

Challenges for Higher Education Systems¹

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The Changing Global Environment

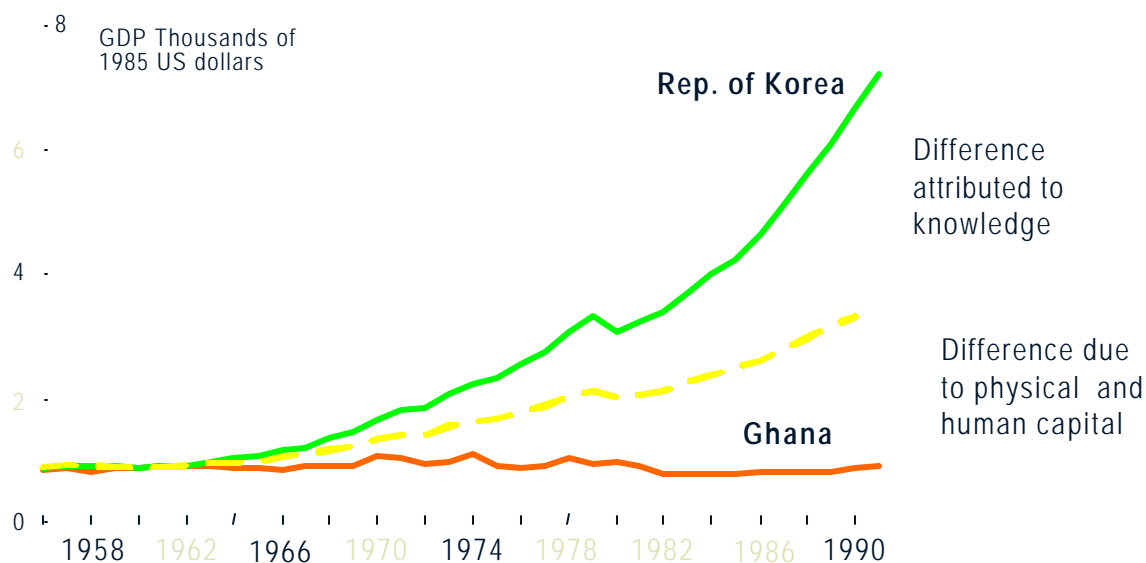
"It is impossible to have a complete education system without an appropriate and strong higher education system... I am not for a moment suggesting that primary education and secondary education are not at the very essence of development... [but that is] not enough. You have to have centers of excellence and learning and training if you are going to advance the issue of poverty and development in developing countries... the key... is higher education, not just on the technological side, but to create people with enough wisdom to be able to use it. " James D. Wolfensohn, 2000

Countries now face a number of significant new trends in the global environment. These shifts are affecting not only the shape and mode of operation but also the purpose of tertiary education systems. Some of these trends represent sources of opportunities; others constitute potential threats. Among the most critical dimensions of change are the growing role of knowledge, the information and communication revolution, the emergence of a worldwide labor market, and global socio-political changes.

Knowledge as a Key Factor of Development in the Global Economy. Knowledge accumulation has become one of the major factors in economic development and is increasingly at the core of a country's competitive advantage, which is itself determined by the ability to innovate in a continuous manner. This change is most evident in OECD countries, where investments in the intangibles that make up the knowledge base of a country (R & D, patents, higher education and training, computer software) are equaling or even exceeding investments in physical equipment. Developing and transition economies, while affected by these transformations, are not yet reaping their benefits to the same degree as industrial economies. In fact, the capacity to generate and harness knowledge in the pursuit of sustainable development and improved living standards is not shared equally among nations. In 1996, OECD countries accounted for 85% of worldwide R&D investment; China, India, Brazil, and East Asia represented collectively 11%, and the rest of the world only 4%. Advanced economies enjoy the fruits of a virtuous cycle in which the benefits of research help produce the wealth and public support needed to continue investing in R&D. In contrast, many developing countries have neither articulated a development strategy linking knowledge to economic growth nor taken steps to build up their capacity to do so.

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Knowledge Makes the Difference between Poverty and Wealth

The graph above, which compares the economic evolution of Korea and Ghana between 1958 and 1990, illustrates the significant difference made by a knowledge-based development strategy.³ Based on the standard Solow method of accounting for economic growth, the graph represents an attempt to estimate the relative contribution of two types of factors: tangible factors such as the accumulation of physical capital and additional years of schooling in the labor force, and other factors linked to the use of knowledge such as the quality of education, the strength of institutions, the ease of communicating and disseminating technical information, and management and organization skills. Technical progress raises the potential output from a given set of inputs. Empirical measures can then distinguish the extent to which growth is due to adding inputs (more labor and capital) versus using inputs in a "better" or more productive way. The latter measure is commonly referred to as "Total Factor Productivity" or TFP, and is generally considered to be very closely linked to the way in which knowledge is used in production. Because TFP is a measure of output per unit of input, raising it leads to higher standards of living. Tertiary education may be one of the most influential of the set of complex factors that determine TFP for a given economy.

The New Challenges

Tertiary education is facing unprecedented challenges at the beginning of the 21st century, arising from the convergent impacts of globalization, the increasing importance of knowledge as a main driver of growth, and the information and communication revolution. But opportunities are emerging out of these challenges. One of these is that

³ The World Bank. 1999. P.22 of the 1998/99 WDR.

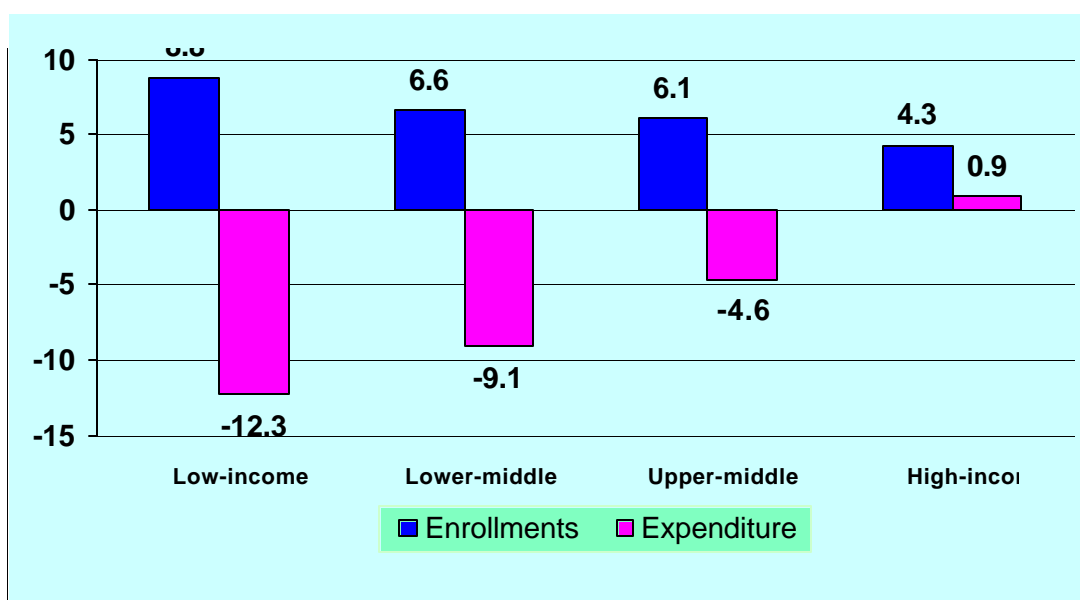
the role of education in general – and tertiary education in particular – in the construction of knowledge economies and democratic societies is now more influential than ever.⁴ Tertiary education is indeed central to the creation of the intellectual capacity on which knowledge production and utilization depend and to the promotion of lifelong learning practices necessary to update one's knowledge and skills. At the same time, new types of tertiary institutions and new forms of competition are appearing, inducing traditional institutions to change their modes of operation and delivery and take advantage of opportunities offered by the new information and communication technologies.

The State of Tertiary Education in Developing Countries

In response to these momentous and converging trends in the environment, a number of countries have undertaken significant transformations of their tertiary education systems, including changes in patterns of financing and governance, growing institutional differentiation, the creation of evaluation and accreditation mechanisms, curriculum reforms, and technological innovations. But progress has been uneven and sharp contrasts remain across and within tertiary education systems. Most developing and transition countries continue to wrestle with difficulties produced by inadequate responses to pre-existing challenges. Among these unresolved challenges are the expansion of tertiary education coverage in a sustainable way, the reduction of inequalities of access and outcomes, the improvement of educational quality and relevance, and the introduction of effective governance structures and management practices. Even though tertiary level enrollments have grown significantly in virtually all countries in the developing world, the enrollment gap between the most advanced economies and the developing nations has become wider. In addition, tertiary education systems continue to be very elitist. Financial resources have been insufficient to sustain the growth of enrollment and improve quality. In many countries, rigid governance models and management practices are preventing tertiary education institutions from embracing change and launching reforms and innovations.

Enrolment and Public Expenditures

⁴ This paper adopts the OECD definition of tertiary education as “a level or stage of studies beyond secondary education. Such studies are undertaken in tertiary education institutions, such as public and private universities, colleges, and polytechnics, and also in a wide range of other settings, such as secondary schools, work sites, and via free-standing information technology-based offerings and a host of public and private entities.” (Wagner, 1999, p. 135).



In this context, developing countries are confronted with a dual task. On the one hand, there is a pressing need to overcome the coverage, equity, quality and governance problems which have traditionally beset tertiary education systems. On the other hand, all nations are exposed to the new challenges arising from the construction of knowledge economies and democratic societies. A key concern is whether developing countries can adapt and shape their tertiary education systems to confront successfully this combination of old and new challenges.

The Continuing Crisis of Tertiary Education

To play a catalytic role in helping developing and transition countries rise to the challenges of the knowledge economy, their tertiary education systems must first address the serious difficulties that they have experienced over the past ten years. To a large extent, these problems are generated by the process of shifting from elite to expanded mass-based tertiary education under severe resource constraints, with persistent inequalities of access and outcomes, inadequate educational quality and relevance, and rigid governance and management structures. OECD countries have faced similar challenges in the recent past, and have addressed them through a variety of approaches and with various degrees of success.

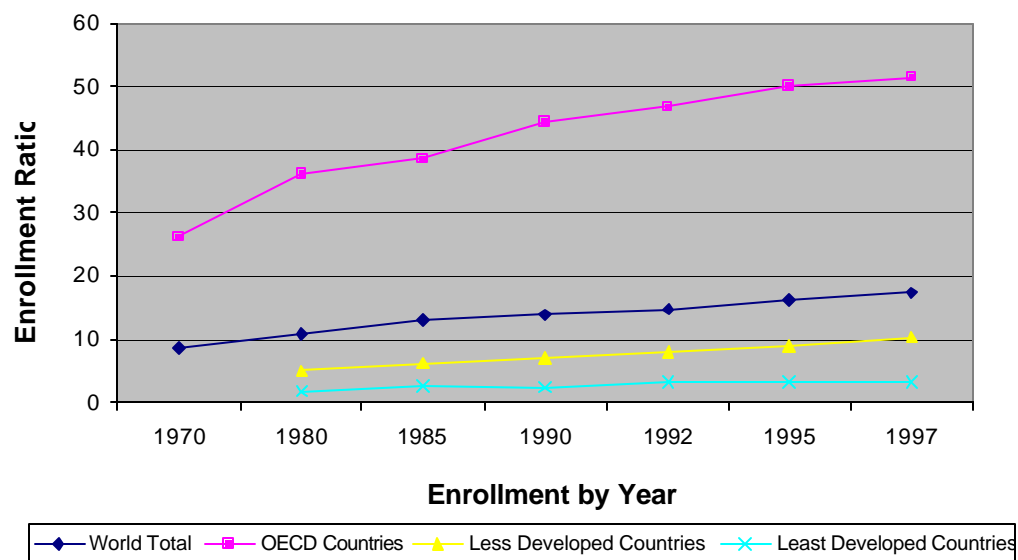
The Challenge of Expanding Tertiary Education

The Challenge of Expanding Tertiary Education. Despite the rapid growth of tertiary enrollments in most developing and transition countries over the past decades, the enrollment gap in relation to OECD economies has not decreased. In fact, quite the opposite has occurred. In 1980, the tertiary enrollment rate in the US was 55 percent compared to an average of 5 percent for developing countries as a whole. In 1995, the numbers were 81 and 9 percent respectively. Equally worrisome is the low level of development of postgraduate education in many parts of the world. In the Latin American and Caribbean region, for example, students enrolled in postgraduate programs represent, on average, only 2.4 percent of overall tertiary enrollment, compared to 12.6 percent in the United States. This circumstance represents a serious constraint to building up the elements of national innovation systems so essential for increasing national productivity: research capacities, university-trained researchers and professionals,

graduates with advanced technical and managerial skills, and more dynamic university-industry linkages.

In many countries, the fiscal constraints experienced in recent years have undermined their financial capacity to undertake further expansion of the public tertiary education system while maintaining satisfactory levels of quality. Moreover, the problem of insufficient -- sometimes even declining-- funding is often compounded by the inefficient use of available resources. Examples of such inefficiencies include low student-staff ratios, underutilized facilities and duplicative program offerings (even in situations of overcrowding), high dropout and repetition rates, and a large share of the budget devoted to overheads and non-educational expenditures, such as subsidized student housing, food, transport and other services. These management inefficiencies drain scarce resources away from the fundamental objectives of increasing access, quality and relevance. Despite the rapid growth of tertiary enrollments in most developing and transition countries over the past decades, the enrollment gap in relation to OECD economies has not decreased. In fact, quite the opposite has occurred, as illustrated by the graph below. The need to invest in expanding coverage at the tertiary level is nowhere more visible than in the large countries of Asia like Indonesia, India, China, and Pakistan with enrollment rates of 11, 6, 5 and 3 percent respectively, or in those of Latin American like Colombia, Brazil and Mexico, whose enrollment rate is less than 15 percent.

Tertiary Education Gross Enrollment Ratio – (1970-1995)



Source: UNESCO World Education Report 2000/UNESCO Statistical Yearbook 1999.

Despite more rapid demographic growth in the developing world than in OECD countries, transition rates from secondary to tertiary education have been higher in the latter countries as a result of several factors, including significant increases in secondary school completion rates, altered perceptions among students towards educational attainment as a means to achieve higher incomes; and the perceived need for highly

skilled labor in a rapidly changing global economy. In the developing world, the most rapid growth of secondary enrollment rates has been observed in East Asia (from 47 to 66% between 1990 and 1997), followed by Latin America (from 51 to 62%) and the Middle East (from 52 to 57%).

Another reason why tertiary enrollment levels are still relatively low in many parts of the developing world is the lack of institutional differentiation to accommodate the growing demand. In Latin America for instance, while countries like Cuba (79.1%), Peru (42.9%), Brazil (37.7%) or Chile (35.3%) have a significant non-university tertiary sector, others like Panama, Guatemala, Honduras, Nicaragua or El Salvador have a very small non-university sector (less than 5%). This is a major concern not only because non-university institutions can absorb a significant share of the demand for tertiary education but also because they are in general more capable to respond rapidly to changing labor market needs, as illustrated by the positive contribution of the two-year Technological Institutes in Mexico.

Within the context of the growing enrollment gap, an equally worrisome issue is the slow rhythm of expansion of postgraduate education in many parts of the world. In the Latin American and Caribbean region, for example, students enrolled in postgraduate programs represented on average only 2.4 percent of overall tertiary enrollment in 1997, compared to 12.6 percent in the United States. Given the fact that more than two-thirds of all postgraduate students are concentrated in only two countries, Brazil and Mexico, the proportion is significantly smaller in most countries of the region. This circumstance represents a serious constraint to building up the elements of national innovation systems so essential for increasing national productivity: research capacities, university-trained researchers and professionals, graduates with advanced technical and managerial skills, and more dynamic university-industry linkages.

In many countries, the fiscal constraints experienced in recent years have undermined their financial capacity to undertake further expansion of the public tertiary education system while retaining satisfactory levels of quality. In the past 10 to 15 years, expenditures for tertiary education as a percentage of the total public education budget have experienced a significant reduction in several countries. In Ecuador, Mexico and Peru, per student expenditures fell by 30, 20 and 30 percent respectively between 1980 and 1990. In several countries, public sector enrollments have not grown or, where they have continued to grow, it has happened with reduced resources.

The financial constraints have become even more acute in times of economic and financial crises, leading sometimes to significant decreases in tertiary enrollment. In East Asia, for example, typical responses to the 1997-98 fiscal crisis in Korea, Thailand or Indonesia have been for low income students to drop out without completing their studies and for middle and high income students to shift from private to public tertiary institutions.⁵ Similar patterns have been observed in a few South American countries, notably Bolivia and Colombia. In the latter case, the National Association of Universities

⁵ Varghese, N.V.. 2001. *Economic Crisis and Higher Education in East Asia*. UNESCO, International Institute for Educational Planning, Paris.

has calculated that the private universities of the country had lost close to 20 percent of their students since 1999.

Moreover, the problem of insufficient -- sometimes even declining-- funding is often compounded by the inefficient use of available resources. These management inefficiencies drain scarce resources away from the fundamental objectives of increasing access, quality and relevance. Examples of such inefficiencies include underutilized facilities, duplicative program offerings, low student-staff ratios, high dropout and repetition rates, uneconomical procurement procedures, and a large share of the budget devoted to non-educational expenditures.

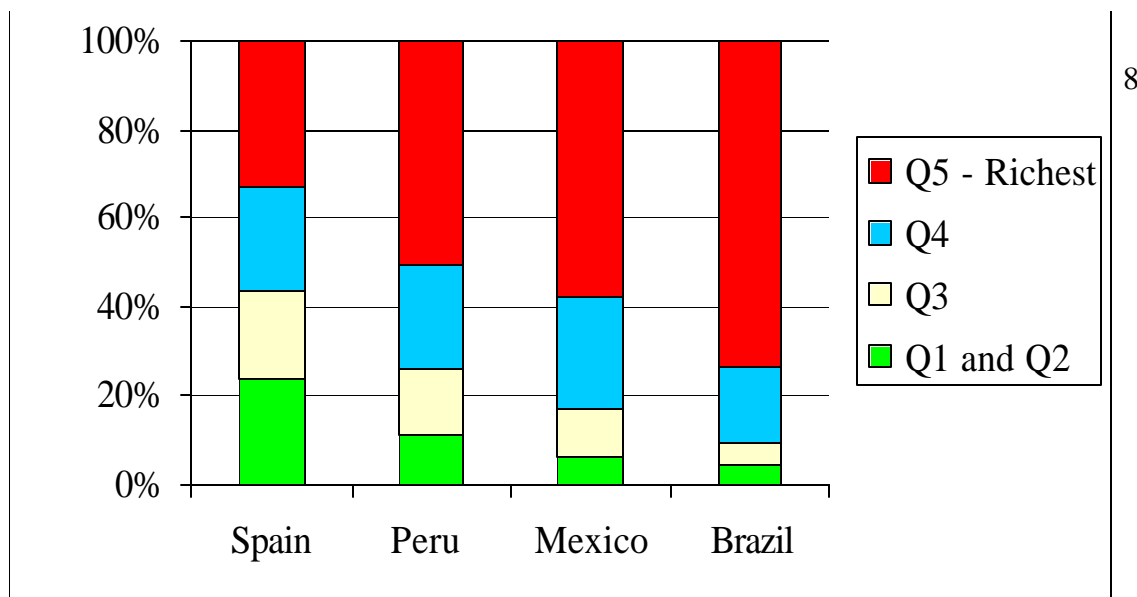
Even though many public tertiary institutions are overburdened by students, their facilities are often underused. In accordance with civil service regulations or agreements with trade unions, many university facilities are closed evenings and weekends.

Low student-staff ratios and high repetition and dropout rates also drive up the cost per graduate. In China and Brazil, for example, student-teacher ratios are very low in the public universities: between 5:1 and 9:1 in Chinese universities, 9:1 in the Brazilian federal universities, compared to a range of 15:1 to 20:1 in European universities. In many parts of the world, the high repetition and dropout rates are among the most important sources of low internal efficiency in public universities, especially in countries with open access. Low internal efficiency is especially prevalent in countries with open access, as is the case with most francophone African countries and a few Latin American countries (Argentina, Uruguay, Dominican Republic, Guatemala). This problem is sometimes compounded by the longer than usual duration of first degrees. In Bolivia, for instance, where the length of the first degree is five years, students actually spend 9 years to graduate on average. In Guatemala, the public universities spend 22 student-years to produce a graduate of a 6-year undergraduate program.

The Persisting Inequalities

Even though rapid enrollment growth has increased access to tertiary education for traditionally less privileged groups, including women and students of rural origin, tertiary education, especially the university sector, generally remains elitist, with the majority of students coming from wealthier segments of society. In many countries, the substantial subsidies for non-educational expenditures represent regressive social spending inasmuch as the proportion of university students from high and middle income families is higher than their share in the overall population. This is as socially inequitable as it is inefficient. Finally, there is an equity backlash whenever fees are imposed only on certain groups, as happens in a number of former socialist economies where the students who do not pass the official entrance examination can still be admitted into regular university programs, provided they are able to pay tuition fees.

Enrollment of 18 to 24 Year-Olds in Higher Education by Income Quintile



Although few countries and institutions collect data on the socio-economic origin of students in a systematic way, where statistics and household survey data are available the pattern is clear. In Latin America, for example, the proportion of students from the bottom third income group is only 6, 11 and 18 percent in Peru, Chile and Uruguay, respectively (García-Guadilla, 1998).

To a large extent, inequalities in access to tertiary education, including gender disparities, are determined by what happens to various groups in primary and secondary education. But access is not the only determinant of equity at the tertiary level. Recent household survey data from Argentina illustrate in a powerful way how even open access tertiary education systems can be deceiving from an equity perspective. Despite the appearance of democratic access for all secondary education graduates, academic outcomes are strongly influenced by socio-economic origin. The proportion of students from the poorest two quintiles who actually graduate from public universities is only a fifth of those who enter as first year students under the open access policy.⁶

Countries which have introduced or raised fees risk to experience an increase in access disparities in the absence of effective and well targeted student aid mechanisms. Even in a wealthy country like Scotland, the concurrent establishment of tuition fees and elimination of the maintenance grant in 1998 has resulted in a noticeable decline in enrollment among low income students.

⁶ Kisilevsky, M.. 1999. Circuitos públicos y privados en la universidad argentina: señales desde la encuesta de hogares. *Pensamiento Universitario*. Universidad Nacional de Quilmes, Buenos Aires.

Inadequate Quality and Relevance

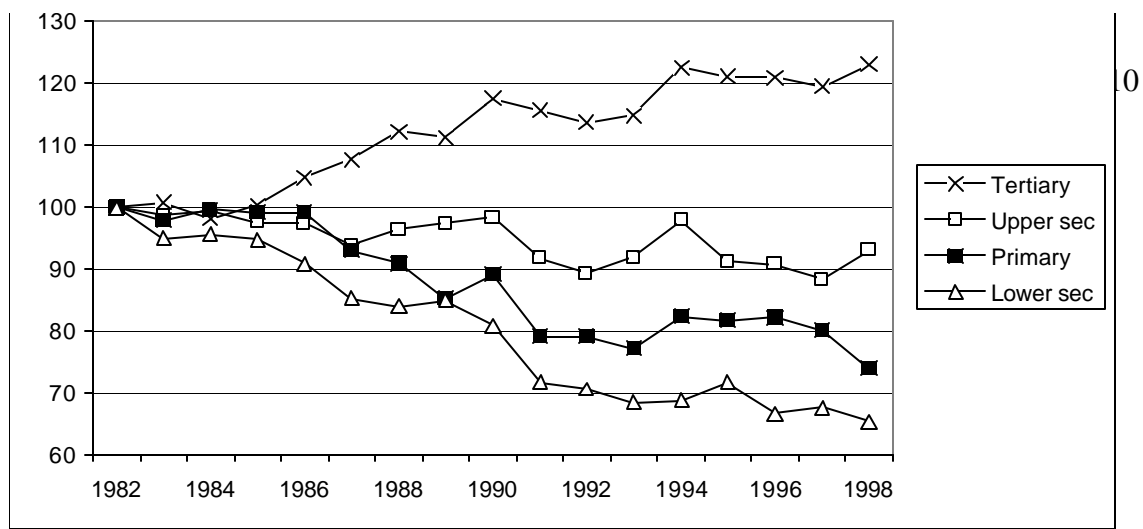
While there are exceptions, the quality and relevance of research, teaching and learning has continued to decline in public tertiary education institutions. Many universities operate with overcrowded and deteriorating physical facilities, limited and obsolete library resources, insufficient equipment and instructional materials, outdated curricula, unqualified teaching staff, poorly prepared secondary students, and an absence of academic rigor and systematic evaluation of performance. Similar conditions can be found in many of the new private universities and other tertiary institutions which have cropped up in many countries, especially in those countries which do not have any formal system of licensing or accreditation of new institutions. Even in the former socialist nations of Eastern Europe and Central Asia, drastic reductions in public funding are further jeopardizing the quality and sustainability of existing programs and even the survival of entire institutions. In many countries, the poor quality of teacher training programs has detrimental effects on the quality of learning in primary and secondary education. Weak secondary education and scientific literacy, in turn, does not provide high school graduates with the necessary skills for successful tertiary level studies.

Most tertiary education institutions function at the periphery of the international scientific community, unable to participate in the knowledge production and adaptation necessary to confront the most important economic and social problems of the countries. While very few countries have exhaustive data to document the depth of the problem in a systematic manner, when information is available, the situation is quite alarming, as illustrated by figures from the Philippines. In 1995, a Task Force on Higher Education concluded, after reviewing information on critical education inputs and the results of professional examinations for the 1316 existing tertiary education institutions, that only nine universities and two colleges were comparable in quality to international institutions.

In both public and private institutions, the lack of full-time qualified teachers is an important factor of poor quality. In Latin America, for example, less than 6 percent of professors teaching in public universities have a doctoral degree and 26 percent a master's degree. More than sixty percent of teachers are part time in the public sector; in the private universities, the proportion is as high as 86 percent (García Guadilla, 1998). Expansion and diversification of tertiary education systems has often led to internal brain drain because low paid professors in public institutions seek second and third jobs in extramural jobs such as teaching at private institutes and colleges which might offer better salaries.

Divergence in Returns to Schooling by Education level in Brazil⁷

⁷ Blom, A., Holm-Nielsen, L.B. and D. Verner: Education, Earnings and Inequality in Brazil 1982-1998, the World Bank, 2001



While there is a global trend towards increased returns to tertiary education, specific market responses are not always favorable. For example when countries expand just any kind of tertiary education in order to meet the increasing social demand, there is a high risk of graduate unemployment. In many countries, the mismatch between the profile of graduates and labor market demands is mostly apparent among graduates in social sciences and humanities. Tertiary education institutions often lack adequate information for prospective students, parents and employers.

Problems of quality and relevance are not exclusive to traditional universities. Even in countries which have diversified their tertiary education structure such as Indonesia, relevance can become a serious issue in the absence of close linkages between tertiary education institutions and the labor market.

Lack of access to the global knowledge pool and the international academic environment is increasingly becoming an issue. In many countries, poor command of foreign languages among staff and students complicates access to textbooks and the Internet, especially at the graduate level.

Many countries which have experienced a doubling or tripling of tertiary enrollments in the last few decades, along with increased participation rates for young people, have also seen the negative effects of rapid expansion on quality. As a result, issues of quality assurance and quality enhancement have been a major focus of attention (El-Khawas et al., 1999). Despite differences in the size and stage of development of their tertiary education sectors, many governments have decided that traditional academic controls are inadequate to deal with today's challenges and that more explicit quality assurance systems are needed. There are wide differences among countries in their approaches to quality promotion. In some countries, governments have taken steps to strengthen quality by introducing new reporting requirements or other mechanisms of management control. Argentina, for example, has introduced quality assurance mechanisms that depend on an enhanced information and evaluation system and new rules for funding the universities. Many countries have developed accreditation systems, while others have established evaluation committees or centers that carry out cycles of external review. In many countries, independent bodies have been established, often a single national agency but sometimes, as in the Netherlands, Mexico, or Romania, separate agencies that are responsible for different types of institutions, regions, or purposes. Such variation in

approach reflects political and cultural preferences within each country, differences in governmental leadership, as well as varying stages of development for the tertiary education sector.

The scope of responsibilities given to quality assurance systems has also varied widely. Scotland and England, for example, have procedures to monitor teaching effectiveness, while Hong Kong is focusing on high-quality management processes. Some countries, Chile for one, have established systems to license new institutions and to certify education credentials. Others have directed efforts toward rewarding research productivity, either of individual scholars (as in Mexico) or of entire academic departments (as in the United Kingdom). There is wide variation too in the extent to which quality assurance agencies have addressed issues related to student transfer and to study in other countries, as well as the issues related to the expansion of new modes of educational delivery, including video-based education, interactive transmission to remote sites or, most recently, Internet-based learning. The most comprehensive activity in relation to transnational credit transfer and student mobility is undertaken among European countries under the *Bologna Declaration*. The further development of the ECTS (European Credit Transfer System) progresses rapidly and it is highly recommended that other nations which have build their tertiary education system on the European tradition are kept informed about the rapid development of such a large international marketplace for students.

Change-Resistant Governance Structures and Rigid Management Practices

In many countries, the governance structure and management traditions of public tertiary institutions are characterized by rigidities and a total lack of flexibility which inhibits any type of reform or innovation. In the name of academic freedom, institutions (and their individual constituents, faculty, administrators and students) frequently operate with limited accountability for their use of public resources or for the quality of their outputs (e.g., graduates, research). Ingrained institutional cultures, together with poor management practices and lack of accountability, explain some of the inefficiency dimensions identified earlier. The time-honored committee approach to management in universities suffers from lengthy, sometimes politically-laden, consensus-based decision making. It often lacks the agility for effective interaction with a surrounding corporate culture.

The ownership of tertiary institutions have often shifted from clients, e.g. society and students, to staff. The *raison d'être* for some institutions has become providing employment and benefits for staff rather than being educational establishments geared towards the needs of the students. Such systems are rigorously guarded by cadres of academic leaders represented in academic councils who operate within a framework of institutional autonomy that is almost exclusively accountable to staff and academics. Academic leaders such as rectors, deans and heads of departments are not trained in management of large complex institutions. In many public universities in Latin America and Eastern Europe, reform-oriented rectors stand little chances of getting elected because they are perceived as a threat to established practices. When there is a change of rector, the entire management team is changed with the ensuing loss of institutional continuity. Often the institutional support systems do not provide guidance in terms of

monitoring and evaluation of the institutions' own performance. Few institutions have a governance structure allowing for the participation of representatives of employers and civil society. Universities in countries as diverse as Russia, Bangladesh and Bolivia have no Boards of Trustees that would constitute an explicit external accountability channel. Reliance on performance indicators as management and planning tools is not a common practice in most countries.

At the national level a stalemate often exists between academically powerful rectors conferences or councils and governments that continue to negotiate line item budgets seldom linked to institutional performance or national strategies, but generally reflect the needs of regional constituencies. This leads to a political rather than a professional system of management and governance. The consequence is a deficient governance system lacking flexibility and innovative capacity because programs are developed to serve the needs of existing staff rather than the country's development goals, and lack of programmatic accountability because academic autonomy is not paired with financial and legal responsibility.

The situation is often compounded by cumbersome administrative rules and bureaucratic procedures. In many countries, the Ministry of Education determines staffing policy, budgetary allocations, number of students admitted, and universities have little say in relation to the number of positions, the level of salaries, and promotions. In Brazil, the *Law of Isonomy* establishes uniform salaries for all federal jobs including those in the federal universities. Lengthy procedures at the level of the ministries of finance and education often cause delays in transfer of funds to tertiary education institutions. The purchase of laboratory equipment is also affected by such inefficiencies; by the time the equipment arrives it is often less up to date than originally intended and institutions end up receiving equipment supplies after the courses have taken place.

In many countries and institutions, administrative procedures are also very rigid when it comes to making changes in academic structure, programs or mode of operation. In Uruguay, for instance, it is only when confronted in the mid-1990s with competition from new private universities that the venerable University of the Republic--which for 150 years had exercised a monopoly over higher education in the country--started a strategic planning process and considered establishing post-graduate programs for the first time. Another example of institutional inflexibility occurred in Venezuela, where a dynamic private business administration institute called IESA had to wait several years to receive the official approval from the Council of Rectors for a new MBA program designed and delivered jointly with the Harvard Business School.

Institutions for tertiary education are in general not designed to deal with civil constituents. Students can block entire systems from functioning over prolonged periods of time, as happened in 1999 in Mexico where UNAM the largest university of the country was closed down for almost a year by a student strike in response to a proposed tuition fees increase from a few dollars to 140 dollars a year. Some countries have seen an alarming increase in campus violence which can be politically motivated (Colombia) or the result of criminal activities (Bangladesh) and which severely damages the functioning of the institutions. Cheating, which has also become widespread in many settings, is another dimension of inadequate operation. Finally, student democracy often

works against the academic interests of the very students. Extended campaigning and election periods detract from teaching and learning and lead to inefficiencies rather than to better opportunities for the students.

The World Bank in Support of Tertiary Education

In continued pursuit of its mandate to help developing and transition countries reduce poverty and improve living standards through sustainable growth and investment in people, the World Bank has renewed, and deepened, its commitment to enhancing the contribution of advanced education to economic and social development worldwide. Through effective partnerships with other multilateral institutions, national governments, non-governmental organizations and the private sector, the Bank aspires to apply its financial resources and extensive knowledge base towards increased efforts in the tertiary education and science and technology sectors, which will help create the foundations of democratic knowledge-based economies and societies.

Assessment of Recent Bank Experience in Tertiary Education (1995-2000)

Since it began to lend for the education sector in 1963, the World Bank has had a prominent role in assisting countries in their efforts to expand tertiary education and improve the quality of institutions and programs. From 1992 to 1998, lending for tertiary education has averaged US\$ 481 million a year. The Bank is currently implementing tertiary education projects or projects with a tertiary education component in 28 countries, supporting the following types of interventions:

- Vision development, strategic planning and consensus building (national level, institutional level);
- Financing reforms (allocation of recurrent budget, competitive funding, cost sharing, student loans, scholarships);
- Governance and management reforms (policy body, mergers / federation, adoption of academic credit system, MIS);
- Quality improvement (strengthening of existing programs, evaluation / accreditation system, innovation in program content /delivery, innovation in academic organization, information and communication infrastructure);
- Institutional diversification (establishment and/or strengthening of polytechnics or technical institutes);
- Science and technology development (strategy development, capacity for monitoring and evaluation, reform of resource allocation mechanisms, competitive funding, promotion of research in priority areas, joint public / private sector technology development, capacity for metrology, standards, testing quality, intellectual property rights).

In the 1970s and 1980s, much of the support provided in World Bank tertiary education projects was organized in a piecemeal fashion, with a narrow focus on the establishment of new programs or discrete quality improvement measures for existing teaching and research activities. These projects occasionally created well-equipped academic oases that became unsustainable over time but the Bank was rarely able to offer the long term

comprehensive support for tertiary education that is required for successful reform efforts and effective institution building. An internal review of implementation experience with tertiary education projects undertaken in 1992 and an assessment of recent interventions in this sub-sector have offered insights into more productive ways of supporting tertiary education reforms and innovations. The most salient lessons about the relative effectiveness of different approaches in support of tertiary education reform and development can be analyzed along the following three dimensions:

- comprehensiveness of the intervention strategy;
- attention to the political economy aspects of reform;
- reliance on positive incentives to promote change.

System-Wide Approaches. The degree of comprehensiveness of the Bank's support strategy is an important predictor of outcome. Policy measures and investments which are not integrated into a broad reform program based on a global vision and strategy for change are less likely to bear their fruits. For example, implementation of an ongoing project in Argentina has been quite successful because it has accompanied a well-articulated reform program sanctioned by a new Higher Education Law promoting the introduction of internal and external evaluation mechanisms, including a national accreditation system, increased autonomy for the public universities in the area of human and financial resources management, support for quality improvements throughout the university system, and institutional strengthening of the Ministry of Higher Education and the public universities, as well as a new funding formula.

Even when it comes to technical aspects of quality improvement reforms, there is a need for a comprehensive approach reflecting the inter-relatedness of academic programs and tertiary education institutions. High quality instruction in engineering, medicine, agriculture, and in applied social sciences, for example, requires sound training in the natural sciences, mathematics, and even in humanities whose importance to economic development is less obvious and, therefore, less attractive in terms of donors support. Advanced scientific training and research requires strong undergraduate programs and a large diversified tertiary education system so that undergraduate and postgraduate do not compete for scarce staff and financial resources. Centers of excellence cannot be maintained if they must bear the burden of accommodating most of the increasing social demand for tertiary education as well. The various institutional components of the tertiary education sub-sector, both public and private, constitute a system. How they relate to each other and to the system as a whole needs to be taken into account.

Reforms of the financing of public tertiary education, especially introduction of tuition and other fees, are difficult to successfully implement without expanding educational opportunity through equity measures. They also require significant devolution of government control in matters affecting institutional costs as well as incentives for institutions to engage in cost-saving and income generating activities. Student loan schemes may work well technically but at the same time fail to promote improved efficiency and cost effectiveness of tertiary education. In Venezuela, for example, the Bank supported the reform of the public student loan agency, FUNDAYACUCHO, with a project aiming at increasing coverage, improving the financial sustainability of the

agency and raising its management efficiency. Although the operation was a great success from the viewpoint of disbursements, its real impact was very limited because the project was not part of a comprehensive reform of tertiary education financing. By contrast, a similar operation in Jamaica has had a more positive impact because the reform of the Student Loan Bureau has supported parallel efforts to improve the financial situation of the University of West Indies through increased cost-sharing.

The preference for comprehensiveness does not mean, however, that all aspects of a reform can or should be packed into a single operation. This is where the time dimension plays a crucial role in the implementation of a system-wide approach. Sequencing provide the tools for responding and adjusting to evolving challenges and long term involvement through a series of complementary operations has proven essential to ensure structural change in a viable and sustainable manner.

Investments were most successful in countries like China, Korea, Indonesia and Tunisia where a series of projects have supported a sector-wide strategy. A long term approach has greatly enhanced the probability of genuine and sustainable reforms. The sustained cooperation with the Indonesian government has led to a real change of paradigm in the way the tertiary education system is governed, financed and developing. Similarly, two successive and complementary sector-wide projects in Tunisia have contributed to substantial improvements in the tertiary education system.

Political Economy Aspects. Until the beginning of the 1990s, very little attention was paid to the political economy aspects of tertiary education reforms. The Bank worked under the assumption that it was enough to design a technically sound reform program and reach agreement with top government officials to be able to introduce change successfully. But when it came to actual implementation, political reality often proved stronger than the technocratic vision. In Sub-Saharan Africa, for instance, a number of education adjustment loans in the late 1980s and early 1990s included tertiary education reform measures aiming at containing expenditures, enrollment growth and subsidies. But implementation experience has not been encouraging. The proposed reform programs, often including too many conditionalities that never materialized, have been opposed by various interest groups and have touched off student rioting in many countries.

Launching and implementing tertiary education reforms and innovations has been more successful when decision-makers have managed to build a consensus among the various constituents of the tertiary education community. This has been the case in recent tertiary education sector activities with Argentina, Chile, Brazil, and other countries such as Jordan, Tunisia and Romania. Furthermore, policy dialogue, stakeholder consultation and consensus building are not discrete activities which are useful only at the beginning of a reform. Rather, there is a need to maintain and renew attention to the political dimensions of tertiary education reform as country conditions evolve. Failure to do so can expose the project to diminishing commitment or even reversal of policies as a result of electoral deadlines and changes of governments or key leaders.

The Bank has been less than successful in supporting the implementation of politically sensitive reforms such as moving from negotiated budgets to formula funding, reducing

subsidies or introducing tuition fees. In several countries, for example Argentina, Tunisia and Jordan, the government has not been able to fulfill its commitment to implement a transparent funding formula, even though it had been agreed at the time of project preparation. In Senegal, the authorities have recently gone back on their decision to streamline the scholarships program in such a way as to ensure that only socially and academically deserving students would be eligible. In Hungary, the government reversed a decision to charge tuition fees for repeating students.

Reliance on Incentives. The third set of lessons is linked to the nature of the policy instruments used to promote reforms and innovations. The extent to which projects rely on positive incentives rather than mandatory edicts to stimulate change has a great influence on their outcomes, as institutions and actors tend to respond more readily to constructive stimuli. In that respect, the World Bank has had positive experience with a number of policy instruments, including competitive funds, accreditation mechanisms, and management information systems.

Well designed competitive funds greatly stimulate the performance of tertiary education institutions and can be powerful vehicles for transformation and innovation. In Argentina, the Quality Improvement Fund (FOMEC) has encouraged universities to engage in strategic planning for the strengthening of existing programs and the creation of new interdisciplinary masters. Within universities, faculties that had never worked together have started to cooperate in the design and implementation of joint projects. In Indonesia, a series of projects since 1993 have been successful in stimulating ownership for the new paradigms in tertiary education among the entire academic community. In Egypt, the Engineering Education Fund was instrumental in introducing, for the first time, the notion of competitive bidding and peer evaluation for the allocation of public investment resources. The Fund promoted in an effective manner the transformation of traditional engineering degrees into more applied programs with close linkages to industry.

A fundamental prerequisite for the effective operation of competitive funds, as well as one of their significant benefits, is the establishment of transparency and fair play through clear criteria and procedures and an independent monitoring committee. In countries with a relatively small or isolated academic community, it is desirable to draw from a regional or international pool of peer reviewers to reduce opportunities for complacency and subjective evaluation among a limited group of national colleagues, following a long standing practice in the Netherlands for example. The new Competitive Fund in Jordan has detailed guidelines described in an Operations Manual, and relies on international peer reviewers for projects of national interest. In Chile a second wave of tertiary education reform is being supported by a competitive fund for diversification (development of the non-university sector) and quality improvement (of all tertiary institutions). Venezuela, Mexico and Brazil are encouraging the formation of advanced human capital in science and technology through competitive funding mechanisms. In all of these cases, international peer reviewing experts figure prominently.

In some cases, there may be a compelling argument to open several windows or to set up compensatory mechanisms to create a level playing field between strong and weak institutions. In Indonesia, three different windows were designed to serve universities

accordingly to their actual institutional capacity. In the latest tertiary education project in China, the top universities are required to form a partnership with a university in a poor province to be able to compete. In Egypt, the Competitive Fund in the Engineering Education Reform project had a special window for technical assistance to help the less experienced schools of engineering prepare well-formulated proposals. Also, proposals which included a partnership agreement between a stronger university and a weaker one received additional points for evaluation purposes. In Chile, a special window has recently been opened to provide preparation funds for universities requiring assistance in strategic planning and sub-project formulation.

Guiding the customers: Quality Assurance in Tertiary Education

The World Bank has supported the formation of national quality assurance systems in a number of countries. This is a necessary instrument in diversifying tertiary education systems. In some instances the Bank has helped establish specific accreditation mechanisms as required, but the general strategy has been to move towards comprehensive systems that cover the entire tertiary education landscape and that are consistent with international developments in standard setting, evaluation and accreditation. In Indonesia, the World Bank supported the introduction of accreditation mechanisms in a project to improve teacher training standards in public institutions. It started with a pilot program to define a set of standards by which all teacher training institutions would be evaluated and establish a baseline for institutional development. Small planning grants were made available to the five institutions which participated in the pilot to enable them to do a self study which was then externally evaluated and validated. The pilot study proved useful in generating acceptance for accreditation as a mechanism to improve the quality and relevance of teacher training. In the same country, the Bank has supported the establishment of the National Accreditation Board for Higher Education.

Sometimes, two sets of policy interventions can be mutually reinforcing in a synergetic way. In Indonesia, Romania, Argentina, and Chile for instance, only programs which are evaluated by the respective national quality assurance system are eligible to compete for innovation and quality enhancement grants. Brazil has a long standing tradition and positive experience from supporting its graduate programs in this way (CAPES).

Many tertiary education projects supported by the World Bank have also facilitated the introduction or development of management information systems (MIS) at the national and institutional levels, on the assumption that neither the state nor individual institutions can formulate and implement reforms without effective monitoring and management tools. In Argentina, for instance, the Bank-financed project helped put in place a network of Intra- and Internet linking all the public universities among each other and with the outside world. Software for all dimensions of academic management were also developed and put together into an integrated MIS which provides information at the level of each individual institution as well as consolidates this information into a program run by the national tertiary education authorities for monitoring and planning purposes. Even though many universities were circumspect at first, they ended up embracing these innovations with enthusiasm because it helped them invest in modern information and communication technologies and provided them with useful management tools.

Promoting an Enabling Framework for International Public Goods.

Some consequences of globalization and the growth of borderless education are turning into important issues which affect tertiary education in all countries but are often beyond the control of any one national government. Among those challenges of particular concern to countries seeking to build up their advanced human capital capacity are the new forms of brain drain, the absence of a proper international accreditation and qualifications framework, the lack of clear rules for the protection of intellectual property rights of distance education programs, and issues of access to information and communication technologies, including the Internet. There may be a need for global institutions such as the World Bank to get involved directly with its partners in the international community in efforts to create a discussion platform and promote an enabling framework for global public goods which are crucial for the future of tertiary education in the developing world.

With respect to the brain drain dimensions, at the very least, donor agencies should not contribute themselves to this trend through their cooperation programs and projects, notably those supporting professor and student exchanges between tertiary education institutions in developing and transition nations and universities in industrialized countries. Clear rules of conduct should be defined and adhered to among donor agencies in order to facilitate the return of professionals trained overseas with external funding. These rules could even be extended to all public agencies in the donor country following the example of the British National Health Service that has adopted ethical guidelines excluding recruitment from any country likely to suffer a negative effect on its own health care services. Another possible approach could be to promote increased reliance on “sandwich” or joint degrees, whereby scholars from developing countries who study in a foreign institution receive their degree from their home institution within the framework of established academic partnerships. A third dimension, suggested by the experience of the German Academic Exchange Program (DAAD) which includes, as part of its scholarship funding, resources to purchase the minimum working equipment and material needed by returning scholars as well as travel funds to allow them regular visits to their professors to update their skills and knowledge. The World Bank could work with client countries to ensure that capacity building activities include measures to create a favorable work environment for national researchers and specialists. Finally, considering the high opportunity cost born by countries losing their advanced human capital to the brain drain, and the corresponding net gain for the recipient economies, the possibility and feasibility of introducing a special tax on qualified immigrants from developing countries could be envisaged.

The rapid development of virtual providers of tertiary education programs on a global scale, the increasing mobility of professionals across national borders, and the absence of quality assurance infrastructure and capacity in many developing countries make it important to establish an international quality assurance framework that can establish minimum common standards to guide countries and individuals. This is already happening in some regions of the world. For instance, the tertiary education policies of transition countries in Eastern Europe are very much influenced by the international coordination efforts to promote mobility, employability and competitiveness that are

taking place in Europe as a result of the 1999 Bologna declaration, the 2001 Prague Declaration and the 2001 Salamanca convention. In South America, the Ministers of Education of the Mercosur countries (Brazil, Argentina, Uruguay, Paraguay, Chile and Bolivia) have defined a minimum accreditation framework to facilitate the circulation of professionals from all member countries in their common labor market.

In addition to the support provided through accreditation projects in individual countries, the World Bank could contribute towards the goal of establishing an international qualifications framework through consultations with partners in the donor community and specialized professional associations, as well as through grants from the Development Grant Facility. Two sets of complementary initiatives could be envisaged. First, the Bank could provide technical and financial assistance to groups of countries intent on setting up regional quality assurance systems. The six Spanish-speaking countries of Central America, for example, are in the process of constructing a regional accreditation system instead of having each country creating its own quality assurance mechanism. Second, the Bank could support global quality assurance initiatives on a thematic basis, such as the current efforts of the World Federation for Medical Association towards the establishment of “International Standards in Medical Education.”

In the past few years, the World Trade Organization (WTO) has spearheaded international efforts to reduce national trade barriers. The inclusion in these negotiations of an increasing number of goods and services is now raising fears in the academic community, especially in developing countries, that WTO rules for tradable goods and services might extend progressively to tertiary education services. The specter of invasion by virtual and other non-traditional providers is leading some governments to take very conservative stands against foreign providers. In this context, the World Bank could work at both international and national levels to help define rules of conduct and appropriate safeguards that would permit to protect students from low quality offerings and fraudulent providers without constituting rigid entry barriers. The following principles could serve to guide governments, licensing bodies and tertiary education institutions: (i) minimum infrastructure, facilities and staffing requirements, (ii) appropriate, transparent and accurate information on policy, mission statement, study programs and feedback mechanisms of foreign providers, including channels for complaints and appeals, (iii) capacity building partnerships between foreign providers and local institutions, and (iv) comparable academic quality and standards including the full recognition, in home country, of degrees and qualifications delivered by foreign providers in a developing country.

A related issue faced by tertiary education institutions in developing countries is that of intellectual property rights for online programs and courses and for access to digital libraries and digital information. The current debate involves two diametrically opposite views. At one end of the spectrum, many universities in industrialized countries favor enforcing strictly commercial rules of protection of the intellectual ownership of digital courses and materials, either on behalf of the university itself or of its professors as intellectual authors. At the other extreme are the partisans of a public good approach who, following MIT's recent initiative to offer all its course materials free of charge on its website, advocate flow-cost access to digital courses, textbooks and journals for tertiary education institutions and scholars in the poorest countries. The World Bank

could play a brokering role to help create dissemination partnerships among publishing companies, universities in advanced nations and tertiary education institutions in developing countries along the model of the recently announced agreement among six leading publishers of medical journals to give free access to their scientific journals to more than 600 institutions in the poorest sixty countries of the world and low cost access to an additional 30 low income countries⁸.

Many developing countries, especially low income nations and small states, have limited resources to build up their information and communication technologies infrastructure. They also lack the economic and political leverage to negotiate favorable access and price conditions. As part of its commitment to contribute to decreasing the digital divide between advanced and developing countries, the World Bank can work with specialized international agencies such as the International Telecommunications Union (ITU) and INTELSTAT and large communication technology companies to support the efforts of the poorest nations of the planet. In the same way as the Bank was instrumental in negotiating, on behalf of the small countries of the Caribbean, the introduction of a special tax paid by the big cruise companies to finance waste management programs in that region, the Bank could intervene on behalf of low income and small states to help them get preferential treatment from telecommunications firms.

Strategic Framework for future World Bank support

Investment in tertiary education is an important pillar of development strategies emphasizing the construction of democratic knowledge economies and societies. In this context, the World Bank can play a supportive role along the following three dimensions:

- policy dialogue on tertiary education reforms
- knowledge sharing and lending to help implement reforms
- enabling framework for international public goods crucial for tertiary education development

Encouraging and Facilitating Policy Dialogue. In many countries, the relationship between the government and the university sector, and/or between public and private tertiary education institutions, is tense at best when not outright conflictive. Attempts at tertiary education reform are usually fraught with controversy. Proposals which are likely to affect established practices and vested interests are always met with fierce resistance and opposition by those groups most concerned by the intended redistribution of power and wealth. Under the right circumstances, the Bank may play a catalyst role in encouraging and facilitating the policy dialogue on tertiary education reforms. In the first place, the Bank can be a bridge builder by bringing to the same table various stakeholders who would not normally converse and work together. In the second place, the Bank can contribute information about a great variety of national and institutional experiences which can aliment the debate in a given country and offer objective elements on the range and content of policy options worth considering. This can lead to the formulation of a

⁸ Galbraith, K. (2001). "6 Publishers Will Give Poor Countries Free or Discounted Electronic Access to Journals." *The Chronicle of Higher Education*. July 10, 2001.

long term vision for the country's tertiary education system as a whole and of strategic plans at the level of individual institutions.

Social assessments can also be used for the purpose of identifying stakeholders concerns and addressing issues that are potentially controversial. The first social assessments for tertiary education projects were carried out in Indonesia, Jordan, Chile and China. In Indonesia, the analysis caused the universities in the outer islands to include young academics recently returned from graduate studies overseas in the self evaluation task-forces which had before been composed of established faculty members. All stakeholders were methodically consulted - students, parents, faculty members, employers and community leaders, and the assessment results proved invaluable in ascertaining their respective aspirations and suggesting acceptable reform instruments with respect to issues of access, gender, internal perceptions and employer expectations. In Chile, a thorough stakeholder analysis led to changes in the government's communication strategy during project preparation, including the inclusion of students in the government's project preparation team.

Supporting Reforms through Knowledge Sharing and Project Funding. The World Bank can contribute to the actual implementation of reforms through knowledge sharing and lending. It will give priority to supporting tertiary education reform programs which can bring about positive developments and innovations in the following areas:

- increase in institutional diversification to expand coverage and establish a lifelong learning framework with multiple points of entry (including construction of accessible pathways from secondary to tertiary education, articulation mechanisms across tertiary education segments, and capacity building for distance learning);
- strengthening of science and technology research and development capacity (possibly in selected areas linked to a country's priorities for the development of comparative advantages);
- improvement of the relevance and quality of tertiary education;
- promotion of greater equity mechanisms intended to create and expand access and opportunities for disadvantaged students;
- establishment of sustainable financing systems to encourage responsiveness and flexibility;
- installation of management information systems for improved accountability, administration and governance;
- enhancement and expansion of information technology and communications capacity to reduce the digital divide.

This menu of priority areas does not apply equally to all countries at all times. The relative emphasis and mix of interventions appropriate for any given country is very much linked to its specific circumstances at both the macroeconomic and the tertiary education levels. Income level, size of the country, existence of a post-conflict situation are all important factors to be taken into consideration. In setting priorities for the appropriate mix of lending and non-lending services in any given country, the Bank should be guided by the following criteria:

- Need to change, reflecting the gravity of issues faced by the country's tertiary education system and the degree to which change is urgently needed. For example, in countries with rapid growth of low quality private institutions, setting up an accreditation / evaluation system would be of high priority.
- Willingness to reform, based on the government's commitment to implement reforms and its ability to mobilize the major stakeholders in support of the reform agenda. Having already undergone a consensus-building exercise and formulated a national vision on the future of tertiary education would be a clear sign of reform readiness.

In establishing and applying this evaluation matrix, it is important to distinguish between first and second generation reforms. First generation reforms, which aim at addressing core problems of tertiary education systems (financing, efficiency, equity, quality assurance), are the first steps in moving from one way of doing things to a more appropriate approach. These include for instance changing from open-ended admission to selective access, introducing cost-sharing through fees and reduced subsidies in institutions which did not charge anything, establishing accreditation and evaluation in unregulated systems, transforming scholarships into student loans, creating non-university institutions alongside traditional universities, adopting the academic credit system, starting to rely on formula funding, etc.

Second generation reforms are undertaken by countries which have already dealt with their basic problems but need to do some fine-tuning to take first generation reforms one step further or to correct some unintended effects. Examples would be extending the eligibility of a student loan program to all tertiary education institutions in a diversified system, introducing flexible mechanisms of articulation and credit transfer among institutions, or establishing competency-based evaluation mechanisms for online courses. In Chile, for instance, a framework for lifelong learning is being established and financing mechanisms like student loans applicable to all types of tertiary education institutions are under consideration. In Korea, the government recently launched a seven-year US\$ 1.2 billion investment plan for tertiary education institutions. The plan, known as Brain Korea 21, is essentially a new incentive financing scheme which offers institutions matching funds awarded on a competitive and selective basis to induce them to excel in cutting-edge research training areas such as biotechnology and information technology. Similarly Brazil, Mexico, Chile, and Venezuela provide incentives through highly competitive mechanisms to world-class research training via the Millennium Science Initiative supported by the Bank.

Operational Implications. Based on the lessons of recent experience about the relative effectiveness of different forms and types of support, the following operating principles will be applied to guide Bank intervention in client countries. Bank support should be:

- appropriate to the specificity of a country's circumstances;
- predicated on strategic planning at national and institutional levels;
- focused on promoting autonomy and accountability;
- sequenced in agreement with the time requirements of the capacity building objectives; and

- sensitive to the political dimensions of tertiary education reform

Selected Bibliography

Blom, A., Holm-Nielsen, L.B. and D. Verner. 2001. *Education, Earnings and Inequality in Brazil 1982-1998, Implications for Education Policy*, the World Bank, 2001

El Khawas, E., with R. de Pietro-Jurand and L. Holm-Nielsen. 1998. *Quality Assurance in Higher Education: Recent Progress; Challenges Ahead*. The World Bank, Washington DC.

García Guadilla, C. 1998. *Situación y Principales Dinámicas de Transformación de la Educación Superior en América Latina*. UNESCO/CRESALC, Caracas.

Gibbons, M. 1998. *Higher Education Relevance in the 21st Century*. The World Bank, Washington DC.

IDB (Inter-American Development Bank). 1999. *Higher Education in Latin America: Myths, Realities, and How the IDB Can Help*. Washington, DC.

IHEP (Institute for Higher Education Policy). 1998. *Reaping the Benefits: Defining the Public and Private Value of Going to College*. Washington, DC.

Kisilevsky, M.. 1999. *Circuitos públicos y privados en la universidad argentina: señales desde la encuesta de hogares*. Pensamiento Universitario. Universidad Nacional de Quilmes, Buenos Aires.

Nelson, R. ed. 1993. *National Innovations Systems: A Comparative Analysis*. New York: Oxford University Press.

OECD (Organisation for Economic Co-operation and Development).

_____. 1998. *Redefining Tertiary Education*. Paris.

_____. 2001. *Education Policy Analysis: Education and Skills*. Paris.

Salmi, J. 2000. *Tertiary Education in the Twenty-First Century: Challenges and Opportunities*. LCSHD Paper Series No. 62. The World Bank, Washington DC.

UNESCO (United Nations Education, Science and Culture Organisation). 1998. *Higher Education in the Twenty-first Century: Vision and Action*. Final Report of the World Conference on Higher Education. Paris.

_____. 2000. *Science for the Twenty-First Century: A New Commitment*. Final Report of the World Conference on Science. Paris.

Varghese, N.V.. 2001. *Economic Crisis and Higher Education in East Asia*. UNESCO, International Institute for Educational Planning, Paris.

Wagner, A. 1998. *Tertiary Education and Lifelong Learning: Perspectives, Findings and Issues from OECD Work*. OECD / IMHE, Paris.

_____. 1999. "Lifelong Learning in the University: a New Imperative?", in Hirsch, W. and L. Weber, eds. 1999. *Challenges Facing Higher Education at the Millenium*. American Council on Education / Oryx Press, Phoenix, pp. 134-152.

World Bank/UNESCO. 2000. *Higher Education in Developing Countries: Peril and Promise*. Report of the Independent World Bank/UNESCO Task Force. Washington, DC.

World Bank. 1994. *Higher Education: Lessons of Experience*. Washington, DC.

_____. 1999. *Knowledge for Development*. World Development Report 1998/1999. Oxford University Press, New York.

_____. 2000a. *Republic of Korea: Transition to a Knowledge-Based Economy*. Report No. 20346-KO. Washington, DC.

Annex 1 - What are key issues in the New Tertiary Education Scenario?

Education and Training Experience

- How to promote sufficient direct communication and human interaction on wired campuses and in web-based courses, in order to build up critical thinking and social learning? What is an appropriate mix of face-to-face and online teaching?
- Faced with many program configurations and course options to choose from, how can students construct an adequate academic path on their own?
- Is there too much emphasis on science and technology programs? What are the prospects for humanities and social sciences? How can students acquire the values needed to live as responsible citizens?
- How can online students benefit from the international dimension of foreign studies (immersion in different culture)?
- How to maintain a strong sense of identity and community in institutions which serve heterogeneous student population?

Academic Management

- What type of mechanisms and arrangements are desirable and effective to introduce flexibility and strengthen the capacity to change, adapt and innovate rapidly?
- At the same time, how can stability be maintained in an ever-changing environment?
- How to promote inter- and multi-disciplinarity across traditional faculty and program boundaries?
- How to organize programs and courses for part-time students and returning graduates? Should one integrate them into regular programs or should separate programs be organized? Should different pedagogical approaches be used?
- Will the prestige of programs be based on the offering institution or the set of intervening professors? What is the future of tenure?

Use of Technology

- How to choose technologies adapted to the curricular and pedagogical objectives of the programs?
- What is the appropriate balance between “high tech” and “high touch” (degree of human interaction as counterbalancing human response to the use of technology)?⁹
- How to avoid over-reliance on technological gimmicks and loss of hands-on training opportunities?
- How to preserve linguistic and cultural identity as communication in a major world language becomes more and more imperative?

⁹ The concept of “high tech” and “high touch” was introduced by John Naisbitt in his 1982 book Megatrends: ten new directions transforming our lives. New York: Warner Books .

Financing

- How to finance the new educational technologies and related infrastructures in a sustainable way?
- How to prevent a growing digital divide among institutions and across countries?
- How can tertiary education institutions remain viable when financial support shifts to consumers, faculty members become more independent, and degrees fade in importance?

Governance

- How can universities with a decentralized set-up (autonomous faculties and departments) undertake the type of comprehensive change required by the new challenges?
- How to maintain a sense of academic mission in the face of emerging corporate behaviors, including the risk of corporate takeover?

Quality Assurance

- What evaluation and accreditation mechanisms and methods are appropriate for online and distance education programs?
- What evaluation methodology should be used to assess programs that involve a heavy use of information technology?
- How can national authorities exercise quality control over foreign institutions established in their countries? How will WTO and GATT rulings affect national governments' ability to regulate?
- Should there be a distinction between public and private no-for-profit on the one hand, and for-profit private institutions on the other hand?
- How can students access current information on the quality of online institutions and programs?
- How to organize and regulate credit transfer arrangements between campus-based and virtual universities, as well as among virtual tertiary institutions?
- How to maintain academic standards for part-time students?
- How to conciliate the demand for rapid program and course development and the need for careful quality review?

Intellectual Property Rights

- How to define and protect intellectual property rights in the case of educational materials prepared specifically for online use? Who owns online courses, the university or the professor? How should their use be regulated?
- How to reconcile the intellectual property rights and academic freedom of professors with the rights and interests of their home institutions?