the hands of students, especially those who would not be able to attend in the absence of such assistance; and (2) returning some substantial portion of revenue advanced (in discounted present value, after deducting the costs of money, servicing and collection, and after a reasonable deduction for non-repayment) in order to increase non-governmental revenue and therefore to increase overall net revenue to higher education. Goal #1—the promotion of accessibility—suggests *general availability* (that is, available at least to all who need the loan without regard to the student's or to his or her parent's credit-worthiness), low interest rates, long repayment periods, and considerable subsidization, as well as a likely considerable loss from default. On the other hand, Goal #2—cost-sharing and repayment recovery—calls for minimal subsidization and various restrictions and other policies to minimize loss from default. Such policies, in turn, suggest either credit worthy co-signatories or test of *credit-worthiness* applied to the borrower, which will privilege borrowers with credit worthy parents or borrowers who are academically able and who are pursuing advanced

professional degrees—to the likely exclusion of most low income and otherwise high risk, but financially needy, potential borrowers.

Student loan schemes remain financially complex, often misunderstood, even by their policy designers, as well as frequently controversial (Johnstone 2006a, b, c; 2004c; Usher 2005; Ziderman and Albrecht 1995; Shen and Ziderman 2007). Much of the controversy, particularly over the introduction of a student loan scheme, has little to do with the idea of a loan *per se*, but rather reflects opposition to the presumed underlying policy of cost-sharing and especially to the notion of tuition fees when and where these have not yet been accepted.¹⁰ However, student loans also have a history of failure regardless of the underlying policy objectives—especially when one of the main objectives was cost recovery. The failures, or losses, come about from two quite different flaws. The first is a flaw (at least for the goal of cost-recovery) of design in the form of excessive built-in subsidization such that even a cost-effective collection process with a low rate of default will lose much or most of the original amount lent in what amounts to *hidden grants* represented by the flow of repayment subsidies. Shen and Ziderman (2007 p. 11) found these hidden grants ranging from less than 2 percent in the Netherlands (that is, signaling very effective cost recovery), 12 percent in England, and 17 to 20 percent in the United States to rates as high as 35 percent in Sweden, 50 percent in South Africa, 62 percent in Germany, 72 percent in Kenya, and 88 percent in Egypt (the latter cases signaling either no interest in cost recovery or major errors in program design). Since these figures do not even consider the costs of administration or of default (which are difficult to obtain, but which we know to be high for unsecured student debt), it is clear that these loan programs in fact contribute very little to cost-sharing—and in the worst cases recover less in present value—after deducting the costs of administration and the losses from default—than a non-repayable grant would have cost in the first place!¹¹

At the same time, because such instances of very low cost recovery can usually be attributed to an initial design that, whether deliberately or inadvertently, could not have recovered the loans under the best of circumstances, and because lender practices in very many instances never took repayment obligations seriously, we believe that student loan schemes—*well designed and well executed*—can still serve the dual and admittedly contradictory goals of enhancing both accessibility and cost recovery. Thus we believe that it is possible (albeit difficult) to serve the nearly universal policy of expanding higher educational participation as well as to shift some costs to the student through a comprehensive, governmentally-sponsored loan scheme that is:

1. *Generally available*: that is, available to all academically prepared students who need the loan in order to pursue post-secondary studies without regard to the

¹⁰ For many years, the politically influential UK National Union of Students fought any kind of student loans even though many students would have been greatly benefited from such a program, even if only to help pay for living costs that were not otherwise covered, out of a conviction that the government could not (or would not) impose a tuition fee or reduce grants in the absence of a working program of loans.

¹¹ This seemingly improbable scenario is most likely when the rate of interest on the loan is very low relative to the market rate (or to the prevailing rate of inflation, or to the appropriate discount rate), the repayment periods long (which further reduces the present value of repayments), the administrative and collection costs very high, and the default high (sometimes well in excess of 50 percent).

wealth or credit-worthiness of their parents or to their individual career and earnings prospects.¹²

2. *Sufficient*: that is, a maximum means-tested student loan amount sufficient to enable the student—after reasonable allowances for parental contributions, if there be any as well as other forms of financial assistance and possibly some term-time and summer earnings—to participate in an appropriate form of postsecondary education without unacceptable personal deprivation, unacceptable parental sacrifice (e.g. spending pension assets on children’s postsecondary education), or spending an unacceptable amount of time (e.g. more than 20 hours a week) in term-time employment. From the standpoint of a higher education system or a country, *sufficiency* also means the provision of a sufficient number of student loans to achieve the country or system goals pertaining to the extent of higher educational participation.
3. *Need-based*: that is, with some form of means-testing, or *targeting*, to minimize student borrowing that is not required for the desired enrollment behavior, but that either merely replaces an officially expected parental contributions (if called for) or is simply invested by the *non-needy* student borrower at a more favorable rate of interest than the borrower will be charged on the loan itself.
4. *Minimally subsidized*: that is, with a level of subsidization that does not go far beyond a *reasonable* interest rate—such as the rate for governmental borrowing or secured consumer debt.
5. *Collectable*: that is, allowing for a rate of default that may reflect the high incidence of unemployment and mobility among recent university graduates as well as the lack of experience with credit generally, but that remains a *reasonable* rate through good lender and collector practices.
6. *Able to tap the private capital markets*: that is, not dependent simply on the government’s current budget. A dependence on the operating budget seems to contradict the need for cost recovery in the first place, particularly in a low income country with the high opportunity costs of any governmental expenditure and the inability under International Monetary Fund and other international creditor rules to count unsecured student loans as anything but expenditures. This criterion must be solved through creative ways to secure otherwise inherently risky student debt. If this inherent risk is minimized, then even if the loans must be originated by a public or quasi public agency from tax revenues, they have a chance of tapping private savings if they can be sold or securitized.

Examples of Student Loans Schemes

As illustrations of the kinds of student loans programs that have achieved some stability in various countries, we offer the following:

¹² A qualification to this criterion is that very high levels of essentially *discretionary debt*—such as might be required for students to declare themselves financially independent of their parents or to pursue costly advanced professional programs—can properly be restricted to students with higher paying career prospects. The other qualification is that parental co-signatories might be required as long as there is a provision to secure the student loan debts of students who do not have credit-worthy parents.

Australia: Australia was the first country to combine a large-scale introduction of tuition fees with a deferred loan option for most students who (or whose parents) did not avail themselves of the opportunity to pay up-front at a discount. The Higher Education Contribution Scheme (HECS HELP) in Australia is a combination of tuition plus income contingent loan. The loan covers the full amount of tuition as established by the university up to limits set by the government within three bands ranging from a maximum of A\$4,996 [US\$3,592] for Band #1 courses (humanities, social and behavioral sciences, languages and visual and performing arts) to a maximum of A\$8,333 [US\$5,994] for Band #3 courses (medicine and law). Up to 20 percent of the tuition due is discounted for paying “up front.” The interest rate in Australia is indexed annually to the Consumer Price Index. Repayments are income contingent on annual incomes above A\$ 38,148 [\$27,444]. Rates range from 3 percent to a maximum of 8 percent on annual incomes in excess of A\$70,847 [\$50,970]. Repayments are collected as an income surtax by the employer or are paid along with estimated or year-end taxes due. Loan balances are not written off after a certain age or passage of years since the borrowing took place. Australia also has a loan program for non-Commonwealth supported—that is, non-HECS eligible—students collected in the same way (FEE HELP). It has a zero real interest rate, but does not have the in-school and grace period interest subsidies. It is also subject to a 20 percent loan fee.

South Africa: The National Student Financial Aid Scheme in South Africa awards means-tested loans between R2,000 [US\$770] and R32,500 [US\$12,500]. The interest rate is a relatively high inflation-plus-two-percentage-points, with no in-school interest subsidy. Students who pass all of their courses may qualify for a 40 percent rebate on their loans, and those who pass half of their courses, may qualify for a 20 percent rebate. Repayment is income contingent, beginning with 3 percent on the first R 26,300 [\$10,115] of income, progressively adding an additional 1 percent for each annual income increment of R6,000 [\$2,307] until a maximum of 8 percent of income must be paid for student debt retirement at an annual income of R59,300 [\$22,895] and above. While the national tax and pension contribution systems are not used for collection, special legislation allows NSFAS to require employers to deduct loan repayments from the monthly salaries of graduates.

England: England was the first European country to impose a more-than-incident tuition fee and thus broke with the tradition of European free higher education. However, it has recently (as of this writing in 2007) moved toward the Australian model of allowing students to defer the fee—as a loan—rather than having their parents have to pay up front.

Full-time students in England are eligible for income-contingent loans to cover their full tuition fees (maximum of £3,000). They may also apply for a partially (25 percent) means-tested maintenance loan to cover living costs totaling £3,555 [US\$5,580] per year for students outside of London and £5,320 [US\$8,350] for those studying in London.

Loans carry a zero real rate of interest. Repayment is income contingent: to be repaid at 9 percent of marginal income above £15,000 [\$23,550], which is deducted by the employer as though an income surtax and passed to the government treasury. Any loan balance (except for arrears) that is left unpaid for 25 years after the borrower’s liability to repay has commenced will be written off.

Chile: Chile has two principle student loan programs: the Fondos Solidarios de Credito Universitario (University Credit Program) and the Credito de la ley 20.027 para Financiamiento de Estudios de Education Superior (Credit from Law 20.027 to Finance Higher Education Studies), both of which are means tested and cover only tuition fees. They both involve the higher education institutions in sharing the risk of nonrepayment. The former is an income contingent loan with a real interest rate of 2 percent. Repayment begins after a two year grace period at a rate of 5 percent of income. Any loan balance remaining after 15 years is written off. The universities are responsible for collecting payments. The latter is a conventional loan that has an in-school grace period. Repayment begins 18 months after the student has finished his/her degree in a series of 240 monthly installments divided into three periods (those payments in the first period are slightly lower than those in the second and those in the second, are slightly lower than those in the third). The loans are partly guaranteed by the higher education institutions.

Germany: Germany has an extensive system of means-tested, or “need-based,” study assistance known colloquially as BAföG. At different times, different portions of the accumulated BAföG grant have been treated as a full grant, and the other portion as “repayable”—i.e. as a loan. At present, one-half of the total accumulated study assistance must be repaid—with the first repayment due five years after graduation and a repayment period of 20 years, at a zero nominal rate of interest (which is actually a negative real rate of interest), and many additional provisions for deferment or forgiveness. Payments are made on a monthly or quarterly basis.

United States: The United States has several types of publicly supported student loan programs whose eligibility criteria and terms differ according to a student’s socio-economic background. These include:

- **Federal Perkins Loans:** loans that are made available by participating schools using Perkins funds received from the U.S. Department of State to most needy undergraduate and graduate student. The maximum loan for undergraduates is \$4,000 per year at an interest rate of 5 percent. Students have up to 10 years to repay their schools.
- **Stafford Loans:** generally available student loans that are governmentally subsidized (the government covers interest payments during in-school and grace period) for students who demonstrate financial need. The loans are made through one of two United States Department of Education programs:
 - **Federal Family Education Loans**, which are offered by private lenders using funds guaranteed by the federal government. Repayments are collected by the bank or private lender.
 - **William D. Ford Federal Direct Student Loans**, made by the U.S. Department of Education at participating schools. Repayments are collected by the Department of Education.

The maximum loans may not exceed a student’s unmet financial need and are subject to annual aggregate loan limits (as of 2007) of \$3,500 for the first year, \$4,500 for the second and \$5,500 for the third year and beyond). All Stafford loans carry an interest rate in 2007 of 7.22 percent for loans in repayment. Four percent of the unsubsidized

loan is deducted from each of the loan disbursements, which in the FFEL Stafford Loans goes to the federal government and the state guaranty agency and entirely to the federal government in the Direct Stafford Loans. The repayment period depends on the amount of the loan and the repayment plan that is chosen and ranges from 10 to 30 years.

Canada: The Canada Student Loan Program is highly subsidized during the in-school period, but charges a substantial interest rate once the student graduates. It offers generally available, need-based student loans to cover tuition fees and living costs with a maximum loan limit of C\$350/week [US\$284] per student for a maximum of 340 weeks. The Federal government pays the interest on the loans during the student's stay in school and provides subsidies during the grace period. The post-study interest rate is the prime rate plus 2.5 percent.

Japan: In 2004, a new student loan system was introduced under the Independent Administrative Institution Japan Student Services Organization (JASSO), formerly known as the Japan Scholarship Foundation. Under the new system, there are two types of student loans, both of them means-tested, for Japanese students. The JASSO First Class loans have a zero rate of interest and are academically selective. They are meant to cover maintenance costs only and provide about ¥45,000/month [\$363] for public university students living at home and ¥51,000/month [\$411] for those who are not. Higher loans also available to students attending private universities. The JASSO Second Class Loans are interest bearing (prime rate) and not as academically selective as the first class loans. They can be used for both tuition and living expenses. Undergraduate students may borrow a maximum of ¥30,000/month [\$241] and an additional ¥100,000 [\$806] for just the first month. Both loans have a grace period of six months after leaving school and a maximum repayment period of 20 years. The JASSO decides the individual repayment periods based on each student's total amount of indebtedness. When they apply for the loans, students choose between a personal guarantee and an institutional guarantee. If they choose the latter, the Japan Educational Exchanges and Services (JEES) will cosign the loan, but students have to pay a certain amount of monthly insurance to the institutions.

China: The means-tested Government Supported Student Loan (GSSL) is available to cover both tuition and living expenses. Loans are disbursed by state owned commercial banks up to a maximum in 2001 of 8,000 Yuan [US\$4,145] per year. Interest rates are pegged to the rates used in commercial loans within the same repayment period. Interest is charged from the origination of the loan, with half paid by the government. Monthly or quarterly repayments begin 6 months after completion of studies with a maximum repayment period of 4 years.

Kenya: The Higher Education Loan Board (HELB) student loans are means tested and available only to students who qualify for the government subsidized module I university courses and those who are studying in private universities. The loan covers about three quarters of the yearly higher education costs that must be born by the student and family. When the student loan program was introduced in 1995 students received a

maximum amount of KES. 42,000. This amount was increased in the 2005/06 financial year to a maximum loan amount for the very poorest student of KES. 55,000 [US\$ 733] and a minimum of KES. 35,000 [US\$ 460]. Once HELB determines that a student should be awarded a loan, the Loans Board pays KES 8,000 directly to the university towards the student's tuition costs. The remaining loan funds are paid to the student through his/her bank account for food and lodging costs and other living expenses. No interest is charged during the in-school years and grace period (one year), and is set at 4 percent during the repayment period. Borrowers are obligated to begin repayment one year after completion of studies. The Board has the right to require employers to deduct repayments from the borrower's wages.

VII University Finance and the Development of Competitive National Research Systems.

In keeping with the Humboltian traditions of the Western university and with trends # 4 and 5 outlined at the start of this monograph (the *increasing knowledge economy*, and *increasing globalization*), all advanced industrialized countries acknowledge the importance of maintaining widespread research capabilities and training and retaining a cadre of researchers. Research capacity is important as well for low and middle income countries: for the sake of their economies, for the requirements of effective management and sound policy making in their governments as well as in the entities of their civil societies, and for the preservation of their national histories, cultures, and identities. In this concluding section of our work, which has been devoted to an exploration of international trends in university finance, we explore the two-way relationship between a university's fiscal health (or of the fiscal health of a higher educational system) and its capacity to contribute to a research and development (and especially to a *basic research*) mission. We say "two-way" because it is clear that a country's universities need to play a major role—alongside the roles of business and industry and other research and development providers—in a country's total R & D effort; but it is also clear that country's particular model of governmental encouragement and financial sponsorship of research and development can have a major impact of the financial health of its research universities.

To begin with, it must be stressed that research and development does not depend primarily, or even mainly, on universities. Most R & D in OECD countries, which constitutes some 80 percent of the world's research and development and which been growing significantly in the last two decades, is carried out by business and industry. However, the proportion that is carried out in academic venues (universities and university-affiliated laboratories and institutes) has been growing in recent years as measured by research expenditures, by the total number of faculty who see research as an important part of their job as well as non-teaching research staff, and by the growth in the number of scientific articles. The proportion of R&D that is considered "basic," although less than one-fifth of total OECD area R&D, has increased, and the proportion of this basic research undertaken in academic venues constitutes more than one-half—although this share has recently been declining Vincent-Lancrin 2006).

R&D in the private sector, almost by definition, is conducted for likely commercial exploitation. What may be new is the emphasis within academic R&D—even that which is reasonably considered *basic* and which is carried out with some considerable discretion by the faculty freely pursuing their scholarly interests and only steered by university leadership—is also undertaken under the banner of enhancing regional or national competitiveness. Academic R&D in the OECD countries is also becoming concentrated in fewer institutions and disbursed by government with more demands for accountability—even if much of this accountability continues to be traditional peer recognition and academic prestige rather than (or at least in addition to) commercial exploitability. This concentration is more to be expected in the United States and the United Kingdom, where differentiation of universities by prestige and presumed scholarly capability is accepted and expected, and where much governmental funding is disbursed on the basis of competitive research funding exercises, as in the UK, or according to competitive, peer-reviewed proposals, as in the United States. But the concentration, competition, and emphasis on accountability in academic research—as opposed to historic institutional entitlement—is spreading throughout the OECD (and probably beyond) as result of increased public sensitivity to the new knowledge economy and global competitiveness, as well as to the increased financial pressures on universities and the spread of *new public management*.

The relationship between a country's research-oriented universities and the conduct of research that is governmentally funded and directed varies by country and may be considered on a rough continuum. At one end, featuring a relatively modest role for universities would be the model of the former Soviet Union, initially continued by Russia and the other countries emerging from the former Soviet Union along with other formerly Communist/Socialist countries of Central and Eastern Europe. In these countries—albeit becoming less so today—the bulk of their governmentally directed and funded research was through the *academies*, which were then quite independent of, and generally more generously funded than, the universities.

Somewhat closer to a university-centered model would be those European countries that direct much of their governmentally funded research through *institutes*, many of which are loosely affiliated with—but are not within or owned or controlled by—certain universities. This model would include, for example, the French Centre Nationale de la Recherche Scientifique (CNRS), the German Max Planck-Gesellschaft (MPG), the Italian Consiglio Nazionale della Ricerche (CNR), and the Spanish Consejo Superior de Investigaciones Cientificas (CSIC). Similar relationships might be found in some of the major university-run federal labs in the United States such as the Applied Physics Laboratory operated by the Johns Hopkins University or the Lawrence Livermore National Laboratory operated by the University of California System.

The more common United States model, however, is at the university-centered extreme. Although most of the total US Research and Development funding and activity continues to be through industry, much of the governmentally-sponsored research—for example, through the National Institutes of Health, the National Science Foundation, the National Aeronautics and Space Agency, and the federal Departments of Defense, Energy, Education, and Agriculture—is carried out through US research universities,

both public and private. As such, the US model of externally-funded but university-centered, research features the following:

- Core university teaching faculty are generally the principal investigators (PIs), with the funding in the forms of both grants and contracts flowing through the university (or in some public universities through an affiliated foundation) and the research itself directed by the faculty PI. The university (or the affiliated foundation) assumes fiscal responsibility for the grant, continues to be the employer of the faculty PI and the associated staff, and is the owner of all purchased equipment (as well as the products of the grant).
- National governmental (in the United States generally referred to as *federal*) grants are widely advertised by the sponsoring agency through official *Requests for Proposals* (RFPs) and are awarded through open competition and based on recommendations from independent peer review panels.
- Federal grants carry provision for payment to the university of indirect costs, which may be as much as 40 or 50 percent of the total direct costs and which cover approved percentages of such general university expenditures as maintenance, energy, debt service, and administrative overhead. The grant may also cover a percentage of the faculty researcher's salary, which may release him or her from some or even all teaching responsibility for the duration of the grant.

The world domination in academic research by the US universities, which Herbst (2007, pp. 167-185) refers to as *The Atlantic Split*, is thus furthered not only by the sheer amount of R & D spending in the United States, but by the special relationship between the governmental research funding agencies and US research universities. The total amount of R & D funding that flows through the US universities as *academic* R & D in 2004 totaled some \$42 billion, or 14 percent of all R & D spent in the US that year (NSF Website). By electing to fund most basic research through universities rather than through stand-alone institutes or academies (whether public or private), the US model contributes greatly to the core funding of America's public research universities, which would otherwise be even more dependent on decidedly less reliable state funding plus undergraduate tuition fees and philanthropy. This model also significantly supports the university's mission of advanced doctoral and post-doctoral training, especially in science and engineering, by funding much of the tuition and cost-of-living stipends that attract advanced students throughout the world to US universities.

Of course, much of the research prominence of the top American research universities is due simply to the wealth of the country; to the dominance of the English language in business, popular culture, and science; and to the pervasive presence of universities and other institutions of higher education in everyday American life.¹⁵ Other contributors to the research prominence of the US university are such features of the American higher educational landscape as:

¹⁵ This pervasive presence can be traced in part to America's early higher educational massification as well as to the popular television spectacle of intercollegiate athletics!

- The intensely rigorous (some might say *ruthless*) traditions at top American universities for the initial faculty appointment and even more so for the awarding of tenure.
- The leading role in research played by America's elite private universities, which is encouraged not merely by the full eligibility of private universities in the open competition for research grants, but by the willingness of the federal government to pay full indirect costs to the "winning" university—thus largely erasing what might otherwise be an insurmountable competitive edge enjoyed by the public state-supported universities.
- The American traditions of academic differentiation and competition, including intense interstate competition and rivalry among the various public *flagship* universities.
- The hugely successful American higher educational philanthropy for both public and private universities and for both current expenditures and endowment.
- Advanced training in US universities that has (relative to European or Japanese universities) greater components of *taught courses* and *curricular design* (Clark 1995).

Some of the features enumerated above are uniquely American, including a sheer scale that most countries cannot replicate. Other features can be replicated, although most require resources above and beyond those associated with the university's conventional mission of teaching. The most significant form of public (i.e. tax) support of university-based research—at least in the advanced industrialized countries and particularly in other-than high cost scientific and engineering fields (that is, in the humanities and the social sciences)—may simply be the provision of time away from teaching and other non-research duties. The increasing emphasis by governments and funding sources on the role of universities in furthering global competitiveness through applied research, and the increasing emphasis by universities on the need to attract grants (preferably large grants that pay generous indirect cost recovery) may well be leading to an overemphasis of *grants and dollars* and neglecting this factor of *time*. Of course, there must be libraries, computing and Internet support, and graduate assistants even in the humanities and the social sciences. However, the support of faculty time—permitting, for example, a three or four course annual teaching load and allowing (indeed, expecting) some 30 to 40 percent of faculty effort to be devoted to research that is essentially of the faculty member's choosing—represents a very significant infusion of governmental (mainly state) revenues for the support of research. And to complete the link to the earlier discussion of increasing higher educational austerity and the imperative in most countries for supplementing increasingly inadequate governmental revenues with cost-sharing and other non-governmental revenues—it is the shortfalls of governmental funding and the manifestation of these shortfalls in increasing student-faculty ratios and the increasing

class sizes and course loads that is most seriously inhibiting university research in many middle income and virtually all low income countries.¹⁶

In closing, we refer again to a caveat set forth at the outset of this monograph: universities are complex and highly resilient organizations with multiple objectives, operating within, and necessarily influenced by, the widely differing social, political, and economic contexts of their states. It is sometimes easy to overestimate the similarity of problems and apparent policy solutions; and so it is with an examination of financial trends in higher education. Having reiterated the caveat however, we see several conclusions that are virtually worldwide:

- Higher education is an expensive enterprise, and its natural trajectory of per-student costs is upward at rates exceeding the prevailing rate of inflation unless opportunities are found to effect continuous productivity increases (as in continuously lowering faculty/staff: student ratios without loss to quality)—which is unlikely.
- The increasing cost-pressures are exacerbated by increasing enrollments, propelled either by increasing populations of university-age youth or by increasing participation rates or both—as well as by increasing societal expectations upon universities and other higher educational institutions for contributions to research, economic development, social justice, or supporting (or thwarting) state or regional expressions of cultural identity.
- The resulting cost escalation has been more than most governmental budgets have been able to provide, thus denying universities and other public higher educational institutions at least some of the funds needed and thereby diminishing either faculty/staff compensation, or the quality of instruction and/or research, or the maintenance of physical plants, or student accessibility—or all of the above.
- The resulting austerity has lead most governments and most institutions of higher education to supplement higher educational revenue with non-tax sources—especially through various devices of cost-sharing, which shift some of the underlying costs of instruction and/or some of the formerly subsidized costs of student living from governments, or taxpayers, to parents and/or students.
- Shifting some costs to parents, primarily through up-front tuition fees, can provide a large and continuing infusion of revenue, although it requires some kind of targeting, or means-testing, in order to maintain accessibility. More limiting is the inescapable

¹⁶ A very rough approximation in the United States of this (state) governmental support of research through the support of faculty time can be obtained by multiplying the 162,000 instructional faculty in US Public universities times the 33 percent of time that faculty claim, on average, to devote to research, times the average base salary in research universities of \$77,000. This calculation (162,000 x 0.33 x \$77,000) suggests more than \$4 billion in governmental support of faculty time to do research in whatever the faculty choose. It is a substantial underestimation by considering only university faculty—and of course a possibly substantial overestimation by assuming that the time is indeed being spent, as claimed, of genuine research. However, the point of this exceedingly rough exercise is simply that faculty outside engineering and science mainly require *time*—and that governmental support of academic research must begin with the kinds of student-faculty ratios and class sizes that permit scholarly activity.

fact that cost-sharing is in many countries politically controversial enough either to be resisted totally (as is likely in the affluent Nordic countries), or to be applied only to some students (generally the less academically able, as in the dual tuition countries), or to be deferred and thus shifted only to students (as in the deferred tuition-cum-income continent loan countries such as Australia and the UK).

- Shifting some costs to students requires student loan schemes, which vary greatly by country (and sometimes by different schemes within country) in: (a) coverage (generally available, or available only to credit worthy borrowers); (b) the underlying rates of interest (highly subsidized, consisting largely of *hidden grants*, or only minimally subsidized); form of repayment obligation (fixed schedule, percent of income, or a “hybrid” of both forms); and success of execution (highly cost-effective, with low defaults and low administrative costs, or cost-ineffective, with high administrative costs and high rates of default).
- Virtually all countries pay homage to the need for increasing amounts of research and development, increasingly linked to science and technology and to a country’s economic development in a competitive, globalized world economy. The role of universities in providing this kind of R&D is limited (that is, most R&D is provided through business or industry, albeit frequently with governmental assistance), but critical, both as the venue for training scientists, engineers, and technicians and also as the venue for much of the research that is basic. Thus, financially healthy universities are better able to contribute to a country’s R&D efforts. And private as well as governmental policies to channel R&D expenditures through universities can contribute to the financial health of at least some of them.

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7/3/07