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Higher Education in India: The Need for Change

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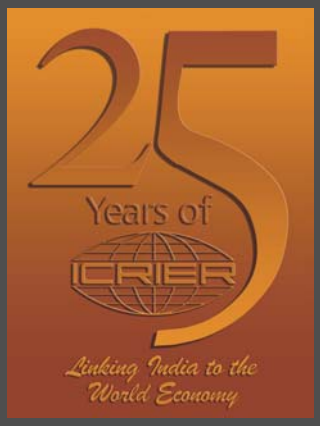

Working Paper No. 180

HIGHER EDUCATION IN INDIA

The Need for Change

Pawan Agarwal

June 2006

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Foreword

Higher education is critical to India's aspirations of emerging as a major player in the global knowledge economy. The global competitiveness of Indian industry and also its employment generation potential is clearly dependent on availability of required skills and trained personnel. But as several recent studies have revealed the overall state of Indian higher education is dismal and therefore poses a severe constraint on the supply of qualified manpower. Despite remarkable progress in reforms covering a number of sectors and sub-sectors of the economy, there is little informed debate on reforms in higher education. This paper tries to fill this gap and lays down an agenda for reforms in the higher education sector in India.

The paper relates the growth of higher education in India to the changing funding pattern and suggests ways to ensure that higher education remains both affordable and accessible to all. The author emphasizes the need for greater adaptability in the higher education system so that it continues to provide the needed skills and trained workforce to the economy as it integrates with the world economy. Policy measures required to promote, sustain, and enhance world-class research are also included. Considering the weaknesses in the prevailing regulatory and quality assurance environment, the paper provides a roadmap for reforms towards improved accountability of the system.

The author, Mr. Pawan Agarwal has undertaken this work during his attachment with ICRIER as a part of the Fulbright New Century Scholars (NCS) Programme, wherein the author is collaborating with thirty other scholars from all over the world for understanding the challenges faced by higher education globally and the national response to them. He also brings to this work his professional experience of working in the Ministry of HRD, Govt. of India and the University Grants Commission (UGC) for over seven years.

It is expected that this paper will serve as a useful input for setting an agenda for change in higher education, shaping the prevailing opinion and mobilizing new constituencies to bring about the much needed change.

Rajiv Kumar
Director & Chief Executive (ICRIER)

June, 2006

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I shared the research findings with a number of academicians, educational administrators, researchers and professionals from higher education and research institutions in a seminar held on March 2, 2006 at ICRIER. I would like to thank the participants, who gave very useful inputs.

I am thankful to Ms. Suchitra Tanwar at ICRIER for providing valuable research assistance. I would like to thank Dr. Rashmi Banga, who provided useful insights from economic theory on market clearing process as applicable in higher education. Finally, I am grateful to my colleagues at ICRIER, and also those in the University Grants Commission and the Ministry of Human Resource Development for the support I got from them. But for the help and guidance of all the people that I mention and many others not even referred to here, this work could not have been completed.

Pawan Agarwal

June, 2006

Abstract

Higher education in India suffers from several systemic deficiencies. As a result, it continues to provide graduates that are unemployable despite emerging shortages of skilled manpower in an increasing number of sectors. The standards of academic research are low and declining. Some of the problems of the Indian higher education, such as – the unwieldy affiliating system, inflexible academic structure, uneven capacity across various subjects, eroding autonomy of academic institutions, and the low level of public funding are well known. Many other concerns relating to the dysfunctional regulatory environment, the accreditation system that has low coverage and no consequences, absence of incentives for performing well, and the unjust public funding policies are not well recognised. Driven by populism and in the absence of good data, there is little informed public debate on higher education in India.

Higher education in India has expanded rapidly over the past two decades. This growth has been mainly driven by private sector initiatives. There are genuine concerns about many of them being substandard and exploitative. Due to the government's ambivalence on the role of private sector in higher education, the growth has been chaotic and unplanned. The regulatory system has failed to maintain standards or check exploitation. Instead, it resulted in erecting formidable entry barriers that generate undesirable rents. Voluntary accreditation seems to have no takers from amongst private providers and apparently serves little purpose for any of its stakeholders.

Despite, its impressive growth, higher education in India could maintain only a very small base of quality institutions at the top. Standards of the majority of the institutions are poor and declining. There are a large number of small and non-viable institutions. Entry to the small number of quality institutions is very competitive giving rise to high stake entrance tests and a flourishing private tuition industry. The stakes are so high that quota-based reservation of seats in such institutions in the name of affirmative action has come to occupy centre stage in electoral politics. Despite some merit, it has resulted in fragmentation of merit space and further intensified competition for the limited capacity in quality institutions.

While public funding declined (in real terms), enrolments in higher education institutions grew to meet the surge in demand. This further deteriorated academic standards. As a result, the institutions were forced to raise their tuition fees to sustain themselves. Emergence of private providers and increase in tuition fees in public institutions without any substantial programme for students' financial aid has made higher education beyond the reach of the poor. The paper discusses feasible strategies to overcome this and make higher education affordable and accessible to all.

This paper takes a comprehensive look at the various facets of higher education in India. It adopts a systems approach for achieving policy coherence and multi-level coordination required to address genuine concerns in the Indian higher education on a long-term basis and uses the experiences of other countries to suggest measures to tackle its various systemic deficiencies.

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Introduction

More than thirty five years ago, Nobel laureate Amartya Sen analysed the crisis in Indian education in his Lal Bahadur Shastri Memorial Lectures on the 10th and 11th of March 1970 at Hyderabad. Rather than attributing the crisis in Indian education to the administrative neglect or to thoughtless action, he pointed out that the grave failures in policy making in the field of education require the *analysis of the characteristics of the economic and social forces operating in India, and response of public policy to these forces* (Sen, 1970). He emphasised that due to the Government's tendency to formulate educational policies based on public pressure, often wrong policies are pursued. Unfortunately, even today, the education policies (*if any*) - particularly on higher education, seek to achieve arbitrarily set goals that are either elusive or pursued half-heartedly.

In addition, the public policies on higher education are not based on long-term concerns. These policies do not carefully weigh the trade off between seemingly contradictory goals and ignore the fact that the markets are now the main arbitrators of resource allocation. The role of the government is to create an open environment and more demanding standards of transparency and accountability so that the markets function efficiently[1]. Also, the government has to strike a delicate balance between growth and an equitable and inclusive development.

The policy has to take into consideration the forces of globalisation and the prevailing socio-economic realties. A country's endowment of its traditional factors of production - land, labour and capital determine its economic strength and therefore its comparative advantage. Between the two extremes- land (a 'fixed' endowment for a nation) and capital (a 'highly mobile' endowment), labour and particularly the quality of labour has become the key determinant for the competitiveness of a country. Therefore, it is not surprising that, in an economy, there is a strong correlation between endowment of skilled labour and its ability to generate higher levels of gross domestic product (GDP) per worker.

An analysis of enrolment in higher education across nations suggests that there is broadly a positive correlation between gross enrolment ratio (GER)[2] in higher education and per capita GDP of nations (Table A1). Higher education in science and mathematics is particularly important (Hanushek and Kimko, 2000). This is understandable since higher education has an important role in imparting useful and usable skills; and science and mathematics skills are particularly crucial in the knowledge-based modern economy.

There is near unanimity about the fact that the economic role of higher education is not its primary role. Yet, employability of graduates is a significant factor in determining the success of higher education effort in country. In this context, it needs to be understood that role of higher education or for that matter education at all levels in inculcating human values to build democratic civil societies is so important and obvious that it requires no discussion. These aspects need to be integrated with education at all levels.

Higher education trains people to take up different economic roles in society and spurs technological innovation that drives economic growth. It is important that the country's capacity in higher education is aligned to the demand for skills from the economy, which would include the demand for teachers from the education system itself. Since higher education itself cannot create jobs; a mismatch between the demand and the supply of quality and number of graduates would lead to unemployed graduates and / or a shortage of graduates with certain kind of skills.

Today, we face the harsh reality of growing unemployment among graduates that co-exist with skill shortages in many areas. While dedicating a public-private partnership initiative at IIT, Delhi on March 20, 2006, the Prime Minister noted the fact that *sector after sector is facing a supply constraint when it comes to skilled, qualified manpower. According to him, this is unacceptable in a country of over a billion people where many are still unemployed or are engaged in low-income activities*.

The emergence of a global economy due to increased trade, investment and mobility of people and, more recently, work across borders has forced nation states to adapt their systems of higher education to the changed global realities. Rather than continuing with their inward looking policies, several countries are reshaping their systems of higher education for making them globally competitive. Pragmatism, rather than ideology, is driving this change. The United States of America (USA) has major plans for investment in higher education. The United Kingdom (UK) has injected new dynamism in the higher education sector through competition and incentives. China has undertaken a package of comprehensive reforms in higher education for over the past two decades. The government in China has declared education, science and technology to be the strategic driving forces of sustainable economic growth.

In contrast to the developments in the above-mentioned countries, India is still basking in the glory of some of its initial success centring on the Information Technology (IT) sector. Although some amount of success in the IT sector could be attributed to government policy, most of it is for other reasons such as (i) a large population base with sizeable numbers having English language skills, (ii) innate abilities of the Indians with their good analytical skills that came in handy in modern economy and (iii) success of a few institutions that promoted merit and attracted very bright Indian students.

With the opening of the Indian economy, the entrepreneurial spirit of the Indians was unleashed. The new breed of entrepreneurs saw a big opportunity in meeting a huge unmet demand for job-oriented education and training. This resulted in a huge expansion of private higher education and training sector in the country. However, instead of embracing the growth of private higher education, the public policy has been apologetic about it. One often sees conflicting signals coming from government reports and pronouncements. The financing of higher education by the government has been marginal, which remains at less than half a per cent of GDP despite often heard statements made by the government to increase it to 1.5 per cent. The expenditure per student has declined rapidly over the years. Accountability mechanisms in the higher

system are in disarray. Unlike many other countries, one does not see a clear direction for change in the higher education system in India.

Despite the fact that the USA has the finest system of higher education in the world, it has set up a commission[3] to examine the future of higher education recently (in September 2005). The mandate of the commission is to ensure that America remains the world's leader in higher education and innovation. For this purpose, the USA intends to make an investment of US $134 billion in higher education over the next ten years.

In the UK, higher education is primarily in the public sector. Faced with problems of deteriorating standards due to inadequate funding and failing accountability, a number of innovations in financing of higher education, such as the performance-based funding for teaching and research and portable students' aid etc. were introduced during the last decade. This helped the UK higher education to regain its place as one of the best systems of higher education in the world. In a politically sensitive and a tough decision, the UK government[4] has now allowed the universities to compete for students and charge variable fees, bringing an end to the regulated fee regime in the UK.

Reforms in higher education in China were initiated along with other economic reforms when China decided to become a market economy in the year 1978. Prior to that, higher education was in the public sector. There was no tuition fee. The government also took care of living expenses of the students. Since then, the system of higher education in China has radically changed. The concept of cost-sharing and cost recovery was introduced in the early years of reforms. Tuition fees have now been made compulsory. The higher education institutions in China were expected to diversify their revenue sources and, therefore, they were allowed to have affiliated enterprises (Sanyal and Martin, 2006).

Higher education in China received an increased financial allocation from the government along with an increased support from alternative sources. With massive expansion in enrolment, the average funding per student was not allowed to be reduced. Through a national legislation in 2002, China proactively involved the private sector to contribute and invest in higher education. That has paved way for a very rapid growth of higher education in China. With a view to nurture excellence, a selective approach in public funding was adopted. In 1993, special financial allocations were provided for China's top 100 institutions to upgrade them to international standards. In the year 1998, an even higher-level funding was provided to nine top universities to make them world class.

In 2003 in an integrated package for reforms in higher education, the government in Australia decided to increase funding support for higher education and significantly enhance provision for subsidised loans and scholarships for students. The higher education reform package in Australia includes areas as diverse as teaching, workplace productivity, governance, student financing, research, cross-sectoral collaboration and quality (Commonwealth of Australia, 2003).

Apart from the USA, the UK, China, and Australia, several other countries have taken up ambitious programmes to reform their higher education sector. It is realised that though primary and secondary education is important, it is the quality and size of the higher education system that will differentiate a dynamic economy from a marginalised one in the global knowledge-based economy. Technological changes and demographic dividend provide India a unique opportunity to mobilise its human resources to become a leader in both the rapidly expanding sectors of services and highly skilled manufacturing. The higher education sector holds the key to harnessing the full potential of the nation's most important resources-- the human resources. The need for change in this sector is, therefore, crucial.

The objective of this paper is to identify the weaknesses in the higher education system in the country and discuss the lessons learnt from the experiences of other nations. This paper provides a framework to enable better understanding of the complexity of the higher education system in India. It outlines the causes of the problems higher education is facing in India and provides a direction for change.

Structure of the paper

The paper looks at higher education in India in a holistic manner and adopts a comparative approach for analysis. It undertakes a comparative analysis only with big and important systems of higher education to avoid drawing erroneous conclusions.

Section 1 of this paper maps the structure of the higher education system in India and its growth - both in terms of enrolment and the institutions. Section 2 deals with the issues relating to the financing of higher education. An analysis of actual funding – both by public and private sources-- has been done. In this section, a conceptual framework has been proposed and practical suggestions given on how higher education should be funded. . The concerns relating to the affordability of higher education have been specifically addressed.

Section 3 analyses the role of higher education in the development of workforce to meet the domestic as well as the global demand for qualified manpower. Section 4 of the paper evaluates the role of academic research in fostering innovation in the Indian economy, outlines the weaknesses and suggests the way forward. .

Section 5 discusses the regulatory environment for higher education, as it exists in India today. Specific areas of concern have been identified taking into consideration the emerging market structure for higher education and the peculiar nature of higher education as a service.. A revamped regulatory system has been proposed based on a regulatory framework that takes care of market failure and facilitates market coordination. Section 6 analyses the progress made on accreditation in India and points out that accreditation, as it exists today, serves little purpose. Specific suggestions for changes in accreditation system in India have been given in this section.

Section 7 of the paper deals with other important and contemporary issues related to governance, academics, profession, using technology in teaching-learning, branding

and advertising, private tuitions and coaching, trade, statistical system and policy research. In Section 8, recommendations and suggestions are consolidated in a framework for action. This section begins with an emphasis on the need for a strategic shift under the changed circumstances. It then proceeds to provide a matrix of all actionable points that would enable the stakeholders to initiate action.

1 Higher education system in India

Education in ancient India was highly advanced as evident from the centres of learning that existed in the Buddhist monasteries of the 7th century BC up to the 3rd century AD Nalanda (Perkin, 2006). In these centres, gathering of scholars-- *gurukula*-- used to be engaged in intellectual debates-- *parishads*-- in residential campuses. A few of these centres were large and had several faculties. Historians speculate that these centres had a remarkable resemblance to the European medieval universities that came up much later. The ancient education system in India slowly got extinguished following invasions and disorder in the country.

Till the eighteenth century, India had three distinct traditions of advanced scholarship in the Hindu *gurukulas*, the Buddhist *viharas*, and the Quranic *madarasas*, before the British set up a network of schools to impart western education in English medium (Perkin, 2006) The first such college to impart western education was founded in 1818 at Serampore near Calcutta. Over the next forty years, many such colleges were established in different parts of the country at Agra, Bombay, Madras, Nagpur, Patna, Calcutta, and Nagapattinam. In 1857, three federal examining universities on the pattern of London University were set up at Calcutta, Bombay and Madras. The existing 27 colleges were affiliated to these three universities. Later, more universities were established. At the time of independence in 1947, there were 19 universities and several hundred affiliated colleges (CABE, 2005a).

The higher education system in India grew rapidly after independence. By 1980, there were 132 universities and 4738 colleges in the country enrolling around five per cent of the eligible age group in higher education. Today, while in terms of enrolment, India is the third largest higher education system in the world (after China and the USA); with 17973 institutions (348 universities and 17625 colleges) is the largest higher education system in the world in terms of number of institutions. The number of institutions more than four times the number of institutions both in the United States and entire Europe. Higher education in China having the highest enrolment in the world (nearly 23 million) is organized in only about 2,500 institutions. Whereas, the average enrolment in a higher education institution in India is only about 500-600 students, a higher education institution in the United States and Europe would have 3000-4000 students and in China this would be about 8000-9000 students. This makes system of higher education in India as a highly fragmented system that is far more difficult to manage than any other system of higher education in world.

1.1 Level and type of higher education institutions

There are different types of universities and colleges in the higher education system in the country. They vary in terms of their academic, administrative and financial arrangements. Universities can either be established by an Act of Parliament or by the state legislatures. Those established by the Act of Parliament are the central universities and the ones set up by the state legislatures are state universities. Some higher education institutions are granted the 'deemed to be university' status by the central government through gazette notifications. A few institutions are established by the Parliament / state legislatures as institutions of national importance. Universities, deemed to be universities and institutions of national importance are degree-granting institutions.

The universities could be of unitary type with single or even multiple campuses or of affiliating type. The concept of an affiliating university is unique to South Asia where a university affiliates colleges. These colleges conduct teaching-learning under the academic supervision of the university to which they are affiliated. The colleges do not award their own degrees, but award the degree of the university to which they are affiliated. A detailed discussion on the affiliating system along with its impact on the quality of higher education in India is provided in Sub-section 5.3.1.

Though there is no clear demarcation, the colleges mainly focus on undergraduate education while the universities impart post graduate education and conduct research. In addition, there are many institutions like the Indian Institutes of Management (IIMs) that only award diplomas. These diplomas are however equated to degrees granted by the universities. Most universities and colleges offer multidisciplinary programmes, however, there are also some that are confined to a particular discipline only – such as agriculture, law, technology, language, medical etc. There are also open universities that offer distance education programmes only.

1.2 Academic structure

Higher education in India covers all post-secondary education beyond class twelve in different subject areas including all professional streams such as engineering and technology, medical, agriculture etc. It comprises three levels of qualifications - Bachelor's or undergraduate degree programmes, Master's or post graduate degree programmes and the pre-doctoral and doctoral programmes [Master of Philosophy (M.Phil.) and Doctor of Philosophy (PhD)]. Normally a bachelor's programme in India requires three years of education after twelve years of school education. In some places honours and special courses are also available. These are not necessarily longer in duration but indicate a greater depth of study. The bachelor's degree in professional field of study in agriculture, dentistry, engineering, pharmacy, technology and veterinary medicine generally takes four years, while for architecture and medicine, a bachelor's degree takes five and five and a half years respectively. There are other bachelor's degrees in education, journalism and librarianship that are treated as second degrees. A bachelor's degree in law can either be taken as an integrated degree programme lasting five years or a three-year programme as a second degree.

The master's degree is normally of two-year duration. It could be based on course work without a thesis or on research with a thesis. The M.Phil. degree is a pre-doctoral programme taken after completion of the master's degree. This can be either completely research based or can include course work. A PhD degree is awarded two years after the M.Phil. degree or three years after the Master's degree. The students are expected to write a substantial thesis based on original research for the award of a PhD degree.

1.3 Mapping the growth in higher education

The system of higher education in India has seen an impressive growth since independence. The number of universities has increased from 25 in 1947 to 348 in 2005. The number of colleges has increased from 700 in 1947 to 17625 in 2005. The total enrolment increased from a meagre 0.1 million in 1947 to 10.48 million in 2005 (Table A2). The colleges that are affiliated to 131 universities constitute the bulk of the higher education system in India, which contribute around 89 per cent of the total enrolment. Figure 1 gives the trends in the growth of institutions and enrolment in higher education in India.

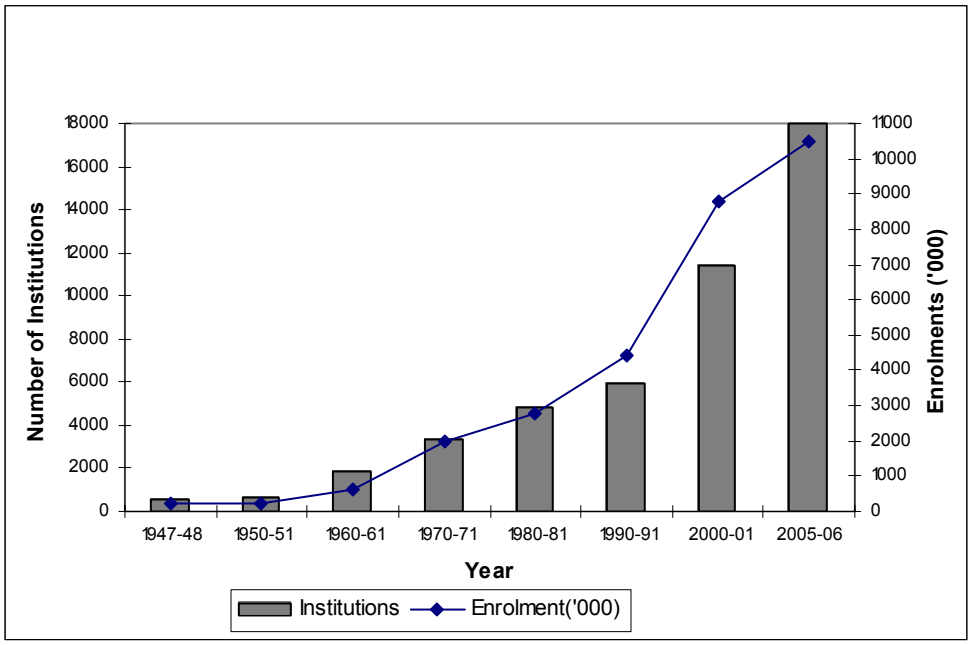


Figure 1: Growth of institutions and enrolment in higher education

The growth of higher education in India can be divided into three phases. The first phase was from 1947 to 1980 followed by second phase from 1980 to 2000. The third phase is from the year 2000 onwards. The three phases are discussed below.

1.3.1 Growth of higher education till 1980

Till about 1980, the growth of higher education was largely confined to arts, science and commerce. The government not only supported higher education by setting up universities and colleges, but also took over the responsibility of running the

institutions set up through private sector. These came to be known as grant-in-aid (GIA) institutions or private aided institutions. In such institutions, though the private sector financed a major part of the capital costs, public subsidies were provided to them to meet a part of the recurrent costs and occasionally for some capital works. Public funding was accompanied with considerable regulation of private institutions by the government (World Bank, 2003). Over the years, several private institutions had set high academic standards for themselves. With government regulation, their autonomy was compromised and standards went down. In effect, this led to the *de facto* nationalisation of private higher education and gave serious blow to the community-led private initiatives in higher education in the country. (Box 1).

Box 1: Private aided institutions in Bihar

In the 1970s, setting up of private colleges was a gainful business in Bihar. Given the large unmet demand for higher education, colleges were set up without proper infrastructure and facilities in the hope that the government would soon take over the responsibility of running them. Between 1975 and 1978, the state government took over the responsibility of running 286 private colleges, whereas in the thirty years prior to that only 17 private colleges were taken over by the state government.

Teaching in such colleges became a much sought after source of employment for mediocre housewives and indolent heirs of the power elite. Given the fact that such teachers got permanent tenures and government pay scales once government took over, this mode of employment as teachers became available for a price. This proved to be a de-motivating factor for the deserving ones who consciously opted for teaching as a career. Parasitism, patronage and sycophancy became accepted practice in the academic world. This killed private initiatives and led to retreat of community from an area, which rightly belonged to them.

Source: V.S. Jha Committee Report quoted in the Times of India on 21 March, 2005.

1.3.2 Growth of higher education from 1980 to 2000

In the 1980s, there was an unprecedented demand for quality higher education relevant to the needs of business and industry, putting considerable stress on governmental resources. Also, there was a substantial increase in the population in the middle and higher income groups, which could afford to pay higher tuition fees. This made the non-subsidised higher education a viable enterprise. Faced with such a situation, the state was left with no alternative but to allow the entry of private enterprise in the area of higher education.

Economic reforms in early 1990s saw the middle class grow bigger, younger and richer. These reforms also saw a rise in entrepreneurship in the country. The rising demand of higher education from the growing middle classes and the growing culture of entrepreneurship together accelerated the pace of growth of private higher education in the country. During this period, very few universities and colleges were set up by the government sector and fewer still were also brought within the ambit of government funding. In a way, this period was marked the near withdrawal of the government from taking over of additional responsibility for higher education in the country.

1.3.3 Growth of higher education from 2000 onwards

Till the late 1990s, the expansion of higher education largely took place through affiliated colleges. By then, many promoters of private unaided colleges began to realise that the regulatory mechanisms of the affiliating university and state governments were inhibiting their growth and did not allow them to fully exploit their market potential. The promoters were not able to make money from their educational enterprises. Such institutions explored the possibilities of wriggling out of the control of the state governments and the affiliating universities.

Some of the institutions took the deemed to be university route to get the degree granting powers. Though, universities in the country are either set up by an Act of Parliament or State Legislature, however, certain institutions are also given the status of a deemed to be university in terms of section 3 of the UGC Act, 1956. Earlier this provision was used sparingly to declare premier institutions offering programmes at advanced level in a particular field or specialization as a deemed to be university to enable it to award degrees. Indian Institute of Science at Bangalore and Indian Agricultural Research Institute at Delhi were the first two institutions to be declared as deemed to be universities in 1958 for education and research at advanced level in the field of basic sciences and agriculture respectively.

Over the last five years, there has been sudden jump in the number of deemed universities. In the early years, this privilege was extended only to the government / government aided institutions. Manipal Academy for Higher Education (MAHE) – a pioneer in private higher education became the first totally self-financed institution to be declared as a deemed to be university in 1976. After 2000, when the provision for conferring the deemed to be university status to a de novo institution was introduced, there was sudden spurt in the growth of deemed to be universities in the private sector. Between 2000 and 2005, 26 private-sponsored institutions got the deemed university status. Though the deemed to be universities do not have affiliating powers, many of them have a number of campuses spread throughout the country. In this way, the new entities were able to wriggle out of the oversight mechanism of the affiliating universities. They were also able to overcome the service area restrictions associated with an affiliating university. This intensified the competition in higher education in the country.

Meanwhile, many state governments realised that education was on the concurrent list of the Constitution and that they could establish private universities through legislation. By early 2005, seven private universities set up in different states were recognised by the UGC. This also led to a new state - Chhattisgarh in central India indulging in an astounding misadventure by allowing the setting up of 97 private universities with all India jurisdictions in the year 2002. This was struck down by the Supreme Court in February 2005 leaving the fate of nearly fifty thousand students registered in these universities hung in balance; the future of those who acquired degrees from these so called universities remains uncertain.

The Chhattisgarh case cited above illustrates the fact that there are a number of loopholes in the regulatory system in the country. Given an opportunity, the private providers would resort to such misadventures. The fact that they resorted to such stratagems in connivance with a state government indicates a major policy lacuna in the higher education sector in the country.

1.4 Emergence of new types of providers

The post-1980 period saw the emergence of new types of providers of higher education in India. During this period, the private institutions proliferated, the distance education programmes gained wider acceptance, the public universities and colleges started self-financing programmes, and foreign institutions started offering programmes either by themselves or in partnership with Indian institutions and the non-university sector grew rapidly.

1.4.1 Private institutions

In the post-1980 period, a few institutions were set up by religious and charitable trusts of repute for philanthropic purposes. Most other higher education institutions were set up by individuals or family groups. These were not financially dependent on the government and came to be known as private unaided institutions. According to Altbach (2005b) such family-style higher education institutions are a part of a worldwide trend. In such institutions, the family members remain directly involved in the administration, governance, financial control and direct and / or indirect ownership of the institution. These are *de jure* not-for-profit institutions; however, most of such institutions in India exhibit several characteristics of the private-for-profit institutions as elsewhere in the world. Such institutions are often referred to as self-financing institutions. For the sake of convenience, we shall call these as '*private*' institutions as distinct from '*public*' institutions that would include both government as well as private aided institutions. Table A3 gives the number of institutions and enrolment in 2000/01 and 2005/06 for various types of institutions.

1.4.2 Distance education providers

Distance education in India had its genesis in the early 1960s. It started as correspondence education -- a supplementary method of education to meet the growing demand for higher education. Since then it has expanded rapidly, particularly over the last two decades. In 2005, there were 12 open universities [including the Indira Gandhi National Open University – (IGNOU)] and 106 dual mode university distance education institutes / centres in the country, catering to over 2.8 million students. Each year, nearly 1.3 million students register for various courses in these universities. (Garg et al, 2006). This was considered as an economical and a quick way of increasing enrolment in higher education.

The emergence of distance education has been a major development over the last two decades. There are diverse types of providers offering a variety of programmes. The regulatory bodies have little control over them. They operate in different ways and sometimes at cross purposes with each other. The growth has been haphazard and the quality is both unsatisfactory and uneven (NIEPA, 2006). Also, there is an anomaly of the

major provider - IGNOU being the regulator. The regulator for distance education – the Distance Education Commission (DEC) is a part of IGNOU. This results in conflict of interest with IGNOU getting a preferential treatment over the other distance education providers from the regulator.

Nowadays, the boundaries between distance education and on-campus education are in a continuous process of convergence, and it is likely that the future interrelations between them will be marked both by a growing competition and a growing cooperation (Sarah, 1999).

1.4.3 Self-financing courses in public institutions

Since the 1990s, there has been an acute resource constraint in public financing of the higher institutions. This had put a brake on the expansion of the public university system. Enterprising public institutions had no option but to start self-financing courses to meet the student demand. Higher education institutions charge the students tuition fees not only to cover the operating costs, but even generate surplus from self-financing courses. The courses were obviously offered in subjects having a demand in the market, such as engineering and technology, medicine, teacher education at the undergraduate level, computer applications and management at the postgraduate level. The fee structure in conventional courses in public institutions continues to be low. The revenue from fees is often adjusted from government grants. As a result, the revenues from self-financing courses along with distance education courses form the main source of revenue for most public universities and colleges.

1.4.4 Foreign education providers

There is a craze for foreign education evident from the trend of a large number of Indian students going abroad for studies. Sensing a huge unmet demand for professional education, a number of small operations have sprung up in different parts of the country. As per a study conducted by NIEPA, 131 foreign education providers were identified to be operating in India in 2005 enrolling around a few thousand students in the country. The study found that the majority of the foreign education providers offer vocational or technical programmes. These were mainly from the USA or the UK. These were twinning arrangements or programme-based collaborations. There is no major foreign education provider operating in India through its offshore campus or branch campus. Vast majority of students enrolled in programmes offered by foreign providers were financed from personal funding sources. A little more than a quarter also took education loans. The fee levels were usually very high (Bhushan, 2006).

Though, in terms of its size and impact, the foreign education provision is small in the country, yet necessity to regulate foreign providers and due to serious concerns about its quality, there has been focus on foreign providers for over a decade now.

1.4.5 Non-university sector

The post-1980s saw the growth of the non-university sector to meet the immediate demand of skills from a growing economy. There was rapid expansion of polytechnics and industrial training institutes for the training of supervisors in industrial setting

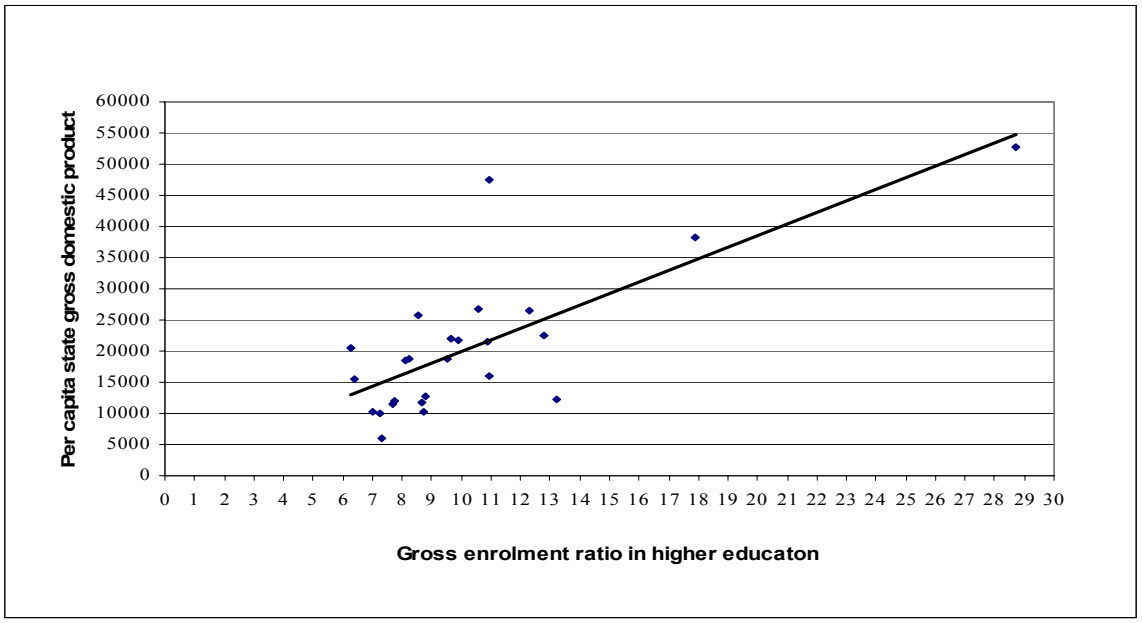
training of workers in various skills, respectively. The capacity addition in these two categories of institutions was largely through private sector. In addition, private for-profit training providers emerged to meet the growing demand for usable training.

1.5 Analysis of growth pattern

1.5.1 Transformation from elite to mass higher education

At the time of India's independence, the capacity of higher education system in India was small. It catered to a small elite group only. With the expansion of higher education, we now have a system that caters to a much larger number. The expansion has also democratised higher education. A large number of students from the lower socio-economic strata constitute a sizeable proportion of the total enrolments in the country comprising about thirty to forty per cent of the enrolments. The enrolment of women students has seen a consistent upward trend from 10 percent in 1950/51 to 40 percent in 2003/04. Though participation of women students and students from scheduled castes, scheduled tribes, and the minorities is rising over the years, it is uneven across disciplines. Their participation in technical and professional programmes is pretty low (NIEPA, 2006).

Despite the enrolment in higher education for the country as a whole increasing over the years, it varies widely across different states in India. These differences are not only linked to variation in government expenditure on higher education, but also to the per capita income, percentage of people below poverty line and the extent of urbanisation in different states. Generally, states with a higher enrolment in universities and colleges are those with higher ratio of urban population and a lower percentage of population below poverty line. (Anandakrishnan, 2004).



SDP - state domestic product; GER – gross enrolment ratio

Figure 2: Correlation between per capita SDP and GER - Year 2002/03

Viewed in terms of income of the states, most states that show above-average enrolment are also the ones with per capita income above the national average as shown in Table A4. Figure 2 shows the relationship between gross enrolment ratio (GER) in higher education and the per capita state domestic product (SDP). The coefficient of correlation between them is 0.5663. This suggests that the two are positively correlated, though the direction of this relationship cannot be established. It is difficult to say whether higher SDP per capita leads to greater participation in higher education or alternatively, if the higher GER would result in greater prosperity measured in terms of higher SDP per capita. Despite the difficulty, this often pushes public policy towards expansion of higher education.

1.5.2 Trend towards privatisation

Growth trends in India show that the higher education sector was controlled by the government till about 1980. After that there has been a clear trend towards privatisation of higher education. Figure 3 shows the growth of higher education institutions in the country in the period between 2000/01 and 2005/06. This is based on the data provided in Table A2. Whereas the number of public institutions – both government and aided institutions has increased only marginally, private institutions have increased significantly. Nearly 30 per cent enrolment is in private unaided institutions, which do not receive any grants from the government. The growth has been predominantly in institutions offering professional courses. Private universities and foreign education providers that financially independent are also emerging on the scene. In future the number of government and private aided universities and colleges is not likely to increase significantly while the number of private unaided higher education institutions may increase.

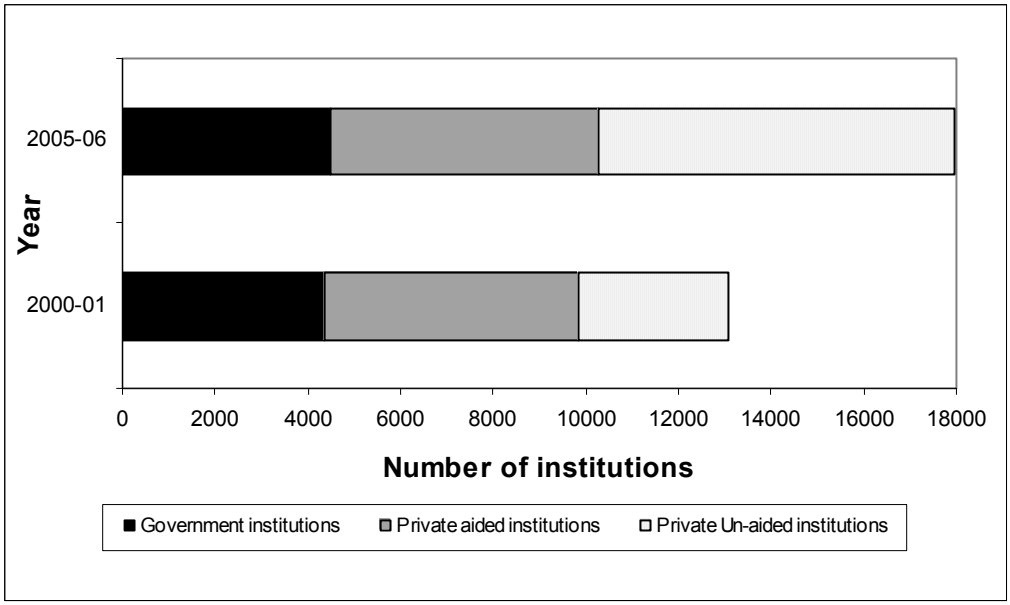


Figure 3: Growth of higher education institutions (2005/06 relative to 2000/01)

According to Bray (1998), privatisation, by definition, is a process, rather than a state. It is the process of moving from less public ownership financing and/or control to more private ownership, financing and/or control. Therefore, in privatisation, the dimensions of ownership, financing and control are present. In the Indian context, the dimension of control will have to be viewed from both the academic and administrative angle. Whereas administrative control is normally linked to financing, the academic control would depend on whether or not an institution has degree-granting powers. The understanding of public versus private ownership and financing and academic and administrative control of various types of higher education institutions in the country is essential for studying the dynamics of the Indian higher education system. Table 1 summarises the ownership and financing arrangements in various types of higher education institutions in India.

Table 1: Typology and growth trends of higher education institutions

Type	**Ownership**	**Financing**	**Number of institutions***	**Number of students***	**Growth trends**
Universities under the Government	Public	Public	240	1,000,000	Not growing
Private Universities	Private	Private	7	10,000	Emerging on the scene
Deemed Universities (Aided)	Private or Public	Public	38	40,000	Growing slowly
Deemed Universities (Unaided)	Private	Private	63	60,000	Growing rapidly
Colleges under the Government	Public	Public	4,225	2,750,000	Not growing
Private Colleges (Aided)	Private	Public	5,750	3,450,000	Not growing
Private Colleges (Unaided)	Private	Private	7,650	3,150,000	Growing rapidly
Foreign Institutions	Private	Private	150	8,000	Emerging on the scene
Total			***18,123***	***10,468,000***	

*Source: Author [** these are approximate figures based on analysis of primary data for the year 2005/06]*

Financing in this case refers to the meeting the operating costs and is not related to the initial investment. Promoter either government or a private entity makes initial investments in infrastructure and facilities of a university or a college. This gives them the ownership. These are usually in the name of the government or the non-profit society or trust that sets up the institution. This is not of much consequence because infrastructure and facilities of educational institutions can not normally be alienated and put to any alternate use. Thus, the source and manner of meeting day-today expenses of the university or college determines its financing pattern.

The private unaided universities and colleges are financed through 'donations' and the like, most of which is paid in cash and either not accounted for or only partly accounted for in the accounts of the institutions. These payments, mostly at the time of admissions are referred to as *capitation fees*. Despite several laws being passed and interventions by various courts over the years against these practices, the practice of capitation fees continues. A detailed review and analysis of tuition fee policies in the private unaided higher education institutions in the country is given in section 5.3.

1.5.3 International comparisons

Over the last couple of decades, two trends in higher education have been observed worldwide: (i) towards transformation from elite to mass (or even universal) and (ii) privatisation. This subsection reviews these international trends from a comparative perspective. Though comparisons of international trends have their own limitations, analysis in international comparative perspective serves a useful purpose in developing a holistic view.

Trow (1973) classified higher education systems worldwide according to their enrolments. He defined the 'elite', 'mass' and 'universal' states when the GER ratio is 'less than 15 per cent; between 15 and 50 percent; and more than equal to 50 per cent respectively (Trow, 1973). In 2004, Brennan summarised the characteristics of the elite, mass and universal higher education systems. According to him, whereas elite higher education shapes the mind and character of the ruling class and prepares students for broad elite roles in government and society; mass higher education undertakes transmission of knowledge and prepares students for broad technical and economic elite roles; and universal higher education is concerned with adaptation of whole population to rapid social and technological changes (Brennan, 2004).

While, as per Trow (1973) classification, India with an enrolment ratio of around nine per cent is still an elite higher education system, at best moving toward a mass higher education system, in terms of absolute number of students, India has a very large system of higher education. With wide variations between rural and urban areas and across the states, higher education in India has very diverse characteristics. Whereas in urban metropolitan areas, enrolment in higher education mirrors that in the advanced developing nations, such as the United States (83%), Australia (74%) and the UK (64%), in rural hinterland, higher education enrolment is very low. Overall, the current enrolment

ratio at around nine per cent in India is within the range of countries with lower middle income countries (CABE, 2005). (Figure 4).

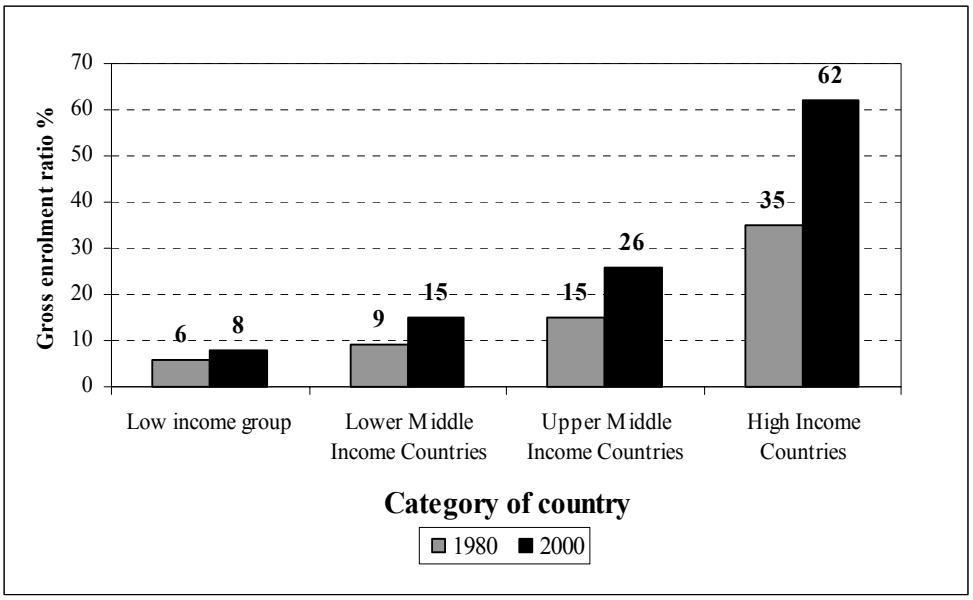


Figure 4: Gross enrolment ratios of various categories of countries

Further, higher education enrolment in a country would also depend on the occupational structure of its economy. Service economies of the developed countries have greater demand for higher education compared to a largely agrarian economy like that of India. While a detailed analysis of the linkages between higher education enrolment and occupational structure is in section 3.3.1, a quick perusal of data in Table A15 on enrolment and skill distribution of the labour force shows that countries with higher skilled labour force tend to have to have higher enrolment in higher education. GERs are roughly twice the share of skilled labour in the total labour force. Further, it shows that economies that have larger share of their labour force in the agriculture sector tend to have less participation agriculture. The three countries - China, India and Indonesia that have large share of their labour in agriculture have relatively lesser enrolment in higher education.

Apart from differences in GERs, what is interesting to note is that whereas in most of the developed nations the enrolments are either growing slowly or are stagnant, in case of emerging economies like China, Brazil, India and Malaysia, enrolments are rising rapidly. Figure 5 below gives the index of change of GERs in various countries between 1995 and 2003. Table A5 provides gross enrolment ratios of select countries from 1998/99 to 2002/03. This shows the changing pattern of enrolments in higher education globally.

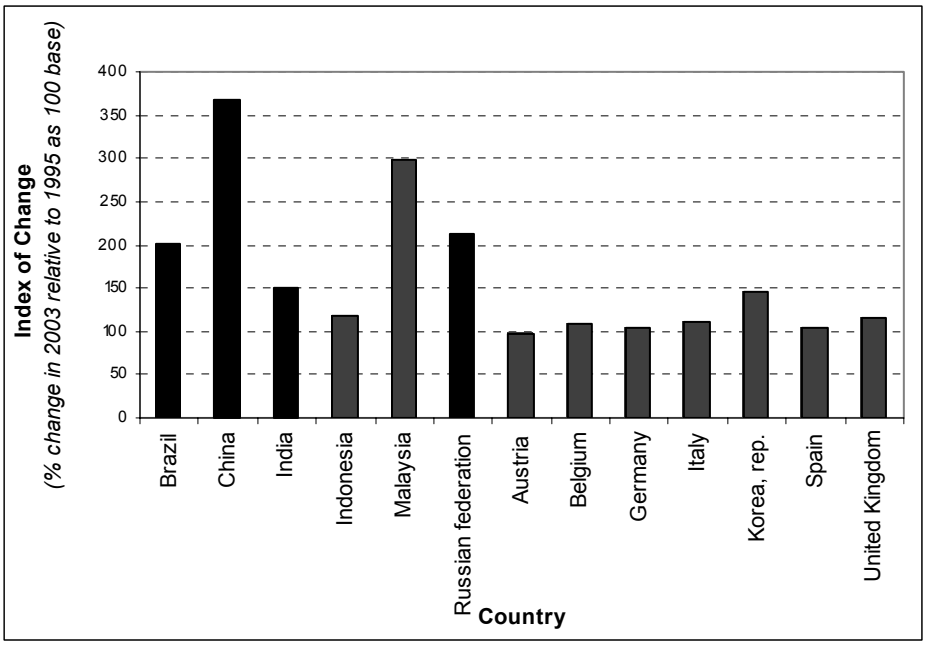


Figure 5: Change in the Gross Enrolment Ratio (GER) in various countries

In addition to growing enrolments, emergence of private higher education has been a worldwide trend in recent decades in different countries. Several common elements characterise this trend. Growth of private higher education has been in secular institutions that absorb the demand that the public sector could not or would not accommodate. Most private institutions are commercial-oriented (though they may claim to be otherwise) and prepare graduates for job markets. Majority of private providers are fully or almost fully tuition-dependent. These concentrate on first level teaching and learning. In most countries, private institutions are rarely the number one choice for aspirants. Public institutions that are mostly highly subsidised are still the most sought after institutions though today, an increasing number of private institutions strive for good if not for top academic standing, particularly in certain niche fields of study (Levy, 2006).

In many developing countries, private higher education has a notable and usually increasing role in higher education, at least in some of these countries private higher education has become the main venue for access and massification of higher education. Gradually over the last two decades, private higher education is moving from the periphery to the centre-stage of the higher education scenario in India. One sees similar trends in several Asian (Japan, Philippines and South Korea) and Latin American (Chile, Brazil and the Dominican Republic) countries. These countries have a majority of enrolments in private higher education. Though no region is unaffected, the growth of private higher education is more pronounced in developing rather than developed world (Levy, 2005). Table A6 shows the extent of private participation in different countries in the world.

Concerns arising out of growth pattern

The expansion of higher education system in India has been chaotic and unplanned. The drive to make higher education socially inclusive has led to a sudden and dramatic increase in numbers of institutions without a proportionate increase in material and intellectual resources. As a result, academic standards have been jeopardised. (Béteille, 2005). There are many basic problems facing higher education in India today. These include inadequate infrastructure and facilities, large vacancies in faculty positions and poor faculty, outmoded teaching methods, declining research standards, unmotivated students, overcrowded classrooms and widespread geographic, income, gender, and ethnic imbalances. Education in basic sciences and subjects that are not market friendly has suffered. Research in higher education institutions is at its lowest ebb. There is an inadequate and diminishing financial support for higher education from the government and from society. Many colleges established in rural areas are non-viable, are under-enrolled and have extremely poor infrastructure and facilities with just a few teachers.

Apart from concerns relating to deteriorating standards, there is reported exploitation of students by many private providers. Ensuring equitable access to quality higher education for students coming from poor families is a major challenge. Students from poor background are put to further disadvantage since they are not academically prepared to crack highly competitive entrance examinations that have bias towards urban elite and rich students having access to private tuitions and coaching.

A series of judicial interventions[5] over the last two decades and knee-jerk reaction of the government to the judicial pronouncements - both at the centre and state level, and the regulatory bodies without proper understanding of the emerging market structure of higher education in India has further added confusion to the higher education in the country.

With changing circumstances, three near certainties about higher education: (i) it is supplied on national basis to the local students; (ii) it is government regulated and (iii) competition and profit are unknown concepts in higher education, have received a serious blow. With growing student mobility[6] and the increasing demand in the global labour market for the highly skilled, higher education has now gone international. With the entry of a large number of private and foreign providers, there is intense competition in the higher education sector. The students and academics now have the choice to opt for the best deal.(The Economist, 2005b).

In the new global realties of competition and increased mobility of students and workforce, there is a need coherent and national strategic vision and policy framework for higher education in the country is called for, which would encourage all higher education institutions - public and private- to be more innovative and responsive. Public funded higher education has to be strengthened. At the same time, barriers to entry and operation of private institutions need to be removed. This paper looks at the various

aspects of reforms in higher education in India in a holistic manner to evolve an informed agenda to improve higher education in India.

2 Financing higher education in India

Financing higher education is the key theme in the debate on higher education the world over. With the landscape for higher education changing rapidly, one cannot think of a stable funding structure for higher education. The future of financing higher education cannot be merely an extension of the present but shaped by new realties, such as massive growth in enrolment, new mechanism of cost sharing, the appearance of new cross-border suppliers, the emergence and growth of different types of public and private higher education providers, distance education and many other innovations.

Consistent with these realties, new and flexible ways of tackling financing issues in higher education have to be found. This would require alternative policies and mechanisms to provide answers to these challenges. Sanyal and Martin (2006) have identified the following *seven key factors* that would affect the new funding trends for higher education:

a. The massive expansion of enrolment;
b. The incapacity of the state to fund such an expansion;
c. The vigorous emergence of the private higher education;
d. The tendency to cost sharing by students and their parents;
e. The importance of accountability;
f. The emergence of new providers; and
g. The need for funding by the states to reduce growing inequalities in access.

Starting with a discussion on the principles for funding higher education, this section reviews the existing arrangements for financing higher education in India and compares the same with other countries. Based on this, recommendations with specific action points have been given both to ensure a sustainable arrangement for financing higher education in India and also to see that higher education opportunities are available to all irrespective of their capacity to pay for it upfront.

2.1 Basic principles

The cost for higher education is to be essentially borne by the government or taxpayers (as grants), parents or their substitutes (as tuition fees), students and / or individuals (by availing loans or doing part-time work) and donors (individuals or institutional). Donation for higher education is not a universal phenomenon and plays an insignificant role in financing higher education in most countries. This is mostly found in the USA and the UK, and in a limited way in a few elite institutions with wealthy alumni in other countries. . The debate, therefore, is essentially whether the higher education should be paid for by the general taxpayer or its beneficiaries, i.e., the students or their parents.

Financing of higher education by the government is justified on the ground that education, being a public good or at least a quasi-public good produces many positive

externalities. Positive externalities would mean that since the society at large rather than the individual benefits from higher education, the government should finance higher education. It is widely accepted that education helps in social mobility; therefore it is an effective instrument for promoting equity. Justifications given for public subsidisation of higher education include imperfections in capital markets that inhibit students from borrowing against uncertain future returns of higher education and market failures due to asymmetric information. . Finally, the production process in higher education is believed to be subject to economies of scale or decreasing returns to scale. Hence it is considered more efficient for the government to provide higher education (Tilak, 2005).

Several arguments against public subsidisation of higher education have been put forth (Tilak 2005). The social rates of returns of higher education are found to be lower than private returns. It is argued that public subsidisation of higher education subsidies mainly accrue to the rich, particularly in elite higher education systems in India. This is regressive and increases income inequalities by transferring resources from the poor to the rich. It is contended that with public subsidisation by the state, education institutions become vulnerable to government control; which is not desirable in higher education institutions. It is argued that since higher education has very low price elasticity, the cost recovery measures in higher education would not lead to any significant fall in enrolments. In fact, additional resources available for higher education would improve access; this would also lead to improvement in quality. Private provision of higher education is also considered more efficient and, therefore, desirable.

Despite differences, there is no opposition to public subsidisation of higher education *per se*. However, it is now realised in most parts of the world that there is a 'limited' scope for increased public spending on higher education; therefore, cost recovery is perhaps the only way forward. Though it may be desirable that higher education in its entirety is funded through tax revenues, with competing and politically more popular claim for public funds from other sectors of economy, this is hardly feasible. There is a general view that primary and to some extent secondary education are more effective instruments for promoting economic and social development. As a result, even within the education sector, higher education gets lower priority in budget allocation.

2.2 Existing funding arrangements

2.2.1 Overall funding

Higher education in India is primarily funded by the government – central or state governments and the households. An optimal level of funding is required for maintenance of reasonable standards of higher education. This may vary across subject areas and across the country. However, with a view to estimate the overall requirement of funds for higher education, an average unit cost of Rs.60000 per annum per student is taken. Based on this norm, for an enrolment of 10.48 million, an annual expenditure of Rs.628.8 billion is desired on higher education in India. Additional funds are required for new infrastructure and facilities for expansion of enrolment. Further, living and transport expenses are borne by the students and parents directly.

Against the desired expenses of Rs.628.8 billion on higher education, the government spends around Rs.190 billion per year. This figure has been arrived at on analysis of the budgeted expenditure on education by the government for the year 2004/05. The budget estimate – 2004/05 for higher education (including technical education) for the central government and the state governments taken together was Rs.131.4 billion. Please see Table 2 below. Taking into account an increase of five per cent per year as per historical rate of increase, this is estimated at Rs.145 billion during the current year. It is estimated that the government spends another Rs.45 billion every year on post-secondary education in the agriculture and the health sectors. Altogether, the central and the state governments spend Rs.190 billion per year on higher education in India.

Table 2: Public expenditure on higher education in India (2004/05 BE)

Operating expanses are generally under non-plan, where capital investment comes from plan.

Amount in Rs. billion

	Higher education	Technical education	Other	Total
Central government				
Plan	6.40	7.50	0.65	14.55
Non-plan	11.57	8.45	0.45	20.47
Subtotal	***17.97***	***15.95***	***1.10***	***35.02***
State governments				
Plan	4.94	5.41	1.25	9.15
Non-plan	72.72	12.52	4.02	87.20
Subtotal	***77.66***	***17.93***	***5.27***	***9.635***
Total	**95.63**	**33.88**	**6.37**	**131.37**

Source: *Analysis of budgeted Expenditure on Education (2002/03 to 2004/05), Ministry of HRD. Govt. of India*

Direct estimates of private spending on higher education in India are not available. Based on estimates by compiling data on the share of tuition fee income in the annual budgets of higher education institutions, it is seen that the contribution of households as tuition fees is around Rs.186.75 billion per year. Please see Table A7 for estimation of this figure. The sources of revenues other than tuition fees being small are inconsequential. These have been ignored in the estimates. The total annual expenditure on higher education works out to be Rs.376.75 billion per year Thus, against a desired expenditure of Rs.629.8 billion, Rs.376.75 billion (around sixty per cent) per year is being spent by the government and households together. Thus, there is a shortfall of about forty per cent. This shortfall would obviously get reflected in the poor standards of higher education in the country.

While estimating the shortfall, an average unit cost of Rs.60000 has been used. This is a conservative estimate based on author's own assessment of handling university finances in India. In 2004, a group of vice-chancellors had estimated the unit cost at Rs.100, 000 (AIU, 2004). Cost of higher education in India varies very widely across institutions and as per discipline and subject of study. In some cases, the unit costs are as high as Rs.200, 000 per student and in other cases, this is as low as few thousand rupees. The average unit is therefore indicative. The fact that the higher education in India is severely under-funded is corroborated a study by Tilak (2004). He found out that with the increasing enrolments in recent years, there has been a decline in per student expenditure in higher education. This decline has been drastic in the 1990s. He estimated this decline at 28 per cent points over a 12-year period from the year 1990/91 to 2002/03.

2.2.2 Public funding

Public expenditure on higher education (including technical education) has been less than half per cent of the GNP for over two decades. This constitutes around twelve per cent of the total public expenditure on education compared to around twenty per cent prevalent in most other countries (CABE, 2005b). Of the total government support for higher education, only about one-fourth comes from the central government[7]. The contribution of the central government to the overall expenditure (including household expenditure) on higher education in India is around ten per cent compared to more than thirty per cent by the federal government in the USA

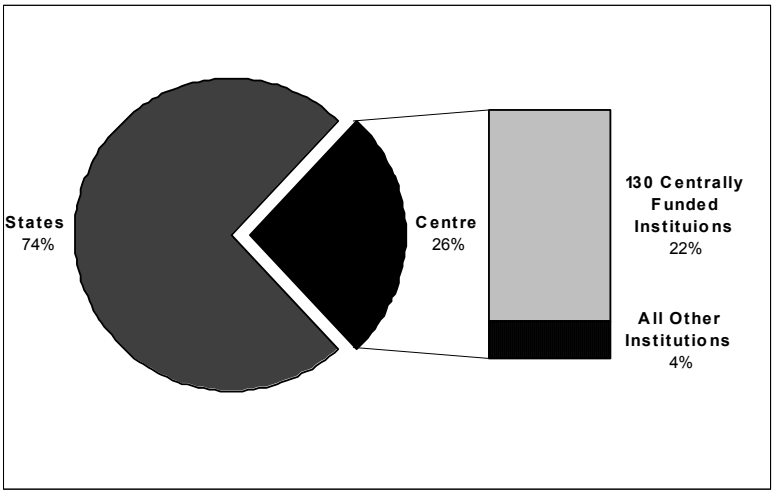


Figure 6: Distribution of public funding of higher education

On analysing the role of the central government in funding of higher education, it is seen that the funding is lopsided and limited. Eighty five per cent of the total central funding to higher education (including technical education) goes for supporting only about three per cent of students enrolled in around 130 out of a total of 17625 higher education institutions (HEIs) in the country. Even among the institutions funded by the central government, certain institutions like the Indian Institutes of Technology (IITs) are more liberally funded than others. Please see Table A8.

University Grants Commission (UGC) is the apex body for higher education in India. It is also the main funding agency of the central government. Whereas, around forty two technical institutions are funded by the central government directly, all others are funded through the UGC. Bulk of the expenditure on higher education is on revenue account and the capital expenditure is a negligible proportion of the total educational expenditure.

Nearly sixty five per cent of the budget of the UGC is meant for meeting the operating expenses of the central universities and Delhi colleges. The remaining 35 per cent plan budget is spent for the system at large. With only Rs.6 billion for about 5500 institutions, the level of funding is insignificant. It is also skewed in favour of central university system. Somehow, there is an impression that only the central university system is the primary responsibility of the UGC and the central government. This is evident form the fact that an additional amount of nearly Rs.5 billion allocated by the

Planning Commission in 2005/06 was almost entirely provided to central universities. With a view increase capacity in higher education institutions to accommodate students from other backward classes, an investment of nearly Rs.80 billion is planned. This amount would again go mainly to the central institutions.

In terms of its mandate, UGC is expected to inquire into the financial requirement of the universities (and colleges affiliated to them) and advise the governments to provide the same – a role that UGC never performed - perhaps for reasons of such exercise being futile due to the inability and unwillingness of the governments to meet the genuine requirements of higher education institutions in the face of financial constraints. The private un-aided universities and colleges are expected to be self-financing institutions and are expected to meet all their expenses from their own revenue sources, which is mostly from tuitions. They are not eligible for any public funding or UGC grants. Of the remaining 278 universities and 9975 colleges, 78 universities and 4648 colleges are not eligible for UGC grants; though these institutions get some grants from the respective state governments (Figure 7). These institutions either do not meet the minimum standards to be eligible for UGC grants or have not bothered to get UGC grants because of its trivial amount. In recent years, UGC's policy on the eligibility for its grants has become somewhat restrictive because of constraints of funds.

In all, majority of higher education institutions are not eligible for central funds. Those who get central funds find that the amounts are very small. A large numbers of institutions do not get any public funds at all.

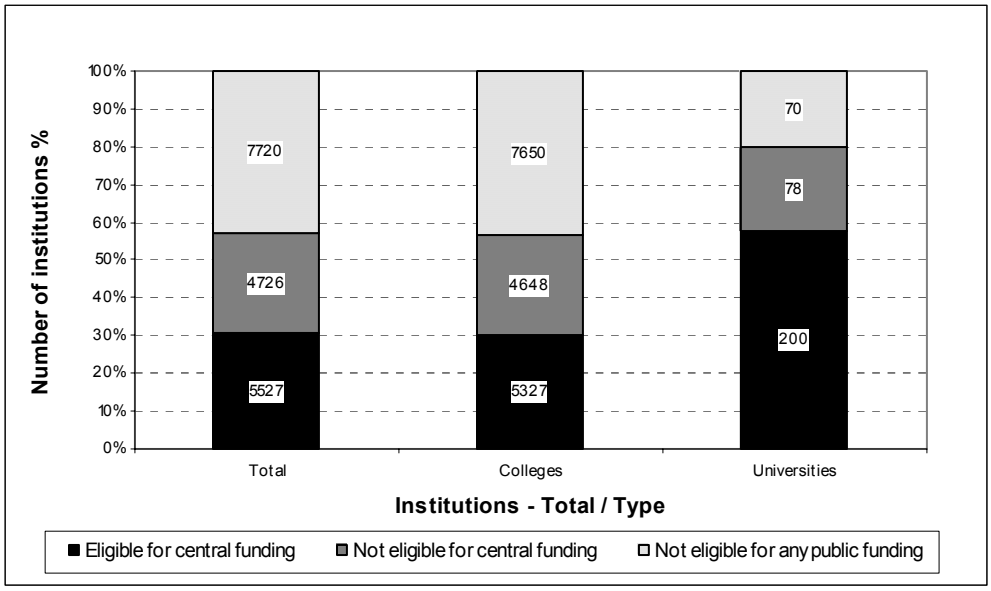


Figure 7: Universities and colleges with/without central and public funding

Only 130 institutions of higher education get operating budget support from the UGC / central government. More than 90 per cent of the grants received as operating budget go into salaries, pension and other per-emptive claims like water, electricity and

rental charges etc. and very little is left for library, laboratory and other academic activities.

Other institutions eligible for UGC grants get only the plan budget support for capital expenditure; even that is hardly substantial. On an average, a college gets merely around Rs.0.2 million or so each year whereas a university gets Rs.5 to 7 million per year as a development grant.

Most public funding for higher education is institution-based. It has an input-based deficit financing basis that is not only inefficient, but promotes status quo-ism. On an average, nearly eighty-five per cent of all public spending on higher education institutions is on salaries and allowances. Many old institutions have huge pension bills. Very little is spent on academic activities. In many institutions, the number of non-academic support staff far exceeds the number of academic staff. Policies adopted by most funding agencies in India adjust income from internal resources – mainly tuition fee income from the annual grants leaving no incentive for institutions to raise internal resources or raise tuition fees.

2.2.3 Fund allocation mechanism

The issue of the fund allocation mechanism is as important as the level of public funding. Several problems are faced in fund allocation mechanism. Austerity measures to control unproductive expenditure in the government are often extended to the government funded higher education institutions. This results in absurd consequences. Despite government policy to encourage institutions to raise internal resources, such resources when raised are adjusted from the annual grants of the institutions leaving them with no incentive to raise resources. Fund allocation is done on deficit basis. This neither promotes cost-effectiveness nor internal resource generation.

The *Punnayya Committee* (1992/93) pointed out that the existing mechanism of funding for higher education perpetuates inefficiency and suggested that the grant-in-aid system should be suitably modified to reward quality, efficiency and innovativeness. The committee recommended the replacement of the existing practice of negotiated block grants based on historical allocations by policy driven funding based on unit cost method. In 1997, the *Pylee Committee* was set up to develop a mechanism for computing unit costs. Apart from changing the funding mechanism, both the committees also advocated cost recovery by suitably revising, rationalising and enhancing tuition fees. Later, the Anandkrishnan Committee that examined the issue of maintenance grants to Delhi colleges funded by the UGC recommended that annual grants for the colleges should be based on faculty strength guided by optimum student- teacher ratio and teachers' work load.

Despite specific recommendations of these committees, the funding of higher education institutions in India continues to have a historical or political basis. The amount of funding that a higher education institution receives is based largely on what they received the year before or how powerful their friends are in the government or funding agency. As Hauptman (2006) points out, this approach tends to be more input driven and

is largely based on staff costs and institutional infrastructure needs. Whereas in many countries there is a shift to policy-driven funding by introducing policy variables into funding process (as in UK) or performance–based funding that recognise outputs rather than just inputs (as in US), funding process followed in India continues to on the basis of historical allocation.

With a view to achieve specific targets for improving quality, spur innovation and develop the management, several countries have effectively used the competitive funding process. The US was one of the first countries to introduce a competitive fund in 1972, with the creation of a Fund for Improvement of Post-Secondary Education (FIPSE). Later, many other countries followed. In India, UGC provides competitive grants to the eligible universities and colleges (those covered under Section 12B of the UGC Act) under various schemes to promote equity, relevance, excellence and research. Though these competitive grants have definitely helped the universities and colleges in taking up many new activities, no objective evaluation of such competitive grants has been made. The amount of such grants is not only meagre but is often cornered by a small number of eligible institutions.

With the increasing cost of higher education, strategies of helping students and their families to pay for higher education have become increasingly important component of financing higher education. These strategies include aid, which is funded or sponsored by the government; provided by the institutions themselves; or given by private individuals or organisations. In many countries (such as the US), student-based funding particularly to support students from poor background is a major responsibility of the government. In India, such an arrangement is nearly absent. A few schemes started from time to time are nothing but tokenism and do not have much impact. A detailed analysis of the same is in Section 2.3. In addition, in several countries, governments support individuals rather than institutions particularly researchers through competitive research funding.

In sum, revisiting the fund allocation mechanism for higher education in India is as important as increasing the allocations. There is a need for creating clear incentives for enhancing institutional efficiencies and improving productivity. Public funds should be used to address concerns relating to affordability due to rinsing cost of higher education.

2.2.4 Private funding

Direct estimates of private spending on higher education in India are not available. Based on estimates by compiling data on the share of tuition fee income in annual budgets of the higher education institutions, it is seen that the contribution of households to the revenue stream of higher education institutions in India is around 50 per cent, i.e. around Rs.190 billion. This is surprising considering that 43 per cent of the number of institutions and 30 per cent of enrolment is in private unaided institutions; many public institutions have self-financing courses and most public institutions have high tuition fees.

Another way of estimating private spending on higher education is using National Sample Survey (NSS) data. As per NSS (2003), there has been sharp hike in private spending on education over the last decade or so. The per capita private expenditure on education almost quadrupled from 1.2% in 1983 to 4.4% in 2003. In urban areas, the growth was a strapping 200% from 2.1% in 1983 to 6.3% in 2003. The rural sector showed a high growth of 262% from a mere 0.8% in 1983 to 2.9% in 2003. In absolute terms, households spent nearly Rs.335 billion on education in 2003. It is estimated that almost half of it goes into higher education. This works out to be comparable to the figure mentioned above.

There are however wide interstate variations. Private spending is higher in richer states, where government spending also tends to be high. Interestingly, private spending as a proportion of the total spending on education tends to be higher even in poor states. The reason is possibly due to the fact that government spending on education in poor states is so low that households need to spend more to fill in this gap. It would be fair to expect that a significant amount of this flows to the higher education sector (Table A9).

2.3 Cost recovery measures

The UNESCO WCHE declaration emphasised that the funding of higher education requires both public and private resources. This has been the rationale for adoption of policies towards shifting of some of the costs of higher education from the state to students, graduates or their families. There is now a global trend towards cost sharing phenomenon in which the burden of the cost of higher education is shifted from exclusive or near exclusive dependence on the government or taxpayers to some reliance on parents and/ or students.

It is generally feared that such shifting of cost of higher education from the taxpayers to individuals would damage access and equity. International experience however shows that introduction of tuition fees need not damage access and equity, provided they are linked with well-designed student support system, including targeted grants and student loans.

There are seven different forms of cost sharing arrangements seen worldwide. These are: (i) introduction of tuition fees (in China in 1997, in Britain in 1998, in Austria in 2001, and most recently in Germany in 2005); (ii) introduction of a dual tuition track with high level of fees for less meritorious students with capacity to pay (practiced in Russia, most of Eastern and Central Europe, India[8], Uganda), (iii) sharp rise in tuition fees (public universities in the United States increased their in-state fees by an average of 10 per cent in 2001-2002. Several institutions in India like the Indian Institute of Technology and the Indian Institute of Management have increased their fees sharply in recent years); (iv) imposition of user charges (happening in China, several African countries like Ethiopia, Mali and Guinea and the Nordic countries); (v) diminution of student grants or scholarships (done in Britain, Russia and most of the Eastern and Central countries);(vi) increase in the effective cost recovery of student loans through various measures, and (vii) encouragement of a tuition- dependent private higher education sector. This has happened in Japan, Korea, the Philippines, Indonesia, Brazil

and some other countries in Latin America. This has increased the participation of parents and students in cost- sharing, and even in profit- making institutions.

According to Johnstone (2006) cost-sharing is now a worldwide phenomenon. This takes the form of either tuition fees or 'user charges' to cover the living cost of students. This should be seen as shifting of financial burden of higher education attendance from the general taxpayers to the students and their parents. In the face of financial crisis faced by higher education systems worldwide, cost-sharing is no more an option, but an imperative. However, designing of an effective cost-sharing programme is essential to mitigate the risks that may be associated with it. Cost-sharing in the form of introduction of tuition should ideally be preceded by provision for means-tested financial assistance programmes as well as generally available students' loan programmes. In tuition-dependent private institutions, there is a need for some form of regulation of tuition fees. Further discussion on this is in Section 5.5.

2.4 International comparisons

The amount of funds allotted to higher education determines both the size and quality of higher education system in a country. There are several ways to measure the overall level of financial commitment to higher education, each with its strengths and weaknesses.

While comparing the public expenditure on higher education described as percentage of gross domestic product (GDP), it is seen that there are few differences between the developed and the developing countries. Both the developed Scandinavian countries and poor African countries like Lesotho and Barbados spend a high percentage of their GDP on higher education. Whereas the public expenditure of 0.37 per cent of GDP on higher education is comparable to that of Korea (0.34%), China (0.50%), and Japan (0.54%), it is much lower than the US (1.41%), Germany (1.13%), and UK (1.07%) (Table A10).The differences in the level of GDP and also different participation rates in higher education mask the relative efforts of different countries towards higher education.

Another measure is to compare the public expenditure per student across countries. It is noted that whereas developed countries spend close to US$10,000 per student per year, developing countries spend less than US$1000 per student. India spends merely US $400 per student. Even with currency adjustment, it works out to be much lower than the developed countries or even China (at US$2728 per student). Here again, at the very top of the list of countries with the highest per student spending is an odd mix of developed and less-developed countries. High fixed costs in universities result in very high cost per student in very small higher education systems (Hauptman, 2006),Table A10).

A still better measure to analyse financing of higher education by different countries is to combine the elements of the previous two and considering the amount spent per student as a percentage of GDP per capita. This compares both how many students are enrolled and how higher education spending relates to the overall economy. This also takes care of currency adjustments. As a general rule, it less than 50 per cent for

developed countries, while for developing countries it is generally more than 50 per cent; in some cases it might even exceed 100 per cent. For India, this is 83 per cent, compared to 53 per cent in China, 26 per cent in US, 31 per cent in the UK, 17 per cent in Japan and merely 5 per cent in Korea (Table A10). Despite the relative effort of the governments of Korea and Japan on higher education being small; these countries have already achieved universal higher education. In these countries, there is a sizeable private higher education and large part of higher education spending comes from private sources, mainly from the households. The USA is a unique case, where despite 66 per cent of all expenditure being met from private sources, the government spends a huge amount on higher education (Usher, 2006).

It is seen that 84 per cent in Korea and 57 per cent in Japan of all expenditure on higher education comes from private sources. In India, as per the analysis done in the previous section, nearly 50 per cent of the higher education expenditure comes from private sources. This is in fact more than many of the developed nations. For instance, only around 29 per cent of the funding for higher education in UK, around 14 per cent in France and less than 10 percent in Germany comes from private sources (Table A11). Jong Bloed (2005) notes that the countries such as the United States, Korea, Canada, and New Zealand that have been able to channelise a higher percentage of GDP into higher education raise substantial share of funding from alternate sources. These alternate sources are mainly students' contribution or private sources.

Despite the limitation of comparable data on financing higher education across countries, it becomes clear from the analysis above that only a very small percentage of India's GDP is spent on higher education and the country spends a very low amount on per student basis. According to Mazumdar Committee Report (2005), resource requirement for higher education from public sources ought to be 1.5 per cent of GDP. The report suggests that the total annual budgetary allocation for higher education (including technical education) needs to be raised to Rs.455.52 billion. A resource gap of Rs.351.69 billion has been worked out by the Committee. Despite its merit, it is impractical to expect the government to find such huge resources to allocate for higher education to bridge this gap. But there is definitely a strong case for enhancing the public funding for higher education in India. Relative effort made by the country for higher education being already large and in the face of competing demands on public resources, the scope for such enhancement is limited. Considering this, the increase in overall expenditure on higher education may therefore have to be from a greater contribution from students and parents.

In the final analysis, there is a case for increasing the funding for higher education both from government sources as well as private sources.

2.5 Affordability of Higher Education

Globally, responsibility of bearing the cost of higher education has shifted from the government (or taxpayer) to the parents and students. The limitations of public finance make charging of tuition fees inevitable. In some countries like Australia and the UK, this shift is deliberate or policy driven. In other countries like India, this is happening on its own, as the

consequences of resource crunch faced by public institutions on the one hand and the emergence of a significant private sector on the other. This shift is making higher education opportunities beyond the reach of a large section of the population. Therefore, this has to be accompanied with the introduction of suitable grants and loan programmes that are designed to be, as closely as possible, both need based and generally available to the academically prepared students without regard to the wealth or credit-worthiness of their parents or their individual career and earning prospects.

Higher education costs in India have gone up significantly in recent years. Full costs are recovered for most of the professional programmes whether these are offered in the private or public institutions. While fee levels may continue to be low in central universities that form a very small part of higher education in India, the fee levels[9] are quite high in many state universities, particularly those in Tamil Nadu, Karnataka, Kerela, Haryana, Punjab and Rajasthan. Figure 8 shows that nearly fifty per cent or more of the operating budget of many state universities (Madras University – 50.4 %, Bangalore University – 63.7 %, Panjab University - 50.4 %) in 2004/05 comes from fee income. In addition, living expenses have also gone up with inflation. In all, but for a very small section of public institutions mainly under the central government and in a few northern states in India, higher education in India is beyond the reach of students from poor background.

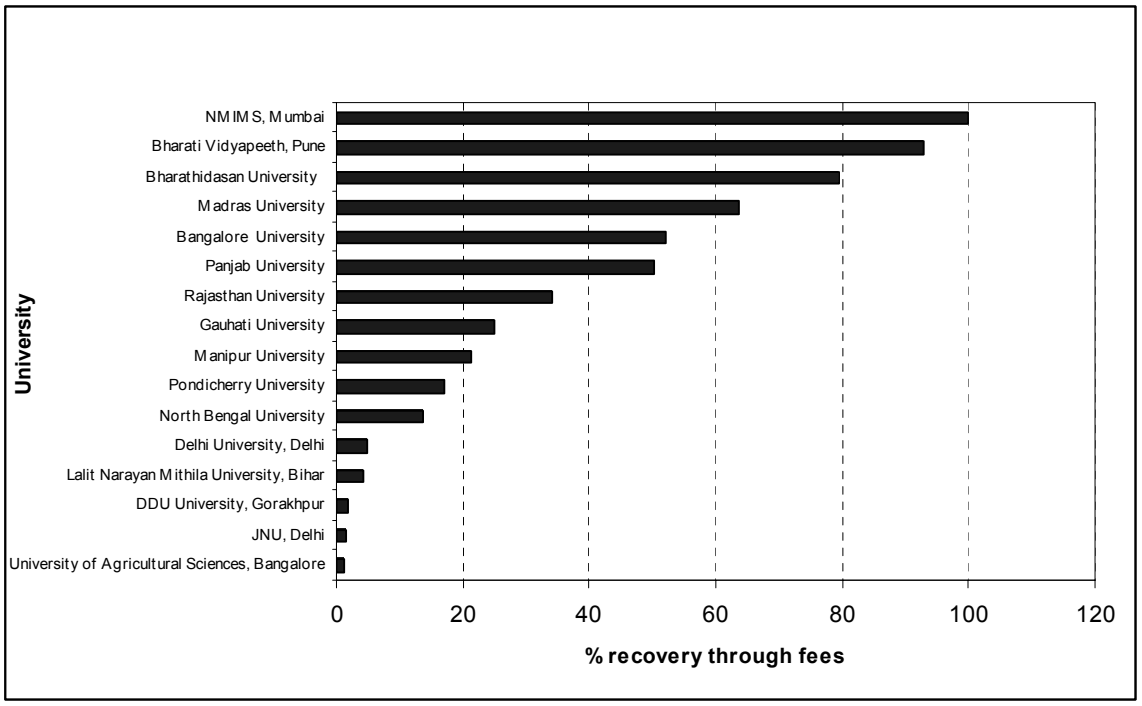


Figure 8: Percent cost-recovery through tuition fees (2004/05)

There are many government schemes of scholarship and free-ships available for scheduled castes, scheduled tribes, other backward classes, and even women for higher education. These schemes have been floated by the central government and the state governments from time to time. In some cases, schemes to support the weaker sections of society have also been started by institutions themselves. In spite of a plethora of schemes, the overall coverage is insignificant.

The amount spent on scholarship schemes is a pittance. Not only it is less than half a per cent of the total expenditure on education, it has been steadily declining over the years. This was merely Rs.250 million in 2003/04 (CABE Committee, 2005b). Most scholarship schemes, being blind to the needs, do not necessarily cover the poorest students. The amount of scholarship does not even cover full tuitions in many cases, particularly for professional courses. In many cases, due to cumbersome disbursement procedures, the assistance is not received in time. There are also reported leakages in disbursement. Despite specific reference in the Common Minimum Programme of the UPA Government that nobody would be denied professional education because he or she is poor, no major scholarship scheme for poor and needy to promote equity has been initiated.

In sum, it is noted that despite the rising cost of higher education making it beyond the reach of a large section of Indian society, there are little or no efforts to initiate steps to make higher education affordable to all.

2.6 Student loan schemes

Education loans have not been particularly popular way of financing higher education in India. A National Loan Scholarship Scheme started by the Central Government in 1963 was discontinued in 1991 because of its dismal performance, very low rate of recovery, unrealistic rate of scholarship and thin spread. In pursuance to a Supreme Court direction in 1995, the Reserve Bank of India circulated a loan scheme to all public sector banks in 1995. It started to pick up, however the education loan portfolio of banks in India remained small amount till late nineties. It was from the year 2001/02, when the Government of India announced a new comprehensive educational loan scheme to be implemented by the public sector banks in India that the education loan portfolio grew in India. Please see Figure 9 growth trend in students' loan in India over the years.

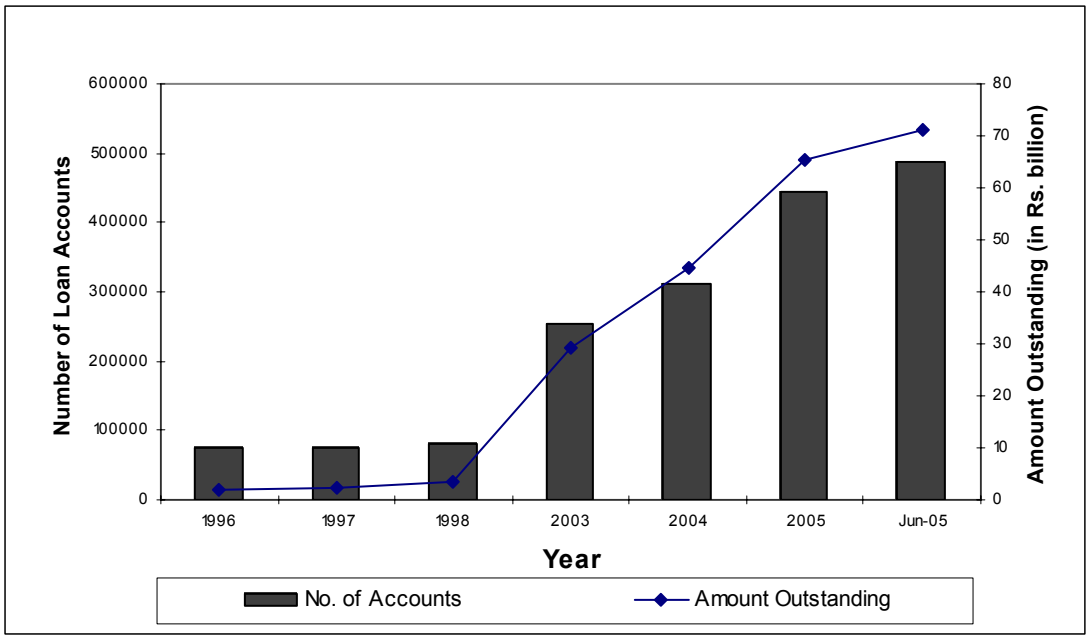


Figure 9: Growth of student loan portfolio in India

As of 30 June 2005, Public Sector Banks had a total outstanding exposure of Rs.71 billion against 488,000 education loan accounts. With less than 100,000 students (out of 3.5 million students graduating each year) availing education loans, financing of higher education through student loans is still insignificant. Only 2-3 % students avail of student loans. In comparison, 85 % students in UK and Sweden, 50% in USA and Canada and 77 % in Australia had availed of student's loans in recent years. (Usher, 2005). There are tax concessions available against interest on education loans. Its impact on the whole is not very significant either.

I-Tenable, a market research company conducted a comprehensive study of the students' loan performance in India.. The study covered 350+ branches of 78 banks covering public and private sector banks including foreign and cooperative banks in 20 cities in Maharashtra and Delhi. It was seen from the study that more than half of the banks did not offer students loans at all. For the remaining banks, student loan portfolio was only about 3.77% of their entire loan portfolio with personal loans, automobile loans and home loans constituting the major part of it. On analysis of the 7751 student loan cases of various banks across the state, it was found that the average loan amount was around Rs.0.3 million and interest rate 12.5%. Majority of students who availed of loans were pursuing professional degree programmes with 46.17% studying engineering, 22.64 % pursuing MBA and 12.71% doing medical programmes. Around 12.1 % of the students also took loans to pursue higher studies abroad. Only about 19% of the students who took loans were females. The default and delinquent levels in student loans were found to be extremely low with 1.1% and 0.7% figures respectively (I-Tenable, 2006).

I-Tenable also conducted a survey on the perceptions of the students towards education loans by interviewing more than 5,000 students across the state. It was noted that most of the students (around 81%) would take loans if these were available. Though the students found the amount of student loan adequate and requirement of collateral fine, but were wary of the time consuming and complicated processes of disbursement of loans, untrained bank staff, constraints of documentation, high rates of interests, and incomplete information with the bank branch's staff regarding students' loans (I-Tenable, 2006). Given the above problems experienced by the students, there is a way forward to make the student's loan programme successful in India. This requires amongst other things, simplification of the banking procedures and documentation and training of bank staff.

2.7 Findings and implications

The findings in this section along with their implications have been summarised in Table 3 below.

Table 3: Summary of findings and their implications

Finding	Implication
Growth in private sector-professional / vocational courses - *de facto* for-profit providers	Rising tuitions along with intense competition raising concerns about inequity and exploitation
Declining role of government in funding higher education – funding largely through tuitions	Poor standards in public institutions

Insignificant role of the Centre – Skewed funding pattern	Inability of the central government to steer change through public funding
Most public funds go to institutions on net-deficit financing basis rather than students / subjects	Funding mechanism promotes inefficiencies

Source: Compiled by the author

From the above discussion, it is clear that the overall funding for higher education in India is grossly inadequate. This is reflected in the falling standards of higher education that are endemic in the country. The role of the government in funding higher education is getting marginalised. Budgetary support for higher education did not increase to commensurate with expansion of enrolment in higher education in India. A large part of the higher education system is not even eligible for public funding, making the situation worse. The funding mechanism also requires a re-look.

The role of central government in funding of higher education is limited and uneven. With handful of central institutions that cater to less than two percent of the students getting nearly eighty five percent of central allocation for higher education, while other institutions that cater to much larger numbers are starved of funds, there is something unjust about the current system of allocate of central resource for higher education. State governments are required to provide bulk of the public funding for higher education. Faced with financial crunch, state after state are tightening their purse-strings for higher education and advocating upward revision of fees. Even states like West Bengal[10] support the view that the colleges should try to be self-sufficient.

It is seen from experience of the last two decades that the expansion of capacity in higher education has been largely through private initiatives. This will continue to be so. Government funding has to be used for revitalising the starved public higher education system. Public higher education would require significant one time investment and continued support. It needs to be realised that in a knowledge economy the size and growth of quality higher education would be the main differentiating factor between a dynamic and a marginalised economy. Therefore larger public investment in higher education is vital.

2.8 Action points on financing of higher education

2.8.1 Action points for sustainable financing of higher education

Considering the above reality, it needs to be realised that private sector would play an important role in increasing the capacity of higher education in the country. Public financing of higher education would fill in the critical gaps. To enable this, public funding has to increase significantly. It is equally important to improve the quality of expenditure by targeting it better. Specific recommendations to ensure sustainable financing of higher education in India are -

- There is a need to substantially enhance the level of funding for higher education in the country by both augmenting support from the government and ensuring greater contribution from the households.

- Funding agencies should gradually shift to a more transparent, rational and formula-based mechanism of funding[11] of public-financed higher education institutions. Institutions should be given adequate financial autonomy within a framework of greater accountability. Both teaching and research need to be supported separately. Funding mechanism needs to facilitate and encourage higher education institutions to raise internal resources, particularly to raise tuition fees to realistic levels.
- In future, little capacity creation and enrolment expansion is likely through government support. Most of it would be through private initiatives. However, public funding for higher education facilities in the underserved areas, such as in the far-flung states in the North East and Jammu and Kashmir shall continue to be required. Further, public funding shall continue to be necessary for academic programmes that the market may not support. These could include programmes that have strong social and cultural value and those that are aimed at promotion of science and scholarship to enhance the country's competitiveness on a long-term basis.

- Larger share of public funds, particularly central funds need to be assigned for student-based grants for providing access to students from poor background. This not only ensures better targeting of public funds by guaranteeing equal access opportunities for all, but also would ensure a more efficient and demand driven system of public funding.

- Student-centred funding should also be extended to accredited private institutions[12]. This would provide equal opportunities for all providers, be they public or private. This would lead to adequate balance in sharing of costs and benefits and enhance competition on the basis of quality. This would encourage private investment in higher education.

- Competitive grants to leverage change need to be increased manifold. The number of schemes for disbursement of such grants should be reduced through review and harmonisation of guidelines with a view to minimise the burden of implementation and enhance the impact through outcome focus. A greater objectivity and transparency in disbursements should be ensured by introducing a system of online submission and tracking of proposals for grants.

- Competitive and general development grants should be admissible to all public and genuinely not-for profit private institutions. Perhaps accreditation may be made a condition precedent to their eligibility for the same.

- Higher education institutions supported by the state governments face acute problem of deteriorating infrastructure and facilities and large number of vacancies of faculty. Adequate and continuing support is required to bring up the level of these institutions to minimum standards.

- Public funding, both to individuals and the institutions, may be provided to groups to promote collaboration and cooperation. To encourage working together, glue funding or mobility grants would be essential.

It may be concluded that public funding for higher education, both at the centre and the state level, need to be increased significantly. Public funds should be utilised where private sector may not enter. Public funding mechanism needs to be reviewed to ensure that performance is rewarded, higher education institutions are encouraged to raise fees and other revenues by themselves and that it promotes collaboration.

Though, there is significant private investment in higher education in India, the big corporate sector has shied away from this due to cumbersome procedures. Similarly, the prestigious foreign universities have not entered higher education sector in India. There is often a wrong message coming from various sources that these are not welcome to enter higher education sector in India. There is a merit in proactively enticing these big corporate sectors and prestigious foreign research universities to set up research universities / campuses for post graduate education and research in science and engineering in India to raise the standards of research for long-term competitiveness of the country. For this purpose, it is necessary to identify prestigious foreign universities (say 500 universities in Shanghai's list of research universities) and big corporate houses in the knowledge sector. Single point contact and a time bound approach could be adopted to facilitate them with bare minimum regulations.

2.8.2 Action points for making higher education affordable for all

With a view to ensure that no one with aptitude and desire is denied access to higher education because he / she cannot afford it, there is a need to introduce suitable grant and loan schemes. There can be variety of grants and loan options designed to address this problem. For example, Australia offers a student loan programme. This loan is repaid through temporary increases in the income tax of programme participants. Consequently, the money can be continuously recycled to finance the education of future students. The best system is one where students can obtain sufficient, but difficult to default, loans. In this way, all students would have the opportunity to obtain a higher education degree. Specific recommendations to ensure affordability of higher education for all are as follows:

- There is a need to introduce a scheme of income contingent loans to make it easier for students from poor backgrounds to participate. This loan arrangement has built in insurance against inability to pay and help low earners. The provision to write off a fraction of loan for each year of service in the rural areas or national R & D system could be provided.

- The practice of deferred payment of fee on graduation and employment with a risk of unemployment / under employment being transferred to the Government exists in many countries like Australia to address the equity issue. This also takes care of the problem of student indebtedness.

- Income contingent loans could be provided through a wide range of private and public sector lenders with a third party servicing of loans. This is a mature and tried concept where lenders outsource their student loan servicing function to an outside

specialised agency. This results in better recovery, effective use of funds, efficient student financing supply chain right up to improved and timely collection of repayments. An appropriate framework can facilitate securitisation of student loans so that fresh money keeps flowing at relatively lower costs.

- Since student loans are inherently risky; the government is required to share part of the risk of a student loan programme. Such loans should be widely available to all or most students in need. Risk can be lessened through a judicious use of cosignatory requirements, with government as a primary guarantor only for families with insufficient collateral, and then a secondary guarantor for families who are able to co-sign the loan and bear part of the risk. This can provide the much-needed impetus to public and private lenders to lend money to students based on market forces. Multilateral and bilateral agencies like the World Bank, Asia Development Bank etc. have been partners with the Governments world over for a similar initiative. They could be receptive to extending similar support to the Government of India.

- The first step towards putting in place a system of income contingent loan scheme with government guarantee would be to commission a detailed study on existing student loan portfolio and its performance based on various criteria. A Student Loan Clearinghouse will have to be created to link all stakeholders through a transparent, data driven, credible and validated system. This would be an essential information infrastructure for the success of this scheme.

- Many countries in the world find tax cuts rather than tax increase as a good solution to higher education. The people who would benefit the most from this are the middle-class families who are overburdened with education costs. It would cost the government revenue in the short term, but a college-educated worker has significantly more taxable income than he or she would have otherwise. Taxing the money individuals spend on education is not the government's best source of tax revenue.

The action points on funding of higher education by the government and through private sources have been summarised in Table 4 below.

Table 4: Summary action points on financing

Increased funding for higher education by both government and households (including loans)	
Public funding from the Centre and States	Funding for minimum infrastructure, facilities and faculty by the Centre and State for their respective institutions; setting up of new institutions – in areas or for subjects / courses where private sector may not be interested; and fund allocation mechanism to outcome-focussed performance-based.
Public funding from the Centre	Set up *Social Equity Fund* to administer financial aid programmes for the poor students; Research funding particularly in the sciences and other technical fields; Funding for collaborative activities; and

	Competitive grants to reinforce accreditation and promote excellence.
Private funding	To ease entry barriers for private investment; rationalise tuition fees in public institutions to tap capacity of the households to provide resources for higher education; and improve availability of student loans.

Source: Compiled by the author

In sum, the fee structure for higher education in India needs to be rationalised with free-ships for students from poor background. Public spending (particularly central expenditure) on students aid schemes for poor students needs to be substantially raised with simplified procedure for disbursement and the student loan financing to become a major source of funding higher education. More specifically, students aid scheme in the form of deferred payment of fees on graduation and employment with risk of unemployment / under employment transferred to the Government could be initiated. Income contingent loans could be provided through a wide range of private and public sector lenders with a third party servicing of loans and government guarantees and attractive tax cuts against money spent on education would promote spending on education. A Social Equity Fund with substantial corpus could be established to ensure fair access of higher education to students from poor background.

3 Workforce Development

Education is not merely a means to get a good job. Embedded in education is a value system, the ability to distinguish between right and wrong. Developing individuals into good citizens is one of the prime purposes of education. In this context, the focus of this section on assessing role of higher education in workforce development may appear to be misplaced. Education and even higher education is definitely not just about jobs, its other roles are so important and obvious that it is unnecessary to even discuss them. There are many issues and serious concerns about the inability of education at all levels to inculcate good human values in students. This section would however not go into them, but shall primarily focus on the role of higher education particularly as it refers to providing workplace skills required in a rapidly changing economy. Beginning with the conceptual framework of the four pillars of learning and the human capital and the screening theory, this section examines the linkage between higher education and work established through academic qualifications.

The section looks at the demand and the supply side of qualified manpower in Indian context and undertakes an analysis of how the clearing of supply with the demand takes place in the higher education system and the labour markets for qualified people in India. With the rapid technological advances and demographic shift taking place, the section looks at the changing occupational structure and the integration of the job markets. These changes render any exercise in planning capacities in higher education redundant and call for building upon the adaptive capacity of the system so that the higher education institutions and the higher education system as a whole is more responsive to these changes.

3.1 Four pillars of learning

According to UNESCO's Report of the International Commission on Education for the Twenty-first Century, education must be organised around four fundamental types of learning: the four pillars of knowledge – *learning to know*, i.e., acquiring the instruments of understanding; *learning to do*, so as to be able to act creatively in one's environment; *learning to live together*, so as to participate and cooperate with other people in all human activities; and *learning to be*, an essential progression which proceeds from the previous three (Delors, 1996). Formal education has traditionally been focused mainly, if not exclusively, on learning to know and to a lesser degree on learning to do. Learning to live together is the essential part of the socialisation process of formal education.

As knowledge is manifold and is constantly changing, it is increasingly futile to know everything; more so with the World Wide Web, where the information is available at the click of the mouse. Therefore *learning to know* is interpreted as *learning to learn*, requiring people to cultivate the power of concentration, memory and thought. Education is expected to provide the impetus and foundation to learn throughout life – both while working and outside work.

Recent developments marked with industrialisation and knowledge economy has endowed education explicitly with an economic value by forging both direct and indirect backward and forward links between education and economy. This has led to changes in the occupational structure and enhancement of skills and knowledge requirements for employment. The evolution of economic purposes of education was the single most important educational development of the twentieth century. With this, *learning to do* has become a vital function of education, particularly higher education that connects formal education to the world of work. Other roles of higher education, though important, the production of useful and usable knowledge has become important in today's knowledge economy, which is the more pragmatic role of higher education in terms of preparing qualified manpower. In a world, where knowledge matters more than ever, higher education is extremely important. Forty per cent of the global workforce will be knowledge workers requiring higher education qualifications by the year 2020 as per *survey of near future* by the Economist (2001).

3.2 Link between higher education and work –the concept of qualification

3.2.1 Human capital theory

New theories of economic growth have brought higher education and training that enhance skills and capacities of people to the centre stage. Residual capital that closely relates to human capital explains the large variance in per capita economic growth of nations. Countries, therefore, focus on human capital formation. People also invest in their own education and training by making rationale estimates of returns from education. Human capital theory that recognises human capital as an agent of growth has

transformed not only development economics but also led to the resurgence of the economics of education (Becker, 1964).

3.2.2 Screening theory

In the 1970s, the *screening theory* of education was propounded. It stated that the value of formal education is not so much in what has actually been learnt (provision of new knowledge that enhances human capital) but it is an instrument for the selection of most gifted employees by the employers. Education acts as a signalling device in the job market. Employers do not have much information about the potential employee's quality; they use markets to judge quality: a good degree is treated as an indicator of ability, and sustained unemployment is regarded as mark of disability. Spence (1973) showed that education is a device that markets use to sort out duds: they function on the premise that the more educated a person is, the lower is the probability that he will be a dud.

Those people who view a '*degree*' merely as a filter that simplifies the selection process that the employers adopt would like to safeguard its credibility as a filter, so that the employers as well as potential employers can continue to value the degree. Others, who believe in the human capital theory, find that higher education equips students with skills and competences that are required in the world of work today and therefore focus on the curriculum and content of the educational experience. There are still others, who think that it is the *socialisation process* of formal education that hones their interpersonal skills essentially in today's work environment.

3.2.3 Concept of qualification

Human capital and the screening theory are found to be valid in different contexts and are often taken as complementary to each other. This along with the socialisation process of formal education helps in understanding the link of education and training with the world of work. This link is established through what is termed as qualification. The term qualification could mean the skills required to do a job, the skills that a worker possesses (linked mainly to his or her education) and the skills that are recognised in the labour market. These concepts, not being identical, fail to establish any hard and fast correlation between education and employment. This makes it difficult to define the objective standards of qualification (Bertrand, 1998). As a result, it is not always possible to create a total fit between the supply of graduates from the higher education system and demand for graduates from the job markets.

3.3 Demand perspective

Demand for higher education could either the private demand from students and parents or demand from the labour markets for particular kind skills and competencies or even social demand of need for educated people in society. There is often a dichotomy between various types of demand. Responding to the private demand and taking the plea of social demand, there is often a bias towards expansion of higher education, despite poor labour market conditions for the educated people. This results in a situation where people with high qualifications are ready to accept inferior jobs which do not require

those qualifications on the ground that some job is better than none. In this context, issue of over education has been a matter of serious debate in 1960s and 1970s. With technological changes, greater mobility of skilled people across the nations and demographic shift, a new scenario emerged from the 1980s onwards. This sub-section looks at the changing occupational structure of the Indian economy as it integrates with the world economy to assess the demand for people with higher education.

Industrialisation and knowledge economy has endowed education with a more explicit economic value. Changes, particularly due to technological progress, have changed the work-environment. This has led to changes in the occupational structure and has altered the nature and level of the skill and knowledge required for work. One can see two undeniable trends in this regard. There is a decrease of workers in industrial and manual jobs. At the same time there is a rise in demand for people who can do intellectual work.

3.3.1 Occupational structure in India

Economic sectors

The trend towards a decrease in manual jobs and an increase in jobs requiring intellectual work is visible in India. Being primarily an agrarian society, the agriculture sector employs the largest proportion of people in India. Employing 59 per cent of the total workforce in India, the share of agriculture sector in employment has marginally reduced over the years. When technology is used in agriculture to achieve a high yield, then the demand for labour will fall in this sector. This would require work opportunities to be created in other sectors. The share of employment and GDP across economic sectors In Table 5 shows that despite large share in GDP, services contribute less than a quarter of the employment. The trends of employment in different economic sectors show that the employment in the services sector is growing rather slowly. Employment in the industrial sector at merely 17.2 per cent is more or less stagnant. Industrial sector with its low employment elasticity, lower still in organised manufacturing, is not likely to emerge as a major employer in near future.

Table 5: Share of GDP and employment in India (2004/05)

GDP - Gross Domestic Product

Sector	Share of GDP	Share of Employment
Services	57.2 %	23.8 %
Industry	22.0 %	17.2 %
Agriculture	20.8 %	59.0 %

Source: Compiled by author from various sources.

To have a better understanding of the occupational structure of the Indian economy, it is desirable to look at the employment opportunities in the formal (organized) sector and the non-formal (unorganized) sector and also the public and private sector.

Formal / Informal sectors

Though the informal sector in India contributes only 59 per cent of the GDP, it employs 91.4 per cent of the total workforce. It comprises of small, non-capital intensive enterprises run by self-employed persons often with family support and/or employing a few temporary, hired workers with around 30 per cent in the home-based segment. Their skill profile is poor. Only a small number of them have any marketable skills. Skill acquisition in the informal sector is substantially hereditary or through apprenticeship with master craftsmen. These factors are responsible for low productivity in the non-formal sector and call for major initiative towards skill upgradation through vocational training. Higher education though, would have a limited role in this.

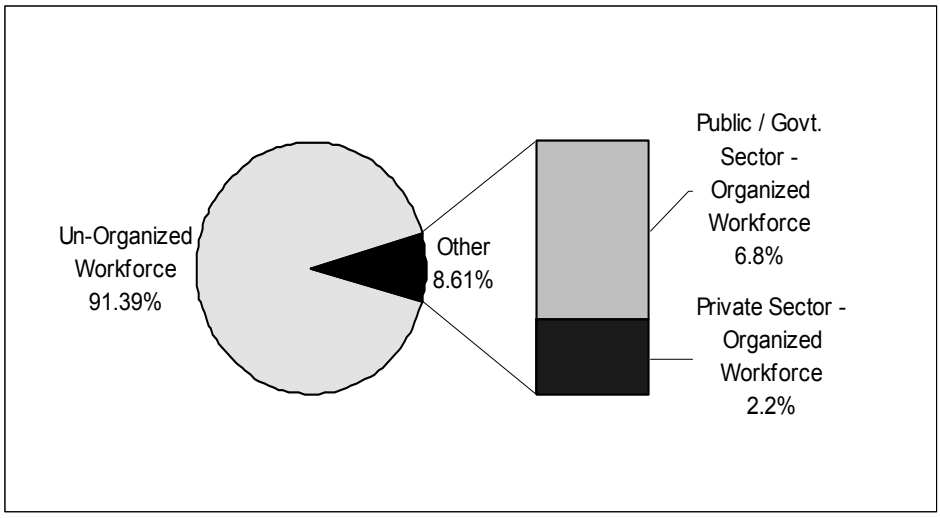


Figure 10: Relative share of employment in India (2003/04)

Contributing 41 per cent of the GDP, only about 8.61 per cent of the workforce is employed in the formal sector. Sixty eight per cent of them are employed in the government and the public sector. Figure 10 provides the relative share of employment in organized and unorganized and public and private sectors. Due to capital deepening and technology adoption, employment elasticity of the organised sector has been very low at 0.066 during 1993/94 to 1999/2000, whereas it has been 0.213 for the informal sector during the same period. As a result, the organised sector has limited capacity to create employment opportunities. Table A13 gives details of the output and employment of the unorganized sector in India. The organised sector that is predominantly in the government and public sector has limited potential to provide employment opportunities.

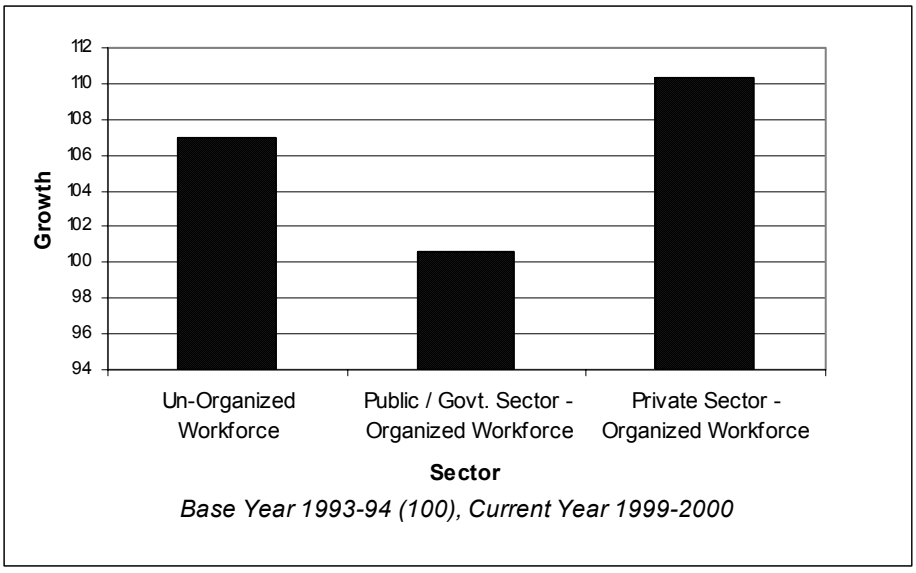


Figure 11: Growth of employment in different sectors

With the opening of the Indian economy fuelled by entrepreneurial spirit, there are however, large and varied private initiatives across different sectors in economy. This has dramatically transformed the pattern of employment in the country. Though at a relatively small base, employment in private organised sector is growing at a fast rate as can be seen in Figure 11.

New economy sectors

Till about mid-1980s, it was employers' market. There was little job-hopping; engineers, doctors and civil services were most coveted. After that, till about 1995, job opportunities expanded as multinational corporations came in; MBA became a middle-class dream degree. Between 1995 and 2000, there was a boom in the services sector; manufacturing shed jobs and the multinational corporations continued to be big hirers. After 2000, manufacturing has rebounded; exports are doing well and the services sector is continuing to boom. There is now a scramble for qualified people.

3.3.2 Global occupational structure

There is increase in trade of both goods and services across national borders. This paved way for an integrated global economy. With the end of the cold war and collapse of the socialist economic system, two global economic systems – with very separate labour forces, trade patterns, and investment pools - merged into one. The labour force of the formerly socialist economies in Russia, China and Eastern Europe is being slowly incorporated into the global production system. This is also true in case of India that shifted from inward domestic focus to outward focus since early

1990s. As a result of this integration, global supply of labour increased significantly without a corresponding increase in the capital for investment.

Productivity gains due to technological changes have led to a dramatic increase in the productivity levels in both manufacturing and services. According to Polaski (2004), though in the long-term, productivity growth is good because it creates the possibility of higher wages and incomes in countries that experience it, in the short-term; it contributes to the disequilibrium in supply and demand for labour. New developments in information technology and communication capacity are turning a segmented global labour market into an integrated whole. Offshore outsourcing of data-intensive work has become feasible. As result of the above changes, there is an over supply of labour and intense competition for an expanding array of jobs. In the backdrop of this discussion, this sub-section specifically looks at the impact of computerisation and integration of job markets.

Impact of computerisation

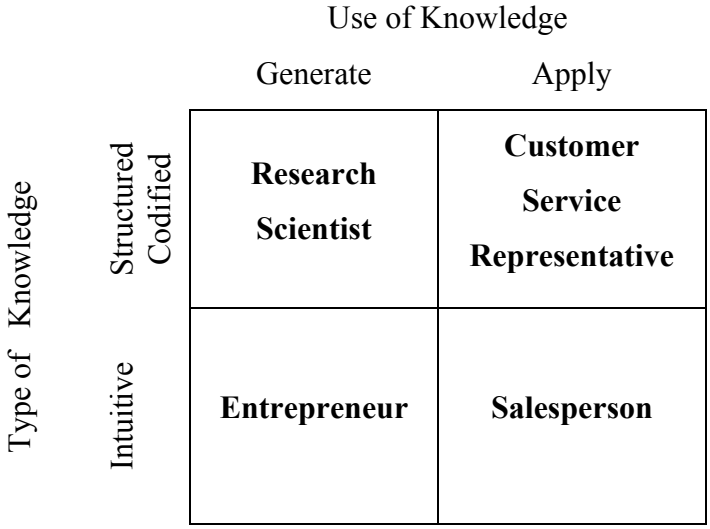
Driven by technological changes, particularly the rapid growth of new information and communication technologies and a greater mobility of both work and workers across borders, there is now more efficient division of labour across nations. There is a growth in the demand for analytical and managerial work like that of scientists, engineers, attorneys, executives and perhaps economists. Also, there is a growth in the demand for services workers, such as security guards, truck drivers, housekeepers, waiters, salespeople etc. But the demand for 'middle-skilled' white collar jobs like that of secretaries, bookkeepers, insurance adjusters, bank tellers, telephone receptionists has collapsed. These changes have resulted in a polarisation of work – the *hollowing-out* of the distribution of job tasks (Autor, 2006). (Table 6).

Table 6: Computerisation and three task categories

	Task Description	**Example Occupations**	**Potential Impact of Computerisation**
Routine Tasks	'Rules-based' Repetitive Procedural	Bookkeepers Assembly line workers	Direct substitution
Abstract Tasks	Abstract problem-solving Mental flexibility	Scientists / Engineers Attorneys Managers Doctors	Strong complementarities
Manual Tasks	Environmental adaptability Interpersonal adaptability	Truck drivers Security guards Waiters / Maids/ Janitors	Limited complementarities or substitution

Source: *David Autor (2006)*

The demand for knowledge-work has expanded. This type of work would itself depend on the type of knowledge used - structured and codified or intuitive and the way it is used - generated or applied. The two dimensions of knowledge combine to create four distinct possibilities for knowledge work as depicted in Figure 12. This knowledge-work typology becomes important with the universal use of computers in different professions. It has implications on the nature of skills and competencies required in growing knowledge economy. This would have significant implications on the changing nature of work, particularly knowledge work and understanding of these changes in our expectations from education and training system.



Source: *Reproduced from (Ware, 2002).*

Figure 12: A knowledge work typology

Integration of job markets

Routine cognitive tasks, mostly services, were formerly almost non- traded across borders. These services required real-time communications and coordination and massive information flows. Revolutionary advances in telecommunications have lowered the costs of sending vast amounts of information rapidly and have improved coordination in real-time basis across continents. As a result of these changes, there has been an emergence of off-shoring industries in a big way in the last few years. It is now clear that the dominant growing segment of the workforce will be the knowledge technologist in computers, manufacturing, and education.

With the adoption of new technologies, the concept of distributed work is gaining currency. Distributed work overcomes the challenges of working across organisational boundaries in different time zones or flexi-time at different physical locations (at times transcending national boundaries). This has altered the basic rules for organising and managing work, particularly knowledge or intellectual work (Ware, 2002). These developments have led to an emerging global occupational structure.

3.3.3 Opportunity for India

The analysis of the occupational structure clearly shows that the organised sector in India cannot possibly absorb all the qualified manpower coming out of the Indian higher education system. Global labour markets and technological changes offer an opportunity to India. Bhagwati (2004) points out that advanced countries have a big appetite for skilled professionals. In a globalized economy countries compete for markets by creating and attracting technically skilled talent. Host countries also perceive such workers to be more likely to assimilate quickly into their new societies. Bhagwati adds that for country like India with large population and huge capacity to generate skilled professionals at home and by education abroad, out-migration of professionals is *an opportunity* and not a threat. Freeman (2005) sees that a country like India with large population and sizeable number of scientists and engineers could threaten North's monopoly in the hi-tech sectors by producing innovative products and services. This he terms as *human resource leapfrogging* that countries like India could possibly create. It is in this background that the need to focus on higher education should be viewed in India. This sub section looks at the opportunities in three specific areas, namely - IT / ITES sector, the manufacturing sector and the personal and community services sector.

IT / ITES sector

Emerging global occupational structure offers an opportunity for India to provide workforce for the knowledge economy beyond the national borders. The services sector in India has been growing rapidly over the last few years. Within the services sector, other business services (which include IT / ITES) have seen phenomenal growth in recent years with a significant proportion of the same coming from exports. According to the World Bank (2004), India exhibits a strong revealed comparative advantage (RCA) in services, particularly software services as compared to goods. The country has leveraged its rich pool of human capital with quality educational institutions and large English speaking population. India is globally positioned in IT-ITES sector with a cumulative average growth rate (CAGR) of 35.3 per cent over the financial year FY-2000/05 amounting to US$ 17.9 billion in FY2004-05. India is now an international services hub. It commenced with IT-enabled services, both voice and data, and expanded to all knowledge sectors, such as pharmaceuticals, biotechnology, and engineering design.

In spite of the limited impact of the growth of IT / ITES sector on the overall employment scenario in India, its overall implications for the growth of the country are significant. It has many multiplier effects on the Indian economy. This sector creates nearly one and a half times the number of jobs than that created by indirect employment opportunities in transport, catering, construction industries, security and housekeeping services, etc. Adding more than Rs.10 billion in direct tax revenue, the sector is contributing to rapid growth in consumer demand, hotel accommodation and air-traffic demand, and the demand for real estate both for offices and housing. (NASSCOM, 2005a)

Manufacturing sector

With increasing international competition, the (mass) production, demanding a work-force with a low level of skills, tends to gravitate towards low-wage countries. Also, automation would affect the most simple and most repetitive jobs. In the more complex manufacturing sector, greater modularity and disintegration in product design and related manufacture is expected. With increasing use of ICT in design and logistics, the services component of manufacturing activities is bound to increase and can be delivered from remote location.

Skill-intensive products would require highly qualified and trained manpower. India is already on the way to become an important destination for off shoring engineering services. Further, whereas, manufacturing will continue to exploit economies of physical scale, speed and scope, with greater modularity, a lot of components can now be produced by a large number of small manufacturing units in the unorganised sector. Thus, through entrepreneurship and skill up-gradation, the Indian manufacturing sector can become competitive in specific areas.

Personal and community services

Personal services, such as teaching and nursing care will continue to expand on a global scale. India can become a magnet economy attracting high skilled and high waged investment capital from the MNCs, and offer high value added services to the rest of the world. This would require India to adopt an outward looking approach to reach out to the global markets and focus on sectors where it has resource advantage.

In all, there are huge and diverse job opportunities available in India. However seizing these opportunities requires an overhaul of the education and training system so that the needs of new economy sectors can be met. There is also a need for quality higher education with a wide range of institutions that provide service to the different sections of the society and meet their varied requirements.

3.4 Supply perspective

3.4.1 Subject-wise enrolments and outturn

Higher education in India caters to two segments of students. First are those students who acquire a degree for its symbolic value. Undergraduate and postgraduate degrees in arts, science and large part in commerce fall in this category. Though many of them seek jobs that require generalised skills such as those required in government organisations or teaching, the number of such jobs is dwindling. The second segment of students seeks skills and competences required in the job markets. They opt for professional courses (Sreekumar, 2003).

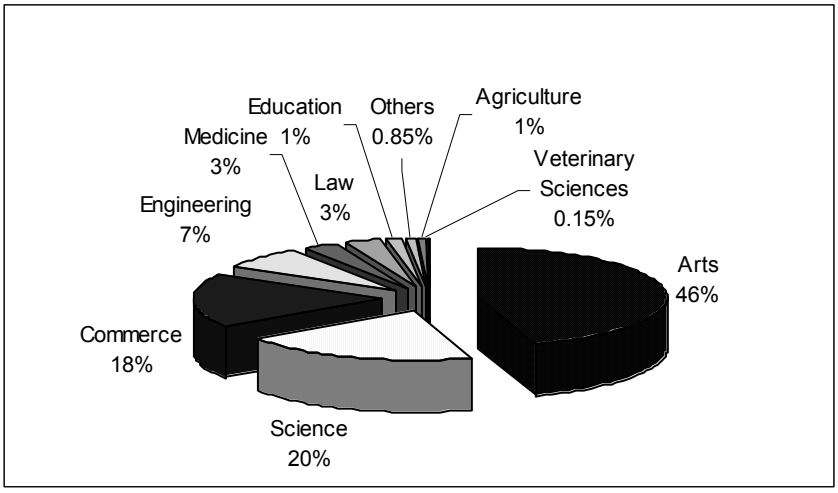
There is an enrolment of 10.41 million students in higher education in India with an outturn of 2.46 million each year. The total stock of graduates in India is around 22 million. An analysis of the subject-wise enrolment in higher education in India reveal that of the total enrolment, 45.12 % of the students are pursuing their degrees in arts with

enrolment in science at 20.44 % and commerce at 17.99%. The remaining 17 % students are enrolled in professional courses.

Table 7: Indian's Graduate Pool in the financial year 2003-04

	Engineering Degree Holders	Engineering Diploma Holders	Arts Degree Holders	Science Degree Holders	Commerce Degree Holders	Total Graduates
Stock (on 2003)	1,200,000	1,750,000	11,500,000	4,985,000	5,933,000	21,986,000
Out-turn (in 2004, estimate)	155,000	130,000	1,150,000	540,000	480,000	2,460,000

Source: Institute of Applied Manpower Research and Ministry of Human Resources Development.



Source: University Grants Commission

Figure 13: Subject-wise enrolments in 2004-2005

From the break up in Figure 13, it is evident that a majority of students are enrolled in arts, science and commerce streams that has weak linkages with the world of work. Several attitude surveys and application rates suggest that though professional courses like medicine and engineering are favoured by the Indian students, there have been limitations of capacity in these fields of study. Therefore, the fact that so many students are enrolled in arts, science and commerce courses is not to suggest that they are addicted to purely academic pursuits: it is simply that they lacked merit that was required for entry to highly competitive professional courses within the context of severely limited capacity.

3.4.2 Growth of professional courses

Till about 1980, expansion of higher education was largely confined to undergraduate programmes in arts, science and commerce in the prevailing tradition of liberal education, based on the view that learning should take place without reference to the economic and social requirements of the society.

The early 1980s saw a huge capacity gap in the provision for professional higher education leading to a rapid growth of private professional higher education. A large number of professional institutions – engineering, medicine, management, teacher education have come up in the private sector over the last 2-3 decades. At present, in the professional stream, nearly 80 per cent of all institutions and enrolments are in the private sector. Table 8 provides an overview of the growth of professional higher education institutions. Their relative share in the public and private sector is given in Figure 14. This brought in dynamism to the hitherto moribund higher education system. Many of these private initiatives got degree granting powers either as deemed to be universities or even full-fledged private universities through the state legislatures over the last five years.

Table 8: Growth of professional higher education institutions

Name of Course	Number of Institution (1999/2000)	Number of Institutions (2005/06)	Percentage increase	Private Share (2003/04)	Public Share (2003/04)
Engineering	669	1478	121	88	12
Pharmacy	204	629	208	94	6
Hotel Management	41	70	70	90	10
Architecture	78	118	51	67	33
Teacher Education	1050	5190	395	68	32
MCA	780	976	25	62	38
MBA	682	1052	55	64	36
Medicine (Allopathic)	174	229	32	46	54
Physiotherapy	52	205	294	92	8
Total	**3730**	**9947**	**167**	**78**	**22**

Source: Related Professional Councils and their Websites. Estimate on public and private share by author based projections

Remarks: Many institutions (particularly for MBA, MCA and B.Ed. Programmes) have more than one of the above programmes; these have been counted more than once.

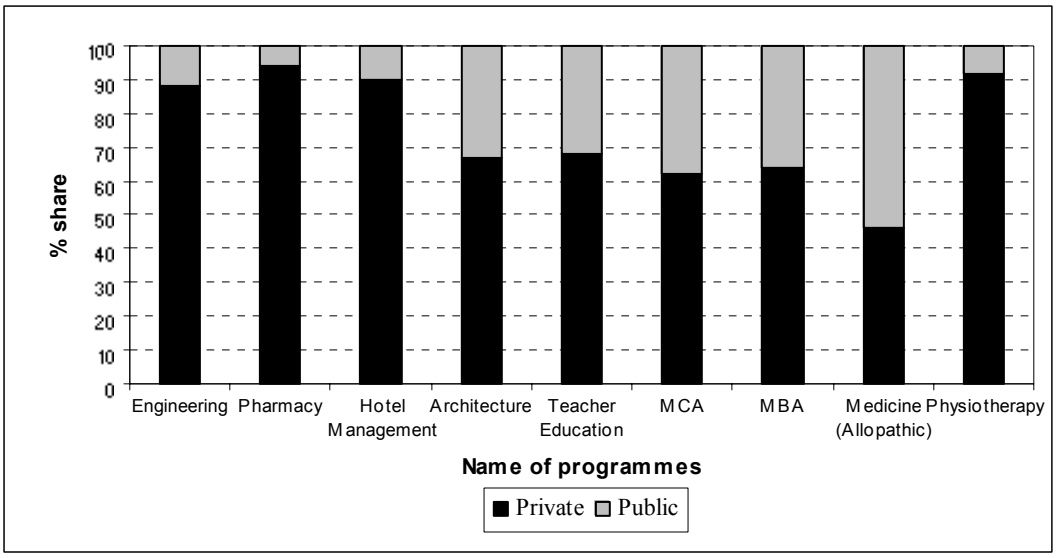


Figure 14: Share of private and public professional education institutions

The growth of professional higher education follows similar trends elsewhere in the world. Higher education system, these days, is no longer dominated by the arts and the sciences. Now these core subjects are covered by layers of professional education: first, by the liberal professions; then by technical professions, principally the many branches of engineering and the technical sciences that accompanied the successive waves of industrialisation including the latest wave of the information sciences; followed by the caring professions which were stimulated by the growth of the welfare state and the most recent by the new upsurge in enterprise professions, centred upon, management, and accountancy. The intellectual effects of the shift from liberal education to professional training have often been observed, but their cumulative effects may only become decisive now in re-shaping higher education. (Gibbons, 1998).

3.4.3 Career-oriented courses with general education

Due to the concerns arising from the growing graduate unemployment, the *National Policy on Education (NPE), 1986* advocated a systematic and a well-planned programme of vocational education. This was intended to be a distinct stream intended to prepare students for identified occupations. In pursuance to this, a scheme for vocationalisation of education at the university / college level was started in the year 1994-95 by the UGC. This was redesigned in the year 2003-04 to bring in greater flexibility. For details on the number of universities and colleges assisted by the UGC under the scheme since inception of the scheme, please see Table A14. This now allows students to pursue both their regular programmes and utility oriented certificate / diploma courses together. Since inception, 2769 colleges and 39 universities have been provided assistance amounting to Rs.2.44 billion. For want of any systematic study, the effectiveness of this initiative is not known. At the same time, its coverage is small. Overall the impact of this scheme has not been significant.

3.4.4 Non-university sector

Around the same time, like many other parts of the world, a huge vocational training sector has developed in India outside the established formal higher education system. Some of this was due to the expansion of the existing systems of training like the expansion of the Industrial Training Institutes (ITIs) and the polytechnics. The ITIs and polytechnics saw huge expansion in capacities starting from 1980s. This growth was almost entirely with private initiatives. In the year 1980, there were 830 ITIs. This number rose to 1900 in 1987. During the 1990s, there was a steep growth. Now there are 4040 ITIs in the country with capacity of more than 700 thousand seats. Sixty five per cent of ITIs are in the private sector. There were only 332 polytechnics in the country in the year 1980. Now there are nearly 1200 polytechnics with 51 per cent in the private sector.

3.4.5 Private IT education and training sector

In addition to ITIs and polytechnics, a new system for computer training emerged in response to the inability of the formal education system to meet the need for short-term computer training programmes; private IT training and education sector emerged in the late 1980s. Initially, it grew slowly. In the year 1995/96, this sector generated revenues to the tune of Rs.4.58 billion. Pioneering the franchising route for growth, IT training and education expanded fast and became a popular option for tapping the geographically dispersed demand rapidly. Between 1995/96 and 2000/01, the sector posted a CAGR of 41 per cent and stood at Rs.25.94 billion in 2000/01. Private providers have also come up for training for hospitality, media and journalism, animation, aviation, event management, fitness consultancy, fashion designing and even clinical research.

In addition, there were other initiatives taken from time to time to link education and training with skill development. To meet the training needs of the unorganised sector, a scheme of community polytechnics attached to regular polytechnics was initiated. Under the National Literacy Mission (NLM), *Jan Shikshan Sansthans* (formerly known as *Shramik Vidyapiths*) were set up for the neo-literates. A scheme of vocationalisation of secondary education at the 10+2 level was also launched in 1988.

There have also been interesting non-governmental initiatives in this area. More than 150 community colleges[13] have been set up all over the country – though mainly concentrated in South India over the last decade. These colleges have flexible entry norms and prior formal academic qualification is not essential. But for a few, all of them are non-governmental initiatives. The curriculum comprises of 21 weeks each of life skills and work skills with eight weeks of internship and hands-on training and 2 weeks of preparation for employment and evaluation. With more than 75 per cent students finding employment on passing out, it is a resounding success and needs replication and support.

In all, vocational training in the non-university sector is now huge. This is financed by students and their parents and responds in more direct and usually more effective ways to the needs of industry and the labour market. With the gap between

training and education[14] getting narrower, this is the eroding of the traditional monopoly that universities have enjoyed in providing training and granting credentials with good currency for jobs in the job markets.

3.5 Supply-demand clearing

Ideally the demand for higher education should be based on the demand of skills in the job markets; supply of graduates from the higher education system need to adjust to it. However the link between higher education and world of work is relatively loose and the process of transition from higher education to employment is complex and protracted (Gibbons, 1998). Further, students' demand for higher education is often based on their aspirations, societal and parental expectations and not necessarily based on signals from the job markets. Finally, higher education may not be equipping students with skills required in the job markets. This usually results in a mismatch, creating a problem of unemployment on one hand and skill shortages on the other. Over-education leading to unemployment and underemployment of graduates is a phenomenon common throughout the world in varying degrees (Table A15).

3.5.1 Graduate unemployment

In light of the above, it is not surprising that the unemployment rate of graduates at 17.2% is significantly higher than the overall rate of unemployment in the country. Nearly 40% of the graduates are not productively employed. Of the total unemployed population of 44.5 million, unemployed graduates are 4.8 million (Census of India, 2001). This number is now estimated at 5.3 million. A positive co-relation has been seen between unemployment and the level of education (Table A16). Ghose (2004) pointed out the fact that the young people with some education would not want to engage in low-productivity, low-income work in the informal sector. They want non-manual work, preferably in the organised sector. The very fact that they have some education also means that their families have some capacity to support them. Visaria (1998) noted that many of the unemployed have rather poor qualifications in terms of their performance at the examinations and have little aptitude or the capacity for the type of work they aspire for. Many of the unemployed are also perceived as unemployable by the industry.

Earlier, Carnoy (1987) in a review of three studies conducted in various parts of India in the same year showed that students in India attend university primarily to get better jobs, and an important reason given for choosing a particular subject studied is its career potential. This demonstrates that students would generally give more weightage to employability; though many people from the academia like to believe that education is completely autonomous from economic forces and should remain oblivious of the changes taking place in the economy. The students generally base their choice of subject to study on how it will contribute to their future employment opportunities rather than on what was intrinsically interesting.

The review by Carnoy (1987) further shows that the graduates from the arts faculty had highest unemployment rate, followed by science and commerce. Those who got jobs with degree in arts worked as clerks / typists. Higher percentage of women

graduated in arts and they were often disinclined to enter the job market. Compared to this, students graduating in education, engineering, law, or medicine had better employment prospects. Such students with professional qualifications were often from higher socio-economic background.

Earlier, a classic study by Blaug et al (1969) showed that higher education in India expanded despite high levels of graduate unemployment among graduates, long-waiting times for first jobs, and the first jobs when obtained are not much more than that of high-level clerks. This in part is due to even higher unemployment of persons with secondary education qualifications and charging of low fees by public universities in India.

As a result of high unemployment, it is seen that many graduates in India tend to accept lower paid jobs incompatible with their qualifications[15]. The jobs tend to get undervalued while the fat salaries enjoyed by a few tend to get highlighted and the plight of the vast numbers who remain jobless for long periods after graduation goes unnoticed. This fact suggests that education cannot be considered as panacea to unemployment. Though education can improve the chances of individuals in hard competition for available jobs, but cannot be seen to create jobs.

There is disjoint between the higher education opportunities and job openings. A leading news weekly-*India Today*- in its cover story on March 7, 2005 identified '*Top 10*' emerging job opportunities in India. These were - hospitality, biotech, education and training, animation, aviation, event management, research and development, fitness consultancy, fashion designing and the NGO sector. The formal higher education hardly provides any openings in many of these areas. Though, the number of job opportunities in areas like event management, fitness consultancy or fashion designing may not be large, yet the point is that the formal system of higher education does not provide qualifications in these areas.

3.5.2 Disconnect between higher education and work

It is generally thought that higher education should equip students only with generic skills rather than tailor them to meet the specific requirements of industry. This is due to the realisation that the evaluation of economic needs is often random and approximate and could change often. It is argued that the generic skills together with flexibility and adaptability and an acceptance of the need for life-long learning, will provide young people with the best basis for a career in any area, including industry, and for the unforeseen needs of the future. Though there is merit in this argument, there is no doubt that education needs to be made more useful and usable and to prepare young people for employment and to encourage adaptability.

The above analysis calls for the intervention by the state to make the connection between higher education and the jobs more efficient as a means for reducing unemployment. This is based on an instrumental and extrinsic model of higher education rather than on the more altruistic and intrinsic model of liberal education and is in line with the human capital approach towards higher education.

3.5.3 Case for enlarging diversity and adaptive capacity

In all, there is a need for the enlargement of diversity and adaptive capacity of higher education and training system in India to respond to the changing economic environment. This is not only desirable to ensure that higher education institutions continue to be relevant, but it is an essential step enabling them to enjoy greater autonomy within a framework of greater self-responsibility. Adaptability in higher education needs to be nurtured in two ways – first by creating conditions for a continuous updating of curriculum and content as per changing needs and secondly by shuffling admission capacities between different institutions and courses as per job market needs.

3.6 Aligning higher education with the job-markets

The coexistence of high graduate unemployment and shortage of skills reflects the paradox of the Indian higher education system. To avoid mismatch, capacity of the higher education system has to be aligned to the job-markets.

3.6.1 Case for public-private and formal-non formal mix

With a view to address problem of mismatch, many countries have pursued structural adaptation policies - UK integrated the university and the non-university sectors to improve efficiency and effectiveness of the system as a whole; in the Netherlands, Norway and Portugal, the non-university sector was strengthened; in Austria and Finland, the non-university sector was introduced for the first time; and Italy simulated the development of sub-campuses and introduced short cycle courses. Length of study of the basic qualification in favour of short-cycle programmes has also been revisited in many countries. Despite a clear government policy, a similar adaptation of the higher education and training system took place in India in the post-1980 era.

Since the 1980s, higher education in India has diversified significantly. There was an emergence of new types of institutions and providers. These included a wide range of private professional colleges, private universities, and private training centres. The diversification has enhanced competition. This is expected to ultimately improve quality as well. Growth with diversification not only absorbed excess demand without direct burden on public exchequer, but helped in building the adaptive capacity and the response time of the system. There is a need to further increase higher education capacity through diversified expansion.

Two recent developments illustrate the above point. One relates to creation of capacities in excess of demand for engineering education resulting in thousands of seats remaining vacant each year. Now many engineering colleges are on the verge of closure. Second relates to changing capacities in private training sector in India. Technology slow down in 2000/01 had a tremendous psychological impact on sentiments in the private IT training sector. Its revenue touched a low of Rs.10.59 billion in 2003/04 from a high of Rs.25.94 billion just a couple of years ago. It is again picking up now and was Rs.13 billion in 2004/05. Figure 15 shows as to how the private IT education and training sector

has been on a roller coaster drive over the last few years. Being purely for-profit private sector, this could easily adapt to changing demands. Both in case of engineering education and IT training sector corrections take place on supply side with changing demand pattern. These are not easy to achieve in purely public system of higher education.

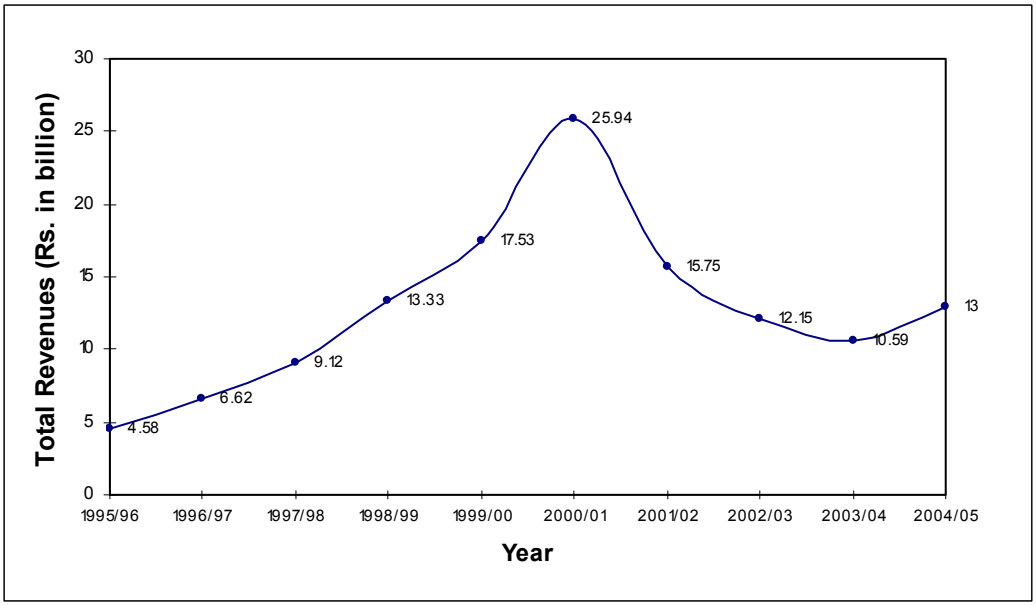


Figure 15: Private IT education and training sector in India

Without internal competition, public institutions have inertia of their own; courses once started cannot be easily discontinued; faculty once recruited on permanent tenure cannot be removed and is difficult to retrain; and putting facilities and infrastructure to alternative has its own limitations. In comparison, private institutions that depend primarily on tuition fees have to cater to students' demand and adapt their course offerings according to it. Private institutions are, therefore, likely to be far more adaptable to the changing circumstances. Within the private sector, the non-formal training providers are even more adaptable. They respond to the changes taking place in the job markets far more quickly.

A total reliance on job-markets is not always desirable since signals from job markets often reflect short-term demand. Over-dependence on signals from the job markets could lead to compromising the long-term interest. Therefore, both the formal and the non-formal training / education providers are important. Whereas the formal education leads to overall development of mind and prepares students for life-long learning, the non-formal education imparts specific skills that are usable in the job markets. Therefore, a suitable mix of the public and the private, the formal and the non-formal provision for higher education and training provides an optimal solution. With increased and varied demand on higher education, diversification of education providers has to be pursued as a goal.

Presently both the formal and the non-formal system of higher education coexist in the country. Over the years, these have grown independently. Considering the

complementarities between the two systems, there is a need to build bridges between through a unified framework of qualifications. This framework will help in developing a coherent and integrated system of higher education. A suitable mix of the public and private, formal and non-formal system of higher education and training provides the most optimal solution.

3.6.2 Periodic review of curricula and content

Apart from structural adaptation of the system, the curriculum and content of courses has to change on a continuing basis to reflect changes taking place in the society and the new knowledge that is available. Many universities in India have not changed their curricula for decades. The process for changing curricula in the universities in India is painfully slow. Rigid academic structure and cumbersome process for change in curriculum are often blamed for it. The fact that the colleges that enrol nearly ninety per cent students have no freedom to change curricula and are at the mercy of their affiliating universities makes the situation worse.

Boards of studies and the academic councils of the universities are responsible for curriculum. In the nation-wide survey conducted by the CABE Sub-committee on autonomy of higher education institutions, 80 per cent of the respondents from the academic community found the existing system to be in order. (CABE, 2005a). This is reflective of the complacence in the academic community on this issue. It goes on to show that the system has nurtured and cultivated a large amount of vested interest that does not want to respond to the transformation taking place. This calls for changes in the academic profession itself. At the same time, subjecting universities to competition might push them to embrace change. An important intervention could be to support and facilitate universities in changing their curricula on a continuing basis.

In the year 2001/02, UGC undertook a massive exercise to develop model curricula in nearly forty subjects both at the undergraduate and postgraduate level through expert groups. These were then circulated to the universities. Whereas, some people in the academia questioned the authority of the UGC in carrying out this exercise and saw it as a blow to university autonomy, others questioned it on the grounds that this exercise was being carried out after a gap of several decades. Notwithstanding this criticism, it must be accepted that curriculum revision efforts have to be continuing efforts with scope for enough experimentation and innovation at the university level.

3.6.3 Aligning curricula to maintain its relevance

Curricula need to be continually updated to accommodate changes in society and to accommodate new body of knowledge. Considering that one of the major roles of higher education is to impart skills and competences required in the job-markets, there is also a need to align the curricula with the world of work. There is now a consensus that the just in-case approach to teaching-learning and curricula design has to be abandoned in favour of more useful and usable education. Therefore, the thrust is on vocational education.

Many universities[16] have taken initiatives on their own to restructure curricula and incorporate vocational element in the curricula so as to make it job-oriented. Such efforts are however few and far between. In many cases, the universities do not have dynamic leadership or capacity to initiate such changes. This process can be accelerated by creating communities of academia across the nation for sharing good practices and providing incentives to universities and faculty to champion such changes.

Improved regular communication among all those involved in shaping the future links between higher education and the world of work would be required. The models of successful communication vary substantially- some advocate the formal involvement of representative of the world of work in the decision- making processes of institutions of higher education (e.g., through membership in board etc.), others favour regular consultations, still others hope that practical elements in the processes of teaching and learning (e.g., internship or practitioners as part-time teachers) - are most eye-opening. But all agree that regular communication is most suitable in avoiding the problem of the un-informed, inward-looking teaching and learning on the one hand, and of naïve subordination of presumed demands on the other hand. On the whole, achieving a meaningful dialogue between higher education and industry would require bridging of perceptions gaps that exist between them (Table A17).

The thrust on vocational education should not suggest that all general education be viewed as unproductive. There is now evidence to suggest that there is a greater demand for workers with general-skills (compared to vocational skills) in those industries where technology is changing rapidly. General course work can increase students' mental flexibility and demonstrate to potential employers that the student can deal with new situations. Berman et al (1998) have gathered substantial evidence from the past 15 years on technology-skill complementarities to make a case for general higher education in changing technology environment. Generalised skills enable workers to develop and implement new technology more quickly. In contrast vocational education based on narrow skill sets is useful when technology is less rapidly changing. Therefore, good quality general higher education rather than becoming less relevant is likely to become more relevant in time to come.

3.6.4 Teaching and Learning Support Networks (TLSN)

Systematic research on teaching and learning process reveals that student learning depends on the quality of teaching and what is called the *academic coherence* of curriculum. Student content learning and cognitive development is affected by the nature and sequence of their curricular experiences, and the extent to which the teachers are collectively involved in communicating with each other about the substance of teaching and learning. Therefore, more systematic efforts to improve quality of learning outcomes will require cooperative action by faculty members to restructure the curriculum, to redesign course sequences and requirements and to better coordinate their individual efforts at instruction in order to achieve greater academic coherence. In sum, improving teaching effectiveness requires collective action (Dill, 1999).

Further, there is evidence to suggest that teaching and learning issues in each subject may not be fundamentally different, yet the nature of teaching communities formed in higher education tends to be defined first and foremost in terms of disciplines.

Based on the above, teaching and learning support networks (TLSN) could be set up not only to restructure the curriculum, redesign course sequences, but also to evolve policies and develop framework to strengthen teaching, learning and research in different subject areas that are in harmony with global standards. These networks could be open-ended communities of academia and other stakeholders. New technologies could be leveraged in doing so for collaboration.

The networks could review, restructure and recommend curricula, teaching-learning methodology; review and recommend the minimum standards of education for each course including duration of the course and the entry level qualification; review and recommend from time to time the national qualification framework pertaining to the subject; provide subject benchmark statements describing nature and characteristics of courses, general expectations at each level leaving adequate scope for variety, flexibility and encouraging innovation; review and prescribe areas of specialisation; facilitate development and sharing of quality teaching-learning resource material (including e-material); ensure coordinated development (including the open system) of teaching and research in respective knowledge area and define research agenda in the subject area relevant to national needs. These networks would be steered by expert groups comprising of the subject experts and other stakeholders including potential employers.

The work of these networks could be coordinated through an independent body, namely – the *National Qualification Authority*. Further competitive grants for innovation in learning and teaching and creation of learning and teaching performance fund would help in spurring innovation and experimentation in teaching and learning is essential to give an edge over others.

For a continuous and sustained engagement of higher education system with industry and employers, evolution of membership-based organisations appears to be a workable proposition. For a meaningful interaction, commitment of time and resources from both the industry and the employers and also the higher education institutions is important. This would involve setting up sector specific industry-business led membership (both from industry and academia) based networks to ensure specific skills (including generic skills) required in particular sectors that are met on a continuing basis. These networks would also compile and collate high quality labour market intelligence and make it generally available to all for making informed decisions.

With the limitation of the organised sector providing employment in large numbers, the hope for creating jobs for a country like India lie in the promotion of small firms and in self-employment. In this context, education system is not only faced with the problem of disseminating knowledge and technical skills, but even more with the problem of developing attitudes and patterns of behaviour, particularly those that

encourage self-confidence and spirit of initiative and help people to work independently. A special focus on promotion of entrepreneurship in curriculum is, therefore, necessary.

Surveys of skills required in workforce across nations consistently show that the core characteristics employers are looking for, and not finding, include motivation and flexibility, willingness to work and learn, confidence, appearance and good manners. In contrast, written communication, literacy skills and using numbers, although important, come much lower in priority. Education system is overly concerned with structures, with insufficient attention given to extra-curricular activities, sports and project work – the activities that help to develop interpersonal skills and emotional intelligence. Aligning curricula to take care of these needs is, therefore, necessary.

As the half-life of knowledge keeps on decreasing, continuing education becomes important. Focus in higher education is now shifting from education of the young to continuing education of the adults. Therefore, higher education institutions need to cater to life-long learning opportunities for all.

In all, there is a need to enlarge the adaptive capacity of the higher education system so that it is more responsive to the changing world of work and meets the diversified needs of economy – both domestic and global. These action points have been summarised in Table 9. The table depicts the direction in which higher education has to change so that it is more demand driven and adaptive.

Table 9: Summary of action points to enlarge adaptive capacity

	Present	**Proposed**
Pursue diversity	Only public institutions considered	Mix of public and private, formal and non-formal providers ensures diversity
Align curricula and content with time	UGC once in a decade effort	Continuous renewal through *Teaching and Learning Support Networks*
Align curricula with the world of work	Little interaction with industry	Continuous engagement with industry through *membership-based skill networks* Focus on soft skills, concurrent enrolment
Labour market trends	No organised efforts at present	Improve data collection, analysis and dissemination on job market trends

Source: Author

4 Higher education and research

With the fast pace of change and due to the impact of globalisation, the role of the higher education institutions in furthering research and scholarship is becoming important. The term 'research and scholarship' usually refers to uncovering or generating new knowledge, or solving particular practical or theoretical problems. With its

increasing importance, various definitions have been given to account for a wide range of activities and disciplines. While 'research' means systematic and rigorous enquiry leading to research outputs, 'scholarship' is seen as the means by which academic keep themselves up-to-date with changes in their own disciplines so that they can communicate the latest knowledge on the discipline to their students and peers. Research and development (usually abbreviated as R & D) activities are aimed at making scientific discoveries and inventions that are commercially attractive (Harman, 2006). The focus of this section is primarily, though not exclusively, on R & D activities.

4.1 Concepts and issues

During the last century, knowledge has been a key factor in economic development, and societies that are able to produce, select, adapt, and commercialise knowledge have better chances of achieving sustained growth and better quality of life. Mcarthur and Sachs (2002) point out that of the three inter-related mechanisms- division of labour, capital accumulation, and technological innovation involved in economic growth, technological innovation is the most fundamental; it is self-perpetuating and pushes economic growth on a continuous basis. Each new innovation triggers further innovation, in a kind of chain reaction that fuels long-term economic growth. Thus, in several science-based, technologically advanced economies, economic growth has continued for several decades without running out of dynamism, or even slowing down. This underscores the need for research, particularly scientific research in modern economy.

Higher education plays an important role in supporting a nation's R & D efforts. It provides skilled human resources for the R & D system. It is often the lead player in public research arena. Academic research through universities forms an important component of the technological base of a country. In the USA that has the most vibrant and the largest R & D system in the world, higher education plays a vital role.

This sub-section briefly explains some concepts. It outlines a few developments that define the role of innovation in economic growth and explores its linkage with academic research.

4.1.1 Pure and applied research

Research is seen as a primary and a vital function of a university and, therefore, of the higher education systems worldwide. There is often a conflict between pure and applied research, particularly in science. Though pure science may require no justification outside itself and its usefulness has no bearing on its validation, it is now widely accepted that the fruits of technology follow careful nurture of basic sciences. It is commonly held that pure science, applied science, engineering and technology follow one another in a linear sequence. Therefore, pure science is not only important by itself; it also has an important role in laying the foundation for applied research that leads to innovation.

Despite equal importance of both basic and applied research and blurring of the boundaries between them, various distinctions have been made between basic and applied

research. The OECD (2002) defines pure basic research as experimental and theoretical work undertaken to acquire knowledge without looking for long-term benefits; strategic basic research is defined as experimental and theoretical work undertaken to acquire knowledge in the expectation of useful discoveries; applied research refers to original work undertaken to acquire knowledge with a specific application in view; and experimental development is the systematic work, using existing knowledge gained from research or practical experience, directed to producing new materials, products or devices.

4.1.2 Technology transfer and commercialization

Substantial investments are required to transform abstract ideas from scientific research into commercially viable products. It also requires the universities to be pro-actively engaged with industry. Success in technology transfer efforts and commercialisation of scientific research depends upon close and continuous engagement with the industry along with an effective intellectual property rights (IPR) regime.

4.1.3 Interdisciplinary research

Looking at the technology trends, it is seen that some of the most significant technologies of the future are likely to be at the intersection of disciplines that are now just beginning to flourish. Technology, unlike science, is a group activity; it is not based on an individual intelligence but interacting intelligence of many. Both these determine the manner in which academic research in the country should be organised. This requires the formation of inter-disciplinary teams within the higher education institutions. Such teams could also include researchers from other institutions and public research laboratories and also from the industry.

Understanding of the linkages between pure and applied research, appreciating the need for an effective mechanism for technology transfer for its commercialisation, existence of a proper IPR regime, importance of interdisciplinary research – all would help in providing a foundation for shaping public policy for supporting academic research in the country.

4.2 Research in India in the global context

As evident from the concepts and review of developments in the previous sub-section, R&D covers a range of issues too complex and too broad to be defined by any single parameter. However, input measures, such as the number of trained personnel carrying out R & D work, the level of national expenditure on R&D and output measures, such as the number of scientific and technical articles published, patents filed, revenues from royalties and licenses, high technology exports are indicators that reflect the technological capability of a country. At times, various combinations of these indicators are used to develop indices to depict the innovative capacity of a nation. In addition, several ranking methods have been evolved to show relative research performance of various higher education institutions.

This sub-section analyses the present status of research in India in terms of various input and output measures. Comparisons with other countries have been used to benchmark India's performance. These comparisons are essentially within top-ten economies as per their GDP on purchasing point parity (PPP). In some cases, a few other countries have been included in the comparative analysis to make a specific point. In many countries including India, a substantial share of R&D is carried out in institutions and organisations outside the higher education system. Getting disaggregated data on the role and the performance of academic research alone is often difficult; therefore discussion in this sub-section is on the R&D in India as a whole.

4.2.1 Expenditure on R & D

Until recently, research, particularly academic research, has been relatively isolated from the demands of economic utility. Research was considered to have high externalities. It was, therefore, largely publicly funded. However as the private benefits to individuals and firms started accruing due to the emergence of IPR, private investments in research began. It was realised that the producers of ideas respond to incentives: if they are granted no rights in their creations, they will create less, or not at all.

Today, research is funded both from public and private sources. Expenditure on R & D by a nation is often used as a proxy to the importance given by a nation to develop its technological capacity. The share of R & D expenditure from private sources is a good indicator of the dynamism of the private sector. It shows as to how the private sector uses innovation to drive national competitiveness.

Table A18 shows expenditure incurred on R & D activities by ten-top economies and a few other selected countries for different years depending on availability of data between years 1996 to 2003. It is seen that expenditure on R & D in India is merely 0.81 per cent. In comparison, it is 2.6 per cent in the US, 3.15 per cent in Japan and 2.5 per cent in Germany. Korea spends around 2.96 per cent of its GDP on R & D, which is at par with top OECD countries. China's research spending is picking up and is catching up with the European Union, which lags behind the US and Japan. It is 1.31 per cent of the GDP. In India, research expenditure had declined from a peak of 0.98 per cent in 1988 to 0.66 per cent in 1997 before increasing marginally to reach 0.81 per cent in 2001.

The share of various sectors in the total R & D expenditure in India for the year 1998-99 was: the central government including the public sector industry – 67.5 per cent, private sector – 21.6 per cent, state governments – 8.0 per cent and higher education – 2.9 per cent, major scientific agencies accounted for 56 per cent share of the national R & D expenditure in 1998-99 (Gupta and Datta, 2005). In comparison in most developed nations, the bulk of the expenditure on R & D i.e., up to 50 to 60 per cent is made by the private sector.

There are huge upsides to an increased R & D expenditure. As Finland increased its R&D spending to 3.22 per cent from 1.5 per cent of its GDP, its exports mainly high tech exports, increased manifold. However, it should be noted that higher R & D

expenditure is no guarantee of progress made by a country; not only the amount spent on R & D, but also the quality of expenditure on R & D matters.

4.2.2 Research manpower and doctoral education

In terms of the number of researchers and technicians engaged in R & D activities, India has merely 119 researchers, whereas Japan has 5287 and the US has 4484 researchers per million of population. Even in absolute terms, the number of researchers in India is much smaller compared to the US, China, Japan, Russia, and Germany. The number of technicians in India is however not as small. It suggests that R & D establishments in India have more technicians per researcher compared to most of the other countries (Table A19).

The numbers of doctoral degrees awarded in science and engineering in India is a little over 6000 doctorates, compared to 9000 in China and 25000 in the US. It increased rapidly from a little over 1000 in 1990 to over 9000 in recent years in China. In comparison, there has been a modest increase in India. The National Science Foundation (NSF) - Science and Engineering Indicators – 2002 show that in the US, about 4 % of the science and engineering graduates finish their doctorates. This figure is about 7 % for Europe. In India this is not even 0.4 % (Table 10).

Table 10: Ph. D. Degree awarded in India.

Subject	1982/83	1988/89	1990/91	1991/92	1993/94	1999/00	2000/01	2002/03	2003/04
Science	2,893	3,044	2,950	3,386	3,504	3,885	3,734	4,976	5,408
Engineering	511	586	620	323	348	723	739	833	908

Source: University Grants Commission

Though there is an increase in the absolute numbers of students enrolled in science at the graduate and postgraduate levels, its percentage in overall enrolment has declined. At the undergraduate level, it has declined from 33.2 % in 1971 to 21.7 % in 1997; and at the postgraduate level from 26.1 % in 1971 to 22.2% in 1997 (Powar, 1999). This percentage drop in students opting for science reflects added opportunities for (the better prepared) students in professional courses in engineering, medicine etc. Some students prefer commerce or law to science. This is not unusual. In today's market driven social order, good students are rarely interested in taking basic science as their career. This trend is seen in almost all countries. However, unlike the developed countries, this would have a cascading effect in India. The country will not be able to attract talent from outside; rather it would lose nearly all talented students who happen to study basic sciences on their own (rare) or who drift (majority) to such courses in the absence of their preferred professional subjects (Lakhotia, 2005).

4.2.3 Publication counts

Publication count in refereed scientific and technical journals is often used to measure impact of research. For this purpose, the Institute for Scientific Information (ISI) has developed a methodology and identified and classified sets of journals for Science Citation Index (SCI) and Social Science Citation Index (SSCI). The databases used by ISI for SCI and SSCI have their limitations. There is some bias towards English-language journals. These exclude some of the journals of regional or local importance. Despite these limitations, citation analysis based on these databases is useful for measuring research performance in global context.

The Research Handbook published by UGC undertook benchmarking of research performance for various countries based citation analysis using ISI databases (UGC, 2005). Table A20 shows the number of papers and the number of citations for top ten countries by the size of the economy and a few other countries for a ten year (1994-2004) period. It is seen that the top seven countries in research publications are also the world's seven largest economies - the G7 countries. This suggests that research publication count is related to their economic performance.

India stands at the 13th position in terms of the number of papers published; it ranks 21 in terms of number of citations with citations per paper being as low as 3.17 (119 rank out of 149 countries) compared to 12.31 in case of the US. The US has the largest share of papers and also the citations. Even smaller countries like the Netherlands and Switzerland have large citation and publication counts as compared to India.

Arunachalam (2004) analysed the trends of publication counts over a ten-year period (1993-2003) for a selected group of countries. The trends show that India's scientific output is on the decline or has remained very nearly the same over this period; whereas, countries like Brazil, China and South Korea have out-performed India and have improved their performance significantly (Figure 16).

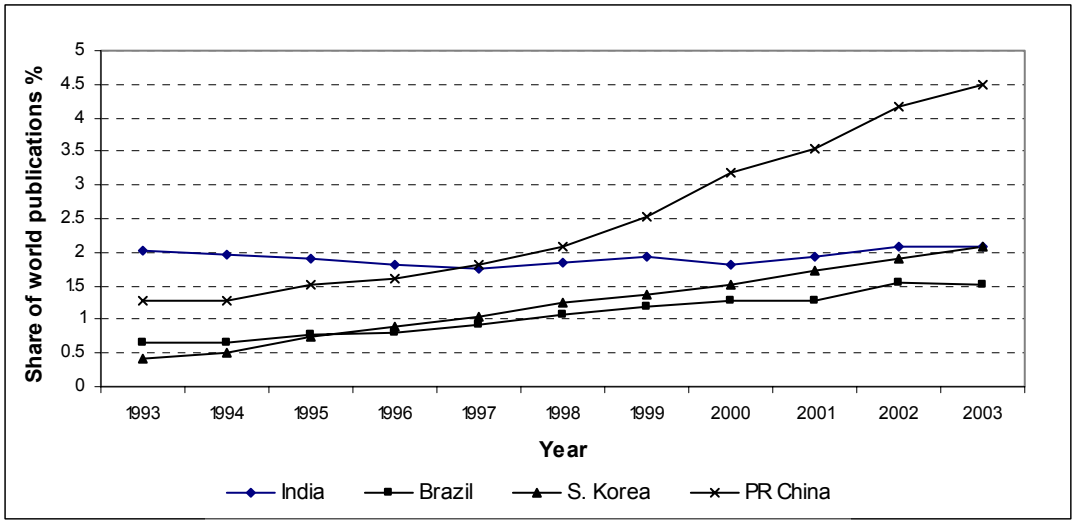


Figure 16: Percentage share of world publications

4.2.4 Patenting

Patenting is an important measure of innovation. With a view to facilitate the filing of patents in multiple countries, an application process was introduced under the Patent Cooperation Treaty (PCT) under the aegis of the World Intellectual Protection Organization (WIPO) in 1978. Though the grant of patents remains the exclusive domain of the individual countries or patent unions, however, number of PCT applications filed by a country is a good measure of the innovative capacity of a country.

Data on PCT application filed by different countries in 2005 was released by WIPO on February 2006. For select countries, it is given in Table A21. Not only a very small number of PCT applications are being filed from India, their numbers have declined during the year 2005. Even smaller countries like Switzerland and Netherlands have filed much larger number of PCT applications. In comparison, all countries (except Russia and Sweden) have recorded growth. A notable feature of PCT filings in 2005 was the impressive growth in applications from China, Korea and Japan. East Asia now accounts for nearly a quarter of all international applications. The US with 33.6 per cent and Europe (members of the European Patent Convention) with 34.6 per cent continue to be most important country / region in international filing of PCT applications.

A positive development for India, however, was that Council of Scientific and Industrial Research (CSIR) from India was among the top ten users of PCT from the developing countries. Track record in patenting of some of our academic institutions such as University Department of Chemical Technology (UDCT) under the Mumbai University and the Indian Institute of Science, Bangalore has also been impressive.

4.2.5 High technology exports and royalties and license fees

In terms of high technology exports and royalties and license fees from technology licensing, India's performance is dismal. It is lowest amongst all the top-10 economies and other selected countries.

4.2.6 Competitiveness ranking

The World Economic Forum (WEF) has been measuring national competitiveness and producing Competitiveness Reports for over two decades. Since 2001, WEF has been providing Growth Competitiveness Index (GCI) for 75 countries. This index is based on quality of macroeconomic environment, the state of country's public institutions and level of its technological readiness. It further separates the countries as core innovators and non-innovators based on number of US utility patents.

For the year 2005, India is at a low rank at 50, though this is an improvement over its previous year's position at 55. Various other indices like innovative capacity index, innovative policy index, cluster innovation environment index, linkages index etc. have also been developed. It is noted that in all these indices India fares poorly.

4.2.7 Global ranking of higher education institutions in India

With higher education becoming internationally competitive, formal international ranking of higher education institutions are being attempted by various organizations around the world. Such organizations include the Institute of Higher education at Shanghai Jiao Tong University (China) [http://ed.sjtu.edu.cn/ranking.htm] and the Times Higher Education Supplement (UK) [http://www.thes.co.uk/worldrankings/].

The Shanghai team publishes its annual rankings since 2003 with the top 500 world universities while the THES has started its rankings in 2004 with the top 200 world universities. While Shanghai ranking uses criteria as alumni / staff winning Nobel Prizes and other prestigious awards, articles published in particular periodicals such as Nature and Science, the THES ranks institutions on the basis of the broader parameters such as peer reviews, international citations, staffing levels, international students and faculty. Though, none of these criteria are very comprehensive, yet these rankings are good indicators of relative quality of higher education institutions in different countries.

In the Shanghai University ranking of World-class Universities, only three universities, namely – Indian Institute of Science (Bangalore), IIT (Kharagpur) and Calcutta University figure in the world's Top-500 for the year 2004. Only the Indian Institutes of Technology at rank 50 and the Indian Institutes of Management at rank 84 from India figure in the 2005 London Times Higher Education Supplement (THES) ranking of world's top 100 universities. United States (31), United Kingdom (13), and Australia (12) have the largest number of universities in this list of the first 100. Even China, Netherlands and Switzerland have four universities each in the Times top-100 universities. Please see Table A22. The THES ranking of technical institutions based on peer review of 2375 academics ranked seven IITs above other global technical institutions like Stanford and Georgia Tech. The IITs were ranked at third spot after MIT and the University of California at Berkeley. Even here though the IITs had a high peer score, yet they fared poorly in citation counts.

It is a matter of concern that only a few universities in India compete favourably with the world's best institutions. Their number is not only small; these are not in top rung. A country of the size of India needs a much larger number of higher education institutions that can compete with the best in the world.

4.3 Research in higher education in India

The data in the previous section paints a grim picture of the status of research in India. A matter of greater concern is poorer performance of the university sector. The performance of university sector was quite significant in 1950s and 1960s. It has fallen significantly in recent years. In OECD countries, research from academic institutions accounts for about 15-35 per cent of the overall R & D effort of the Country. In basic research, as much as 60 per cent or more is contributed by the academic institutions. In the US there is a very strong relationship between undergraduate / postgraduate teaching and research. In the well-known universities of the US, the undergraduate students have a good exposure to eminent research scientists; which is lacking in the Indian system.

Further, the academic institutions in India are often severely under-resourced. These have insufficient linkages amongst themselves and with the society at large. They suffer from cronyism and academic in-breeding that prevents cross-fertilisation of ideas and is an impediment for good science. It is seen that the researchers in India emulate topics of the developed economies often to the neglect of local need and national priorities, in order to get published and gain respectability.

Though all universities are expected to have research focus and be comprehensive in their focus both on teaching and research, data on doctorates, particularly in science, engineering and medicine suggests that only a few institutions have real research focus. In engineering there were merely 650 doctorates awarded in 2001/02. Of these 80 per cent were from just 20-top universities. In science, 65 per cent of the doctorates awarded were from the top-30 universities.

Sustained research efforts made by the faculty are eventually reflected in recognition of their work at the national level. Such recognition includes membership of science academies. Even here, it is seen that the distribution is skewed. According to the Research Handbook (UGC, 2005), only about 20 out of the 120 traditional universities have a fellow in one of the three science academies, namely – Indian National Science Academy (INSA), Indian Academy of Sciences (IAS), Bangalore and National Academy of Sciences (NAS), Allahabad.

There is a serious and growing concern about the quality of Ph.Ds in the country. Requirement of Ph.D for appointment and promotion as faculty member had undesirable consequences. The fact that the highest number of Ph.Ds are awarded not by the most reputed universities suggests widely varying standards of quality control for Ph.D degree. In some universities, student is awarded a Ph.D degree within 18 months and in others students take three to five years, sometimes even longer to complete their Ph.D degree. The Verma Committee[17], while inquiring about the status of higher education in Bihar, found out that a single thesis was used by as many as eight students for award of Ph.D in Bihar universities. There have also been cases of plagiarism.

Quality is a major issue in social science research as well. Doctoral theses in social sciences often apply a descriptive approach to specific limited topics without really relating it to a wider socio-political and economic context. There is a need for a more analytical and comparative approach in doctoral research and relating it to society, policy and economy. A study conducted on Social Science Research Capacity in South Asia – 2002 showed that the share of the Indian universities in the special articles published in the Economic and Political Weekly was only about a 25 per cent. This too was dominated by only three universities, namely - Jawaharlal Nehru University, University of Mumbai and University of Delhi (Chatterjee, 2002).

A subject of discussion in scientific circles for almost last fifty years in India has been the '*two box disease'* that has afflicted the universities and the government funded R&D laboratories in India. The two systems are poorly connected in India and work in

isolation. In comparison, in most industrialised countries, these work together in tandem (Parthasarathi, 2005). There is an increasing dichotomy in teaching and research between universities and research institutes in India. It is an accepted fact that research is stimulated, informed and occasionally even germinated as a result of instructional activities, even from teaching undergraduate courses. Being actively involved in research makes one a better teacher; and instructing students makes one a better researcher. These complementarities require research and teaching to go together. The way new knowledge is created, protected and managed requires new ways of collaboration between academia, research laboratories and industry. The need for their working together is no more an option, but an imperative.

In the midst of these disturbing trends, there are a few signs of hope. Several initiatives have been taken to address various concerns. The consortia approach has been adopted to enhance access to expensive e-journals and e-resources in a cost-effective manner. There is more liberal funding of selected institutions. The IISc at Bangalore and the seven IITs now receive more funds. In addition, five universities have been identified and five more will be identified as universities with potential for excellence. An amount of Rs.300 million (US$6.38 million) is being allocated to each of them. The strategy, though similar to the selective approach in public funding adopted by China to nurture excellence, the scale and coverage of funding in India is very low compared to the initiatives in China.

In 2005, the Indian government has started two new institutes for science education and research at Kolkata and Pune, the third one is planned at Chandigarh. A new institution for design and manufacturing has been set up at Jabalpur. These are efforts in the right direction, but for a country of the size of India, much more needs to be done.

4.4 Research- innovation- growth linkage

Despite India's poor performance in basic research (as measured by publication and citation counts) and applied research (as measured by patent counts), there is general optimism about India's potential in the new knowledge-based economy. Virmani (2005) has cited several reasons for it. These include continued growth of business services sector, demographic transition and demographic bonus, indigenous entrepreneurship, large institutional and social capital, the ability of Indians to manage diversity, and huge pool of underutilised brain. He further adds that innovative capacity of a nation matters only after a country reaches the high-income category. India's performance in high technology research would not really matter in the catch-up stage. However, this does not mean to suggest that continued poor performance of basic research and technology development in India should not be a matter of concern. The fact that there are several restrictions in transfer of strategic technologies, the country needs to develop indigenous technological capabilities.

In addition to the arguments above, there is now, a new understanding of the manner in which innovation drives growth. Several nuances of these new developments are not adequately represented through various science and technology indicators that are often used in international comparisons on competitiveness. The importance of gradual and experimental innovation in comparison to breakthrough inventions, environment for rapid diffusion of technology facilitated by new information and communication technologies, the power of disruptive innovation, and migration of skilled people from universities to businesses are all important features of technology driven growth. Of all of these, the new information and communication technologies are the most important in recent years and have helped build up momentum for innovation-led growth.

There is often a focus on big ideas and breakthrough innovations; the experience has however shown that gradual and experimental innovations bring in greatest gains in productivity that drives economic growth. Therefore, it is not only the big ideas that are important, but also millions of little ideas produced and put to use are important (Romer 1993). This places premium on diffusion of technology in society where the higher education institutions could play a vital role.

Reaching out the benefits of technological innovation to the masses is an important policy goal in the developing world. There is a huge demand at the bottom of the pyramid – from people who need and want new goods and services but cannot afford them. This requires disruptive innovations that could bring in a different value proposition - typically cheaper, simpler, smaller, and frequently more convenient to use. Disruptive innovations can open new opportunities in such circumstances creating a win-win situation leading to accelerated growth.

Though, IP protection and its licensing for commercialisation is important, there is evidence to support that more effective form of technology transfer is the migration of skilled people from universities to businesses. Technical know-how that researchers carry with them is significantly more valuable than the legal right to commercialise inventions. Therefore a strategy based on creating environment for training of highly skilled manpower is more sustainable. This requires a people-centric approach to be adopted in the national innovation system.

The new information and communication technologies offer vast opportunities for progress in all walks of life. These offer opportunities for economic growth, improved health, better service delivery, improved learning, and social and cultural advances. India's information and communication technology expenditure is not only a decent 3.8 per cent of the GDP; new technologies are highly affordable in India. This has helped in rapid increase in its usage. This increase is having a large spin-off in fostering innovation throughout the society and contributing to growth.

This sub-section attempted to explain as to why despite poor international rankings in various science and technology indicators, India has performed well in recent years. Though efforts are required to improve the country's innovative capacity, the

efforts should be to build on the existing strengths in light of new understanding of the research-innovation-growth linkage.

4.5 Key findings, concerns and opportunities

India's position on various input and output measures for research performance have been summarised in Table 11.

Table 11: S & T Indicators for four top economies (various years)

PCT – Patent coordination Committee; HEI – Higher education institutions

	United States	China	Japan	India	Remarks
Expenditure on research and development (R&D)	2.60	1.31	3.15	**0.81**	2.64 % of GDP spent on R&D in Korea and 34.9% R&D through HEIs in Canada
- As percentage of GDP	16.8	10.1	13.9	**2.9**	
- Percentage performed by HEIs					
Research manpower					Russia also has a relatively large number of researchers
- Researchers (per million population)	4484	663	5287	**119**	
- Technicians (per million population)	--	--	528	**102**	
Rank - Growth Competitiveness Index	2	49	12	**50**	Finland is ranked at No.1
Patent – PCT applications	45111	2452	25145	**648**	33.6 % of applications on PCT from the US
Publications in refereed journals					
- Number of papers -Rank	1	9	2	**13**	38.5 % papers and 62.7 % citations are from the US
- Number of Citations - Rank	1	18	4	**21**	
- Citations per paper – Rank	1	121	11	**113**	
High technology exports					33 % of Korea's manufactured exports is high tech exports
- Volume (US$ billion)	216.02	161.60	124.04	**2.84**	
- As percentage of manufactured	32	30	24	**5**	
Royalties and license fees					UK also has sizeable receipt and payment under this head.
- Receipts (in US$ billion)	52.64	0.24	15.70	**0.03**	
- Payments (in US$ billion)	23.90	4.50	13.64	**0.42**	
Number of HEIs on Sanghai's Top-500 university list	161	18	36	**3**	Highest from India is Indian Institute of Science in 251-300 range

Source: Compiled by author from detailed tables in annexure (from various sources)

A reality check above and an analysis of the role of higher education institutions in research in the previous sections would have a sobering effect on the *'irrational exuberance*' about India becoming a global knowledge power. It is seen that despite a very large system of higher education and a significant number of science and engineering graduates, research output of India in terms of publications, particularly its quality, patenting, high technology exports is poor. India ranks rather low on various competitiveness indices.

There is a lack of adequate linkages between universities and research laboratories on the one hand and universities and businesses on the other. With very little being spent on research through higher education institutions, the required infrastructure and experimental facilities for research does not exist; whatever exists is not being optimally

utilised due to lack of collaborative work and absence of the culture of sharing of facilities. There is waning interest in science at the school level. Bright students are not opting for science at the degree level and beyond. The status of doctoral education is disturbing. Their numbers are not increasing to meet the growing demand from the public sector research labs and higher education institutions. There are a small number of university level institutions that produce a decent number of doctorates. Even amongst them, there is a suspicion about the quality of doctoral education from at least some that are not known to be reputed, yet contribute to a significant numbers of doctorates.

The concerns above are real. Addressing these concerns is essential to seize the new opportunities that are available to India in the modern world. The job market for higher science and technology professionals has improved with a large number of global R&D centres being set up in the country. India is doing reasonably well in the pharmaceutical and automotive sector. Over the last few years, 150 MNCs have set up R & D Facilities in India (120 in last 5 years). These are in diverse fields - not only confined to IT sector. Though these are mainly confined to development research and not in the cutting edge technology areas, yet this is a healthy development. The reason for this development is the low cost manpower around four to six times cheaper in India and a huge talent pool in English that the country has. It needs to be realised that the total investment in these R&D centres is not huge. These centres do not create jobs in huge numbers. As a result their direct impact on national income may not be significant. Yet, when R & D flourishes, the growth in manufacturing and other services would become inevitable. This helps the country to take new trajectory of growth. It is now seen that under pressure of the global competition, even the domestic private sector is keen to invest in the technology development.

4.6 Analysis and action points

In the final analysis, it is clear that academic research and higher education are important in fostering innovation through creation of new knowledge and developing trained manpower to use that knowledge for creating wealth and enhancing public good. Now there are new ways in which innovation is driving development. There are many changes in the way research is being funded and managed the world-over. Taking the new developments into consideration, several actions are required to be taken. These would include increasing the level and mechanism for funding academic research in India, improving infrastructure for quality research, putting in place objective measures for measuring research performance, rewarding performance, and promoting collaboration and competition.

4.6.1 Funding research

In view of its high positive externalities, research is primarily funded by the government. Though there is increasing share of the private sector in funding research, particularly for funding applied research and technology development; most of the basic research is funded by the government. Most countries spend a significant amount of their research budgets through the higher education institutions. In the US, 16.8 per cent of all government expenditure is made through higher education system; in Germany, it is 17.1

per cent and in UK, it is 22.6 per cent. In comparison, in India, only 2.9 per cent of the total government expenditure on R & D is spent through the higher education institutions. This is very low. Even in China, 10.1 per cent of all R & D expenditure is made through higher education institutions.

Overall, the R & D expenditure is not only low (as noted in sub-section 4.2 above), the expenditure on R & D made through higher education institutions is even lower. Therefore, a larger budget provision for research through higher education institutions is necessary.

Universities are heterogeneous. Their research profiles and research capacity vary widely. Expecting similar research outcomes on per unit investment from all of them is unrealistic. In recent times, there is a trend in many countries to separate institutional funding for teaching from funding for research. Considering strong teaching and research complementarities, this may not be the best approach. However to optimise public investment in research, a selective approach in research funding would be desirable. Institutional funding for research could be done at three levels. A small number of higher education institutions – say fifteen institutions could be supported to become world class research university, so that these can compete with the best in the world; around a hundred institutions could be supported to have infrastructure and facilities at par with a good higher education institution internationally.

Performance-based competitive funding is common for public funding of academic research the world over. Performance measures range from use of simple performance indicators like higher degree completions, publication counts etc. (as in Australia) to comprehensive research assessment exercise (as in UK). At times, there is focus on mission-oriented research that is funded on competitive basis. In addition, there is also project funding and funding for special programmes. All these mechanisms are in use in India in some form or the other. There is however a problem of sub-optimal funding, near absence of objective assessment and lack of coordination. There is a need for greater objectivity and transparency in public funding of academic research in the country. This would help improve its outcomes quality. And finally, the scale of public funding of research through academic institutions has to be significantly enhanced.

4.6.2 Setting priorities for funding research

An issue closely linked with public funding of research is the priority setting for university research. Various countries use different approaches for setting the priority for public funding of research. In Korea, research in areas that could possibly be the engines of future economic growth are identified; while in the United States, priorities are identified to direct research efforts towards major areas of concern (OECD, 2003). Korea uses the foresight model, whereas Japan has been conducting periodic technology forecasting exercise using the Delphi method since 1970. In countries such as Japan, Korea, Germany, the Netherlands, a "top-down" approach is dominant. Several other countries such as the United States, Canada and Sweden adopt a decentralised - "bottom-up" approach for setting research priorities. Despite differences in approach, almost all countries set up priorities for public funding of research including research through the

higher education institutions. In India, setting up of research priorities is not done in any organised manner. There is a need for streamlining this.

4.6.3 Research coordination

Research is carried out in a wide variety of settings and funded by a number of agencies. Research is a collaborative activity. Setting of priority for research and conduct of research involve a wide range of stakeholders. Considering this, many countries have developed new mechanisms for coordination of research agenda and research efforts. In the US, such coordination is done through the National Science Foundation (NSF) and National Health Service (NHS) for medical sciences. In India also, the need for setting up such an autonomous body as the NSF has been under consideration for past some time.

Whereas, setting up of NSF-type body may be desirable, a *Research Grants Portal* could be established with a view to address the problem of duplication of research efforts and lost opportunities for collaboration due to lack of communication between different agencies problems. The aim of such a portal could be to provide centralised access to grants. Rather than having to go through the laborious process of searching grants by the agency, potential applicants can easily search one comprehensive database using a number of criteria, such as date, agency, category etc. There could be a system of assigning a unique number to each research proposal to track such grants over a period of time. Applications could be made online through this portal. It should be possible to have simple registration process that could enable researchers to submit applications. The progress of applications could then be tracked online. Increased homogeneity in forms would help to simplify the application process and reduce avoidable administrative burden of researchers. This would also ensure that applications pass through a central contact and enable effective coordination.

4.6.4 Sharing research infrastructure and facilities

Infrastructure and experimental facilities for research, particularly for science and technology are expensive. Most often these are not optimally utilised. This would call for a strategy on nationally integrated research infrastructure. This has to ensure that existing expensive research equipment, high-end computation and communication infrastructure are accessible to all researchers in the higher education institutions and research agencies and new research infrastructure can be created where gaps exist by pooling of resources. Whereas, more expensive and less intensively used facilities should necessarily be shared; less expensive and more intensively used facilities need not be shared; and the other facilities could be shared on selective basis depending upon the circumstances.

4.6.5 Research partnerships

Research requires collaboration not only among higher education institutions, but also between these and the research laboratories on the one hand and with the industry on the other. Cooperation is particularly important to achieve critical mass in new fields of knowledge, which is often missing. This often acts as an impediment to creativity and productivity. There are some bilateral linkages. These are primarily for staff and student

exchange and rarely for promoting cooperative research. Multiple linkages forming inter-connecting clusters or groupings that are either regional or discipline / subject specific are extremely rare.

Despite this realisation, collaborative efforts are few. Most of these are not very effective. There are five criteria for effective collaboration. These are – (i) activities should be jointly designed, implemented and monitored, (ii) resources should be contributed, (iii) organisations need to mutually benefit from collaboration, (iv) people at all level should be actively involved and supportive of the relationship and (v) collaboration would necessarily require sacrifice of some autonomy of the organisations involved.

Considering the potential for greater synergies between higher education institutions and research agencies, possible models for closer collaboration may be evolved. There is a need for greater focus on commercialisation of research through collaboration and possible alternate funding models to promote excellence across the national research effort. There are inherent gaps in thinking about research in university environment and industry environment (Table A23). This gap is to be bridged to have meaningful engagement of industry with higher education institutions. Apart from bridging these gaps, resources need to be committed to institutionalise such partnerships. Academic institutions often face the problem of funding for mobility that is essential for any collaborative activity. Therefore, provision of mobility grants or a glue-funding is perhaps necessary.

4.6.6 Improving access to information resources

Easy access to scholarly communication is a critical input for quality research outcomes. There is a major concern today that many scholarly journals have become so expensive that most higher education institutions cannot afford them. Scholarly communication in electronic formats has now become popular. With its very low, almost zero marginal cost in distribution, it provides an innovative solution to the affordability problem. Sharing of information resources, putting in place effective document delivery services and open archiving (OA) are becoming popular and alternate solutions to address the affordability issue.

The OA approach by creating institutional archives of research publications from the institution needs to be promoted. According to many recent studies papers available via open access archives are cited anywhere between 2.5 - 5.5 times more often than papers published in the same source but not made open access. Such archives can be created in all universities and other institutions of higher learning. The software is absolutely free. A Linux server is the major equipment needed, besides a Internet connection. Any computer science graduate or a librarian with some training can set up the archive and run it. This would enhance research productivity by improving visibility of Indian research. This also addresses the problem of research publications from India not getting as much impact as it should because many of them are published in journals that have a small subscription base.

India could also work pro-actively and get integrated to the worldwide systems of library services and information systems to share resources. For instance, it would be desirable to partner with OCLC (Online Computer Library Centre) - a membership-based, service and research organization that serves to provide access to the world's information at reduced cost. The OCLC bibliographic database, WorldCat (the OCLC Online Union Catalogue), is one of the most consulted electronic databases in higher education. There is a possibility of developing a separate model for India that may include hosting of OCLC data locally, leasing OCLC's software and collaboration for standardisation of bibliographic records for major Indian universities and creation of bibliographic records for documents in Indian regional languages including Hindi.

Higher education and research institutions form consortia to subscribe to large base of journals and databases in electronic format to benefit from discounted pricing due to economies of scale. The consortia are able to obtain attractive terms of agreements for its members through hard bargaining with publishers and aggregators. Such negotiations often involve technical complexities and provide financial options beyond the comprehension of an individual institution. Though there are many library consortia in the developed countries, this movement has just picked up in India. There are many initiatives in India. Four of these have significant membership and subscription base (Box 2).

Box 2: Four existing library consortia in India

(1) Indian National Digital Library in Engineering Science and Technology (INDEST) Consortium http://paniit.iitd.ac.in/indest/: with a membership of 164 institutions (38 core institutions funded by the Ministry of Human Resource Development, Government of India, 44 institutions by the All India Council of Technical Education (AICTE) and 82 self-supporting institutions);
(2) Council for Scientific and Industrial Research (CSIR) E-Journals Consortium http://www.niscair.res.in/: funded by the CSIR for its all its 44 labs;
(3) University Grants Commission (UGC) eJournals Consortium http://unicat.inflibnet.ac.in/econ/mindex.htm: funded by the UGC for 100 universities and being extended to other universities and colleges and
(4) DAE E-Journals Consortium: for 36 institutions under Department of Atomic Energy.

Source: *Compiled by the Author from various sources*

There is a need and possibility for the consolidation of the existing library consortia. With the existing four consortia serving as the nucleus, a national consortium could be formed. The national consortium could extend to the institutions falling under various ministries such as the Department of Science and Technology (DST) with 30 institutions, Department of Bio-technology (DBT) with 12 institutions, Defence Research and Development Organization (DRDO) with 44 institutions and Department of Space with 10 institutions. The national consortium would have a much greater bargaining power. This can ensure greater coverage both in terms of subscription-base and number of institutions. The national consortium can take up collaborative activities such as setting-up back file repositories, e-print and electronic theses and dissertations (ETD) repositories, local hosting and mirroring of e-resources, cooperative cataloguing, training,

etc. The national consortium may act as a central agency to coordinate all activities related to acquisition, creation and access to information in digital format. The funds for a national consortium can either be pooled from different institutions or made available directly.

4.6.7 Improving quality of doctoral education

A major handicap faced by doctoral research in India is its poor visibility and the 'unseen' factor. There is an international trend to preserve and centrally maintain repositories of electronic thesis and dissertations and make them generally accessible and improve their visibility. This helps in improving the quality of doctoral research. In this context, there is need to create a mechanism for collection and compilation of catalogue information referred to as "metadata" on all theses and dissertations in a standardised format in the country. The universities could also be encouraged to submit full text of their theses and dissertations in electronic format to a central repository. This can then be made available to all researchers in the country to facilitate further research, prevent gaps and overlaps and plagiarism.

4.6.8 Creating highly skilled manpower through collaborative approach

With a view to move up the value chain in the knowledge intensive global economy, we need to create manpower in the new and emerging areas. This would automatically attract investment as evident from the 150 multi-national corporation (MNCs) setting up their R & D Centres in India in recent years. World-class research universities usually have a large number of graduate students and researchers in many new and emerging areas science and technology. They have state of the art infrastructure and facilities for their research areas. They attract talent from all over the world and have a lot of activities surrounding their research areas. This provides a vibrant environment and makes these research centres sought after by researchers from all over the world. In India, though some good work is being done in new technology areas, in most cases it is nowhere close to world class. Sub-criticality is the main issue.

The problem of sub-criticality can be addressed by developing collaborative programmes around new technology areas. These programmes could involve select academic institutions, research laboratories in the public and the private sector and the industry. The focus of such initiative could be to develop highly skilled manpower in new technology areas. The strategy could be to create a critical mass around a technology area and provide a stimulating environment for academic and research programmes of international standards. Not only graduate and doctoral students, even post-doctoral students from all over the world could be attracted to these programmes by offering them attractive scholarships and fellowships. New virtual structures may have to be created overlaid on the existing physical organisational structures to enable this to happen. Such initiatives need to be liberally funded through special focus programmes steered by committed and dynamic persons from the related area.

4.6.9 Incentive system to promote useful research

Cross-country analysis has shown that countries that have a strong incentive system in place relating to ownership and use of IPR arising out of academic research are more successful in commercialisation of research (Henrekson & Rosenberg, 2001). The American supremacy in technology is led by major research universities, which under the Bayh-Dole Act of 1980 maintain ownership of all IP resulting from federal research grants. Not only this, a fair portion of the income from publicly funded research is allowed to be retained by the researchers. This provides a strong incentive to them to innovate. Higher education institutions in India are yet to catch up with their American counterparts on this. The guidelines and facilitative mechanism put in place by the UGC for creating awareness, protection and management in the university system in India need to be made operational at the earliest. In due course, a Bayh-Dole-type legislation may be enacted to create an incentive system conducive to promoting innovation in India.

4.6.10 Attracting private investment and participation of world class universities

Postgraduate education and research are resource intensive. Normally, this cannot be sustained on tuition fee alone. Therefore, other than the US and Japan, such universities are mostly publicly funded. In the US and Japan, the culture of philanthropy to support research and existence of favourable tax structure has enabled such research universities to flourish in the private sector. Now these universities have built a huge portfolio of IP and earn substantial income from technology transfer and its commercialisation.

Realising that postgraduate teaching and research in science and engineering could be a viable preposition, the private sector in India has shown interest in setting up of higher education institutions for postgraduate teaching and research in science and engineering. A non-profit group (AKRF based at Mumbai) plans to set up a major private, self-financing university to provide high quality postgraduate education in the area of science, engineering and public health. An industry with major interest in aluminium industry - Vedanta Resources plans to set up a world class university[18] in Orissa with an investment of US$ 1 billion, over an area of 5000 acres with capacity of 25000 seats to expand to 1,00,000 students in due course. NIIT - an IT training major plans to set up a research university near Delhi.

The above non-governmental initiatives are different from the usual private higher education. Whereas, the traditional professional education at undergraduate level or the postgraduate programmes in management and computer application are low-risk and highly profitable, the postgraduate programmes in teaching and research in science and engineering are capital-intensive and high-risk. The government needs to treat the two differently. The country should not miss this opportunity the way a similar initiative for setting of Global Institute of Science and Technology (GIST) at four locations by a group of NRIs was missed in the year 2000. They were not allowed to set up GIST in India for the fear that they would poach faculty from the IIT system.

In addition to enable the initiatives mentioned in the previous paragraph to bear fruit, the government could proactively woo big corporate sector and prestigious foreign research universities to set up research universities / campuses for post graduate education and research in science and engineering in India. This would help to raise the standards of research for long-term competitiveness of the country. Prestigious foreign universities - say 500 universities in Shanghai's list of research universities and big corporate houses in the knowledge sector could be identified and approached for the purpose. Single point contact and a time bound approach could be adopted. Instead of subjecting them to burdensome regulatory system, bare minimum regulatory concerns may be addressed while allowing them to set up such institutions. The fact that big corporate houses and reputed foreign universities would have their own prestige to safeguard would act as a better deterrent in preventing them from dilution of standards or indulge in exploitation of students. This could work better than the most sophisticated regulatory system. This would give the country an edge in international competition in higher science and technology.

4.6.11 Conclusion

In conclusion, the overall public funding support for research through higher education institutions needs to be substantially enhanced. Private funding of research needs to be encouraged by evolving a system of incentives. The mechanism for funding should be reviewed to include selective funding of higher education institutions to nurture excellence. Competitive grants should be increased. Research assessment exercise (based on simple parameters to begin with) should be introduced to bring objectivity in research funding and disbursement of competitive grants. A policy for setting priorities for funding research should be put in place. For research coordination, NSF-type foundation could be established; initially a research portal could be set up. Existing research infrastructure and experimental facilities should be optimally utilised by putting in place a system of sharing such facilities.

Research partnerships should be encouraged. Various measures are required to improve access to information resources. Steps are required to be taken to improve the quality of doctoral education. An initiative to create highly skilled manpower through collaborative approach could be initiated. Incentive system to promote useful research should be put in place. Proactive efforts are required to attract private investment and participation of world class universities in postgraduate education and research in science and technology.

5. Regulating Higher Education

5.1 Accountability, market structure and rationale for regulations

5.1.1 Changing concept of accountability

Higher education is no longer perceived as an acquisition of a degree but an instrument to obtain sufficient knowledge and skills so as to function as a productive member of the society. The structure and delivery of higher education is changing, including the coming up of new types of educational institutions and an increasing use of

technology that allows institutions to operate on a national and global scale. Also, higher education has explicitly acquired an economic value in today's knowledge economy. All these changes have resulted in growing demand for increased accountability (Schray, 2006).

Historically, in higher education, there was regulatory or compliance accountability based on government statutes. In compliance-based accountability system, higher education institutions are accountable for *adherence to rules* and *accountable to the bureaucracy*. Over a period of time, as educators and in many cases professional practitioners agreed on certain principles and practices, a professional-norms approach to accountability emerged. Here the higher education institutions are accountable for *adherence to standards* and *accountable to their peers* (Anderson, 2005). This came to be known as accreditation. The nature of regulatory and accreditation mechanisms vary widely across nations depending on the structure of their higher education systems.

The two accountability systems, particularly the compliance-based system, failed to meet the growing aspirations of the stakeholders. With the emergence of new models of higher education, many aspects of the two systems are now no more useful. Dissatisfied with the outcomes, a third accountability system based upon results, where results defined in terms of outcomes and more specifically student learning has become popular. Here, the higher education institutions are accountable for *student learning* and *accountable to the general public* (Anderson, 2005).

Finally, a view is now emerging that a good accountability system shall primarily be based on results while being attentive to professional norms and regulatory compliance requirements. There is a consensus that simply leaving supply and demand to the market will not necessarily deliver outcomes for higher education that represent the best use of resources or that are just and socially optimal (Teixeira et al, 2004). The new set of regulatory practices is based on the understanding of the market structure of higher education and takes into account a proper mix of the three accountability systems.

This section examines the structure of higher education market and reviews existing regulatory arrangements. Based on the understanding of the market structure and the three accountability systems, it lays down a basic framework for regulation for higher education in India.

5.1.2 Market structure of higher education

Clearing of demand and supply in higher education is unique. In higher education, students are both consumers and producers. In the awkward economics of higher education, there is a hierarchy of providers and they do not necessarily pursue profit maximization. Higher education is subject to serious market failure arising from information asymmetry and time lag. Supply-demand clearing takes place at two levels - one is the clearing of the supply of places in higher education with the demand for the same; and the second is the clearing of supply of the graduates from the higher education system and the demand for them from the labour markets. These factors are elaborated further to describe the distinctive market structure in higher education.

In higher education, the quality of education depends upon the quality of students. Students choose those institutions that admit more meritorious (merit being a proxy for quality) students. Higher education institutions improve their quality by choosing more meritorious students. The quality of institutions is often determined by the quality of students. The students buy and sell peer-quality. This makes the students both consumers and producers of higher education.

Not all students pursue higher education to improve their economic conditions. They pursue it for a variety of reasons. Similarly, all higher education institutions do not necessarily look for economic returns. They may not pursue profit maximization but strive for excellence or academic reputation. Prestige plays the part in higher education that price plays in the conventional markets. This reinforces the tendency of many institutions to direct their resources towards those activities that may be valued by many academics but not necessarily by the wider society. It is here that the basic assumption of rational behaviour of the consumer (the student) and the producer (the higher education institution) becomes wrong. This has consequences that are not easy to factor in while designing a regulatory mechanism for higher education.

Because of the peer effects and prestige, rather than the price-determining behaviour of the institutions, higher education becomes sharply hierarchical and has an impact on the market clearing process. Higher education is highly stratified at the top end. Whereas, there could be a large number of vacant seats in some institutions, a few institutions at the top-end of the hierarchy would attract many times the number of students that they can accommodate, making them very selective institutions. High selectivity goes hand in hand with high reputation. Prestige is a scarce commodity; the losers far outnumber the winners and winner-take-all (Kirp, 2003). This makes branding particularly important in higher education.

It needs to be noted here that with the price elasticity for higher education being low, highly reputed institutions could charge heavy tuition fees. However, they do not do so in all cases, since they pursue prestige maximization rather than profit maximization. Naturally, prices alone fail to balance the demand and supply. In fact, in the US, the more prestigious institutions use their donative wealth to attract high quality students. As a trade off between their ability to charge high tuition and the necessity to attract meritorious students, the reputed institutions usually adopt *high-tuition high-aid* strategy.

Efficient market competition presumes that consumers have perfect information about price and essential characteristics of a service as its quality. In case of "experience goods[19]" like academic programmes, need for credible consumer information is even more crucial. Non-availability of such information results in market failure - often described as market failure due to information asymmetry. Information asymmetry in higher education can arise due to student immaturity, provider furnishing misleading information or both the provider and students having only imperfect information about the true quality of the academic programmes (Dill, 2004).

5.1.3 Rationale for regulation

In all, higher education follows an awkward economics. Perfect competition and efficient markets are an ideal that are difficult to achieve in real life. Perfect competition requires homogeneity of products; absence of entry and exit barriers; perfect knowledge and perfect mobility; and unbiased behaviour to facilitate exchange to be guided only by the considerations of price. Violation of even one of them would render the competition imperfect. Higher education breaches all of them. Under the circumstances, leaving the higher education system to the uncertainties of market may lead to undesirable consequences; lack of competition would be one of its main consequences.

With new models of higher education, several factors that impeded competitive process in higher education in the past are becoming less important. Limited student mobility has hindered competition and worsened the price quality ratio. However, with technological developments in the transport and telecommunication sector, student mobility is increasing. In new models of education, courses (referring distance education and online learning) rather than students move. This has already extended the higher education market beyond national borders and led to enhanced competition in the higher education sector.

Higher education programmes are to an extent indivisible. A college entry decision is a "yes" or a "no" decision. This implies that students are locked-in to their higher education institution. Increasing flexibilities in programme structures, facilitating student mobility by easing credit transfers are to an extent addressing this problem. Finally, educational production is characterized by economies of scale. Many programmes require expensive equipment and laboratories. This implies that large institutions have a cost advantage over small ones and there are substantial entry barriers for newcomers for such programmes. New learning environments are changing these realities.

In the final analysis, though the changing structure and delivery of higher education and increasing use of technology are creating a competitive market for higher education, the total reliance on market forces alone in higher education is not the most feasible option. While the market forces are being increasingly used the world over to coordinate and steer the higher education systems, yet their limitations are also becoming clearer. Rising inequities, increasing exploitation of gullible students, deteriorating standards and skewed growth necessitate government intervention. The limitations of market forces in higher education need to be understood and a regulatory system developed to overcome these limitations.

5.2 Present structure of regulatory system

There are multiple agencies and a complex web of rules and regulations that govern the higher education system in the country with the UGC as the apex body. The state governments; the thirteen professional councils at the national level and five professional councils at the state level; the state councils; and affiliating universities are the key stakeholders in the regulatory arrangement in the country.

Though as per constitutional mandate, all education including university education had been made the responsibility of the states, the centre was assigned the key function of coordination and determination of standards through Entry 66[20] of the Union List of the Constitution of India. In 1976, education was brought to the concurrent list as Entry 25[21] and centre was brought on equal footing with the states for all levels of education. The exclusive power assigned to the centre as per Entry 66 was however retained.

The Constitution does not stipulate that the centre should maintain standards. However, realizing that neither coordination nor determination of standards is possible without having some control (Singh, 2004), this role has been assumed by the central government in the course of evolution of higher education system in the country. For this purpose, the central government set different statutory bodies over the years. In all, the central government has a key role in defining public policy for higher education in the country. In fact, the central government and its various agencies have come to occupy the centre-stage of higher education in the country.

Over the years, the central government has established several institutions of higher education. The Central government also maintains these institutions in addition to the three universities, namely - Delhi University, Aligarh Muslim University and Banaras Hindu University assigned to the Central Government under the constitution. A detailed analysis of role of central government in financing higher education is given in the section on financing of higher education.

In all, the higher education institutions and regulatory bodies that are maintained and funded by the central government and the key appointments are also made by the central government. This enables the central government to have a final say on major issues. In addition, the central government on recommendation of the UGC confers on higher education institutions the status of a deemed-to-be-university and specifies the title of degrees to be awarded in the system. In matters of pay scales and career progression of teachers in universities and colleges in the country, the central government has a decisive role.

The central government discharges its responsibilities primarily through the Ministry of Human Resource Development. In addition, there are at least fifteen other ministries / departments in the Government of India that either establish, finance or regulate higher education institutions. Whereas medical education comes within the purview of the Ministry of Health, agriculture education and research is looked after by the Ministry of Agriculture.

5.2.1 University Grants Commission (UGC)

In pursuance to entry 66 of the constitution, the University Grants Commission (UGC) was established as a statutory body by the parliament '*for coordination and determination of standards in Universities*' in 1956. While enacting the UGC Act in 1956, two important provisions in the original draft bill were removed. These related to prior approval of the UGC for setting up of a university and power to derecognize a university degree. With this, UGC became more of a recommendatory entity (Singh, 2004). This decision was perhaps taken keeping in mind that the constitution required the central government or its agencies to discharge the function only of 'coordination and determination of standards' and not of 'maintenance'.

This arrangement worked fine when the number of universities was small; they were largely public-funded; and led by distinguished academic leaders. The universities were supposed to be self-regulating entities, expected to voluntarily adhere to the standards determined by the UGC. This infirmity in the UGC structure became evident with the rapid expansion of higher education in the country and the emergence of the private sector on the higher education landscape in the country.

Despite the mandate given to the UGC to coordinate and determine standards of universities, the structure and predominant functions assigned to the UGC in India were largely on the pattern of the University Grants Committee (UGC) in England that was set up under the Government Treasury in UK in 1919. While the UGC in UK has been replaced by two independent agencies - Higher Education Funding Council for England (HEFCE) and Quality Assurance Agency (QAA), UGC in India still continues despite its serious limitations in facing new challenges.

UGC has the national jurisdiction over university education in all disciplines. Whereas over the universities, the UGC exercises this role directly over the affiliated colleges, this role is exercised through the concerned university. Over a period of time, UGC evolved several ways to maintain academic standards. An analysis of the same is given in Section 5.4.5. A list of UGC regulations and notifications for maintaining standards is higher education is given in Annexure B.

5.2.2 Professional Councils

With the expansion of the system of higher education, a number of professional councils have come up. Table 12 below gives a list of regulatory and statutory bodies along with their main functions. A more detailed statement is given in Table A24. All but the Indian Council for Agriculture Research (ICAR) are statutory bodies established through an Act of Parliament. Some of them predate the UGC. None of them however provide any role for the UGC in their functioning. This creates a problem of coordination between the regulatory bodies in the country.

Table 12: Regulatory and Statutory Bodies for Higher Education in India

Name	Main role	Overlaps with the role of
University Grants Commission (UGC)	Funding, recognition of institutions and degree titles, maintaining overall standards.	Other professional councils and the Distance Education Council (DEC)
Distance Education Council (DEC) under the IGNOU Act	Funding, maintaining standards of open education	Other professional councils and the UGC
All India Council for Technical Education (AICTE)	Approval for technical institutions and limited funding role for quality improvement	UGC, DEC, Pharmacy Council of India, Council of Architecture and the State Councils for Technical Education
Council of Architects (CoA)	Registration of architects and recognition of institutions for education in architecture and town planning	AICTE
Medical Council of India (MCI)	Registration of medical practitioners and recognition of medical institutions and qualifications	State Medical Councils and the State Governments; UGC and DEC to a limited extent
Pharmacy Council of India (PCI)	Registration of pharmacists and approval of pharmacy institutions	AICTE and State Pharmacy Councils
Indian Nursing Council (INC)	Accepts qualifications awarded by universities within and outside India	22 State Nursing Councils with different Acts have registering powers
Dental Council of India (DCI)	Recommend to the Central Government for approval of dental colleges etc.	Ministry of Health
Central Council of Homeopathy (CCH)	Maintain Central Register of Homoeopaths.	State Councils
Central Council of Indian Medicine(CCIM)	Maintain central register.	State Councils
Rehabilitation Council of India (RCI)	Recognition of institutions for physiotherapy and related fields	State governments

National Council for Teacher Education (NCTE)	Recognition of teacher education institutions	DEC
Indian Council for Agricultural Research (ICAR)*	Coordinate and fund agricultural education	UGC
Bar Council of India (BCI)	Listing of Members of Bar	State Bar Councils

* Not a statutory body

Source: Compiled by the author from various sources

As can be seen from the list, there are significant differences in the mandate, powers and functions of the different regulatory and statutory bodies. The councils have rules and regulations of their own. There is large overlap of their functions with the functions of the UGC, other professional councils and even function of universities in some cases. In five cases, namely - Medical Council of India, Pharmacy Council of India, All India Council for Technical Education, Indian Nursing Council and the Bar Council of India, there are also State Councils; and there are overlaps in functions of the national councils and state councils. An illustrative list of the regulations of four professional councils is given in Annexure C.

This has resulted in fragmentation of higher education system in the Country. To ensure coordination between them the idea of a National Council for Higher Education (NCHE) was mooted. But for some reasons, it has not materialized so far. On perusal of the structure and functions of the proposed National Council, it becomes clear that such a body when constituted may create further complications.

5.2.3 State Governments

As per the analysis of financing pattern in section 2, the state governments have a major role in funding of higher education and also have the main say in all administrative and operational matters. In respect of the colleges, the concerned affiliating university provides academic supervision. Unlike the centre that discharges its responsibility towards higher education through UGC and other professional councils, the states carry out most of the functions by themselves through the concerned government department or directorate in the states. Some states have setup state councils for higher education, but these are largely advisory bodies with little or no operational role. On the whole, the powers with respect to higher education in the states are concentrated in the higher education departments. According to eminent educationist Amrik Singh, the states are the weakest, though a vital link in the entire higher education chain (Singh, 2004).

5.3 Universities and colleges

In India there are nearly 18000 universities and colleges in the formal system of higher education. This number is more than four times that of higher education institutions both in the USA and entire Europe. Higher education in China having the highest enrolment in the world (nearly 23 million) is organized in only about 2500 institutions. Whereas the average enrolment in a higher education institution in India is

only about 500-600 students, a higher education institution in the US and Europe would have 3000-4000 students and in China this would be about 8000-9000. A smaller average size of higher education institution has implication on governance and regulation of higher education systems.

Of the 17973 higher education institutions in India, only 348 are university level institutions. Other institutions are affiliated colleges. The colleges offer undergraduate programmes, whereas universities offer postgraduate as well and research programmes, though there are colleges that offer postgraduate programmes and vice versa. Though usually universities are larger entities than colleges, yet there are colleges having several thousand students, whereas some universities have student strength of merely a few hundred students. Therefore, in any analysis both the universities and colleges need to be taken together. An analysis based on one to and exclusion of other would lead to wrong conclusions.

From the trends in growth of higher education institutions, it is seen that the number of affiliated colleges has grown much faster than the number of university level institutions. Eighty seven per cent of all enrolment is in affiliated colleges. Affiliated colleges function under the academic governance of a university, whereas these are independent entities as far as administrative and financial matters are concerned. This makes higher education in India highly dispersed, much more than any other higher education system in the world. A large number of institutions are non-viable and under-enrolled posing serious problems of governance and regulation.

5.3.1 Affiliating system

Higher education system in India largely resides in the affiliated colleges. Affiliating system is based on the practice of affiliation started in the London University (established in 1836). Neither London nor any other long established universities such as Oxford and Cambridge had colleges other than their constituent colleges on the same campus affiliated to them; whereas affiliated colleges in India are geographically dispersed throughout the states or regions over several hundred square kilometres. Normally an affiliating university has a defined geographical service area and all colleges located in the area are expected to be affiliated to that university.

Most traditional universities in India are teaching-cum-affiliating universities. They have a central campus housing departments or schools of study that offer instruction at the postgraduate level and undertake research. In addition, a large number of colleges generally offering undergraduate education are affiliated to them. A major task of such universities is to determine and oversee the academic standards of these affiliated colleges and conduct centralized examinations for the candidates enrolled in them. The curriculum is prescribed by the university and examinations are also conducted by them. These affiliated colleges are dispersed geographically, but are under the jurisdiction of a university as determined by law (Jayaram, 2006). The concept of jurisdiction by assigning a geographical service area within which they are entitled to affiliate colleges limits competition and creates a monopolistic situation for the affiliating university.

The 17,625 colleges that existed in India in 2005 were affiliated to around 131 universities. The colleges have common syllabi and the students appear for a common examination usually conducted by the university at the end of the year. For many universities the conduct of examinations has become the most important administrative function. Some universities[22] have nearly 400 colleges affiliated to them rendering them as merely examining bodies.

Many of the ills of Indian higher education are often attributed to the system of affiliation. The affiliating system was devised to regulate and standardize the quality of education. But with the tremendous increase in the number of institutions, the system has been serenely riding piggyback on the reputation of the mother institution. In the affiliating system, the weak colleges tend to determine the policy of the university with regard to the course of study, teaching requirements, examinations etc. Good colleges that are capable of rising to a much higher standard consequently have no incentive to do so and in some cases are not even allowed. Most people consider that the affiliating system in India is a drag on the better intuitions that could otherwise innovate and excel.

In order to allow the growth of colleges that had the desire to innovate and excel, the concept of autonomous colleges was introduced a decade back. It allows the college to have autonomy with regard to academic matters. However, not many institutions have sought the autonomous status. By early 2006, there were only 214 autonomous colleges spread over 47 universities in thirteen states (MHRD, 2006). Many educationists feel that the programme of granting autonomy to the colleges needs to be vigorously pursued, even to the extent of making every college autonomous and responsible for itself. Teachers, particularly the teachers' associations, look upon this innovation with suspicion and often oppose it.

In the process of affiliation, initially, temporary affiliation is granted on the condition that this would be permanently affiliated on meeting certain minimum standards in terms of infrastructure and facilities. It is estimated that sixty per cent of all colleges continue with temporary affiliation even after decades, for want of minimum infrastructure and facilities. Such colleges are not eligible for recognition by the UGC under Section 2(f) of the UGC Act. This leaves us with a very unusual situation. Though degrees for study in these colleges is awarded by the affiliating university and is recognized (because these universities themselves are recognized), these colleges are not recognized by the UGC. More than two-thirds of all colleges in the country (12036 out of 17625) are not recognized by the UGC (UGC, 2005b). This defeats the whole process of recognition by the UGC.

5.4 Regulation of fee and admission

Due to its *awkward economics*, pricing plays a limited role in clearing of demand and supply in higher education. For fear of market failure arising primarily from information asymmetry and concern for equity, tuition fees and admission policies are often subject to government intervention. With the exception of the US, in most countries, these are regulated to varying degrees. These are often centralized and determined by the government for all higher education institutions. In some countries

tuition fees are differentiated as per programmes and even location. Higher education institutions usually enjoy autonomy in matters relating to admissions, though in many countries, students are assigned to the universities on the basis of their performance in the national level university entrance tests. Many countries are now moving towards providing greater autonomy to their higher education institutions in matters of deciding on fee and admissions.

The US higher education is a good example of a deregulated system with regard to tuition fee and admission policies. There is a substantial price and quality differential across higher education institutions. Universities focus on a particular segment, and compete for students within that segment. The students and their parents have access to reliable information on programmes, quality, tuition fees and future income prospects to make informed choices. The success of the US system is largely attributed to the existence of several reliable information sources, independent nation-wide testing services (Education Testing Service) that help to objectively determine merit of prospective students, and a credible quality assurance system.

The deregulated system of fees and admissions in the US had its own problems. Over the years, higher education in the US has become very expensive. Tuitions have risen faster than wages. Students' indebtedness is on the increase. There are serious concerns about affordability of higher education. The government has invested a lot of money to provide student-based support so that higher education continues to be affordable. The universities in the US are also able to lure the brightest students from all over the world with fee concessions and attractive scholarships. There is definitely a merit in drawing lessons from the US experience.

Tuition fee and admission policies were non-issues when the higher education system in India was largely publicly funded. Though, there was clamour for increasing tuition fees in public institutions to overcome financial constraints, yet fees continued to be reasonable and admission processes by and large free and fair with higher education institutions enjoying great autonomy in choosing whom to take.

With the emergence of private higher education in 1980s and continued supply-demand gap, many private promoters started charging capitation fees often ignoring merit. These promoters made quick money and inspired a whole generation of edu-entrepreneurs to invest in private professional education. A detailed discussion on this is in section 1.

5.4.1 Judicial interventions and evolution of policy

Over the years, charging of capitation fees for admission in the professional programmes became common place. This evoked adverse public reaction and forced the state governments to initiate action. Several state governments enacted laws to regulate admission and prohibit capitation fee in private unaided professional institutions. Andhra Pradesh enacted a law in 1983, Karnataka in 1984, Maharashtra in 1987 and Tamil Nadu enacted a law in 1992 to ban capitation fee and regulate admissions. Provisions of these laws were challenged in courts. This started an era of judicial intervention in matters of

tuition fee and admission policy in higher education in India. Since then, regulation of tuition fees and admission policy has been the most contentious issue in higher education in the country.

The Supreme Court in JP *Unnikrishnan and others vs. State of Andhra Pradesh and others (1993) case* while, upholding that the commercialization of education was not permissible and charging of fess was illegal, gave a framework of control of admissions and fees for pure self-financing institutions. This framework essentially laid down the principle of merit in admissions and a differential fee structure for students. This enabled cross-subsidization allowing students who could pay to subsidize education for the meritorious students. This arrangement was similar to the tuition discounting for meritorious students done by universities in the US. Further out-of-state students pay far more than the students from state in most states in the US. Two-tier fee structure is used by many other countries as well. This worked well and was in operation till about 2002, when the Constitution Bench of Supreme Court declared this arrangement as unconstitutional.

In a somewhat ambiguous judgment in 2002, the Supreme Court in *TMA Pai Foundation and others vs. State of Karnataka and others case* decreed that whereas there could be '*no profiteering'* in higher education, but a '*reasonable surplus'* from it would be alright. Though separate quota for management seats was retained, differential fee structure was struck down. According to the Court, the policy of cross subsidy was unreasonable. It amounted to compelling a citizen to pay for the education of another citizen. The court rightly pointed out that in practice, this could mean marginally less meritorious but poor student bearing the burden of a rich and well-exposed urban student. This observation of the Court was based on real life experience and the fact that middle and high income families benefit most in academic competition because they could invest in private institutions at the school level and also incur heavy costs of coaching. This observation could in fact lay the foundation of a workable affirmative action policy. The court however failed to appreciate the unique nature of higher education where meritorious students also contribute to the learning process and therefore institutions wish to recruit them even by offering them fee waivers and scholarships. Please see section 5.1.2 for detailed discussion on this.

The Court decreed that that the fees could be fixed in a manner that a reasonable revenue surplus could be generated by the educational institution for the purpose of development of education and expansion of the institution. At the same time, the Supreme Court observed that taking away the choice in matters of selection of students and fixation of fees from the private un-aided educational institutions would amount to violation of their right to practice any profession, or carry on any occupation, trade or business under Article 19(1) (g) of the Constitution.

Later, another bench of the same court in *Islamic Academy of Education and others vs. State of Karnataka and others case (2003)* clarified the meaning of autonomy of admission and fees while interpreting the judgment, endorsed a cost-plus system in higher education, where reasonable fees would be fixed by a committee in each state,

headed by a retired High Court Judge. It also upheld the principle of merit-based admissions and for that purpose the necessity of common entrance tests. However, how these common exams would be held remained ambiguous.

Though the principle of fee determination on cost-plus basis was endorsed, removal of provision of differential fees raised new issues. Some states had been implementing policy of caste-based reservation quotas in private unaided institutions. This issue also remained unresolved. On examining these issues, the Supreme Court in the *PA Inamdar Case* (2005) observed that "….neither the policy of reservation can be enforced by the state nor any quota of percentage of admissions can the carved out to be appropriated by the state…". It however upheld the holding of a common entrance tests for determination of merit.

The Supreme Court judgment in *Inamdar Case* led to the Parliament amending the Constitution to enable the government to make special provision for the advancement of the socially and educationally backward classes of citizens or for SC / ST for admission in educational institutions including private institutions. Presently, the government is in the process of bringing a central legislation to regulate admissions and tuition fees in private unaided professional institutions. Minority institutions are proposed to be exempted from it. Legislation for extending quota-based reservation for the other backward classes (OBCs) in the premier higher education institutions is also planned.

Tracing the long history of evolution of tuition fee and admission policy in India above, it is clear that these policies were driven more by judicial interventions than proactive public policy. Due to the inability of the courts to take a holistic view, courts' decisions often suffer from self-contradictions. Though they tend to serve the private interests of the providers, they like to be seen as pro-poor. Nevertheless, a broad direction for policy on tuition fee and admission policy has emerged over the years. It is now well-established that admissions in higher education should be on the basis of merit. The merit could be determined on the basis of common exams if required. The fact that tuition fees could be fixed, cost-plus basis with some surplus for reinvestment is now accepted. The issue is essentially that of implementation.

5.4.2 Determining inter se merit

With 37 school boards and around 350 universities – all with varying academic standards, developing a common yardstick for determination of inter se merit is not an easy task. This makes use of entrance tests for admissions inevitable. The issue is only whether these could be held by individual university or college or are conducted jointly for an academic programme having similar eligibility criterion. Ideally, each university should be allowed to decide on the criterion to decide on merit and conduct entrance exams if required. Considering the short time for conduct of such exams and mental and financial burden to multiplicity of these exams, common exams are always preferred. Many all-India and state level common exams are being conducted. However, many universities would like to retain control of these exams. The main reason for retaining control is financial. Both public and private universities generate huge surplus from this activity and would not like to forgo that. Some private universities also manipulate the

exams conducted by them and maximize their earnings. A huge coaching industry (according to some estimates with an annual turnover of Rs.100 billion) thrives on this.

There is a need for streamlining the entire process of common entrance examinations. Universities and examining bodies making huge sums of money through this mode from harried parents is unethical. There is an urgent need for putting in place the system of common entrance exams for professional programmes. These common entrance exams could be held at the all-India level, where admissions are from the all-India body of students and at state levels, where admissions are from state-wide body of students. Admissions through these common exams should be insisted upon unless there is valid reason for a university not to participate in that for reasons of uniqueness of the programme. On a long-term basis, a *National Testing Services (NTS)* - independent of the school boards could be set up. Such exam could be conducted several times a year on the pattern of SAT and GRE.

Anandakrishnan (2006) notes that the majority of privately funded and managed institutions whether in the category of college or a university could be accused of collecting exorbitant capitation fees and other institutional fees, not brought into regular accounts; manipulation of entrance results and admission processes to maximize illicit payments; and disregarding admission norms in favour of those willing to pay more. Under these circumstances, exempting any private institutions or category of private institutions either on account their minority status (or any other status) or in the name of safeguarding their autonomy could lead to exploitation of students and parents.

The fact that private providers are looking for loopholes to escape the common exam system is evident from the recent experiences. Many of the deemed to be universities opted out of common exam for entrance to undergraduate programmes in engineering as soon as the government gave them this option. Ostensibly they opted for their own tests to safeguard their academic autonomy; the reality could have been different. Now they are conducting their own exams; some of them are making huge sums of money though entrance exams. They have unreasonable refund policies that create dilemma for parents. Some of them even manipulate the result of entrance exams conducted by them to maximize illicit payments. A large majority of the applications from ‘so called’ minority institutions for affiliation to central universities were received after the provisions of the draft bill on regulation of admission and fee in private unaided professional colleges became known. Both this draft bill and the constitutional amendment exempt the minority institutions from their regulatory cover.

Another issue related to determination of inter se merit is the fragmentation of merit space due to a plethora of reservations. Since there are high stakes in admission to a small number of quality higher education institutions, the issue is highly contentious. Reservation quotas for admissions on the basis of the caste and class are an instrument of the affirmative action policy of the government. A detailed discussion on this is in section 5.6. In addition, there are reservations for sports persons, children of war widows, children and grand children of the freedom fighters etc. Manipulations in such admissions are fairly common.

5.4.3 Determining tuition fee

There are two reasons for the government to regulate fees – one the government would like to ensure that higher education continues to be affordable, and the second reason is that pricing fails to play an important role in clearing of demand and supply in higher education. The higher education institutions that are perceived to be prestigious can command high prices. The demand for seats in such institutions is relatively inelastic. Even poor people would pay for a seat in such an institution even if they have to sell their assets. In the absence of credible information sources about quality of higher education institutions, the perception about prestige can be created by misrepresenting facts and using deceptive practices. Fee regulation, therefore helps in curbing exploitation.

The Supreme Court in the *Unnikrishnan Case* has laid down a procedure for determination of fees in private unaided professional institutions in 1992. In pursuance to this, various states had constituted fee committees to determine fee (both tuition and development fees) levels for merit and payment seats (not exceeding fifteen per cent) for various professional programmes in private unaided institutions. Despite teething problems, this system got institutionalized over a period of time. With the *TMA Pai Foundation Case* in 2002 declaring the differential fee structure as unconstitutional, the system evolved over the years fell into disarray. There were several practical difficulties due to self-contradictions in the orders. First, the fees had to be fixed all over again in various states. Second, management quota was retained and states were required to decide on the extent of management quota. Third, even students admitted in management quota had to be admitted on merit basis and charged same level of fees as other students. The implication was that the managements were able to get up to fifty per cent quota apportioned to them for admitting students that they liked. Though officially they could not charge higher fees for students admitted under the management quota, the management of the private institutions could negotiate any price. This in effect paved way for the return of the capitation fee system in private higher education in India.

The fees levels are being determined by state level committees all over again. Since the norms for fixation of fees are vague, the quantum of fees charged has no rational basis. According to Anandkrishnan (2006), while the illegal capitation fees range from Rs.200 to 800 thousand for some of the courses for medical courses; this may go up to Rs.1 to 4 million per annum. The regular fees also vary considerably among the states and within the states. The range of annual fees charged in a few states in 2005/06 for undergraduate engineering degree programmes is shown Table A25.

The deemed to be universities do not follow these fee norms. The UGC has fixed fee ceilings for them. A survey of fees charged by various deemed universities show that most of them do not adhere to the UGC norms on fees. Many of them are not even aware of such norms. In addition, the private institutions collect exorbitant and compulsory fees in the name of transport, canteen, library, text books, mark sheets, caution deposits, degree certificates, hall tickets, association fees etc. and refuse to give valid receipts for such collections. In most cases fees are collected in advance are not refundable. Some private institutions capitalise on the anxiety of students and their parents and schedule their

admission process to benefit from the non-refundable deposits in the name of blocking the seats. Normally, state fee committees have not bothered to determine fee norms for management programmes, therefore most private management institutions charge whatever maximum the students and their parents are willing to pay. In addition, fees in a large number of programmes and training courses that are not approved by any agency is arbitrarily fixed and vary according to paying capacity of the parents.

In sum, the emergence of private higher education in India has resulted in several aberrations. The competition between them fails to set the prices due to peculiar nature of the education services. They either exhibit monopolistic behaviour or non-collusive oligopolistic behaviour[23] - each provider trying to maximize its own profit. Interventions by the courts for over a decade and government's ambivalence have not helped to check the errant behaviour of scrupulous private providers. As a result even credible private providers are tempted to make money by exploiting loopholes in the existing regulatory environment. As a result the principle of *Gresham's Law*, bad private providers driving out the good providers seems to apply in private higher education in India. Some public institutions have also been tempted to make money by starting self-financing programmes that have high unmet demand. In absence of credible information sources and objective and transparent process for determination inter se merit, providers of higher education (mainly though not exclusively private providers) are bound to indulge in exploitative practices. Apart from tuition and admission related regulations, there have been new challenges arising from the emergence of private providers in the country.

5.5 Regulating private higher education

India has a long tradition of private higher education. Prior to Independence, several first class educational institutions were set up not only by the religious and charitable trusts, but by the corporate sector. Mehta (2006) terms the period from the turn of the century to Independence as the country's golden age of corporate philanthropy. Many of the most prestigious higher education institutions in India were set up by corporate houses by the Tatas, the Birlas, and the like with philanthropic objectives. Today, higher education is seen as a business and what passes as philanthropy is setting up institutions by floating family trusts or societies by entrepreneurs, businessmen and politicians. Small numbers of private institutions of the pre-independence era are very different and continue to be different from the majority of private higher education institutions today. Today, private institutions offer a variety of programs particularly in professional subject areas. These have added a new dynamism to the higher education landscape in the country. At the same time, they have posed serious challenges on the regulatory front.

There are various types of private institutions in higher education in India. Some are affiliated or autonomous colleges, some are deemed universities, and some are private universities established by state legislatures. A few of them also receive governmental support in one form or the other. Some of these are minority institutions. These are generally established and operated under provisions of charitable societies or trusts. There are many commercial institutions operating in higher education and training sector. Some are satellite institutions of foreign universities (Anandakrishnan, 2006). In all, private higher education sector in India is large and complex. There are genuine not-for profit private institutions,

many of them are even funded by the government. There are some not-profit institutions that are financially independent and supported by income of the charitable and religious trusts. There are large numbers of private institutions that meet all their expenses from tuition revenue. A significant number of them are family owned and de facto run as business enterprises. There are also private training centres that are legally for-profit entities.

There are extremely varying perceptions in the country about the characteristics of private institutions. Some would consider them as the panacea for higher education. They would not want any kind of regulation or interference in the establishment and operation of private institutions and would let the market forces determine their survival. There are many others who consider private institutions as the fountain of malpractices, exploitation, and poor quality, which are manipulated politically or financially. Clearly both perceptions are based on real world experiences though these may suffer from undue generalizations. It would be unfair to characterize all self-financing private institutions as indulging in undesirable practices.

There are many privately funded and managed institutions that are committed to educational excellence and conscious of their responsibility to their students. A substantial number of them are known for transparency and academic commitment. An analysis of such institutions reveals that their governing bodies consist of eminent persons, known for their integrity and knowledge of educational systems. Such bodies are not controlled or manipulated by private individuals or family members. These are established as public trusts or societies true to the spirit that education is a charitable and non-commercial venture. They allow considerable autonomy to the head of the institution and the faculty and treat them with dignity so that competent teachers are attracted to such institutions.

The excess incomes generated by such institutions are generally not hidden or misappropriated but utilised for further growth and development of the institution. They are keen on providing post-graduate and research programmes and establish good reputation and academic image. In such institutions, the curriculum, recruitment procedures, admission requirements, various fees, details of faculty, results etc., are transparent through their publications and websites. According to Ananadakrishnan (2006) nearly 25 per cent of private institutions will fit this characterization, whereas the large majority of the other self-financing private institutions who do not exhibit the above traits result in poor image of many of the private institutions.

Apart from admission related malpractices referred to in the previous section, these institutions generally treat the faculty somewhat like bonded labour in matters of salary and service conditions. While private investment in higher education has become inevitable in the current environment, the nature of private participation is so poorly or ambiguously spelled out, that pseudo educational ventures have come to dominate our educational system. Whereas legitimate return on private investment is justifiable, the greed of private providers that could result in exploitation of gullible masses need to be checked.

The ambivalent status of these private institutions permitted to operate under the cloak of "charitable" institutions is the problem. In order to claim the status of charitable

enterprises, they should explicitly demonstrate the educational commitment and social responsibility and should be willing to allow prescribed social and academic audit. According to Anandakrishnan (2006), the suggestion of the Supreme Court in the *Unnikrishnan Case* that only Public Trusts or Societies should be allowed to run private professional institutions should be extended to all categories of private unaided institutions. This would help to overcome most of the malpractices.

An obvious corollary to the above would be to declare all educational institutions managed as private trusts or by private individuals or by families as profit-making commercial entities. They could be free to admit whomever they want, for whatever programme they offer and charge the fees they prescribe but should abide by the regulations applicable to commercial establishments including payment of taxes. They could get their programmes accredited by designated educational accreditation agencies, so that their diplomas and degrees are recognised for further education and employment. This would help in making a clear distinction between for-profits and non-profits. Non-profits by definition can only use money left over after deducting expenses to develop the institution and continue its charitable or other non-profit objectives, while for-profit institutions can essentially do whatever they want with it, including offering rewards to owners.

The above arrangement would be very similar to the practice followed in many other countries in the world, where not-for profit as well as for-profit private providers co-exist with public providers in higher education. While, there are 4236 institutions of higher education (with 60 percent institution enrolling 33 percent students being private not-for profit), there are almost the same number of private for-profit institutions. Though most of such institutions are smaller in size and non-degree granting, there are some like the University of Phoenix that are big and grant degrees. Some of them also volunteer for accreditation. While some countries (like Poland, Russia, Portugal, Tanzania and Uruguay) do not permit, in many other countries for-profit private higher education is very significant. In Malaysia, 90% of the private higher is reportedly for-profit. In South Africa bulk of private higher education is legally for-profit education. Two-thirds of Brazil's private institutions are for-profit. Philippines has 47% of all its students in for-profit institutions (Kinser and Levy, 2006.

There could be concerns about these for-profit institutions indulging in malpractices. Most of these malpractices, such as not giving valid receipts for fees collected; taking signatures from teachers for fictitious salary payments; collecting donations through dummy foundations; etc. are in fact criminal offences under existing criminal laws and require no special law. What is perhaps required is to introduce a system of pro-active disclosure of essential information about the institution by universities and colleges irrespective of the fact that they are public, private or private for-profit institutions. A guide on advertising, promotion and marketing stating as to what constitutes misrepresentation or misinformation would help consumer courts and competition commission to curb deceptive practices.

There is a general feeling that private higher education in India is highly controlled and the strict regulations encourage rent-seeking activities. A strong case for deregulating this sector is often made in popular media. Experience has however shown that private

providers have done little to build public trust in them. The fact they are not organised could be the reason. Education Promotion Society of India (EPSI) floated by PHD Chamber of Commerce and FICCI-HEN (Higher Education Network) organised by Federation of Indian Chambers of Commerce and Industry (FICCI) raise hopes for organising private higher education providers to create public trust in them. Private higher education in India would flourish and gain respectability only if the providers could organise themselves around ethical practices and earn the trust of the general public. This has potential to make government regulation irrelevant over a period of time.

Despite the common belief that private providers abhor regulation, a recent FICCI Survey[24] on perception about higher education in India suggest that promoters would like predictability and transparency in regulation rather than no regulation for private higher education in the country. There is a case in making regulatory regime for private higher education less burdensome, but more important is to ensure that it does not change with the change in the government and it is uniformly applied to all. Experience in other countries has shown that absence of regulation is not a precondition for growth of private higher education. In terms of regulation of private higher education, the example of Korea is worth noting. Korea has one of the highest gross enrolment ratios in higher education in the world with more than 80 per cent of it being in the private sector. With the higher education system dominated by private sector, Korea faced difficulties in maintaining quality and integrity of higher education, therefore, the Korean government tightly regulated higher education. It was only in 1995 that Korea moved towards liberating the private higher education to make it more competitive.

Box 2: Regulating private higher education in Korea

Private higher education in Korea grew in an environment marked with very tight regulations. Until 1995, Korea not only had strict guidelines regarding how to establish and operate a higher education institution, it also controlled the number of students in each department for each school, as well as student selection methods. In most cases, student quotas and school licenses were rationed to those institutions that could demonstrate to the government their capabilities of providing quality education. Naturally, the strict regulations created substantial rent-seeking activities, while leaving little room for individual educational initiatives among institutions. Recognising various problems from heavy regulation, in 1995 the government started to loosen controls. Among other things, private universities were allowed to regulate the number of incoming students as well as the distribution of students within the institution. The rules to establish a new institution were liberalised. The government also gave small incentive grants to reward performance. In short, the government introduced competition among universities and colleges by making them more autonomous and more competitive.

Source: Kim, 2005

There are certain realties that one needs to face while discussing private higher education. In different countries throughout the world, the bulk of private higher education growth during the private boom of recent decades has been in secular institutions that absorb the demand that the public sector could not or would not accommodate. Most private institutions are commercial-oriented (though they may claim to be otherwise) and prepare graduates for job markets. Neither prior nor contemporary history has brought many non-US examples of academically prestigious secular private higher education (Levy, 2006). In India, for over two decades now, private higher

education has been the main venue for increasing access to higher education. Like many other countries such as Malaysia (even China), private growth in higher education in India has just been allowed to happen rather than taking measures to enable, promote, or even steer the private growth.

This is now the time to face realities and correct the systemic anomalies and wrong notions about private higher education in India. Many of these corrections will have to be made in adopting a more pragmatic (rather than an idealistic) approach in formulation of public policies and interpretation of the constitution by the various courts. All efforts to burden the overloaded regulatory bodies to maintain quality standards and ethical practices would amount to wasted exercises, if these anomalies are not removed.

It needs to be understood that private higher education could flourish in low-risk high profit segments of higher education that essentially train workforce for the future provided a right kind of environment exists. Growth of private higher education would leave large gaps. Public higher education would be required to fill in these gaps. The Public higher education would have to step in the areas of postgraduate education and research and for education in liberal arts, humanities and languages. Public funding has to take of care of those who cannot afford. It would be unfair to burden the private higher education with the infirmities that exist in the public higher education. The need of the hour is a coherent policy framework that recognises the complementarities of public and private systems of higher education and ensures the healthy development of both the systems.

5.6 Affirmative action

The system of quota-based reservation for admission in educational institutions with a view to correct the injustices done to certain castes and classes of people in the past is unique to India. This has been in practice for scheduled castes (SC) - 15 per cent quota and scheduled tribes (ST) -7.5 per cent quota throughout the country since independence. Later, some states also introduced quota-based reservation for other backward classes (OBC) - 27 per cent quota. There have been costs (in terms of loss of efficiency) and benefits (in serving equity objectives) of this policy; however equity-efficiency trade off has rarely been empirically studied.

Though, not intended to be in place for perpetuity, the possibility of rollback of quota-based reservation once started is rare. With high stakes involved particularly for admission into the highly selective institutions, this privilege over a period of time becomes an entitlement and no political party would like to isolate the important constituencies that benefit from reservations. It remains and would continue to a divisive and an emotive issue in India unless all political parties decide not to use caste, creed and religion in electoral politics.

The Supreme Judgment in *Inamdar Case* leading to the amendment of the constitution and the government initiating steps to extend quota-based reservation for OBCs in premier central institutions and forcing private unaided institutions to implement quota-based reservation up to 50 per cent has brought this issue into limelight again.

It is a fact that students from poor and weaker sections of the society tend to lose out in brutal competition for entry to educational institutions due to the lack of access to quality education at lower levels and supplementary tutoring due to family circumstances. Considering that education, particularly higher education, is an effective instrument for social mobility, this deprivation creates undesirable inequities in society.

Considering the reality above, there is merit in putting in place an affirmative action policy to safeguard their interests. This however has to be based on the principle that higher education is *equally accessible to all on the basis of merit* as per Article 26 of the Universal Declaration of Human Rights. Any compromise on the principle of merit creates a sense of injustice in the minds of the youth that have grown up in a society where caste does not matter at all. They fail to understand the logic of caste-based reservation in this time and age. Further, the principle of *equality of opportunity* and *non-discrimination on grounds of religion, caste etc*., are basic fundamental rights under the Constitution of India. Finally, in the changed global scenario, competitiveness of nations comes from the talent of its citizens. The signal that goes out when half of the people with top qualifications in India are not on the basis of their merit but for other considerations will result in India losing its long-term competitiveness.

Based on the principles laid down above, an affirmative action policy could be crafted to safeguard the interests of all those who are being deprived of the quality educational opportunities. Such policy could be based on provision of deprivation bonus for all students coming from lower socio-economic backgrounds and backward regions in competition for entry to educational institutions to compensate for the actual deprivation suffered by them. Deprivation bonus should be on the basis of transparent criteria such as students from families in the below poverty line (BPL) lists, students from educational institutions in rural and backward regions, physically disabled students etc. Such bonus should not result in lowering of bar on merit for admission by more than ten per cent on an average. There is empirical evidence to show that some mix of more and less meritorious students could be a socially optimal strategy, yet if the proportion of the less meritorious and / or their extent of lower merit is high, the teaching-learning process suffers and the standard of the whole class goes down. Within this broad framework, institutions could have their scheme of affirmative action depending on the programme of study. Further, the issues relating socio-economic backwardness vary from state to state; the states could have their own policies for affirmative action for state level institutions. While devising affirmative action policy in India, there is possibility of taking lessons from experience of other countries (Box 4).

Box 3 : International Experience in affirmative action

In the US, most educational institutions have affirmative action policies based on gender and colour (these are visible and biological differences, rather than differences created by the society or polity). These policies are essentially to have a diversity of student population in their enlightened self-interest. There is no pre-determined quota system. Students from Afro-American communities (blacks) and women are given some advantage in competition for entry to higher education institutions. This is completely decentralised with institutions enjoying great autonomy.

In the UK, students coming from disadvantaged schools are given points to compete with students that have access to better schools with a view to provide opportunities to students who are otherwise meritorious but are not able to compete due to lack of opportunities at school level.

Source: *The Economist (various issues)*

Affirmative action policies are more effective at lower levels of education; therefore, these could be graded by the level of education. This would enable the deprived students to build capacities at lower levels to compete at higher levels. Facilities could be created for supplementary tutoring at different levels to enable deprived students to compete. The number of *Navodaya Vidyalayas* started with the objective of nurturing talent from rural areas could be increased or doubled. Despite affirmative action, the students from poor families will continue to be deprived of educational opportunities due to rising cost of education at all levels. Therefore, the issue of affordability should be addressed simultaneously. Please see section 2 on this.

Affirmative action policy in India should be based on providing equality of opportunity for higher education to all based on merit and work towards a non-divisive casteless society. It should be guided by Nehru's vision. To quote *"I have referred (above) to efficiency and to our getting out of traditional ruts. This necessitates our getting out of the old habit of reservations and particular privileges being given to this caste or that group….I dislike any kind of reservation, more particularly in services. I react strongly against anything which leads to inefficiency and second-rate standards…if we go in for reservation on communal and caste basis.*"

Designing of an appropriate policy would require a trade off between excellence and equity. The objective should be to unearth raw merit that might remain deprived and hidden due to the academic competition. The existing admission processes give undue advantage to the rich. An effort to push one section of society ahead of other for any other reason would create divisions in society and hurt the country's competitiveness in human resources. Though, quota-based reservation policy has been preferred in India since it was found most workable, however considering the overall implications of such a policy, there is case for better policy design in affirmative action. This policy should actually be able to eliminate sources of disadvantage of the disadvantaged people. It should be flexible and be able to cater to the diversity of needs of such people by allowing different types of institutions to address their concerns in different manners.

5.7 Regulating academic standards

Universities are self-regulatory bodies that determine and maintain their own standards. However, there is a need to put in place a mechanism for comparability of academic standards across universities. This is required to enable transfer of students from one university to another. Also degrees from different universities need to send similar signals in the job markets to facilitate selection process. For these reasons, we require some harmonisation of academic standards across universities. University Grants Commission (UGC) has the primary responsibility to coordinate and determine academic standards across the university system in the country. UGC discharges this responsibility

though it's various rules and regulations. A few important regulations are described below.

The UGC Regulations of 1985 on the minimum standards of instruction for the grant of first degree through formal education lay down working days, working hours, attendance requirements, supplementation of lectures by tutorials and / or problem-solving sessions, term papers, nature of evaluation, work load of teachers and several other matters. There are similar regulations for non-formal / distance education mode of education. All of the 18000 universities and colleges in India are expected to follow UGC regulations on minimum standards across various disciplines. Many of the professional councils also have similar standards. This results in overlap and confusion. Universities and colleges blame the UGC to push this extreme form of standardisation and claim that this kills their capacity to innovate at the institutional level.

The UGC with the approval of the central government specifies the title of degrees that can be awarded by the universities. Standard nomenclatures of degrees become necessary for the purpose of comparability of qualifications across institutions and also to ensure that degrees send out unambiguous signals in job-markets. This important role in many countries is discharged by an independent body of experts. Countries like Australia, New Zealand and South Africa have independent National Qualifications Authorities (NQA) that lay down a National Qualification Framework (NQF). Various academic titles with their duration, content and learning outcomes are specified under the NQF by the NQA.

In India, the process of specification of degrees had been taken very lightly. There is a highly centralised and cumbersome process that had become redundant with the passage of time. The fact that between 1975 and 1999, no new degree titles were specified reflects the lackadaisical approach. Many premier universities find this requirement a blow to their autonomy and continue to award degrees on their own beyond the degrees specified[25] by the UGC. The whole process has been recently reviewed by the UGC, yet the process continues to be cumbersome and centralised; not all universities are willing to oblige the UGC by adhering to it.

In addition, UGC has other rules and regulations for maintenance of standards. A list of the same is given in Annexure B. A review of their scope and the way they are implemented shows that there is similar lackadaisical approach. Revisions in these rules and regulations are infrequent. They either do not reach all stakeholders or are wilfully ignored by them. For instance, the private universities in the State of Chhattisgarh continued for more than year in total defiance of the UGC (Establishment and Maintenance of Standards in Private Universities) Regulations, 2003 before the Supreme Court struck them down in 2005. In some of fields of study there is an overlap between academic standards and professional standards and one often sees conflicts between different agencies. Annexure C list some of the regulations of four professional councils to show that there are many overlaps in their functioning. Recently there was dispute between UGC and AICTE over their jurisdiction on maintaining standards and obtaining prior approval in respect of technical courses offered in the deemed-to-be universities.

In sum, the mechanisms for maintaining standards are weak in design and poor in their implementation. These suffer from the problems of gaps and overlaps. The analysis of funding of higher education in section 2 has shown that with the expansion of higher education, UGC's role as a primary funding agency for higher education had got marginalised. Therefore, the UGC now neither has the statutory power to direct the universities to do what in its judgment should be done, nor the financial clout to oblige the universities to fall in line with its directives. Added to this is the fact that with passage of time, higher education has expanded beyond the university sector, leaving an increasingly large portion of higher education outside its jurisdiction.

Closely linked to the norms on academic standards are norms on infrastructure and facilities. These are particularly rigid for professional programmes. Compliance is usually through inspections. Results are not satisfactory. For general courses the norms on infrastructure and facilities are often not laid down. These programmes are run in conditions of sub-optimal infrastructure and facilities.

5.8 Findings and implications

The review of the existing structure of regulatory system in India and the way it regulates various aspects of higher education shows that the existing regulatory procedures are extremely burdensome and counter-productive. The regulations are often too detailed and diminish the responsiveness of the higher education institutions to respond to changing needs of society. The regulatory system does not take into account the new developments in higher education particularly as they relate to new providers and new form of delivery.

The regulations often control supply, limiting choice by erecting formidable entry barriers for new institutions to be set up through private enterprise. Time consuming, non-transparent and complex procedures applied arbitrarily create conducive environment for rent seeking and patronage. It makes higher education institutions less accountable. The system is straitjacketed and inhibits innovation. Overall, the system works towards standardisation in higher education and not for maintenance of standards. There is a widespread feeling that the regulatory bodies in India have miserably failed to discharge their responsibility towards maintenance of standards. Summing up the situation, Kapur and Mehta (2004) conclude that the existing laws regulating higher education in India tend to promote adverse selection. It deters genuine investment in education, but encourages those who are adept at manipulating the license quota *raj* in the system.

In a recent survey of the degree of regulatory control of the major higher education systems in the world, The Economist (2005a) has noted that whereas, most nations in the world (including China) are working towards loosening of statutory control over their higher education systems, India is moving in reverse direction and tightening government control in institutions of higher education. It is also clear from the mapping of the regulatory system in India that there is a diarchy in higher education in India. While UGC is expected to oversee it, the state governments regulate it in practice. In

addition, the higher education institutions are subjected to a multi-layered regulatory and control process involving a number of agencies and bodies. Despite all this, higher education in India has virtually remained an unbridled horse (Pinto, 1984).

In view of the above, it is no surprise that many of the better known institutions of higher education in India such as – the Indian Institutes of Technology (IITs), the Indian Institutes of Management (IIMs), National Institute of Fashion Technology (NIFT), National Institute of Design (NID), Indian Institute of Science (IISc), Tata Institute of Social Sciences (TISS) and Birla Institute of Technology and Sciences (BITS Pilani) – are all outside the conventional university system in India. IIMs, NIFT and NID do not even have degree granting powers and offer only diplomas.

Complex and dysfunctional regulatory arrangements for higher education in India have raised serious concerns about the credibility of the Indian higher education system. There is a need to safeguard its integrity and enhance its credibility. Loss of this credibility would have serious repercussions. Our competitive advantage as a nation with huge reserve of highly qualified and trained manpower may be lost. Many countries are shying away in signing mutual recognition agreements with us because of horror stories that they hear about deteriorating standards of higher education in India. This would become more difficult in the years to come, if we allow any further compromise on the standards of higher education in the country.

Being blamed for all its ills, it is often argued that the total deregulation of higher education in India would serve the public interest best. This argument is based on the simple principle of economics that if the market regulates institutions more efficiently and effectively than the state, then the task of regulation should be left to the market; facilitating oversupply would be the best way to subject market sensitive institutions to the regulations of the market. The manner in which clearing of demand and supply takes place in higher education suggests that leaving higher education to market forces may not be most viable option. Though academics would normally object to the concept of regulation, especially as it relates to academic quality, it needs to be understood that due to its very nature, academic standards need to be determined and coordinated across universities requiring some kind of external scrutiny. This makes regulation important; though equally important is as to the nature of regulation, who is responsible to develop and who would implement these regulations.

5.9 Defining nature and scope of new regulatory system

Having made a case for regulation in higher education, there is a need to define its nature and scope. The direction for change has been aptly recorded in Para 3.64 of the approach paper for the 10th Five Year Plan (Planning Commission, 1999). According to this '*Laws, rules and procedures for private, cooperative and NPO (not for profit organizations) supply of education must be modernized and simplified so that honest and sincere individuals and organizations can set up universities, colleges and schools. Oppressive controls on fees, teacher salaries, and infrastructure and staff strength must be eliminated. The regulatory system must be modernized based on economics of information and global best practices. Given the weak criminal justice system in our*

country, the regulatory system must also put greatest emphasis on fraud detection and punishment while letting normal individuals to function normally.'

Based on the above, the scope for the new regulatory system could be defined. An ideal regulatory system should be based on addressing the minimum set of regulatory concerns. These concerns could be those arising from possibility of market failure or need for market coordination or to address issues of public health and public safety. The system should ensure fair play, transparency and accountability. It should be non-intrusive and student-friendly. New regulatory environment needs to provide adequate space for innovation and experimentation and facilitate growth of the private sector.

The problem of information asymmetries in higher education can lead to wrong and costly decisions by students as well as employers. Such information gaps, related purely to financial matters, such as fee levels, refund policy etc., can be effectively bridged by enforcing transparency similar to the disclosure norms of listed companies. Information gaps related to academic quality are more difficult to bridge. There is an absence of agreement about how to measure quality of student learning and achievement. The purpose for which people pursue higher education is not clear. This makes matters worse. Since higher education is expected to meet diverse needs of a huge and varied section of people, therefore, defining national or regional standards for higher education is not desirable at all. In fact this promotes standardisation and should be avoided.

Considering the above, instead of a traditional form of regulation, it would be appropriate to promote creation of membership-based self-regulatory organisations that would seek to achieve public goals in a more flexible manner. Self-regulatory organisations being autonomous and independent in their functioning would be able regulate its members more effectively and without undue interference. Drawing on case studies in different areas, Coglianese and Lazer (2003) have shown that self-regulation can be an effective strategy when regulated entities are heterogeneous and regulatory outputs are relatively difficult to monitor. At present, the role of regulation and financing are discharged by the same agencies. With a view to bring about clarity in role, it is essential to separate these roles. New arrangement for discharge of financing and regulatory roles could be as under.

5.9.1 Streamlining the role in financing

The multiple roles discharged by the University Grants Commission (UGC) could be segregated. UGC requires un-bundling. Its funding role could be assigned to a *funding council* as in the case of UK. It needs to be noted that around forty-five higher education institutions have already been disbursed funds directly. UGC provides operating budget support to merely sixteen central universities, ten deemed to universities and sixty-four colleges. Experience of the last couple of years shows that many decisions on funding of central universities were taken directly by the MHRD in the central government, UGC merely disbursed funds to the central universities as per the dictates of the Ministry. Under the circumstances, more efficient arrangement would be for MHRD to take upon this responsibility directly and the institutional energies of the UGC could be focused elsewhere. This would also streamline reporting arrangements and reduce reporting

burden on universities while maintaining the highest level of accountability for public investment.

Competitive research funding could be provided through a National Science Foundation (NSF) type of body responsible for coordinating and funding research in the country. Funding for innovation and experimentation in teaching and learning may be routed through a National Qualification Authority on the basis of the recommendation of the subject level networks. The states provide operating as well capital grants to the state government aided universities and colleges. Central funding for the state government aided universities and colleges, is merely around Rs.4 billion per year. At present, this fund is disbursed through the UGC. The central grant for the state universities and colleges could be disbursed through the state governments. This could be done on an objective basis, such as the size of the higher education system within the state etc.

A separate and new agency with adequate funds may be set up to ensure equitable access to higher education for students from poor background though a combination of grant-in-aid and loans. Existing student-based support schemes may be assigned to this agency. Over a period of time, primary funding role of the central government may be confined to student-based funding.

5.9.2 New regulatory role

The UGC's role of determination and coordination of academic standards could be assigned to subject level peer networks coordinated by an independent National Qualification Authority. The maintenance of academic standards could best be done through a credible accreditation system. It is seen that communities of practice would be in better position to evolve policies and develop framework to strengthen teaching, learning and research in different subject areas rather than a centralised bureaucratic agency.

Compulsory self-disclosure[26] in the form of returns of information by universities and colleges should be mandatory to address the problem of information asymmetry in higher education. Provisions of the Right to Information Act, 2005 could be used for this purpose. This could even be extended to private for-profit sector. These rules could also define misrepresentation and deceptive practices in advertising, promotion and marketing by higher education institutions. In the USA, students' 'Right to Know' requirement under the provisions of the Higher Education Act of 1965 and Freedom of Information Act require the disclosure of financial assistance and institutional information to students.

Compliance-based regulatory system would be essential to ensure that the baseline standards are met. Broad norms for infrastructure, facilities, faculty and staffing may continue to be required. These can be provided by the subject-level networks, but their compliance should be the responsibility of the state governments, where they are located. No state could be authorised to approve institutions for operation outside their own states. For cross-state provision in distance mode, DEC would come into picture.

Tuition fee and admission policies require the most attention. While the private unaided institutions could be given greater flexibility in deciding on fees to be charged within a broad framework, compliance to it should be ensured by enforcing transparency in accounting to curb exploitation of students and parents. The practice of each university or institution having its own entrance test needs to be stopped. The multiple entrance tests are the cause of avoidable mental and financial hardships to students and their parents and are subject to manipulation. Over a period of time, there is a need to create a national testing service across subjects and levels. For the time being one (or at best 3-4) test in each subject area may be identified at the national and state levels. All institutions should be obliged to use inter se merit based on these tests. Each university could however be allowed a reasonable autonomy to decide on their entrance criteria subject to the condition that such criteria are fair, transparent and merit-based (a combination of merit on the basis of a specified common test and performance in qualifying exams). Admission processes should be allowed to be used for generating revenues by any institution – public or private.

In the final analysis, there is a need to develop a roadmap for streamlining regulation of the higher education sector through decentralisation of central regulation and development of institutional mechanism for effective market coordination. Compulsory self-disclosure in the form of returns of information by universities and colleges should be mandated to address the problem of information asymmetry in higher education. Higher education institutions should have reasonable autonomy to decide on their entrance criteria subject to the condition that such criteria are fair, transparent and merit-based and it reduces burden of admission tests on students. For this, there may be a need to create a national testing service across subjects and levels. A National Qualification Authority could be set up that would work through peer networks - subject / discipline-wise with a mandate to define standards of instruction, curriculum and academic titles in each subject area. The UGC Act may be replaced by a more comprehensive and umbrella Higher Education Act to provide overall unambiguous framework for development, regulation and financing of higher education in the country. Unnecessary regulations need to be terminated. There is a need to re-look at the entire recognition and approval system so that baseline standards are met.

6 Quality Assurance Mechanism

6.1 Emergence of quality assurance agencies

Higher education has several stakeholders. These include all those who have legitimate interest in what higher education institutions do and in the quality of their outputs. The stakeholders include students, and graduates, and also employers, parents, various professions and professional bodies, and government. All these stakeholders now demand greater accountability from higher education institutions. With the rapid growth of enrolment in higher education in 1980s, there was increase in costs to government. This made the government to adopt new approach (as practiced in the other public sector) to the administration of higher education institutions. There was focus on '*value for money'*. In recent decades there has been an emergence of the private sector in higher

education. Higher education today is more competitive, more diverse in terms of students' population and less well funded. Along with increased expectations from higher education to serve the national, regional and local needs, there is a greater demand for efficiency. These developments have given prominence to quality assurance issues in policy discourse on higher education in different countries the world over. Quality now is the most talked about and the least understood issue in higher education.

Over the last couple of decades, several quality assurance agencies have emerged under the pressure of greater demand for accountability. These agencies essentially convince various stakeholders that a higher education institution takes its quality control seriously, and that the quality of teaching and quality of graduates leaves no room for concern. With the increased mobility of professionals and skilled workers and the greater need for recognition of qualifications across borders, these bodies are now required to coordinate their work and create a mechanism for quality assurance in a trans-national context.

This section describes the quality assurance system as it exists in India today. There is an objective assessment of the work of the quality assurance agencies and a review of the new developments in this regard. The section compares the structure and process of accreditation in India with that in the USA and drawing lessons from experience of the USA recommends steps required to make accreditation an effective instrument for ensuring quality of higher education in India.

6.2 Quality assurance in India

Like elsewhere in the world, the rapid expansion of higher education in India has been at the cost of its quality. Quality varies widely across institutions. Despite the general deterioration of quality, some institutions like IITs, IIMs, a few university departments and some affiliated colleges have maintained high standards. The deterioration of quality is most glaring in the state universities in general, and at the undergraduate level in affiliated colleges in particular. Conventional postgraduate education is also facing crisis and performs extended "babysitting" function because of lack of job opportunities for the graduates in India (Jayaram, 2006). India's standards of higher education compare unfavourably with the average standards in educationally advanced countries.

In 1980s, serious concerns were raised about continued deterioration in quality of higher education. It was found that the built-in controls were not able to ensure quality. Various options were examined. In line with global practices, external quality assurance was conceived in India as a solution (Stella, 2002).

Presently, there are three agencies that evaluate quality of institutions and / or programmes through an external quality assurance in the country. These are: the National Assessment and Accreditation Council (NAAC) set up by the UGC in 1994 to accredit institutions of higher education; the National Board of Accreditation (NBA) established by the All India Council of Technical Education (AICTE) in 1994 to accredit programmes in engineering and related areas; and the Accreditation Board (AB)

established by the India Council of Agriculture Research (ICAR) in 1996 accredits agriculture institutions.

6.2.1 National Assessment and Accreditation Council (NAAC)

Though the National Policy for Education (NPE) in 1986 recommended to put in place a quality assurance mechanism, the National Assessment and Accreditation Council (NAAC) could only be established in 1994. Even after that it took almost eight years for NAAC to accredit the first institution in January, 1998. Initially there was a debate on whether the accreditation in India could be made compulsory and linked to funding. Finally, keeping in mind that built-in controls in the form of regulatory bodies and a strong affiliating system already existed, it was decided that assessment and accreditation would be used as an enabling mechanism towards self-improvement (Stella, 2002).

The NAAC adopted core elements common to most external quality assurance systems, namely, assessment based on a pre-determined criteria that combines self-study and peer review that is valid for a specific period of time. Based on this, NAAC evolved its unique assessment model that combined three basic approaches to quality assurance namely, accreditation[27], assessment[28] and audit[29] together. NAAC *accredits* institutions and certifies for educational quality of the institution based on seven criteria[30]. It goes beyond certification and provides an assessment that classifies an institution on a nine-point[31] scale indicating where the institution stands in the quality-scale. External peer review report other than its confidential part is made public.

So far, NAAC has taken up accreditation of universities and colleges only, though it could take up accreditation of departments or programmes as well. The universities recognised by the UGC or colleges affiliated to them are eligible to volunteer for accreditation. Accreditation by NAAC is voluntary and is valid for five years.

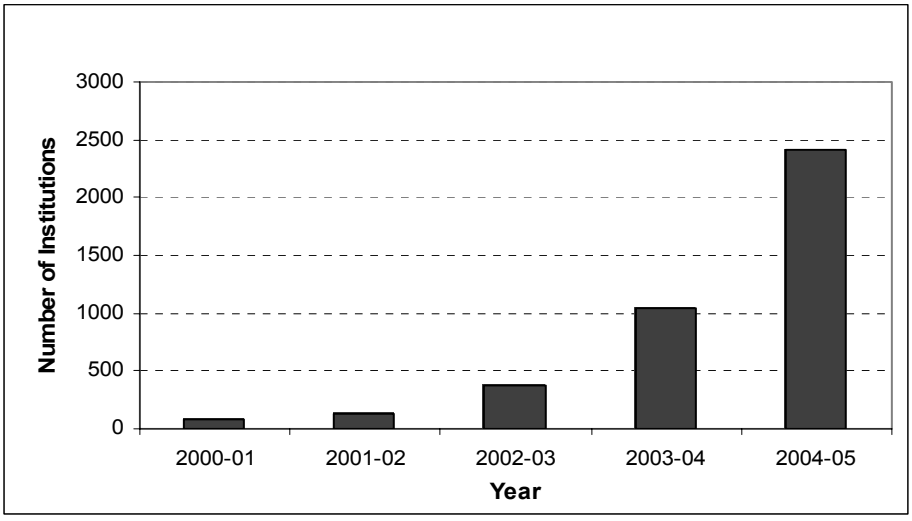


Figure 17: Trend of NAAC Accreditation

By June 2005, NAAC had accredited 105 universities and 2311 colleges. Under its work plan, NAAC expects to cover the remaining recognised universities and colleges by the end of the tenth plan period i.e. within March 2007. From Figure 18 above, it is seen that accreditation activities have picked up in the last few years only. Overall around 13 per cent institutions of higher education have been accredited by NAAC in India. The analysis of universities and colleges accredited by NAAC shows that these are mostly government or government-aided; private unaided institutions have been less willing to subject themselves to accreditation (Figure 18). The fact that many of them were set up in recent years and are not yet eligible for accreditation could be a reason for only a few private unaided institutions having been accredited so far.

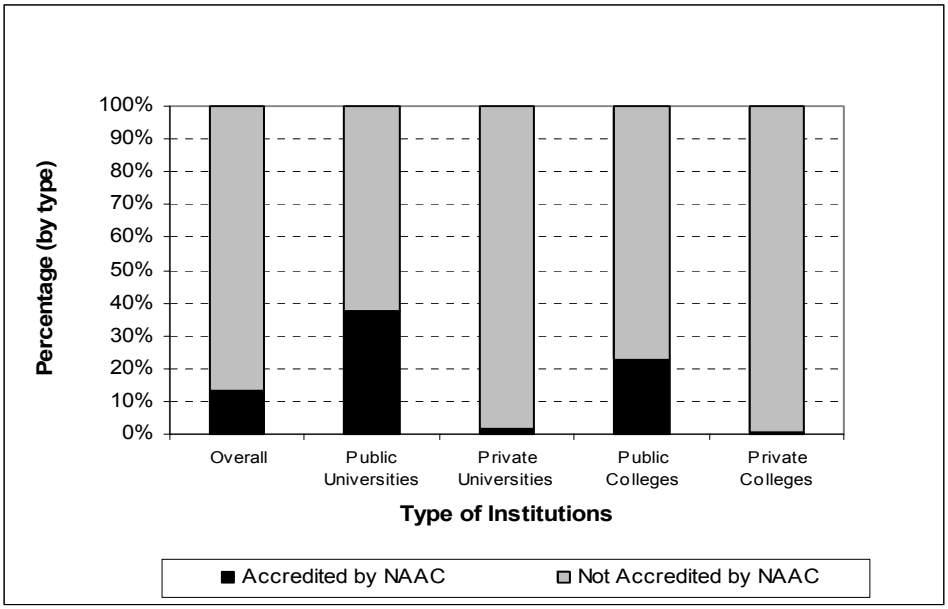


Figure 18: NAAC Accreditation Status (June 2005)

Though accreditation in India is voluntary, many state governments have decided to make accreditation compulsory for the institutions within their states. The government of Tamil Nadu has decided to submit the government colleges for assessment in a phased manner. Karnataka has made accreditation mandatory for all its professional colleges. Similar moves are on in states like Bihar, Kerala, Goa, Andhra Pradesh and Maharashtra. The UGC is meeting all cost of accreditation of universities and colleges recognised by it.

6.2.2 Other Accreditation Bodies

The National Board of Accreditation (NBA) under the AICTE accredits programmes that come under engineering and related areas. NBA follows the same process of external peer review as that of NAAC. Programmes with more than 650 marks out of a maximum of 1000 points are "*Accredited*" and those that score les than 650 are "*Not Accredited*". Programmes getting a score more than 750 are accredited for a period

five-years, where between 650 and 750 are accredited for period of three years. The outcome of NBA process is not linked to funding.

Though AICTE has made accreditation by NBA mandatory for all technical institutions, the progress so far is poor. By May 2003, NBA had accredited merely 895 programmes from 202 institutions as against a total of 14000 programmes in 3589 approved UG and PG and 1608 diploma level institutions. A large number of institutions are yet to complete two years after graduating of their first batch and, therefore, are not yet eligible for accreditation. Coverage being poor, there is doubt if NBA accreditation serves any useful purpose in overall context.

Accreditation Board (AB) under the ICAR enforces and monitors compliance with norms and standards for agricultural education in India. AB follows the same process as that of NAAC and NBA. The result of AB accreditation process is – "accreditation status", "provisional accreditation status" or "no accreditation status". In each case, the outcome is substantiated with reasons. The accreditation status is valid for a period of five to ten years. Accreditation outcome is linked to funding. The AB charges no accreditation fees.

Some of the other professional bodies are attempting to establish their own accreditation mechanism. The Distance Education Council (DEC) and the National Council of Teacher Education (NCTE) are working with NAAC to develop their own accreditation procedures. The overall the response of the higher education institutions quality assurance movement is lukewarm, though there are significant regional variations with universities and colleges in the southern and western parts of the country generally more enthusiastic towards accreditation. There have also been initiatives to rope in private professional rating agencies for accreditation in certain segments of higher education.

6.2.3 Private professional rating agencies

In January 2004, the Directorate General of Shipping (DGS), the regulator of maritime education in India decided to encourage maritime education institutions - both public and private to get themselves rated by professional rating agencies such as CRISIL, ICRA or CARE. The Directorate laid down standards based on global practices for accreditation and allowed the private agencies to do the rest. It did not interfere in determining the fee structure for rating. Initially twenty-four out of sixty pre-sea institutes voluntarily came forward for grading. There has been an excellent response from the public and aspiring candidates to the institutes that were graded. Based on inputs from the accreditation bodies, the rated institutes have improved their standards. DGS is now planning to make it mandatory for all maritime education institutions to get themselves rated by the identified private professional rating agencies.

As noted above, the experience of using private rating agencies for accreditation for maritime education in India has been good. Rating by private agencies has helped to improve the quality of maritime education in India. It has also helped in preparing trained

manpower that meets global standards for the shipping industry. This experience is for a small and niche segment of higher education. It needs to be seen if this is scalable.

6.3 Assessment of Impact

Despite the existence of NAAC for over ten years now, its impact on quality of higher education is yet not quite visible. There is a need for deeper scrutiny of this. Perhaps the reasons for deteriorating standards of higher education in India are deep-rooted. To address the problems of lack of resources, the issues relating to financing higher education need to be fixed. To address the issues relating to violation of minimum standards, the regulatory system needs to be made more effective. A voluntary accreditation process cannot address these problems.

If one evaluates performance of NAAC against its intended purpose, we see that NAAC has been doing a commendable job. The problem lies elsewhere. NAAC accreditation was to facilitate institutions towards self-improvement with the institution as its prime beneficiary. This is beginning to happen. Funding agencies were expected to use the outcome of the accreditation process to target their funding to quality institutions. This is also beginning to happen, yet it has little impact. The funding agencies have little or no discretionary funding available with them to link it with quality. In absence of clear incentives for accreditation, the higher education institutions have not begun to take accreditation in India seriously.

The coverage of NAAC and NBA accreditation is still small. Many of the reputed universities and colleges have so far not volunteered themselves for accreditation. As a result, accreditation status fails to give any clear signal about the quality of all institutions or their programmes. In contrast to this ambiguous situation in India, accreditation in the US serves a clear and specific purpose. Accreditation processes in India and the US have the same core elements: institution-based voluntary exercise, self-study, peer review, and public disclosure of outcome. Despite this similarity, there are significant differences in the way the accreditation in the two countries is organised. These differences explain different outcomes. A comparative analysis of accreditation in the two countries has been done in the next section.

6.4 Comparative analysis of accreditation in the United States and India

Accrediting organisations in the US play a key “gatekeeper” role in higher education. Accreditation is used to determine whether higher education institutions and programmes are eligible to receive the over $80 billion in federal, state grants and loans available annually (Schray, 2006). In India, there are no such linkages of accreditation to funding. The UGC uses grades of accredited institutions in a limited way as one of the several criteria for competitive grants. As noted in section 2 on financing, the quantum of such competitive grants in India is insignificant to create any real incentives for higher education institutions to get accredited. .

Accreditation in the US, though originally started to help students to transfer from one higher education institution to another on the basis of credits earned by them, has evolved into a private, non-governmental "self-regulation" system. It assures that both public and private institutions of higher education and their programmes meet acceptable levels of quality. It has a wide diversity and enormous reach. It involves 100 public and private accrediting organisations that accredit more than 6,400 institutions and 18,700 programmes (Box 4).

Box 4 : Accreditation in the United States: Wide diversity and enormous reach

There are three types of accreditation organisations in the US - regional, national, and specialised or programmatic. *Regional accrediting agencies* operate in six different regions in the U.S. and review entire institutions. Nearly 3000 regionally accredited institutions cover almost all traditional, non-profit, degree-granting colleges and universities. *National accrediting agencies* covering around 3500 institutions operate throughout the country and review the entire institution. Some of them are single purpose institutions. These cover both degree and non-degree granting institutions and also profit and non-profit institutions. *Specialized accrediting agencies* operate throughout the country and review programmes, departments, or schools in specific fields that are parts of an institution. Sometimes they also accredit single purpose institutions. Some specialised accrediting agencies are government agencies such as those responsible for regulating healthcare professions. These cover 18,713 accredited programmes and single purpose institutions.

Source: Schray, Vickie (2006)

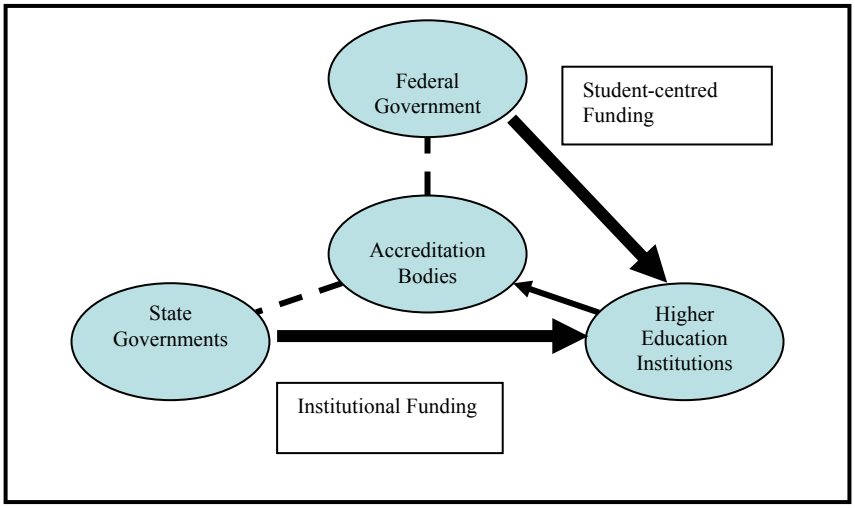


Figure 19: Linkages between different units in US higher education

In the US, accreditation bodies occupy the centre stage of the higher education system. Though the federal government uses the outcome of accreditation for student-based federal grants, the US accreditation bodies do not come under the direct supervision of the government. Accreditation provides the primary means to inform and

protect students and parents against fraud and abuse. It helps the students to transfer from one institution to another. States have their regulatory mechanism and provide institution-based funding support (Figure 19)

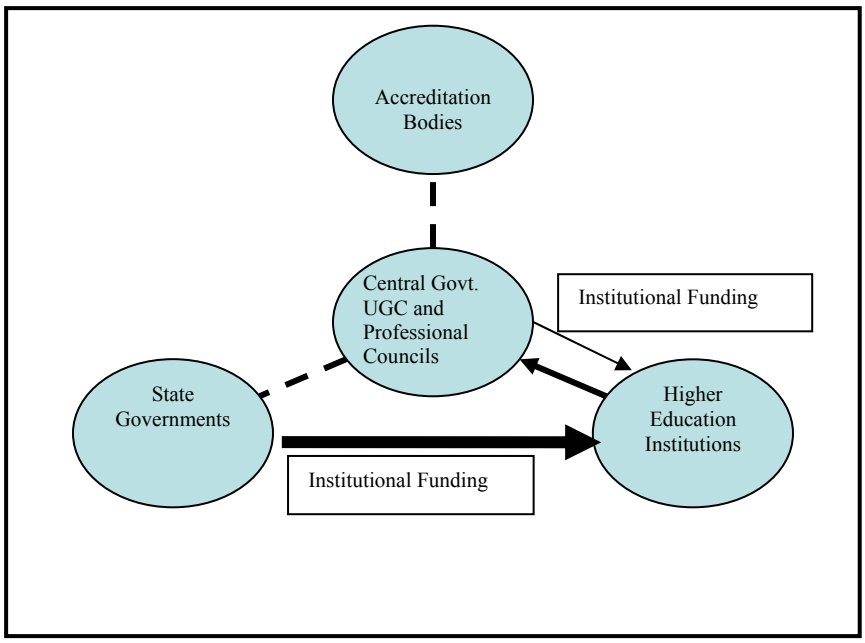


Figure 20: Linkages between different units in Indian higher education

In India, the central government and its various regulatory agencies, rather than the accreditation bodies occupy the centre stage. Accreditation bodies are subordinate to the central government or its apex bodies. Though accreditation is voluntary in the US, its coverage is enormous. Almost all higher education institutions are voluntarily accredited and new ones are in the process of getting accredited. In comparison, in India only around 13 per cent of all higher education institutions have been accredited. Many high quality institutions have not volunteered for accreditation. With the majority of the private institutions yet to be accredited, accreditation does not protect students and their parents against fraud and abuse. Linking of funding with accreditation is tenuous. Mobility of students from one institution to another is highly restrictive.

Accreditation agencies in the US are privately organised as not-for-profit membership based organisations. They are financially self-supporting through annual dues from member institutions. Institutions pay actual expenses for site visits. In India, NAAC is organised as an Inter-University Centre under the UGC; NBA is under the AICTE and AB under the ICAR. Accreditation agencies are financially dependent - almost fully on the government. Even the cost of peer team visit is borne by the government grant.

Despite a large number of accreditation agencies in the US, there is a reasonable clarity in roles and functions amongst various accreditation agencies. The two umbrella organisations at the national level – the Committee of Regional Accrediting Commissions

(C-RAC) and the Council for Higher Education Accreditation (CHEA) harmonise standards and activities of accreditation agencies and coordinate joint visits (El-Khawas, 2001). On the other, in India despite just three accrediting agencies (NAAC, NBA and AB), there are often overlaps in their functions. In addition, several regulatory agencies carry out similar functions. Many differences in outcomes of accreditation in the US and Indian system could be explained by he higher education system in the two countries is organized. Table A26 provides a comparative overview of the two higher education systems.

Voluntary accreditation in the US has evolved as a consequence of a long tradition of cooperation that exists between academic institutions. It grew as its legitimacy was proved and it functioned successfully. Over a period of time, the federal and state governments could trust the outcome of the voluntary accreditation process and used it for a variety of purposes. This reinforced public confidence in voluntary accreditation in the US. Despite accreditation putting a lot of cost and burden on institutions, the academic institutions value it; they value it realising that a substitute for voluntary accreditation would be a more burdensome external scrutiny organised by the government.

Despite the same core elements, each institution is evaluated in accordance with its own stated purpose in the institutional accreditation process in the US. This safeguards the diversity of the institutions, which is considered a hallmark of the strength of the US higher education system. In India, the evaluation for accreditation is done on the basis of standard instruments (largely based on numerical facts). This amounts to standardisation. There are now attempts by NAAC to learn lessons from the US experience.

Based on the comparative analysis of the accreditation in the US and India, it is seen that the success of accreditation in US is in its design, the specific consequences it has and the credibility that accreditation agencies have built over a period of time; while in India voluntary accreditation provides little or no incentives for institutions to go in for accreditation. Accreditation in India is yet to gain full acceptance and credibility. Public awareness about it continues to be low. In its presence form, it is being reduced to a ritual with no clear consequences and needs to be overhauled.

6.5 Rankings and league tables

Rankings and league tables of higher education institutions are popular abroad. These are beginning to be seen in India. These are lists of groups of institutions that are comparatively ranked according to a common set of indicators in descending order. Different from performance indicators, these are designed specifically as a comparative measure, pitting institutions against each other. In most cases, these are produced by commercial publishing enterprises. Most league tables provide a single integrated score that allows an ordinal ranking of entire institutions.

Such rankings provide valuable information to the students, parents, teachers and researchers, policymakers, and to institutions themselves as they compare themselves with peer institutions at home or abroad. However, there are many problems with

ranking. Private ranking systems, such as the US News and World Report "Best American Colleges," use a limited set of data, which is not necessarily relevant for measuring institutional performance or providing the public with information needed to make critical decisions. Many of these rankings are based on data provided by the institutions themselves. Such data is not independently verifiable and is subject to manipulation. Indicators that are aggregated or weighted fail to provide an insight into the actual functioning of the institution. Most rankings are at the institution level and not at the programme level reducing their value for the students.

There are now approaches to address problems mentioned above. Two of these are worth mentioning. Germany's CHE/DAAD (Centre for Higher Education Development / German Academic Exchange Service) rankings that serve to assist international students in coming to Germany are based on faculty surveys and data from third party sources. It does not weigh or aggregate individual indicator scores. Each department's data on each indicator is allowed to stand independently. This allows users to create their own weightings and rankings by selecting a set of indicators and querying the website's database to provide comparative institutional information on that basis. This approach effectively cedes the power of defining "quality" to the prospective university students and their parents (Usher and Savino, 2006).

Another methodology has been developed by Avery and his colleagues in the US. They have constructed a ranking of US undergraduate programmes based on how desirable students find them. They collected data on the college applications, admissions, and matriculation of 3,240 high-achieving students and developed what they call as the revealed preference ranking of more than top 100 colleges in the US (Avery et al, 2004).

Despite weaknesses in the existing ranking system, rankings and league tables are essential in an increasingly competitive landscape for higher education. As in the rest of world, in India these will have to be done by the popular print media. The government and the higher education institutions could however ensure that the media has access to up-to-date and credible data. Altbach (2006a) suggests creating generally agreed criteria that can be used to do the rankings. This could be a useful first step towards bringing greater objectivity in rankings. Transparency throughout the process is central but many of the current rankers are notably unclear about both the criteria and the methods. The challenge is to ensure that they provide accurate and relevant assessments and measure the right things.

In the above context, the government could well align its information collection system to collect and disseminate institution and programme-related data for comparative analysis, using standard formats, designed for students (and parents) and also policymakers. Availability of sound data in user friendly formats will go along way in addressing the quality issue in higher education. This could also allow students to create their own rankings of institutions to make informed choices at the time of admission.

6.6 Analysis and action points for making accreditation effective

In the mid-1960s, the Education Commission noted that the standards of higher education in India did not compare favourably with the average standards in the educationally advanced countries. Since then, the standards have continued to deteriorate. Low standards are now endemic and a serious problem. Accreditation would hardly serve any purpose, if the issues of minimum standards, in most cases arising from poor infrastructure and facilities, are not tackled first. While lack of resources could be primarily responsible for deteriorating standards, there are other reasons as well. The requirements of minimum standards are being violated with impunity. There is undue emphasis on certification rather than teaching-learning process. This makes examination as 'be end and end all' for all practical purposes. Increasing graduate unemployment arising from supply-demand mismatch is often thought of as quality issue. No quality assurance system can be expected to address problem of an anaemic, distorted and dysfunctional higher education system. Structural issues related to it need to addresses first.

A properly designed accreditation system could however help in making higher education institutions more accountable to its various stakeholders. In its present form, the accreditation system in India serves little purpose. It requires a thorough overhaul to enable it to deliver. There is a need to initiate and facilitate setting up of membership-based accreditation agencies for institutional accreditation as a means for self-regulation on the pattern of the accreditation agencies in the US. Such bodies may be responsible for accreditation of no more than 1500 to 2000 institutions in each region. Such accreditation agencies should be at arms length from the government and totally autonomous in their functioning. There could be a national level body for coordination amongst the accreditation agencies.

There is a need to create clear consequences for accreditation by having suitable and adequate incentives for it. For instance, students-based government grants should be available to students studying in the accredited institutions only. Accreditation of professional courses, particularly for those courses that have licensing and registration requirements may continue to be done by the national level agencies. Duplication and overlap need to be avoided.

Accreditation in its present form promotes standardisation unlike a review against the institution's mission. Maintenance of standards rather than cloning through standardisation should be the objective. Experimentation and innovation in quality assurance mechanism should, therefore, be encouraged. The possibilities of scaling up accreditation experience of maritime education could be explored.

Quality assurance mechanism themselves have to be in harmony with global trends so that there is international acceptance of degrees / diplomas awarded in the Indian higher education system. In this direction, Indian agencies could work towards networking with trans-national and international quality assurance agencies and enter into arrangements for mutual recognition of quality assurance systems. It is desirable to make

the quality assurance mechanism in India compatible with UNESCO / OECD guidelines on the issue released last year.

Accreditation agencies in the US are now engaged in aligning their information reporting requirements with other data collection requirements that academic institutions face to make accreditation process less burdensome. Electronic portfolio of information is being designed that would meet accrediting requirements while also informing students, families and institution's surrounding community about its activities. Developing a public information system, where information about institutions in comparative perspective and in user friendly standard formats is made available on the web for students (and parents) is, therefore, desirable. Availability of sound data in format will go along way in addressing quality issue in higher education. This could also allow students (parents and print media) to create their own rankings of institutions to make informed choices at the time of admission.

Finally, there is a need to develop better measures of student achievement by putting in place national level tests. Accreditation bodies should primarily focus on the outcome of such tests and labour market outcomes of the graduates from higher education institution in their accreditation processes.

7 Other Important and Contemporary Issues

Governance and Administration

Institutional governance and administration

Today, higher education institutions face intense competitive pressures. They have to meet increased expectations of different stakeholders. They are required to do more with less (be more efficient) and do it better (be effective). They have to be transparent in their functioning. The Right to Information Act, 2005 imposes new requirements of transparency on the higher education institutions. Transparency in functioning helps them to build confidence of the various stakeholders. Transparency brings the institutional governance and administration into focus.

Whereas governance refers to decision-making, administration is more about execution of those decisions. There have been changes in the organisation and structure of both the governance and administration of higher education institutions in recent years. These changes are reflected in three distinct approaches in use. These are – new public management, entrepreneurialism, and academic capitalism. New public management is an extension of the experiences with the public sector in general to academic institutions for making them more efficient and effective. Entrepreneurialism is driven by making different units of the university more autonomous in the quest for diversified sources of funding. Finally, the academic capitalism is the shift of higher education from a social institution to an industry. One can see a combination of all the new approaches being adopted by some higher education institutions that are adapting themselves to the changing circumstances in India.

Within the context discussed above, this section covers three important areas that require attention. These are: (i) staff development, (ii) procedural simplifications and (iii) computerisation efforts. There is the issue relating to rightsizing of administrative support, particularly in public institutions, since it has been seen that non-academic staff in many public-funded institutions is several times more than the academic staff, resulting in inefficiency of operations. The Indian Institute of Science, Bangalore had tried a special voluntary retirement scheme to reduce the non-academic staff. Others could also try this.

There is a need for training and development of academic administrators and support staff in the universities and colleges throughout the country in a structured manner. The activity need not be confined only to the development of generic skills but also should focus on development of specific skills required by different groups of academic administrators in the system. A coordinated plan for the same through empanelled training providers could also be considered. Higher education institutions could be encouraged to earmark a specific budget for this purpose each year. Each institution could have a training cell or a suitable mechanism to identify the training needs and conduct and arrange programmes for the same.

The key to improved institutional governance is the simplification of internal procedures on a continued basis, which needs special attention. The institutions can be benefit by sharing of the best practices on improved institutional governance.

The computerisation of administrative systems and streamlining back office processes provide efficiency and promote transparency in the functioning of institutions. The track record of such use of computers in the higher education institutions has been poor. Early efforts to introduce computers were limited to standard packages for word processing, simple spreadsheet for calculations or isolated databases to store information of a section or a department. Now what is needed is a system that will integrate all the functions-- academic; financial; building and works; personnel; hostel management; alumni affairs and its interface with government; and government agencies. The efforts for computerisation are likely to be successful now as there is increasing acknowledgement of the ability to use computers and the availability of a large "computer ready" workforce in higher education institutions. Considering the new computer-enabled technologies now available, a web-based model is suggested. This would be both reliable and scalable.

Since the way educational institutions function and the requirements of the institutions vary only marginally, a single packaged solution with flexibility for customisation may be possible. A set of standard modules could be created (with more than one version for some modules if necessary) that will cover all the functions and that a customisation exercise be undertaken for each institute.

The rapid growth of enrolments in universities and colleges has not only led to concerns about financing, but has also raised issue of the related costs. Consequently, there is an interest in strengthening institutional governance and management as a way of

improving institutional efficiency and effectiveness. These concerns are addressed both through interventions within the institutions and through responses in its external environment.

Higher education information systems project (HISP)

For information management in the higher education system at the national level, a comprehensive Higher Education Information Systems Project (HISP) could be considered. Since the system is a loose configuration of heterogeneous organisational units – universities, colleges, professional councils, UGC etc., information management in such a complex system would be tricky, yet necessary to ensure its credibility. Such a system has to provide for an efficient mechanism for data collection, compilation and dissemination, improve targeting and monitoring of funding, promote collaboration between higher education institutions themselves and with industry and society through sharing of expertise and facilities, provide credible information about higher education institutions and programmes and cater to many other related needs. A properly implemented information system project would not only enhance its efficiency and effectiveness at the operational level, but also bring about a paradigm shift in the management of the higher education system.

The HISP could have various modules for the purpose of grants management; statistics collection and compilation; recognition management; research projects management; information on expertise and facilities; students' information; knowledge repository; and university and college admission management. For more details, please see Annexure D. This could be built and offered as an open source educational ERP (enterprise resource planning) package in an ASP (application service provider) model. This would enable even the remotest colleges with a dial-up connection to integrate with the system. For its implementation, a policy document on electronic records management could be developed. This shall cover legal issues; information security including authentication and audit; issues relating to privacy; records preservation and disposal; and strategies for incorporating metadata tags in various electronic documents.

Academic Profession in India

Condition of academic profession is central to many issues in higher education. Traditionally teachers in India have been accorded the highest esteem, over the past few decades, the academic profession is facing severe crisis. Teacher shortages due either due to non-availability of suitably qualified persons or arising from the ban on recruitment for financial reasons are rampant. Most bright people are reluctant to join the profession and those who join, do it as a last resort. They get disillusioned soon after they join when they find that they have no incentive to perform. This section looks the crisis in academic profession in India in the changing circumstances and examines some of the remedial measures that are being thought of.

Numbers and career progression

Universities and colleges have similar, though not identical structure and ranks in the academic profession. Universities have lecturers, readers and professors. The position of an associate professor also exists in some institutions. In the colleges, majority of the faculty are lecturers. In some cases, there are also senior grade lecturers and selection grade lecturers. The latter is equivalent in salary to that of reader but without the title. The rank of an assistant professor exists in some states.

Though recruitment of faculty is done by individual institutions as per their rules and statutes, the minimum qualification and pay scale for the post is prescribed by the University Grants Commission (UGC) in case of general institutions, and other regulatory bodies such as the All India Council for Technical education (AICTE) /Indian Council of Agricultural Research (ICAR) etc. for professional institutions. Approximately, there has been nearly twelve-fold increase in the faculty strength from 40,000 in 1950 to 472,000 in 2003/04. Please see Table 13.

Table 13: Number and Distribution of Teaching Staff by Designation: 2004/05

	In University Departments & University Colleges		**In Affiliated Colleges**		**Total**	**Percentage in affiliating Colleges**
	Numbers	***Percentage***	***Percentage***	***Numbers***		
Professors	16244	21.00	6.1	23708*	39952	59.34
Readers	24468	31.63	23.8	94016	118484	79.35
Senior Lecturers	11850	15.33	15.1	59505	71355	83.40
Lecturers	22868	29.56	51.5	203425	226293	89.90
Tutor/ Demonstrators	1920	2.48	3.5	13927	15847	87.84
Total	***77350***	***100.00***	***100.00***	***394581***	***471931***	***83.60***

Source: *University Grants Commission [* Includes Principals and Senior Teachers who are equivalent to Professors. Part-time teachers/Physical training instructors are included in lecturers.]*

Issue of teacher quality

Improving the quality of teachers is the key to improving learning outcomes in all educational institutions including higher education institutions. Hanushek and Rivkin (2004) describe various attempts to estimate the impact of teacher quality on student achievement. Estimates suggest that the differences in annual achievement growth between an average and a good teacher are large. Within one academic year, a good teacher can move a typical student up at least four percentiles in overall distribution (equal to a change of 0.12 standard deviation of student achievement). It is clear that having a series of good teachers can dramatically affect the achievement of any student. In fact, they erase the deficits associated with poor preparation at the previous levels.

In spite of strong empirical evidence and also commonly held belief that teacher quality is most critical in student achievement, there is a crisis of teacher quality the world over. This is perhaps the weakest link in the education systems worldwide. Hiring good teachers is not easy. Teaching ability is also not loosely related to training or experience. Unfortunately, the prevailing salary structures also do not target particularly high quality teachers (Hanushek, 2005).

Existing evidence suggests that improvement in teacher quality is more likely to come from selecting and retaining better teachers rather from re-training the existing teachers. This is corroborated by the experience of refresher courses conducted by the Academic Staff Colleges (ASC) and university departments (UGC-sponsored or self-financed) in India. It is observed that these trainings are conducted as a formality. They generally lack the advanced academic orientation expected of them. Teachers attend such courses out of compulsion[32] (Jayaram, 2002). While, some in-service training and development courses could be useful and further efforts are required to create a fit between training needs and training courses, it is generally accepted that this strategy would have its limitations. Thus, the focus has to be on selecting better teachers and retaining them.

Attracting and retaining good teachers

The strategy to attract and retain good teachers is not easy. First, the academic profession has suffered a serious downgrading. Teachers no more earn the same kind of high esteem in society as they used to get a few decades ago. In those times, teachers used to be revered by the society. Even though the economic rewards were inadequate, this sufficiently compensated and attracted people of a high intellect to academic profession. Second, with the advent of knowledge-led economy, students who are better prepared academically have other lucrative alternatives now. Academically, the bright students opt for professional courses at the first degree level itself, with fewer students moving on to post-graduation and doctoral level – a qualification required for academic profession. The total enrolment at the post-graduate and doctoral level in India is less than ten per cent. As a consequence of bright students not opting for post-graduate and doctoral education, the overall standards of these degrees in the country are abysmally low. This call for interventions to improve the standards of post-graduate and doctoral education in the country on one hand and re-look at the salary structure and career opportunities of teachers on the other.

Box 5: Serious faculty shortages in engineering institutions

With the rapid growth in number of engineering institutions, the non-availability of adequate number of competent faculty has emerged as a serious problem. AICTE Report (2004) estimated a total faculty requirement of 95,924 (comprising 13,703 Professors, 27,407 Assistant Professors and 54,814 Lecturers) on March 31, 2003. This would ideally require 41,110 Ph.Ds and 54,814 M.Techs. With only 7,536 Ph.Ds and 11,983 M.Techs available as faculty in engineering institutions, there was a gap of 33,574 Ph.Ds and 42,831 M.Techs. With further increase in intake now, the situation is worse. The AICTE had to reduce intake in 1346 approved engineering institutions by 25,335 (from 4,77,595 in 2004-05 to 4,52,260 in 2005-2006) on the basis of shortage of faculty[33]. Seven institutions with more than 50 percent shortfall of faculty

were not allowed to admit any students. Faculty shortages have been seriously undermining the quality of technical education.

Source: Report of the Board on Faculty Development of the AICTE (March, 2004)

Teachers and their associations have often blamed inadequate salaries and unattractive service conditions for the deterioration in the status of academic profession. The two pay revisions (in 1987 and 1998) have given the teachers a very good deal. The UGC pay package after the 1998 revision is adequate in absolute terms considering the nature and quantum of work that they do and the little accountability demanded of them (Jayaram, 2002). Though the teachers have not been happy, they have been demanding the observance of the principle of parity with Group 'A' services in the government. The UGC pay package has been accepted in principle all over the country, though there are some variations in its implementation.

Pay and compensation issues

The uniform UGC pay package was expected to attract better-qualified persons to the academic profession. On the contrary, it had four undesirable consequences. First, since the issues arising out of pay revision, particularly relating to career advancement and promotion schemes, retirement age and work load are far from settled, they continue to be the reasons for teachers' protests including strikes. This has been a major cause of teacher truancy and has spoiled the public image of academic profession. There is now less inhibition in not taking classes.

As a result of series of career advancement and promotion schemes, all teachers whether they are academically competent or not rise to the top positions. This has decreased the mobility of individuals who were seeking promotions across universities. This also removed incentives for teachers to perform (Kapur and Mehta, 2004).

Third, with the already deteriorating financial condition, many states could not bear the massive burden of pay hikes for teachers though the central government met 80 per cent of the additional expenditure in the first five years. As a result, there have either been cuts or delays in the payment of salaries. In most states, the teachers are not able to take even the security of their salaries on-time for granted. This has demoralised them.

Finally, the financial squeeze has also forced many states to impose embargo on recruitment of teachers even against existing vacancies. But for exceptional circumstances, new teacher positions against increased enrolment are not being created at all. The ad hoc appointees and part-time teachers out-number the permanent academic staff in many higher education institutions. The ad hoc appointees, being temporary with little possibility of permanent absorption, have no incentive to perform. Permanent appointments being few and far in between are subject to intense pressure that is not always fair.

Lamenting on the state of affairs of academic profession in India, Jayaram (2002, p236), himself a distinguished academic, notes that '*entering the profession with no prior*

professional preparation other than a postgraduate degree, assured of tenure, doing unchallenging work without any accountability, with performance being no more than its own reward, teachers at colleges and universities have been largely reduced to the lowest common denominator'.

In all, instead of improving the teachers' quality and their performance through uniform and attractive pay package, the strategy has led to the lowering of standards and almost a crisis in higher education. Parochialism and inbreeding has become an integral part of higher education in India. It goes on to suggest that governmental intervention in job market for academic profession has resulted in undesirable consequences and calls for a re-look. Rather than a centrally determined uniform pay package for teachers in higher education, there should be a differentiated pay-package structure with properly aligned incentives. This should be largely driven by the funding agencies, which would pay according to their means.

Apart from attracting and retaining quality teachers, ensuring that they have the incentive to continue to give their best is important. This calls for aligning their incentives with performance on a continuing basis. There is the need to introduce some kind of tenure system and implement a pay-for-performance system. As suggested by Narayanamurthy[34], there could be bi-annual student surveys of teachers and all benefits to them including compensation and promotion must be based on the feedback. This would make teachers and the higher education institutions directly accountable to students for student learning.

There have been suggestions for raising the salary levels of the teachers and increasing their age of retirement. It is being considered that salaries of the teachers should be increased to levels comparable in the private sector so that bright people can be lured to teaching profession. These measures are desirable and would help in attracting bright people to academic profession. However matching the teachers' salaries with the private sector across the board does not appear feasible. Teaching profession has to be seen as a package vis-à-vis private corporate sector. The kind of intellectual freedom that one enjoys in teaching profession can not be thought of in the private sector. The academic profession is much less stressful and can be far more challenging than a career in private sector. Therefore, merely looking at the remuneration package of teachers would be misplaced. Along with improving the conditions of service of teachers, there is a need to link it to their accountability. Changing strategy for attracting and retaining quality teachers and making them accountable is absolutely essential for any reform in higher education.

Use of new technologies

Basic framework

New information and communication technologies, particularly web-technology, (referred to as new technologies here) can be used in higher education to enhance the quality and to promote excellence. New technologies can offer: *outreach* (the opportunity to reach a very large number of people, in many cases simultaneously); *economies of*

scale (the economic consequence of outreach is lowered unit cost, which has often led to the view of educational technology as a less costly variant of expensive traditional structures); *richness of illustration and visualisation*; *individualisation*; *access to information* (interactive access to worldwide resources of information and archiving); *simulation*; and an *outlet for creativity* (Hancock, 1998). Overall, the new technologies can have a profound impact on higher education.

The new technologies can change the teaching-learning process in a way that has not been possible before. Richness of illustration and visualisation and possibility of individualisation could ensure that the most difficult concepts can be understood by all. However, it needs to be realised that the computer will never replace the teacher; but it will change the role of the teacher to increase the time and attention that can be spent on groups of people who are often neglected at present – exceptionally gifted children and those who lag behind. New technologies would have a profound impact on the way the research is conducted. Interactive and easy access to the World Wide Web would ensure that existing base of knowledge is readily available to all at all time. A maze of interconnected computers and huge distributed knowledge repositories sitting in different parts of the world would enable researchers to build new knowledge and collaborate with peers more effectively. New technologies are also known to significantly improve the governance both at the institutional and the systemic level in the higher education system.

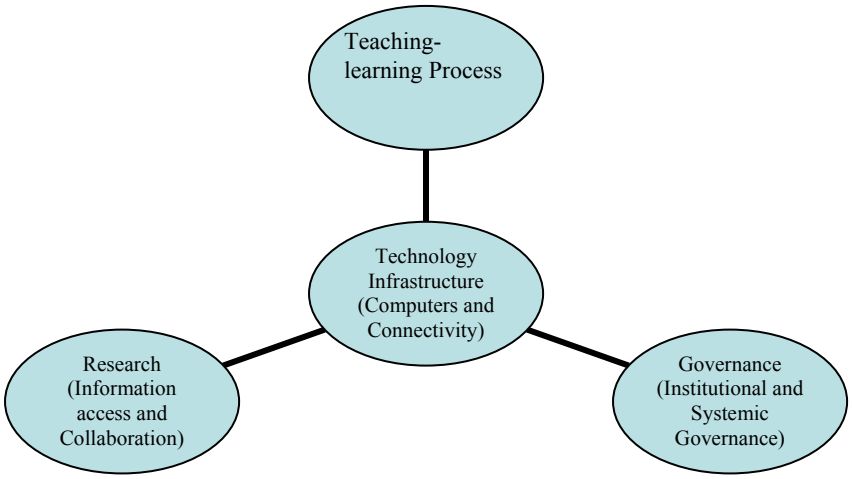


Figure 21: Use of technology in higher education – a framework

Organised efforts are required to reach out to the largest number of institutions to enable and facilitate them to leverage technology in all the three areas of teaching-learning, research and governance. Figure 21 above shows the framework of using technologies in higher education. In this section, we shall discuss the issues relating to technology infrastructure and the use of technology to enhance the teaching-learning process. Issues relating to use of technology in research and for institutional governance have been discussed in other sections of this paper.

Technology infrastructure

Good computing, networking and connectivity infrastructure for higher education institutions are essential for the purpose. Considering that the affordability will be an important factor, new technologies that are smaller, cheaper, and simpler would be adopted. To bridge the digital divide amongst educational institutions, networked computing at low price-points could be made popular. This would mean a simpler computing environment where upgrading is required mainly on the server-side only. A low cost thick-server thin-client computing environment with open source software could be considered. To be able to absorb the flow of information at high speeds from external sources, all higher education institutions must improve the internal campus network significantly. In most of the campuses, the application considered earlier was predominantly email access and browsing. As the scene has changed considerably, it is required to redo the bulk of network in every campus. In addition, dense academic areas in every institution could have a Wi-Fi network.

Reliable connectivity is essential for the technology-enhanced learning initiatives; integration of the efforts to set up digital library of all institutions; bringing together the academic and research community across the higher education institutions using voice over IP and videoconferencing; and to enable easy access to computing resources across the institutions to form a Computer Grid for High Performance Computing. Connectivity is now such a critical infrastructure for a higher education institution that institutions are being ranked according to the bandwidth available on per student basis. Though the central government and the UGC are making some investments in providing connectivity to higher education institutions, in a ranking of universities in Asia, the Indian universities fall far behind.

Using technology to enhance teaching-learning process

There are many efforts in India to use technology in the teaching-learning process. Their overall impact has not been systematically analysed. Whereas most of them are at the institutional level, there are two major efforts at the national level that have been described below. These are the Consortium for Educational Communication (CEC) and the National Programme on Technology Enhanced Learning (NPTEL). In addition, Indira Gandhi National Open University (IGNOU) and other open universities have been using technology to assist learners through its study centres.

The UGC started using the medium of films and broadcast media for knowledge communication in the early eighties. Countrywide classroom (CWCR) was launched in 1984. Production facilities were set up in six universities. An inter-university Centre named as 'Consortium for Educational Communication' was set up in the year 1993 to coordinate and provide guidance to the activities of the media centres set up by the UGC in various universities. The CEC coordinates the development of centres, ensuring the quality of software, coordination of telecasting of the selected films, inspiring and encouraging innovations. During the two decades of CWCR and a decade of CEC, considerable progress has been made.

The system of educational communication has grown to 17 centres. These centres now use computers, Internet and multi-media extensively and are called Electronic Multi-Media Research Centres (EMMRCs). The average number of education films produced has increased to 500 films from 25 in the beginning. The number of hours of telecast of education films on the national channel has increased from 2 hours to 4 hours daily. Now CEC runs a 24 hour higher education satellite channel known as *Vyas* channel on Gyan Darshan bouquet. The focus of educational films are on the following three types:(i) enrichment oriented films, (ii) subject related series of films, and (iii) undergraduate syllabus based lectures by eminent teachers. On the side of development of production equipment, CEC coordinates the acquisition and maintenance of the latest equipment by the media centres.

Over the years, CEC has developed a huge repository of video films. There are a total of more than 13000 titles available in 49 subject-areas. Syllabus-based model lessons are available in 47 academic areas. Syllabus-based model lessons in two subject-areas, namely political science and economics have also received quality control certifications.

The National Programme on Technology Enhanced Learning (NPTEL) was launched in 1999. The main objective of NPTEL programme is to enhance the quality of engineering education in the country by developing curriculum based video and web courses. This is being carried out by seven IITs, IISC Bangalore and other premier institutions through a collaborative effort.

The project intends to provide learning materials, digitally taped classroom lectures, supplementary materials and links to the state-of-the art research materials in all engineering and core science subjects. So far, approximately 70 courses covering all levels and many subject areas are ready and another 140 courses are in various stages of preparation and distribution using the Internet. The programme ensures harmonisation of curriculum so that the largest number of people can benefit from this initiative. A definite mechanism for assurance of quality and certification of courseware produced under the programme has also been put in place. This is primarily meant for supplementing classroom lectures. Video software developed under NPTEL is telecast through the *Eklavya* Technology Education channel to reach out to engineering students spread all over the country.

There is a need for the consolidation and scaling up of these efforts. A suitable feedback mechanism is required to understand the impact of using technology. These national efforts could be integrated and monitored at the national level, so that synergies between them could be effectively leveraged.

Private tutoring in India

India has a tiny quality sector in higher education. The seven Indian Institutes of Technology (IIT) and six Indian Institutes of Management (IIMs) are at the top of this quality hierarchy. With a strong meritocratic tradition, these institutions are at the very top of the highly selective higher education institutions in the world. Entry into many

other medical, engineering and management institutions is as difficult. As a result of strong linkages between entry to these institutions and later life opportunities, these institutions have high stake entry tests. Strategic interventions by students and parents to improve performance in these entry tests have stimulated a rapid growth of private tuitions in India.

Changing pattern

Private tuitions are not new; there is a long tradition of private tutoring in India. Earlier, a teacher used to make some money by teaching a gathering of 10-15 students in a makeshift classroom in his house after the school hours. He solicited students through word of mouth. Private tuitions were essentially meant for academically weak students for remedial purposes.

High stake entry tests to reputed institutions and plethora of competitive exams for entry into government and public sector has now changed this. Prime commercial addresses with spacious classrooms capable of accommodating hundreds of students and specialized and full time teachers are now used. Classrooms are now air-conditioned and equipped with modern teaching aids and comfortable furniture. Customized education packages, glossy brochures and a complete marketing strategy for promotion are used.

From being a covert activity, private tutoring is a booming industry. While the organized private tutoring is referred to as coaching classes in India, home-based private tutoring is termed as private tuitions. Big private players, such as FIIT JEE, IMS, Career Launcher, and Career Point have nation-wide presence of franchisee operations. Some of them are even offering private tuitions to the students in the US.

A few cities, such as Kota and Hyderabad have become famous for such coaching centres. Students, often with parents, shift to those cities for two years. The students attend the coaching centres on full time basis and private schools operate a dummy to provide attendance and conduct board exams. Many private schools are now having strategic arrangements with reputed coaching centres for supplementary tutoring after school hours on the school campuses itself.

While many coaching centres are bad and indifferent, charge heavy fees, and prey on the anxieties of the parents; teachers from regular schools moonlight there and use quasi-blackmail method to create demand for tutoring among their regular students, there are others that are well-organized, have specialized tutors and use self-learning instructional materials; they provide customized programs; they conduct periodic assessment of students' progress and provide students with diagnostic feedback; they develop their own teaching and practice materials; and provide guidance and information services.

From being a seasonal demand tending to increase close to major public examination, private tutoring is year-round phenomenon now. Coaching classes variously referred to as parallel education or shadow education that grew on the fringes of the formal education system is tending to become main-stream now. While there high-pitch

coaching to prepare students for high-stake entry tests, it is common at the lower levels as well.

A 1997-survey of 7879 primary school children in Delhi found that 39.2% students were receiving private tutoring. Participation at the higher levels is much more with majority of students either attending organized coaching classes or being tutored privately. Though, this continues to be a largely urban phenomenon, private tuitions have made inroads in rural areas as well.

There are no estimates of the amount and pattern of expenditure of households on private tutoring. It is however, understood that private tutoring is now a significant part of household expenditure and is increasing over the years. Some of the big players have estimated market potential for organized coaching in India for various competitive exams alone at Rs.70 billion, nearly half of what the government spends on higher education annually. Spending on unorganized private tuition is much larger.

Are private tuitions bad?

In a nation-wide survey in 1999, two-thirds of the people felt that coaching institutes flourish because of the poor quality of education; nearly ninety percent said that the competition has become so severe even the best students feel the need for systematic coaching. Ninety percent parents were even prepared to pay the high fees for private tuitions as they felt that this would an investment in their children's future.

Though there is no systematic study of the influence of private tuitions on students' performance, however the fact that nearly sixty percent students who qualified for IITs in 2004 had some form of private tuition seems to suggest that there is a linkage. A survey of primary school children conducted by *Pratichi Trust* in West Bengal suggest that 80% of who took private tuitions could at least write their names, only 7% of the children not taking private tuitions could do so.

Private tuitions in India have become one of the most important yet also unacknowledged, factors in child's performance in the high stake entry tests. Since families from the lower income group cannot afford large tuition spending, this results in inequalities in academic competition that is already distorted against government schools particularly in the rural areas. This skews the class-mix in higher education, particularly in those institutions that have competitive entry tests.

In addition, there are some apparent problems caused by private tuitions. These include: weakening of students' self-directed learning capabilities, students' low engagement in classroom teaching and undue pressures, both financial and psychological on parents as well as the students. Private tuitions also increase inequalities in academic competition for entry into highly selective higher education institutions. Tuition culture is making education a uni-focal exam oriented activity. Instead of imparting a holistic education, it force-feeds the students with knowledge to get high marks but does not enhance the questioning, reasoning or analytical ability so vital to equip for challenges of life.

Examining this phenomenon in other countries, it is seen that effectiveness of Japan's school system in teaching difficult subject like math and science is often attributed to the wide spread use after-school tutoring known as *Juku* and *Yobiko* in Japan. High level of household expenditure on private tuitions (*hakwon* in Korea) is believed to have a salutary effect by ensuring high academic achievements of Korean students, particularly their high science and math scores.

By analyzing performance of students from different countries in international tests since the 1960s, Hanushek and Kimko in their study in 2000 have pointed out that quality of labour force as measured by their math and science scores explains a substantial portion of the variation in economic growth of nations. Sustained over a period of time, its impact is very large.

Considering above, it is difficult to say whether private tutoring is necessarily bad? Private tuitions appear to fill in a vacuum left by grossly inadequate formal school system. Though, only a few thousand students may get entry into the limited number of quality institutions, yet the competition tends to push up the science and math skills of a large section of student population who aspire for entry in these highly selective institutions. This may be providing competitive edge to workforce from India. For this reason, it would be inappropriate to dismiss private tuitions totally.

Road ahead

Growing dissatisfaction of the parents with the formal school system and their realization that bad exam results will doom the life chances of their off springs would further stimulate growth of private tutoring. With the emergence of mass private tutoring, distinction between formal and informal learning would get blurred. Private tuition costs will occupy a significant proportion of household expenditure on education. Efforts to control and/or monitor private tutoring are likely to meet with only limited success.

Several measures could be taken to cope with the growing incidence of private tutoring. These could include: making the teachers in the formal school system more accountable and the schools qualitatively more competitive; reviewing the selection criteria for entry to higher education institutions to measure authentic academic achievement, high-level thinking skills and self-directed learning capabilities; and finally support students from poor households and in rural areas so that they are better prepared for entry to reputed higher education institutions to correct the distortions in the academic competition.

Since it is not feasible to control private supplementary tutoring and perhaps not even desirable to curb it, considering that it might be raising the country's average levels of achievement, the best option is to adopt a coping strategy that takes care of its negative consequences.

Branding and Advertising in Higher Education

Brand orientation in higher education

In the US, in a deregulated system, with a focus on their hierarchical position, higher education institutions have always had a strong brand orientation. Institutions vie with each-other for bright students, star faculty and research grants. Reputation is what matters in such positional warfare (Kirp, 2003). Economist Robert Frank describes higher education as a "winner-take-all" market. He points out that in higher education market, success breeds success and failure breeds failure (Frank, 2001).

US universities such as Harvard, Stanford and MIT are strong global brands that have stood for pre-eminence in higher education for decades. This shows that higher education brands have staying power and make an impact on the public psyche in extraordinary ways that are inarguable. India also has the IIT and IIM brands that are now recognized world over. These institutions have helped giving a positive image of Indian higher education abroad. Please see Box 6.

Box 6: IIT: A Global Brand

"the smartest, most successful, most influential Indians who've migrated to the US seem to share a common credential: They're graduates of the Indian Institute of Technology, better known as IIT. Made up of seven campuses throughout India, IIT may be the most important university you've never heard of ... This is IIT Bombay. Put Harvard, MIT and Princeton together, and you begin to get an idea of the status of this school in India ... With a population of over a billion people in India, competition to get into the IIT is ferocious. Last year, 178,000 high school seniors took the entrance exam called the JEE. Just over 3,500 were accepted or less than 2 percent. Compare that with Harvard, say, which accepts about 10 percent of its applicants ... impact of IIT graduates has been on the American technology revolution ... "I can't imagine a major area where Indian IIT engineers haven't played a leading role "... It isn't just high tech ... Fortune 500 headhunters are always on the lookout for that IIT degree ... And the American companies love the kids from IIT ... Nehru, India's first prime minister, created IIT 50 years ago just after independence to train the scientists and engineers he knew the nation would need to move from medieval to modern. He never imagined India would be supplying brainpower to the whole world ..."

Source: *Excerpts from the Popular "60 Minutes" Program on CBS News on June 22 2003*

In the context of higher education, at its root, a brand is the promise of an experience. Understanding and communicating the validity of that experience to target audiences are parts of the branding process. Brands do not develop value or authenticity by themselves. It can take time and a great deal of work. Through effective marketing, many institutions have succeeded in aligning or enhancing their images to better fulfill the promise they convey to the constituencies that they already "own" or desire to attract.

In US, according to Garvin (1980), an institution's actual quality is often less important than its prestige or reputation for quality because it is the university's perceived excellence, which, in fact, guides the decisions of the prospective students and scholars considering offers of employment and federal agencies awarding grants. This would be equally true elsewhere.

And while many people in academics are suspicious of a brand orientation, believing it to be false or superficial, in fact, the best brands are entirely authentic. The authenticity of the promise conveyed by a brand name is particularly important in higher

education, where the college or university brand becomes part of an individual's identity, one of the key badges that we all wear in understanding and explaining ourselves.

Moore (2004) notes that authenticity of an education brand cannot be taken for granted. If a false promise lures you into buying a pair of acid-washed jeans that you are forever embarrassed to wear, or entices you into the door of a restaurant that serves less-than-average food, your loss is small and your disappointment modest. However, if you choose a college or university and entrust your child to one--based on the promise of a specific experience and then that promise is not fulfilled, the impact can be profound, embittering, and lasting. Therefore, branding in higher education is a two-edged weapon.

Though branding in higher education has always been there, what is different now is that over the past decade or so, deliberate efforts to "market" higher education institutions have gone from being a marginal - and somewhat suspect - activity in higher education to becoming a strategic imperative. Heightened competition is encouraging all institutions to take a more market-oriented approach.

Since the state-run higher education system (with some notable exceptions) is in disarray and there is prosperity, people are looking for alternatives for which they are willing to pay. With this, branding in higher education in India is emerging. Private promoters look at branding of their institutions as a very important aspect of marketing and realise that their reputation is the key to success. Educational institutions spend heavily on advertisement to attract prospective students and build their brand (Box 7).

Box 7: Spending on advertisements by educational institutions

According to AdEx India estimates, among various categories, educational institutions were at the number one slot (up from sixth position in 2003) in print media expenditure in 2004 in India. They spent Rs. 2.1 billion in 2004. This worked out to 3.9 per cent of the total print ad spend. This category is seeing double-digit growth over the last few years. Further analysis showed that this growth comprises advertising by thousands of institutions spending a small amount each on advertising, with the total volume turning out to be a substantial amount. Educational advertising is seasonal and happens more in the period from April to August, which is the typical season for admissions. The preference of educational institutions for advertising in print media (constituting more than 90 per cent of advertisement expenditure) rather than television is not surprising. While television is a big draw, particularly for lifestyle, print media suits the livelihood and life issues.

Source: AdEx India (Research Division of TAM Media) Estimates

Sensing a unique opportunity, the print media has been fast with its response. The print media launched special vehicles to capture this expenditure on advertisements and combined this with relevant editorial inputs. Today, most English language dailies have supplements and some language papers have also jumped on to the bandwagon. This sudden rush to advertise is due to the growing competition and the increasing number of options for the students, such as course content, location and even costs.

The entry of foreign universities through education consultants and franchisees is another development. Students can truly choose between India, England, Australia, US,

China, Europe etc., because of the free availability of foreign exchange as well as the availability of loan on easy terms. The need to announce the arrival of training institutes for entirely new career options like airlines, travel, clinical research, 3D-animation has added to the advertising boom.

Most of the educational advertisements are 'notice' type today. However, this is likely to change in the next few years. With increasing competition, educational institutions would apply all the marketing principles. Advertising will be more focused on addressing the needs of the students. A shift is already evident. A few institutions like IIPM, ISB, Amity International, Rai University, Wellingkars, Wigan & Leigh etc., are using image-building elements to differentiate themselves from the rest of the crowd. It seems this sector would present some interesting challenges for the advertising industry in building brands that endure.

Since there is still a huge demand for quality higher education and the competitive forces are still weak, but for a few old institutions, efforts towards branding and advertising are only confined to new institutions, sometimes with questionable credentials. With a weak regulatory system, such institutions are using the power of advertising to misrepresent and misinform prospective students. By creating an aura of high reputation, such institutions are attempting to create a perception of high quality. Sometimes this borders on cheating. This has raised serious concerns to the extent of some people suggesting that advertisements in higher education should be banned.

In the final analysis, the emerging trend for branding and advertising in higher education has to be seen both as an opportunity and a threat. There could be a serious problem of information asymmetries contributing to market failure in higher education. Branding and advertising can address this problem or even make it worse depending on the way it is used.

India has an opportunity to build up strong global brands in higher education and attract bright students, star faculty and research funding from all over the world. India has the potential to seize a huge global opportunity by positioning itself as a hub for quality and affordable higher education.

All higher education institutions should be encouraged to disseminate credible information and build authentic brands by creating public information about their profile and achievements. This would help the students and parents in making informed choices. A strong brand orientation would promote good conduct of higher education institutions, since they would have a reputation to lose.

In order to curb deceptive practices, there is a need for guides[35] on advertising, promotion and marketing. This guide could clearly state as to what constitutes misrepresentation of facts, misinformation and deceptive practices. This would be helpful to the various prosecuting agencies and consumer courts in addressing this problem and ensuring fair play.

Higher Education in context of trade in services

Forces of globalisation that are evident from the economic, political, societal and other changes taking place are pushing higher education towards a greater international involvement. This is often referred to as internationalisation of higher education. This involves integrating an international, intercultural or global dimension into the purpose, function or delivery of higher education. There are several changes in the recent times driving the process of internationalisation of higher education. Whereas earlier the cross-border activities were essentially to meet the unmet demand, now cross-border activities also meet the differentiated demand. Earlier, the student mobility has been largely from the developing countries in the South to the developed countries in the North. Now one can see North-South, North-North and South-South flows. This is almost like worldwide circulation of students. In the past, only students and to some extent faculty moved across borders, now we can see mobility of programmes and providers as well. Whereas the earlier rationale for student mobility was largely for the political, socio-cultural / religious and academic, now it is predominantly economic. With the emergence of private for-profit providers, there is growing international competition in higher education.

The developments above have resulted in increased cross-border activities in higher education. Trade in education services is already a major business in some countries. Global trade in higher education is large; it is estimated at more than US$30 billion per annum. The major exporters of education are the USA, UK, Canada, New Zealand, and Australia. China, India, the Philippines, and Indonesia are the major importers of this service.

This sub-section provides an overview of the General Agreement for Trade in Services (GATS) framework. It explores the opportunities that are available to India and then makes a case for domestic regulatory reforms and a clear policy for internationalisation of Indian higher education to not only benefit from increased trade in higher education services but also seize opportunities in the trade in professional services that is huge and growing fast.

GATS framework

The GATS has identified education services (including higher education) for liberalisation to promote further trade. Education service is an important traded service. Since higher education also feeds the growth of professional services trade, it is even more important. Trade in higher education services, like any other service, could occur in any of the following four modes:

a) Mode 1: Cross-border supply of education services, where the programmes move, meaning that the education is provided through distance mode including provision for online learning;
b) Mode 2: Consumption abroad, where the students move and enrol in on-campus programmes abroad;
c) Mode 3: Commercial presence, where the education providers establish their physical presence abroad; and

d) Mode 4: Presence of natural persons, where the faculty moves abroad and teach.

The key elements and rules under the GATS framework relate to the coverage, measures that reduce barriers to trade, obligations that could either be unconditional or conditional, conditions for the most-favoured nation treatment, national treatment and market access. The GATS negotiations are essentially through voluntary request and offer process of commitments.

Though the higher education community is beginning to understand the implications of the multi-lateral trade rules on higher education and the discussions have moved from mere speculation to informed analysis, there are many grey areas as far as higher education services are concerned. It is being realised that trade issues are closely related to the larger issue of commercialisation and co-modification of higher education. It is not clear whether higher education would come within the definition of exempt services – services that are supplied in exercise of government authority on non-commercial basis and not in competition with other service suppliers.

It is also feared that since GATS involves negotiating across sectors, higher education could be positioned as a 'trade off' for gains in another sector. Aspects such as dispute mechanism, subsidies and treatment of monopolies need to be studied further in the context of education. Finally, it is feared that the commitment made to one country automatically applies to other countries and the GATS principle of progressive liberalisation will force liberalisation in spite of safeguards and undermine the public good nature of higher education (Knight, 2003)

India has no multilateral obligation under the GATS framework so far to open up higher education services to foreign participation as it has not scheduled any commitment in education services in the Uruguay Round. It is however interesting to note that a hundred per cent FDI (foreign direct investment) on automatic route is allowed in India. Also, foreign participation through twinning, collaboration, franchising, and subsidiaries is permitted. This has happened by default and not due to any proactive policy stand taken by the government. Though India has received requests from several countries like Australia, Brazil, Japan, New Zealand, Norway, Singapore, and the US, it has not made any offers in this sector during the ongoing negotiations.

A Committee set by the Government to provide inputs to finalize India's position in GATS negotiations in education sector has recommended that India should not make any distinction between the private and public education providers in making requests to other countries. It accepted the five fold classification of education services under GATS and added that education and training in language, naturopathy, yoga, IT may be classified under 923 and 929 respectively. The Committee has suggested that India should put in place all regulations and transparent mechanisms for accreditation as well as the licensing procedures as specified in section (Government of India, 2006).

The Committee has noted the great potential of exports in South East Asia and West Asia, on the basis of concentration of Indian Diaspora and otherwise, in English

language teaching, IT education and training, professional and technical education, commerce and accountancy and secondary and higher education. It also noted varying potential of exports in Anglophone Africa, Russia and Caribbean nations, although little potential in Australia, New Zealand, North & South America and EU. Under modes 1,3 and 4, the Market Access (MA) limitations were identified as local partner requirements and restriction on users of services in the case of Singapore whereas National Treatment (NT) limitations were identified as discriminatory regulations and requested no exemptions to be given on 'Quality', although it allowed exemptions limited to financing and subsidy. It also recommends that India may consider in its requests for market Access Primary, Secondary and Higher Education sectors. It recommends preparing requests for individual countries to be merged later with the plurilateral group partners.

Notwithstanding the committee's recommendations, there are many misgivings on the issue. This is clear from the fact that though India had included higher educational services in its recent offer in August 2005, it later withdrew it at the final stage. Though the offer would not have made any significant difference on the field, it was opposed fearing that this would open floodgates for entry of foreign higher education providers into India. Their entry was opposed for their being insensitive towards cultural and educational ethos in India.

In view of the above, it is no surprise that education for the GATS trade negotiations is one of the low priority sectors with least commitment from the policy makers. The much awaited mechanism for registration of foreign education providers (likely to be in place soon) may deter a few sub-standard operators. At the same time, it is not sure whether this would encourage reputed foreign universities to set up their campuses in India. In any case, the overall impact of such operations in the Indian higher education system is likely to remain small.

In sum, there is already a significant cross-border activity in higher education through the movement of students, programmes and even institutions across national borders. The need to participate in multilateral negotiations on higher education within the GATS framework should serve as a *wake up call* for us to re-examine and streamline these cross-border activities and seize new opportunities that could be available.

Opportunities for India

India also has an opportunity to attract a much larger number of international students than at present. India can provide quality higher education at affordable costs. Not only the tuition fees are merely a fraction of the alternatives, living costs are also low. This gives a distinct cost advantage to India. The success of Indians abroad and India's reputation in IT services has created a brand of Indian higher education abroad. In many subject areas, particularly science and mathematics, education in India is not only good but is seen to be of a high quality. It is expected that by adopting a right strategy for recruitment, the number of international students can easily go up from around fifteen thousand at present to nearly thirty-five thousand in the next few years (Agarwal, 2006). This number can substantially go up if the country adopts an aggressive position by setting Special Education Zones (SEZ) that have been proposed in the recent years.

Getting larger number of international students would require a pro-active nationally coordinated initiative and planned effort. Credible high quality institutions with relevant course offerings need to come together and reach out to the target markets. Simplification of process for admission and student visa system has been done in recent times. Nevertheless, further work is also required on this. The policy of earmarking fifteen per cent supernumerary seats for international students in all higher education institutions has been of help. A few professional councils, notably the Medical Council of India (MCI) have reservations in allowing medical institutions to admit 15 per cent more students without adequate infrastructure and facilities. Rather than stopping them from admitting additional students, MCI could insist on additional facilities. Positive and proactive policy environment are required to make India a higher education hub.

Higher education institutions in India could also be encouraged and facilitated to set up campuses abroad and offer distance education and e-learning programmes for overseas students. India could also explore opportunities in education goods and services sector as distinct from education programmes. In the US, a wide range of education goods and services comprise almost two-third of the total national activity in education. There could be definite opportunities for exports of education goods and services. Education, particularly higher education, is an important sector for India to leverage in the emerging global economy. Finally, due to direct linkage between higher education and professional services, making Indian higher education globally competitive would enable India to play an important role in global market for professional services.

Linkage to the growth of professional services trade

The global trade in professional services is huge and increasing rapidly. This exceeded $270 billion last year. Developing countries make a significant contribution to trade in professional services and there is scope to further increase this share. Trade in professional services is good – both for wealth creation and for employment growth. This creates a high wage employment. India with its huge pool of qualified manpower has a clear export interest in professional services.

The export of professional services takes places essentially through the movement of professionals (mode 4) or movement of work (Mode 1). For both the kind of movements, the credibility of the credentials of workforce is important. This makes it essential that both the academic and professional qualifications are recognised globally.

Unfortunately, there are no global standards for the recognition of academic and professional qualifications. Even within India, the system of recognition is complex and has many loopholes as discussed in Section 5.2. In recent years, many unscrupulous providers of higher education have exploited these loopholes. This has undermined the credibility of the higher education qualifications in India. Over the last two decades, unplanned and chaotic growth of higher education in India has further complicated this. *De facto* for-profit private sector has emerged in a big way. Public institutions are bursting at the seams. These are grossly under-financed resulting in poor condition of their infrastructure and facilities and large vacancies of teachers. As a consequence, there

is deterioration of overall standards of higher education in the country and lowered the value of an academic and professional degree.

Restoring credibility of the higher education system in India would require a holistic look at its domestic regulation and public funding. For the global recognition of its qualifications, India needs to work towards the establishment and eventual adoption of common international standards and criteria for recognition of academic and professional awards. In doing so, there is a unique challenge of harmonisation of the standards while recognising the need to provide autonomy to academic institutions to experiment and innovate. In 2005, UNSECO and OECD jointly issued guidelines for quality provision in cross-border higher education. These guidelines while giving importance to national authority and diversity within the higher education system lay down a framework for action. Keeping the guidelines in view, India needs to look at its own domestic regulation holistically. While making the domestic regulation investment friendly and forwarding looking, the loopholes in the existing system need to be plugged to restore credibility of an academic qualification from India.

Apart from global recognition of qualifications, initiatives such as NASSCOM's National Skills Registry for IT / ITES (IT-enabled services) manpower are steps in the right direction. This database containing third party verified personal, qualification and career information of IT professionals will improve recruitment practices and build the confidence of global companies in Indian professionals.

Finally, it is evident that there are opportunities for India to benefit from the ongoing negotiations for opening of trade in higher education services, provided many of the domestic regulation issues are sorted out and we take more pragmatic approach in negotiations. This also offers a chance to review the government's policies for internationalisation of higher education. There is a need to put in place an effective system of registration that will prevent unapproved foreign institutions from operating in India. Good quality foreign institutions may in fact be wooed to come and set up their operations in India so that there is greater availability of good quality higher education.

Statistical system and policy analysis

In spite of the growing complexity of the issues facing higher education in India, there is no system of collection and compilation of statistical information on higher education in the country. The Ministry of Human Resource Development of the Central Government that was earlier responsible for the higher education statistics, delegated this responsibility to the UGC in the mid-nineties. Unfortunately, UGC failed to give the kind of importance to this activity that it deserves. There have been no efforts to evolve data standards for higher education essential for collection and compilation of statistical information of such a complex and diverse system. The response from higher education institutions is poor. The mandate of the UGC Act and rules framed there under, namely UGC (Returns of Information by universities) Rules, 1979, were never used to obligate the universities to furnish information. Technology is also not been used to collect information. As a result, the available statistical data on higher education are sketchy and dated.

Compared to the above, the UK has a separate and independent agency, namely the Higher Education Statistics Agency (HESA) as the central source for the collection and dissemination of statistics about higher education in the UK. The National Centre for Education Statistics (NCES) in the US collects and analyses data related to education (including higher education). In addition, the Carnegie Commission on Higher Education developed a classification of colleges and universities to support its programme of research and policy analysis in 1970 in the US. This classification is regularly updated. It is widely used in the study of higher education as a way to represent institutional differences. This also helps in the design of research studies to ensure adequate representation of institutions, students, or faculty in sampled data.

Policy research

In India there is absence of good, sound data, making it difficult to set policy at the central, state, and institutional levels. We keep making small fixes with programmes, but do not think strategically about the bigger picture. Philip Altbach, an international education expert, who has been watching the developments in Indian higher education over the last two decades laments that the government in India and academic leaders are content to do the same old thing. He points out that higher education system in India being large and complex needs good data, careful analysis and creative ideas. Referring to China having more than two dozen high education research centres and several government agencies involved in higher education policy, he is shocked to see that there is no field of higher education research in India and only a few in India are thinking creatively about higher education (Altbach, 2005a)

Considering the background of the statistical system in higher education in India discussed above, there is an immediate need for conducting a baseline survey of higher education and training system – both in the public and the private sector. It is ironical that whereas the All India School Education Survey is being held regularly (seventh survey in this series was conducted by NCERT in 2002/04) and there is a greater clarity on school education in India, information on higher education is vague and out of date. Data standards and classification system need to be worked out.

A system needs to be put in place to maintain unit records of all students in the higher education system linked with a unique identification number. This unique number could be the proposed citizen's National Identity Number (NIN). Till the time NIN is introduced throughout the country, a unique number can be designed and assigned to each student. A repository of such unit records of students would be a critical information infrastructure for the country. This repository would help to track the changing enrolment and completion patterns, monitor academic performance and providing accurate aggregate institution level data for planners, academicians and researchers. This would also facilitate student-centric financial aid and education loans. With this infrastructure in place, value added services such as online enrolment and degree verification services to check fake certifications for employers and transcript services could be started.

There is the need to put in place a system of catering to information needs of the students and parents about institutional and course performance. Surveys on graduate destinations and course experience on a regular basis and dissemination of the findings is, therefore, important and should be taken up.

It is essential to establish a network of a dozen research centres for policy research on various issues related. These could be both within the university system as well as independent research organisations.

8 Overall framework for action

This section reviews the public policies for higher education in the country, examines various weaknesses and threats, strengths and opportunities for higher education in India in the changing context. Taking all this together, the section recommends a paradigm shift in public policy on higher education and provides a framework for action.

Review of existing public policy instruments

From the early 20th Century there have been several high level commissions set up to provide policy orientation to the development of higher education in India. On the basis of the report of the Sadler Commission (1917-1919), also referred to as the Calcutta University Commission, the Central Advisory Board of Education (CABE) was set up to define the general aims of educational policy and coordinate the work of various provinces and universities by guarding against needless duplication and overlapping in the provision of the more costly forms of education. The University Education Commission presided over by Dr. S. Radhakrishnan in its Report in 1949 recommended that university education should be placed in the Concurrent List so that there is a national guarantee of minimum standards of university education. The constituent assembly did not agree to it. It was much later in 1976 that education was made a concurrent subject with the 42nd amendment of the constitution.

The Kothari Commission (1964-66) examined various aspects of education at all levels and gave a very comprehensive report with full of insight and wisdom. This report became the basis of the National Policy on Education, 1968. With this, a common structure of education (10+2+3) was introduced and implemented by most States over a period of time. In the school curricula, in addition to laying down a common scheme of studies for boys and girls, science and mathematics were incorporated as compulsory subjects and work experience assigned a place of importance. A beginning was also made in restructuring of courses at the undergraduate level. Centres of advanced studies were set up for post-graduate education and research. Detailed estimates were made to meet requirements of educated manpower in the country.

In 1985, a comprehensive appraisal of the existing educational scene was made. This was followed by a countrywide debate. It was noted that while achievements were impressive by themselves, the general formulations incorporated in the 1968 Policy did not, however, get translated into a detailed strategy of implementation, accompanied by the assignment of specific responsibilities and financial and organizational support. It was

further noted that problems of access, quality, quantity, utility and financial outlay, accumulated over the years, had assumed such massive proportions that these required to be tackled with the utmost urgency.

In the background above, the National Policy on 1986 was put in place. It was noted in the preamble to the policy that education in India stood at the crossroads and neither normal linear expansion nor the existing pace and nature of improvement of the situation would help. It was also noted that education has an acculturating role. It refines sensitivities and perceptions that contribute to national cohesion, a scientific temper and independence of mind and spirit-- thus furthering the goals of socialism, secularism and democracy enshrined in our Constitution. Education develops manpower for different levels of the economy. It is also the substrate on which research and development flourish, being the ultimate guarantee of national self-reliance. Accepting the fact that education is a unique investment in the present and the future, a very comprehensive policy document was approved in 1986. This was supplemented with a Programme of Action (PoA) in 1992.

On review now, one sees that many of the recommendations of the NPE, 1986 read with PoA, 1992 have been only partly fulfilled. More over, there has been no effort to modify the previous policy prescriptions or to develop a new one. After the economic reforms were undertaken in the early 1990s their influence on development of higher education has been ignored. With economic reforms of 1990s, private sector has come to occupy a central role in economic development of the nation. There is a need for a holistic review of the instruments currently available for managing the high education system such as the UGC Act, the AICTE Act, etc which have become outdated in the present context. In this context, it is important to develop a new national policy framework for higher education in the current and emerging context. Such a policy framework should not be developed by political processes but by an independent high powered Commission.

Weaknesses and threats

A systematic examination of the higher education in India in the preceding chapters reveals its several weaknesses that threaten India's competitiveness in the knowledge economy. These are recapitulated below.

The pattern of growth of enrolments and institutions reveal that post-1980, growth has been largely through private initiatives. Since not all of the growth in the number of institutions has been driven by philanthropy, this pattern of growth has thrown new challenges for regulators. Higher education system has not been able to respond to the changing demands on it due the inflexibility of the public universities and the archaic affiliating college system. This inflexibility is most visible in the courses and curricula that continue to be outdated and irrelevant. Research, more specifically academic research, performance in the country is poor. The quality of doctoral research is particularly bad. India lags behind its competitors both in quality and volume of academic research. There is declining interest in science and mathematics due to the changes taking

place in the job-markets. As a result the long-term competitiveness of the country may be at stake.

Public funding of higher education has not kept pace with its growth. Poor funding has resulted in the deterioration of standards of higher education in the country. The cost of higher education is gradually shifting from the government to students / parents with the increase in tuition fees, introduction of self-financing courses in public institutions and starting of a large number of private institutions. The role of the government in funding of higher education and to leverage change through funding is getting marginalised. In the absence of suitable student grants and loan schemes, higher education is becoming increasingly out of the reach of the students from poor families raising concerns about inequity in access to higher education opportunities.

The regulatory system for higher education in India is rigid, ineffective and antediluvian. It is designed for a higher education system that is largely public funded. The quality assurance system has a limited reach. In the absence of any consequences for accreditation, it has been rendered meaningless. Academic profession has been devalued. It no longer attracts bright people. The teaching community is de-motivated.

There is no clear and coherent long-term policy for higher education in India. The absence of reliable data makes informed decision making even more difficult. As a result either ad-hocism continues to prevail or in the absence of even ad hoc policies, chaos is created. With the limited understanding of the issues, interventions by the judiciary and media have only added to this confusion. Despite market forces for higher education in India being active, the market for higher education in India is not yet fully developed. The problem of market and non-market failures gets further aggravated because of awkward economics of higher education. As a result, the outcomes are far from perfect and in some cases disastrous.

Strengths and opportunities

The Indian economy has been growing fast in recent years. This has been driven by the growing knowledge sector bringing to focus the need for human capital formation through its large and expanding higher education system. This expansion has been largely due to the private initiatives. The fundamental changes taking place in the Indian economy and the rising tide of entrepreneurship reflect India's strength in the knowledge sector. The country's strengths and opportunities as they relate to higher education have been analysed in the previous chapters. These are summarised below.

The growth of higher education in the post-1980 period in India through private enterprise has been demand-driven. This has been largely in vocational streams and in employment oriented courses. Huge capacities have been created mainly through private initiatives without much public investment. Entrepreneurship in higher education and training has given a dynamism and vibrancy to this sector. Due to technological changes, a global occupational structure is emerging. Both skilled work and skilled workers are moving across borders. India has a huge pool of skilled workers with the knowledge of English and good analytical skills. As a result the country has the potential to corner a big

slice of the available work in the knowledge sector. Despite some resistance, economic forces and demographic shift will make this inevitable.

With increasing affluence and the growing middle class, a larger section of people can afford to pay for higher education. There is already a greater reliance on tuition fees by higher education institutions rather than on government grants. A further shift in this direction is possible. In fact, this appears to be only practical option to address the financial crisis that is being faced by higher education in India. Increased contribution of households for higher education is resulting in the demand for greater accountability of the higher education institutions to the students and parents. Students and parents now demand value for money.

Despite loopholes and weaknesses in the recognition system for degrees in India, India's recent visibility in IT / ITES has created a distinct brand of Indian higher education. Graduates from the Indian higher education institutions, particularly from some of the prestigious institutions, are sought after globally. The Indian brand of higher education can be creatively used to the country's advantage.

Though there are structural defects in the accreditation system in India, the process and practice used for voluntary accreditation follow international norms. The process makes use of instruments that are comparable to the best in the world. The practice of external peer review is similar to the practice followed by most accreditation systems in other countries. A large section of academic community in India now has hands-on experience with accreditation processes. The dynamism in the knowledge sector in India is changing the job market for the academic profession. With opportunities for career growth and consultancy available in academic profession, bright people would get attracted to this profession.

New technologies can be used in many creative ways to improve governance both at the institution and the system level. Technology now enables greater collaboration for working in groups across institutions. Teaching-learning processes can be improved using technology. New technologies would enable data collection and compilation to become easy to get correct facts and figures for informed decision-making and policy support. As a strategy, the country needs to build on these strengths and harness new opportunities that are now available.

Need for a strategic paradigm shift

The changing circumstances call for a fresh look at the issues that the higher education is facing. A strategic paradigm shift is required to deal with higher education in India today. Referring to the public policy for higher education, Patel (1998) noted that in India, for that matter in most parts of the world, public policy for higher education continue to face the dilemma of the legitimacy of ever-widening ends and reality of limited resources. He pointed out that there is not only the demand for more opportunities

for higher education, but also greater diversity, not in just subject range, but in terms of institutional arrangements as well as how subjects are taught and the research is done.

Diversity in higher education is, therefore, to be pursued as a policy objective. Uniform quality standards[36] work against this very objective. Higher education serves different purposes for different people. Therefore, higher education requires diverse quality standards to meet a variety of needs of different stakeholders. This also enables individual institutions to experiment and innovate.

The need to pursue diversity as an objective does not suggest that there is no necessity for any accountability. By its very nature academic standards cannot be maintained or improved without some kind of external checks. Trust that was long used to ensure accountability when number of institutions was not large does not appear to work now, when the system is large and complex. This makes regulation important. Equally important is the kind of regulation, who designs it and how it is implemented. A focus on the information disclosure along with enforced self-regulation holds greatest potential for the efficient functioning of the higher education system.

Detailed planning and control-led approach to regulation has not been found to be very useful in higher education. This has been the experience in many countries the world over. Therefore, the present system has to be substituted by a regulatory framework that takes care of market failures and facilitates market coordination.

The higher education system in India has so far adopted an inward looking approach, concerned primarily to meet the domestic demand for higher education. With the integration of the country with the rest of world and the growing trade, investment and mobility of people, there is a need for outward looking approaches in higher education. The Indian higher education should not only be able to meet the domestic demand but also the international demand for qualified and trained manpower.

Further, the focus in the past has been mainly on the formal system of higher education and that too the public university system. Under the changed circumstances, we need to take into account the higher education institutions, both from the public and private sectors. The reputed and established public universities provide a strong foundation for the higher education system in the country. Big and emerging private sector institutions provide the required dynamism and responds to the growing demand for professional courses. The private training sectors offering short-cycle courses meet the requirement of skills and competences required by fast-changing industry like the IT / ITES sector. The varied sets of institutions bring in their respective strengths to meet the diversified needs of the economy and the various stakeholders. A differentiated higher education system with high adaptive capacity is needed in the country today.

In all, the change in the higher education system requires a paradigm shift in our thinking.

Action framework

While seeking to intervene in complex systems like ecologies, economies, societies and nations, it is wise to first understand how the system is put together. Higher education system in India being large and complex requires a similar kind of understanding. Accordingly, an empirical mapping of the system along different dimensions has been done in the previous sections. This has become the starting point for intervention. This has helped to organise the complexity of the higher education in India into a coherent story. Based on the mapping, the growth trends and the analysis along various dimensions, there are certain findings. The key findings have been summarised below.

- Expansion in enrolment has taken place over the last two decades only through private initiatives;
- Skill shortages exist despite high graduate unemployment;
- The regulatory system fails to maintain standards despite formidable entry barriers;
- Deceptive practices and misrepresentation by some elements in the private sector;
- Chaotic and unplanned expansion;
- Diminishing value of a degree in job markets in India and its eroding credibility world over;
- Unaffordable higher education for students from poor background;
- Non-viable and substandard public institutions;
- Poor standards of academic research and small base of postgraduate education and research, particularly in science and engineering;
- Poor technology infrastructure;
- Wrong message that prestigious foreign research universities and big corporate sectors in India are not welcome to enter higher education sector in India;
- Antediluvian regulatory environment meant for public institutions that does not take care of changed realities.
- Accreditation system that has no consequences; and
- Affiliating, regulatory and accreditation system work together to promote uniformity and cloning rather than allow experimentation and innovation.

Based on the findings and an understanding of the strengths, weaknesses, threats and opportunities under the changing circumstances of higher education in India, an action framework has been devised. Various action points in the framework are given below:

1. Put in place a *Social Equity Fund* for financing means-tested grants for students from poor background; guarantees for students' loans, putting in place income contingent loans for certain category of students so as to promote equity in access to higher education.

2. Evolve an *affirmative action policy* that provides equality of opportunity to students belonging to the rural areas and from poor families so that they

compete with their counterparts in the cities and from more affluent background on equal footing in to complete their academic exercise without compromising on the overall competitiveness of the Indian higher education.

3. Provide *additional funds to existing public institutions* to attain minimum standards of infrastructure and facilities and to bridge the shortfall of teachers. Change fund allocation mechanism to improve the efficiency and effectiveness in use of public funds by institutions and also public funding to leverage greater investment by state governments and households.

4. Provide *additional funds for competitive grants* to enhance competition in higher education. Review and harmonise the existing guidelines for competitive grants in order to minimise paperwork and enhance their impact with a focus on the outcome.

5. *Upgrade technology infrastructure* by ensuring high bandwidth connectivity, sufficient computers and proper campus networks to harness new technology to improve teaching-learning, research and governance in higher education.

6. *Put in place disclosure standards* including transparency in accounts, students' 'Right to Know' conditions and a system to curb deceptive practices and misrepresentation of facts to address the problem of information asymmetry and enable students / parents to take informed decisions.

7. *Review the recognition, affiliation and approval system of institutions* to plug loopholes in it and restore its credibility. Decentralise wherever possible, remove duplication, rationalise and simplify procedures.

8. Set up a *National Qualification Authority (NQA)* and *Teaching and Learning Support Networks (TLSNs)* to ensure seamless vertical and horizontal mobility of students and go for curricula renewal on an ongoing basis. The NQF could create a unified qualification framework for the formal and non-formal systems to internalise and create bridges with the non-formal training system. Learning resources repositories in different subject areas could be put in place up through LTSNs to enhance learning effectiveness through coordinated efforts

9. *Restructure accreditation system* and bring accreditation bodies at the core of the higher education system to address quality concerns and create clear consequences for accreditation by having suitable and adequate incentives for it. Institutional accreditation is to be regionally carried out and based on peer review against the institution's missions so that it is effective and promotes diversity. Accreditation for professional programmes and professional institutions should be carried out nationally and based on national standards for professional practice consistent with global norms.

10. Set up a *Skill Development Agency* and *Sector-specific Skill Development Networks* led by industry to provide sustained engagement of industry with higher education and provide sector specific labour market intelligence.

11. Create a *university and college admission system* with national testing in various subjects at different levels to facilitate admissions on the basis of merit and regulate fees in the private unaided institutions with focus on transparency and gradually enlarge their discretion in deciding their own fees.

12. Enact an umbrella *Higher Education Act* for better coordination and improved governance at the system level. This would redefine the roles of different bodies under changed circumstances.

13. Develop a *Nationally Integrated Research Infrastructure* by pooling existing infrastructure and facilities of higher education institutions, research laboratories, both in the public and private sector, and ensure its usage by providing mobility grants to researchers in the country. This could include a *National Consortium for Information Resources* with pre-print archives and national e-theses repository to improve the access of scholarly publications to researchers by pooling of resources.

14. Proactively *woo big corporate sector and prestigious foreign universities* to set up research universities / campuses for post graduate education and research in science and engineering in India to raise the standards of research for long-term competitiveness of the country. Identify prestigious foreign universities (say 500 universities in Shanghai's list of research universities) and big corporate houses in the knowledge sector. A single point contact and a time bound approach is to be adopted. The bare minimum regulatory concerns need to be addressed.

15. *Develop manpower at the post graduate and doctoral level* in new and emerging areas through collaborative efforts with a view to build critical mass and provide long-term competitiveness to the Indian economy.

16. Put in place *Higher Education Information System Project (HISP)* as a comprehensive information infrastructure for coordination across the sectors at systemic level. This would include a statistical system, *National Students' Data Repository* to track enrolment and completion patterns, verification services etc. This public information system could enable the students and parents (and even popular media and third party agencies) to create rakings of institutions and programs. This can begin with conduct of *All India Higher Education Survey* to create baseline data for better understanding and decision making.

The specific emerging action points have been tabulated in a matrix given in Table A27. The purpose of each of these action points has been defined briefly and the experiences from other countries have been referred to against each action point. Though the circumstances in India are unique and would require contextual solutions, the global

experience would help in the understanding of the practicality of the solution. The overall score for the proposed action in the matrix would help in sequencing the proposed actions. The interventions having overall scores are not only important and urgent but also require little money and can be implemented quickly.

Summary and Conclusions

In this paper an empirical mapping of the growth of higher education in India since independence (1947) has been done. The mapping has been carried out with an international comparative perspective with particular reference to the private initiatives. The paper notes that the higher education in India has grown fast over the last two decades. Private higher education institutions that started emerging on the scene in early 1980s now occupy centre stage.

The paper has analysed public financing, both from the centre and the states, expenditure by households including the trends in funding of loans. Whereas only a few public higher education institutions are reasonably funded, most of them face a severe financial constraint, which is reflected in their sloppy standards. In several cases the public funds are not optimally utilised and the mechanism promotes inefficiencies. In most cases, public higher education institutions have no incentives for internal resource generation. The funding mechanism has to change to promote efficiency. Public higher education institutions need to be supported by the central and state governments to reach the minimum standards. Competitive grants need to be provided to encourage healthy competition in higher education. Public funds would have to be used in areas and for subjects where private sector may not venture. Demand-driven, efficient and targeted funding of students from poor background by initiating a social equity fund should be taken up on a big scale. Collaborative activities that are far and few in between require to be supported through public funding. The deficit in financing of higher education has to be met by pooling resources from all possible sources, such as the government at the centre and the states, and the households, including education loans. The possibility of attracting foreign and corporate agencies in the knowledge economy sectors through a proactive approach could be explored. To address equity issues, a social equity fund to cater to the need of students from poor background could be set up. A suitably designed affirmative action policy should also be put in place.

Nowadays, both skilled work and skilled workers are moving across national borders. The paper has examined the role of higher education in workforce development to meet the domestic as well as the global demand for qualified manpower. The role of academic research in fostering innovation in Indian economy has been evaluated, its weaknesses have been identified and the way forward has been suggested. Several measures are required to ensure that India has a respectable position in its research performance. These measures would include increasing the level for funding academic research in India and altering the funding mechanism; improving physical and information infrastructure for quality research through a nationally coordinated approach; putting in place objective measures for assessing research performance; and rewarding performance and promoting collaboration along with competition in research in India.

The higher education institutions in both public and private sectors need to work together with research laboratories and the industry for the development of manpower in identified high technology areas. This would facilitate technology transfer when such highly skilled manpower migrates from the universities to the businesses. Proactively, wooing credible big corporate houses and foreign universities to set up research universities and campuses for postgraduate education and research also holds great promise.

The regulatory environment for higher education, as it exists in India today, has been studied taking into consideration the emerging market structure for higher education. The paper agrees with the well-known fact that the regulatory bodies have miserably failed to discharge their responsibility towards the maintenance of standards of higher education and have erected formidable barriers for the entry of new institutions to be set up through private enterprises. In place of a detailed planning and control approach, not found useful in the experience of many countries, a regulatory framework that takes care of the market failures and facilitates market coordination has been advocated. It is proposed that a system to curb deceptive practices and misrepresentation of facts should be put in place. Disclosure standards for higher education institutions including transparency in accounting and '*students right to know'* need to be introduced.

Analysing the progress made on accreditation in India, the paper points out that accreditation serves little purpose. For this purpose, its structure needs to be overhauled and consequences have to be built for accreditation Specific suggestions for changes in accreditation system in India have been suggested. Accreditation bodies should be membership–based bodies and independent of the government. Institutional accreditation should not promote cloning, but may be designed in a way that respects institutional diversity. Professional accreditation shall however be based on norms for professional practice which in many cases would require to be nationally defined and consistent with global norms. The role of the UGC and the professional councils needs to be redefined under the changed circumstances.

The other important and contemporary issues, such as governance, academic profession, use of technology, branding and advertising, private tuitions and coaching, trade-related and the statistical system and policy research issues have also been covered. It is proposed that wherever possible, both the authority and the responsibilities can be decentralised in favour of the state governments.

The effective use of new technologies holds great potential in improving teaching-learning outcomes, research performance and institutional and systemic performance. For this purpose, investment in technology infrastructure in higher education is advocated. A comprehensive higher education information system should be put in place at the earliest. A system is proposed to maintain unit records of all students in the higher education system linked with some kind of a unique identification number. This system would help in collecting and maintaining students' data; providing online student support services and enabling student-centric financial aid and education loans.

With a view to resolve the paradox of high graduate unemployment and shortage of skills coexisting together, the connection between the higher education and the jobs has to be made more efficient. This can best be achieved by incorporating adaptability in higher education – first by creating conditions so that curriculum and content are continuously updated as per changing needs and second by adjustment of admission capacities between different institutions and courses as per job market requirements. The change in the curricula and content with time can be best ensured by the *Teaching and Learning Networks* that are coordinated through an independent *National Qualification Authority*. A mix of public and private and formal and non-formal institutions should bring their respective strengths to put together a strong and dynamic higher education system. For continuous and sustained engagement of higher education institutions with industry and employers, the construction of membership-based networks that would facilitate specific skills including generic skills is proposed. These networks would also compile and collate high quality labour market intelligence and make it generally available to all for making informed decisions.

The paper has found that in order to enable the formulation of policy at the central, state, and institutional levels, there is an immediate need for conducting a baseline survey of higher education and training system – both in the public and the private sector. The changing national and global circumstances require that we evolve a new paradigm in higher education. There is a need to agree on a basic framework for change. With a view to initiate changes, action is required on several fronts. In some areas, detailed analysis is required to chalk out a plan of action, in other cases; action could be initiated right away. Whereas radical changes are required and tinkering would not work, strategically an incremental approach has to be adopted to build commitment for change. Important and urgent activities that are inexpensive and would take short time could be taken up initially. In many cases, we can learn from international experiences and avoid committing mistakes. For structural changes, detailed studies would be required.

Though this paper does not go into the nitty-gritty of each suggestion, an attempt has been made to define the options and solutions at a level of detail that underscores the practicality of the suggestions and more importantly provides a broad direction for change. India has a unique opportunity to convert demographic surplus to its economic strength. This would require the creation of a competitive environment in higher education that ensures both public and private institutions develop and become more responsive and innovative. A transformation of this sector would have a major impact on the quality of output and competitiveness of all sectors of the Indian economy. The transformation of this sector would however require a clear vision, the wisdom to understand and appreciate the new realities and the courage to take bold decisions. In the emerging structure of a new knowledge economy, the source of competitiveness is talent. Therefore, the countries that are able to nurture talent by pursuing progressive policies in higher education will tend to be the winners. The choice whether we would like to be winners is in our hand. We can continue to make wrong policies and let this opportunity slip out of our hand or craft progressive policies and seize this opportunity.

Note

[1] This is extracted from the *Civil Services Day Speech* of the Prime Minister of India on April 21, 2006.

[2] Gross enrolment ratio (GER) is the ratio of total enrolment in higher education (beyond class 12) regardless of age to the population of age group (17/18 to 23/24 years) that corresponds to higher education.

[3] U.S. Secretary of Education has set up a Commission on the Future of Higher Education in the United States in September 2005. More information about the commission is available at: http://www.ed.gov/about/bdscomm/list/hiedfuture/index.html

[4] In January 2003 the Education and Skills Secretary in UK released the White Paper "The Future of Higher Education", which sets out the Government's plans for radical reform and investment in universities and higher education colleges. More information is available at http://www.dfes.gov.uk/hegateway/hereform/index.cfm

[5] Starting from the late eighties, there have been series of judicial interventions on various issues relating to higher education, particularly in matters of admission and fee policies in private institutions. Pronouncements by several constitution benches have taken initiative out of the hand of the executive.

[6] It is estimated that 150000 Indian students are studying abroad. Around 80000 students are studying in the US alone.

[7] Federal government is referred to as central government in India.

[8] The Supreme Court in India laid down dual track fee policy for professional unaided institutions in 1992. This was declared as unconstitutional in 2005 by a bigger bench of the Supreme Court in 2005.

[9] This is based on survey on financing of universities by the author.

[10] Extract from '*Higher Education in the Next Decades — Policy for the State of West Bengal'*

[11] Many countries in the world (Australia, UK, Chile etc.) have shifted to performance based funding to get value for money from public spending on higher education.

[12] Federal government supports higher education in the US primarily through student grants. These grants are available to students studying all accredited institutions – whether these institutions are public or private. This is single most important incentive for higher education institutions in the US to get accredited.

[13] Though there is some similarity, these are different from community colleges in the United States and Canada, where such colleges have open door admission policy, provide cheaper option and pathways for entry to regular four-year colleges.

[14] Whereas, education is an open-ended process leading to the development of mind; involves inputs in the cognitive and affective domains, the specific goal of training is to impart technical skills and usually involves inputs in the psychomotor domain.

[15] MBAs and engineers figured in 10000-odd applications received against an advertisement for two posts of peon *(The Financial Express, Septmeber16, 2004*).

[16] In 2004, Delhi University restructured its BA (Pass) Course that now has both - theoretical and applied components. Restructured course provides ample scope for employment opportunities, a marked departure from the old one. In third year, applied papers ranging from computers, tourism, tax management, film studies, theatre and music have been introduced. (Source: *The Times of India, April 23, 2005)*.

[17] Quoted from the Times of India dated March 21, 2005.

[18] Quoted from the Indian Express on April 19, 2006.

[19] It could be argued that products of higher education are "post-experience" goods, whose quality can be accurately assessed only after the education is completed. Such goods would warrant even more rigorous efforts at consumer protection.

[20] Entry 66 reads – "Co-ordination and determination of standards in institutions for higher education or research and scientific and technical institutions."

[21] Entry 25 reads as – "Education, including technical education, medical education and universities, subject to the provisions of entries 63, 64, 65 and 66 of List I; vocational and technical training of labour."

[22] Andhra University has 405 colleges, Bangalore University has 400 colleges and Osmania University has 390 colleges affiliated to them.

[23] In a non-collusive oligopoly firms recognise their interdependence but do not collude with each other. They act in their own best interest. However each firm takes into account the output and price decisions of its competitor before making its own decisions.

[24] This was the finding of the survey – 'Understanding of private higher education in India: A stockholder's perspective' conducted by a Marketing consultancy and research company on behalf of FICCI in 2006.

[25] As on 16 August 2003, UGC had specified 142 degrees.

[26] Returns of information by universities and colleges could be mandated under the UGC Act read with Right to Information Act. These rules could also define misrepresentation and deceptive practices in adverting, promotion and marketing by higher education institutions.

[27] Accreditation is an evaluation of whether an institution (or program) qualifies for a certain status. Accreditation provides the outcome in a binary scale – yes/no or accredited/not-accredited.

[28] Assessment gives an idea of the quality of the outputs. Typical outcome of assessment results in a multi-point grade - numeric or literal or descriptive.

[29] Academic audits are focused on those processes by which an institution monitors its own academic standards and acts to assure and enhance the quality of its offerings. The objectives of the institution or programme are taken as the starting point for the audit. The audit is usually done by a small group of generalists and it results in an audit report.

[30] Earlier there used to be ten criteria for assessment.

[31] Earlier, there used to be a 5-grade system.

[32] Teachers in higher education are expected to attend two refresher courses before they are eligible for career advancement or promotion.

[33] AICTE adopted an objective criterion for reduction of seats. For faculty strength short up to 25 per cent, no additional intake was sanctioned; for shortage from 25 to 50 per cent, a pro rata reduction in intake was ensured and in case the shortage was more than 50 per cent, institutions were not allowed to admit any students. *Source: AICTE quoted in The Times of India, June 8, 2005*

[34] This suggestion was given by the chief mentor of Infosys, Mr. N.R. Naranayamurthy in the Fourth Ravi Matthai Memorial Lecture organised by the Academy of Human Resources Development at Bangalore in November 2005.

[35] There is international experience on this. The Federal Trade Commission (FTC) in USA has Guides for Private Vocational and Distance Education Schools (on advertising, promotion and marketing).

[36] The government, regulatory bodies and even courts seem to pursue uniform quality standards in higher education.

[36] This includes UK and even neighbouring Pakistan that earlier had UGC.

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Annexure

Annexure A

Table A1. Growth in enrolment, enrolment ratio GNP per capita

(Select countries including ten top economies)

GER - gross enrolment ratio; GNP - gross national product

Country	Enrolment *(in million)*		Increase *%*	GER 2001 *%*	GNP per Capita *(in US $)*
	1990/91	**2001/02**			
USA	13.71	15.93	16.2	81	34,280
China	3.82	12.14	217.7	13	890
Japan	2.90	3.97	36.8	49	35,610
India	4.95	10.58	113.6	11	460
UK	1.26	2.24	78.1	64	25,120
France	1.70	2.03	19.4	54	22,730
Italy	1.45	1.85	27.7	53	19,390
Brazil	1.54	3.13	103.0	18	3,070
Russia	5.10	8.02	57.3	70	1,750
Canada	0.84	1.19	41.7	58	21,980
Indonesia	1.59	3.18	99.7	15	690
Philippines	1.71	2.47	44.3	31	1,030
Australia	0.49	0.87	79.1	65	19,900
Malaysia	0.12	0.56	358.9	27	3,330

Source: *For 1990/91 (or nearest year) - UNESCO Statistical Yearbook (1998); for 2001/02 (or nearest year) - UNESCO Institute of Statistics (2005); and for GNP per capita - UNESCO EFA Global monitoring report (2004).*

Table A2. Growth of higher education institutions and enrolment in India

HEI – higher education institution

Year	Universities	Colleges	Total HEIs	Enrolment (in million)
1947-48	20	496	516	0.2
1950-51	28	578	606	0.2
1960-61	45	1,819	1,864	0.6
1970-71	93	3,277	3,370	2.0
1980-81	123	4,738	4,861	2.8
1990-91	184	5,748	5,932	4.4
2000-01	266	11,146	11,412	8.8
2005-06	348	17,625	17,973	10.5

Source: *University Grants Commission. (Universities include central, state, private and deemed-to-be universities as also institutions of national importance established both by the central and the state legislatures.)*

Table A3. Higher education institutions and enrolment

(by type of management)

Type		Higher education institutions *(Universities + Colleges)*		Enrolment *(in thousand)*	
		2000/01	***2005/06***	***2000/01***	***2005/06***
Public	**Government**	4342 *(245+4097)*	4493 *(268+4225)*	3443	3752
Private	**Private Aided**	5507 *(10-4997)*	5760 *(10+5750)*	3134	3510
	Private Un-aided	3223 *(21+3202)*	7720 *(70+7650)*	1822	3219
Total		13072 *(266+12806)*	17973 *(348+17625)*	8399	10481

***Source**: University Grants Commission. (Break up by type of management for 2005/06 is based on the projections by the author on the available trends in few states.)*

Table A4. GER in higher education and per capita net SDP

(Various states in India for the year 2002/03)

GER - gross enrolment ratio; SDP - state domestic product

State/Union Territory	Net SDP at current prices (2002/03) *in Rs. per Capita*	GER in 2002/03 *%*
Andhra Pradesh	18,661	9.51
Arunachal Pradesh	15,616	6.37
Assam	11,755	8.67
Bihar	6,015	7.3
Jharkhand	9,955	7.27
Goa	…	13.47
Gujarat	22,047	9.65
Haryana	26,632	10.56
Himachal Pradesh	22,576	12.76
Jammu & Kashmir	…	4.95
Karnataka	18,521	8.12
Kerala	21,853	9.92
Madhya Pradesh	11,438	7.66
Chhattisgarh	11,893	7.77
Maharashtra	26,386	12.3
Manipur	12,230	13.19
Meghalaya	15,983	10.94
Mizoram	…	9.51
Nagaland	…	4.33
Orissa	10,340	8.71
Punjab	25,855	8.53
Rajasthan	12,753	8.77
Sikkim	20,456	6.29
Tamil Nadu	21,433	10.91
Tripura	…	5.84
Uttar Pradesh	10,289	7.03
Uttranchal	…	12.25
West Bengal	18,756	8.21
A & N Islands	…	…
Chandigarh	52,795	28.68
Delhi	47,477	10.94
Pondicherry	38,162	17.88

(… information not available)

Source: *Economic Survey 2004/05 and CABE Committee on Higher Education Financing (2005)*

Table A5. GER in higher education (various countries)

GER - gross enrolment ratio; … information not available

Country	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003
India	...	11	11	11	12
Australia	64	63	63	65	74
Canada	59	60	59	58	...
China	6	7	10	13	16
France	51	53	54	54	56
Germany	48	48	49	50	51
UK	59	58	59	64	64
USA	73	70	71	81	83

Source: *UNESCO*

Table A6. Provision of private higher education

(Select countries / various years)

… Information not available

Country	All higher education institutions				Universities			
	No. of institutions		Enrolment		No. of Universities		Enrolment	
	Private *% of Total*	**Year**	**Private** *% of Total*	**Year**	**Private** *% of Total*	**Year**	**Private** *% of Total*	**Year**
Argentina	42.9	2000	25.7	2001	55.0	2005	14.4	2003
Brazil	88.9	2003	70.8	2003	51.5	2003	56.7	2003
Chile	93.3	2000	71.0	2000	75.0	2000	58.9	2000
China	39.1	2002	8.9	2002	0.6	2002	…	…
Germany	29.5	2003	3.7	2003	24.8	2003	1.0	2003
Hungary	54.4	2004	14.2	2004	…	…	…	…
Japan	86.3	2000	77.1	2000	73.7	2000	73.3	2000
Kenya	34.2	2000	9.1	2000	70.0	2000	19.3	2000
Malaysia	92.2	2000	39.1	2000	41.7	2000	7.5	2000
Mexico	69.1	2002	33.1	2003	72.7	2002	41.8	2003
Moldova	44.5	2003	20.0	2003	…	…	…	…
Mongolia	64.2	2003	26.0	2003	27.2	2003	8.3	2003
Philippines	81.0	1999	76.0	1999	…	…	…	…
Poland	66.8	2003	29.4	2003	6.3	2000	3.5	2000
Portugal	64.2	2001	28.5	2001	37.0	2001	19.4	2001
Romania	56.0	2003	23.3	2003	…	…	…	…
Russia	37.0	2003	12.1	2003	…	…	…	…
Thailand	68.0	2001	19.0	2001	48.9	2001	16.8	2001
Uruguay	42.9	2000	10.0	2000	88.9	2000	12.0	2002
USA	59.4	2000	23.2	2000	74.6	2000	35.3	2000
Venezuela	56.6	2004	41.3	2005	54.2	2004	21.2	2005

Source: *PROPHE [www.albany.edu/dept/eaps/prophe/data/international.html.] – as in June 2005*

Table A7. Estimate tuition fee income as per cent of total revenue sources

Type of institutions	Enrolment	Tuition fee estimate as *% of total revenues (on the basis of)*	Weighted number
Government	3752	19 (data from 45 institutions)	713
Private aided	3510	38 (data from 32 institutions)	1300
Private unaided	3219	100 (data from 25 institutions and by definition)	3219
Total	**10481**		**5232**
Average		**49.7 per cent**	

Source: *Data interpretation and analysis done by the author.*

Remark: With government grants amounting to Rs.19000 comprising of the balance 50.3 per cent, the total annual expenditure on higher education works out to be Rs.375.75 billion per year.

Table A8. Central funding of higher education institutions in India

Agency	Institutions (Type and Number)	No. of Students	Funding (2004-2005) *Rs. in billion*		Per student funding (average) *In Rs.*	
			Plan	Non-Plan	Plan	Non-plan
University Grants Commission	16 Central Universities + 12 Deemed Universities & 59 Colleges	150,000	2.0	1,100	13,350	73,300
Central Government	42 University level Institutions (IITs, IIMs, NITs etc.)	50,000	5.0	750	100,000	150,000
State Governments	180 Universities & 10250 colleges*	6,644,000	4.0	Nil	602	Nil
Self-financing Sector	70 Universities Level + 7650 Colleges	3,637,000	Nil	Nil	Nil	Nil
Total		**10,481,000**	**11.0**	**1,850**	**-**	**-**

Source: *Estimates by author based on budget documents of Ministry of HRD, UGC*

Table A9. Relative expenditure on education by major states

States	Share of population *%*	Education expenditure as percentage of SGDP *%*	Per capita expenditure on education *(in Rs.)*	
			Private (2001/02)	Government (2000/01)
Andhra Pradesh	7.4	3.5	368	567
Assam	2.6	9.6	153	778
Bihar	10.7	6.2	168	44
Delhi	1.3	2.0	693	809
Gujarat	4.9	3.7	272	812
Haryana	2.1	3.2	609	737
Karnataka	5.1	4.0	245	674
Kerala	3.1	4.3	434	902
Madhya Pradesh	7.9	7.0	210	838
Maharashtra	9.4	3.5	323	1070
Orissa	3.6	5.4	182	515
Punjab	2.4	3.7	604	845
Rajasthan	5.5	5.0	225	591
Tamil Nadu	6.1	4.1	364	784
Uttar Pradesh	17	3.9	291	387
West Bengal	7.8	3.9	354	1749
All India			**299**	**705**

Source: *For share of population – Registrar General of India (2001 Census); For education expenditure – Analysis of budgeted expenditure on education (2002/03), Ministry of HRD; and for per capita expenditure – Household consumer expenditure and employment – unemployment situation in India (NSS-58th round, July-December 2002, report no. 484)*

Table A10. Expenditure on higher education

Country	Percentage of GDP on Higher Education*	Public expenditure on higher education per student (2002/03)	GDP per capita, 2002 (US$)	Public expenditure per higher education student as percentage of GDP per capita
USA	1.41	9,629	36,006	26
China	0.50	2,728	989	53
Japan	0.54	4,830	31,407	17
India	**0.37**	**406**	**487**	**83**
Germany	1.13	11,948	24,051	43
UK	1.07	8,502	26,444	31
France	0.99	8,010	24,061	29
Italy	0.87	7,491	20,528	28
Brazil	0.91	3,986	2,593	52
Russia	0.62	1,024	2,405	11
Canada	1.88	15,490	22,777	48
Korea	0.34	1,046	10,006	5
Indonesia	0.28	666	817	20
Philippines	0.43	625	975	14
Australia	1.19	7,751	20,822	27
Malaysia	2.70	11,790	3,905	118

Source: *UNESCO Institute of Statistics (UIS). Data used are most recent available- data may vary between 1998/99 and 2002/03. Data (other than GDP) on India is as per analysis by the author.*

Table A11. GER, private enrolments and expenditure share

GER - gross enrolment ratio; -- *data not available*

Country	GER	Private enrolments	Percentage expenditure from non-public sources	
			Public	***Non-Public***
USA	81	23.2	34.0	66.0
China	13	8.9	--	--
Japan	49	77.1	43.1	56.9
India	**11**	**30.7**	**50.3**	**49.7**
Germany	48	3.7	91.3	8.7
UK	64		71.0	29.0
France	54	--	85.6	14.4
Italy	53	--	77.8	22.2
Brazil	18	70.8	--	--
Russia	70	10.0	--	--
Canada	58	--	58.6	--
Korea	85	--	15.9	--
Philippines	31	76.0	--	--
Australia	74		51.3	48.3
Malaysia	27	39.1	--	--

Sources: *For GER - UNESCO Statistical Yearbook (1998), UNESCO, Paris for 1990 and nearest years; UNESCO Institute of Statistics 2005, for 2001/2002 and nearest years; UNESCO 2004 FEA Global monitoring report for data on GNP per capita. Data on India as per analysis by the author.*

Table A12. Growth of employment between the years 1983-2000

	Employed workers (in millions) *(in percent)*			Annual growth rates (%)	
	1983	**1993/94**	**1999/2000**	**1993/94 (pre-reform period)**	**1994-2000 (post-reform period)**
Primary	208.99 *(69)*	245.16 *(65.5)*	239.83 *(60.4)*	1.6	-0.34
Secondary	41.66 *(13.8)*	55.53 *(14.8)*	66.91 *(16.8)*	2.91	3.14
Tertiary	52.11 *(17.2)*	73.76 *(19.7)*	90.26 *(22.7)*	3.53	2.42
Total *(in per cent)*	*100.0*	*100.0*	*100.0*	2.04	0.98

Source: Adapted from Joshi (2004)

Table A13. Output, employment and productivity in various sectors

(Organised, unorganised, private and public sector at 1993-94 prices)

	Organised			Un-Organised	Grand Total	Organised	Un-Organised	Public Sector	Private Sector
	Total	**Public**	**Private**						
Value Added (GDP) (NET) in Rs. billion						**In percentage**			
1993-94	2568.49	1808.43	760.06	4411.43	6979.92	36.80%	63.80%	25.9%	10.89%
1999-2000	4189.20	2665.19	1524.01	6004.25	10193.45	41.10%	58.9%	26.1%	15.0%
Growth In per cent	8.5%	6.68%	12.30%	5.27%	6.52%				
Employment in million						**In percentage**			
1993-94	27.18	19.3	7.88	288.66	315.84	8.61%	91.39%	6.1%	2.51%
1999-2000	28.11	19.42	8.69	308.64	336.75	8.34%	91.66%	5.8%	2.54%
Growth In per cent	0.56%	0.10%	1.64%	1.12%	1.074%				
Employment elasticity	0.066	0.015	0.133	0.213	0.165				

Source: *Report of Special Group on Targeting Ten Million Employment Opportunities a year in the Tenth Five Year Plan; Planning Commission, (2002)*

Table A14. Career oriented education in Universities and Colleges

Year	No. of Colleges	No. of Universities	Amount released *(Rs. in million)*
1994-95	190	19	260.0
1995-96	191	5	174.1
1996-97	324	7	208.9
1997-98	292	0	235.5
1998-99	320	0	261.7
1999-00	216	0	185.4
2000-01	109	1	118.7
2001-02	208	0	291.3
2002-03	273	3	197.8
2003-04	368	2	250.4
2004-05	278	2	260.7
Total	**2769**	**39**	**2444.4**

Source: *University Grants Commission*

Table A15. GER, skill distribution and labour share in Indian Economy

(For the year 2002-2003 or most recent year available)

GER - gross enrolment ratio

		Skill distribution of labour force			Labour share in economic sectors in 2000-2004		
Country	**GER in HE**	**Agriculture labour**	**Unskilled labour**	**Skilled labour**	**Agriculture**	**Industry**	**Services**
USA	83	2.0	63.7	34.3	2.5	21.6	75.9
China	15	43.6	48.9	7.5	44.1	17.7	16.1
Japan	52	3.8	79.0	17.2	4.7	29.7	64.8
India	11	59.2	35.4	5.4	59.0	17.2	23.8
Germany	50				2.5	32.5	64.9
UK	64	4.1	69.0	26.9	1.4	24.1	74.2
Italy	59				5.1	32.1	62.8
Brazil	20	16.1	73.1	10.8	19.8	21.6	58.4
Russia	65	14.3	61.6	24.0	10.7	29.7	59.6
Canada	57				2.8	22.8	74.4
Korea	89	na	na	na	9.3	27.3	63.3
Indonesia	16	47.7	48.2	4.1	44.3	14.1	41.6

na=not available

Source: *GER data from UNESCO Institute for Statistic; Labour data (by skill distribution) from LABORSTA Database, International Labour Organization (ILO), http://laborsta.ilo.org. Labour share in economic sectors data from WDI (2006); Data on Labour share in economic sectors on India from Table 5.*

Table A16. Unemployment (UPS) and level of education (in per cent)

Years of education	Rate of unemployment			Distribution of unemployment		
	Male	**Female**	**All**	**Male**	**Female**	**All**
0	0.4	0.1	0.3	5.1	3.8	4.8
1-5	1.7	1.3	1.6	15.2	7.7	13.3
6-8	3.7	4.9	3.8	21.5	11.5	19.0
9-10	5.4	15.8	6.5	21.5	23.1	21.9
11-12	7.6	21.1	9.1	15.2	15.4	15.2
More than 12	8.5	27.0	11.3	21.5	38.5	25.8

Source: *Reproduced from Ghosh, 2004 (Based on Data from NSSO-2000)* [Unemployed are persons, aged 5 years or more, who are unemployed according to usual principal status.]

Table A17. Difference in perception of University and Industry

Characteristics	University	Industry
Values	Altruistic, scientific	Business, commercial
Activity	Generation and dissemination of knowledge and ideas	Application of knowledge for economic gain
Objective	Excellence in academic	Customer satisfaction, Profit
Role	Academic philosophy requires keeping up with theory and applications	Corporate philosophy involves continual improvement and greater efficiencies through new products and services, new design and manufacturing processes, innovations, software development.
Motivation for learning	Knowledge for its own sake; continuous learning to Upgrade knowledge	Need-based; learning as necessary
Horizon	Long-term	Short-term
Output	Academic degree, publications, patents	Cost-effective quality product and processes
Openness	Keen to publish results expeditiously	Keen to keep know-how proprietary
Attitude	'Holier than thou'	'Out here in the real world'
Process of HRD	Education: open-ended process leading to the development of n involves inputs in cognitive and effective domains.	Training: specific goal is to impart technical skills; involves input in the psychomotor domain

Source: *Natarajan, R. (2000), "University-Industry Cooperation, Collaboration and Partnership", Presented at the Presidents of World Prestigious Universities Forum on the Theme, "Higher Education and Development of High-tech in the 21st Century- University and Enterprises", Beijing- China,*

Table A18. Expenditure on research and development

Top 10 economies

PPP GDP – purchase point parity gross domestic product; HEI – higher education institutions

Countries	Expenditure on R & D (% of GDP 1996-2003)	Expenditure on R & D (US$ M at PPP)	% performed by HEIs	Expenditure on R&D performed at HEIs (US$M at PPP)
US	2.60	284,584	16.8	47,810
China	1.31	72,014	10.1	7,273
Japan	3.15	106,854	13.9	14,853
India*	0.81	19,200	2.9	557
Germany	2.50	54,449	17.1	9,311
UK	1.89	31,163	22.6	7,043
France	2.19	37,967	18.9	7,176
Italy	1.16	16,367	32.6	5,336
Brazil	0.98	--	--	--
Russia	1.28	16,838	6.1	1,027

Other select countries

Canada	1.94	18,596	34.9	6,490
Korea	2.64	24,869	10.1	2,512
Australia	1.63	7,815	26.8	2,094

Source: *Data on expenditure on R & D % of GDP from WDI (2006) and others from OECD Science and Technology Indicators 2004.*

** Data on India is for the year 2000-2001 quoted from National Innovation System in the Asia –Pacific Region, UN ESCAP*

Table A19. Researchers and technicians in R & D

Top 10 economies

Countries	Researchers in R & D 1996-2004		Technicians in R & D 1996-2004	
	per million people 1996-2004	Number	per million people 1996-2004	Number
US	4484	1316951	--	--
China	663	859380	--	--
Japan	5287	675678	528	67478
India	**119**	**128484**	**102**	**110129**
Germany	3261	269032	1089	89842
UK	2706	162089	--	--
France	3213	194065	--	--
Italy	1213	69868	1347	77587
Brazil	344	63261	332	61054
Russia	3319	477272	557	80096

Other selected countries

Canada	3597	115104	--	--
Korea	3187	153294	--	--
Australia	3670	73767	--	--

Source: *UNESCO Institute of Statistics from WDI (2006)*

Table A20.Gross Domestic Product (GDP) and Scientific Publications

Top 10-economies

S. No.	Country	GDP 2005		Citations		Papers		Citations per paper (Rank)
		in PPP $ billion	% share	Numbers (Rank)	% share	Numbers (Rank)	% share	
1.	United States	12,278	20.10	33,212,308 (1)	62.7	2,698,434 (1)	38.5	12.31
2.	China	9,412	15.41	799,415 (18)	1.5	271,032 (9)	3.9	2.95
3.	Japan	3,911	6.40	5,264,781 (4)	9.9	722,512 (2)	10.3	7.29
4.	**India**	**3,633**	**5.95**	**573,792 (21)**	**1.1**	**180,783 (13)**	**2.6**	**3.17**
5.	Germany	2,522	4.13	6,102,642 (3)	11.5	666,104 (3)	9.5	9.16
6.	United Kingdom	1,833	3.00	6,373,300 (2)	12.0	604,397 (4)	8.6	10.54
7.	France	1,830	3.00	4,338,642 (5)	8.2	488,585 (5)	7.0	8.88
8.	Italy	1,668	2.73	2,709,842 (7)	5.1	320,667 (7)	4.6	8.45
9.	Brazil	1,577	2.58	433,772 (nr)	0.8	98,747 (18)	1.4	--
10.	Russia	1,576	2.58	870,485 (15)	1.6	282,027 (8)	4.0	3.09

Other selected countries

	Canada	1,105	1.81	3,587,966 (6)	6.8	358,176 (6)	5.1	10.02
	Korea	994	1.63	504,634 (nr)	1.0	126,438 (nr)	1.8	--
	Netherlands	630	1.03	2206097 (8)	4.2	197426 (12)	2.8	11.17
	Switzerland	237	0.39	1823353 (9)	3.4	140164 (15)	2.0	13.01
	Australia	163	0.27	1821757 (10)	3.4	216819 (11)	3.1	8.4
	Spain	158	0.26	1,529,708 (12)	2.9	219,404 (10)	3.1	6.97
	Israel	503	0.82	864214 (16)	1.6	96890 (nr)	1.4	8.92
	Finland	271	0.44	733391 (19)	1.4	73068 (nr)	1.0	10.04

Source: *IMF for PPP GDP 2005.* The data on citation, papers and citation per paper is taken from *Research Handbook, 2005 (UGC).* This covers Top-21 of the most-cited out of 149 countries in all fields from the ISI Essential Science Indicators Database (Online version).

In the 10-year period (January 1994-August 2004), ISI recorded about 9 million articles, notes and reviews, published in roughly 9000 indexed journals. ISI Essential Science Indicators categorizes these journals into 22 broad disciplines. Each journal is assigned to a discipline. The number of citations received by these 7 million items for the period was roughly 53 million.

Nr= Not ranked

Table A21. PCT international applications

(Country-wise by nationality of first applicant)

Top-10 economies

PCT - Patent Cooperation Treaty; PPP GDP – purchase point parity gross domestic product

Country of Origin	PPP GDP 2005		2000	2001	2002	2003	2004	2005	% Share	% Growth
USA	12,278	20.10	38007	43055	41292	41023	43464	45111	33.6	18.7
China	9,412	15.41	784	1731	1018	1295	1706	2452	1.8	212.8
Japan	3,911	6.40	9567	11904	14063	17393	20223	25145	18.7	162.8
India	**3,633**	**5.95**	**190**	**295**	**525**	**764**	**723**	**648**	**0.5**	**241.1**
Germany	2,522	4.13	12582	14031	14326	14682	15255	15870	11.8	26.1
UK	1,833	3.00	4795	5482	5376	5205	5041	5115	3.8	6.7
France	1,830	3.00	4138	4707	5089	5172	5181	5522	4.1	33.4
Italy	1,668	2.73	1394	1623	1982	2163	2196	2309	1.7	65.6
Brazil	1,577	2.58	178	173	201	219	281	283	0.2	59.0
Russia	1,576	2.58	533	557	539	586	519	500	0.4	-6.2

Other selected countries

Canada	1,105	1.81	1801	2114	2260	2270	2109	2315	1.7	28.5
Korea	994	1.63	1580	2324	2520	2949	3554	4747	3.5	200.4
Australia	630	1.03	1576	1664	1759	1680	1837	2022	1.5	28.3
Switzerland	237	0.39	1989	2349	2755	2860	2881	3096	2.3	55.7
Finland	163	0.27	1578	1696	1762	1557	1672	1866	1.4	18.3
Israel	158	0.26	964	1314	1174	1130	1227	1481	1.1	53.6
Netherlands	503	0.82	2928	3410	3977	4480	4236	4435	3.3	51.5
Sweden	271	0.44	3091	3421	2990	2612	2844	2784	2.1	-9.9

% share in 2005 of the total number of applications; %Growth in 2005 over 2000

Source: *WIPO [www.wipo.org accessed on February 3, 2006]*

Table A22. Times Top 100 Universities

Country	Number of universities in Top-100	Top university in the country	Rank	
			In 2005	In 2004
United States	31	Harvard University	1	1
United Kingdom	13	Cambridge University	3	6
Australia	6	Melbourne University	19	22
France	5	Ecole Polytechnique	10	27
China	4	Beijing University	14	17
Switzerland	4	ETH Zurich	21	10
Netherlands	4	Delft University of Technology	53	78
Japan	3	Tokyo University	16	12
Canada	3	McGill University	24	21
Hong Kong	3	Hong Kong University	41	39
Belgium	3	Brussels free University (French)	76	-
Singapore	2	National University of Singapore	22	18
Germany	2	Heidelberg University	45	47
India	2	Indian Institutes of Technology	50	41
Austria	2	Vienna University	65	94
New Zealand	1	Auckland University	52	67
Finland	1	Helsinki University	62	129
Denmark	1	Copenhagen University	66	63
Israel	1	Hebrew University of Jerusalem	77	93
Russia	1	Lomonosov Moscow State University	79	92
South Korea	1	Seoul National University	93	118
Mexico	1	National Autonomous University of Mexico	95	195
	100			

Source: *Times Higher Education Supplement, London*

Table A23. Comparison of University and Industry R& D

University R & D	Industry R & D
• Essential long-term.	• Essential short-term.
• Carried out by graduate students under the guidance of faculty supervisors, with the objective of fulfilling degree requirements.	• Carried out by professional personnel with objective of satisfying customer needs.
• Maintaining continuity is more difficult.	• Continuity is maintained in proportion to the industry goals.
• Output is more in terms of research papers.	• Output is more in terms of products and processes, and patents.
• Scope is more deep and detailed.	• Scope of solution is determined by the extent of need.

Source: *Natarajan, R. (2000), "University-Industry Cooperation, Collaboration and Partnership", Presented at the Presidents of World Prestigious Universities Forum on the Theme, "Higher Education and Development of High-tech in the 21st Century- University and Enterprises", Beijing- China,*

Annexure B

UGC Regulations /Notifications

1. UGC Notification on Revision of Pay Scales, Minimum Qualifications for Appointment of Teachers in Universities and Colleges and Other measures for the Maintenance of Standards,1998
2. UGC Regulations, 2000 Regarding Minimum Qualifications for Appointment and Career Advancement of Teachers in Universities and Colleges
3. UGC (Admission to specified Professional Programmes) Interim Regulations, 2003
4. UGC (Establishment and Maintenance of Standards in Private Universities) Regulations, 2003
5. Specification of Degrees (No Notification between 1975 and 1999 and no alternation in the list after August 2003)
6. Recognition of College in Terms of Regulations, 1974 framed under the UGC Act
7. UGC Inspection of Universities Rules, 1960
8. UGC (Returns of Information by Universities) Rules, 1979
9. UGC (Fitness of Institutions for Grants) Rules, 1975
10. UGC (Establishment and Maintenance of Institutions) Regulations, 1985
11. UGC Regulations, 1991 regarding Minimum Qualifications for Appointment of Teachers in Universities and Colleges.

UGC Rules regarding Fitness of Universities

12. UGC (Fitness of Certain Universities for Grants) Rules, 1975.
13. UGC (Fitness of Agricultural Universities for Grants) Rules, 1975.
14. UGC (Fitness of Technological Universities for Grants) Rules, 1978.
15. UGC (Fitness of Open Universities for Grants) Rules, 1988.

UGC Regulations regarding the Minimum Standards of Instructions

1. UGC (Minimum Standards of Instruction for the Grant of the First Degree through Formal Education) Regulations, 2003.
2. UGC (Minimum Standards of Instruction for the Grant of the Master's Degree through Formal Education) Regulations, 2003.
3. UGC Letter No. F. 1117/83(CPP) dated 2.1.1986 to Vice Chancellors of all Universities regarding Minimum Standards of Instructions for the Grant of First Degree.
4. UGC Regulations, 1985 regarding the Minimum Standards of Instruction for the Grant of the First Degree through Formal Education.
5. UGC Regulations, 1985 regarding the Minimum Standards of Instructions for the Grant of the First Degree through Non-formal/Distance Education.
6. Partial Modifications of UGC Regulations, 1985 regarding the Minimum Standards of Instructions for the Grant of First Degree (UGC Letter No.F.1117/83 (CPP) dated 30th May 1986].

Source: www.ugc.ac.in

Table A24. Regulatory and Statutory Bodies for Higher Education in India

S. No	Name, Statute & Year, Ministry & Website	Statutory Mandate	Primary Function	Other Functions	Overlaps with Functions of *
1	University Grants Commission (UGC) The UGC Act, 1956 Ministry of HRD www.ugc.ac.in	Co-ordination and determination of standards in higher education and research in the country.	Release of grants to universities and colleges.	Recognition of universities and colleges (including eligibility for central grants); Specification of degrees; Minimum standards of instruction; common pay scales; common facilities, and institutional accreditation through NAAC	Other professional councils and DEC
2	Distance Education Council (DEC) under Section 25 of the IGNOU Act, 1985 Ministry of HRD www.ignou.ac.in/dec/	Promotion, coordination and determination of standards of the open university and distance education system in the country	Release of grants to open universities and correspondence course institutes.	Initiated assessment and accreditation activities	Other professional councils and the UGC
3	All India Council for Technical Education (AICTE) AICTE Act, 1987 Ministry of HRD www.aicte.ernet.in	Planning and coordinated development of technical education in the country.	Approval of degree & diploma programs in engineering, architecture, pharmacy and hotel management	Funding for institutional and faculty development; Pay scales and qualifications of teachers; accreditation through NBA	UGC, DEC, Pharmacy Council of India, Council of Architecture and the State Councils for Technical Education
4	Medical Council of India (MCI) MCI Act, 1953 Ministry of Health www.mciindia.org	To establish standards in medical education and to define medical qualifications in India and abroad.	Registration of medical practitioners and recognition of medical institutions	Eligibility criteria for admissions; Exam for recognition of foreign qualifications for practice in India.	State Medical Councils and the State Governments; UGC and DEC to a limited extent

5	The Council of Architecture (COA) The Architects Act, 1972 Ministry of Urban Development www.coa-india.org/	Regulate profession and practice of architects and town planners in India	Registration of architects , maintaining standards of education, recognized qualifications and standards of practice	Maintaining the register of architects and make recommendations with regard to recognition and de-recognition of a qualification	AICTE
6	Pharmacy Council of India(PCI) The Pharmacy Act, 1948 Ministry of Health www.pci.nic.in	Regulate profession and practice of pharmacy in India	Registration of pharmacists and approval of pharmacy institutions	Prescribe curriculum and requirement of practical training	AICTE and State Pharmacy Councils
7	Indian Nursing Council INC Act, 1947 Ministry of Health www.mohfw.nic.in/inc/	Uniform standards of training for Nurses	Accepts qualifications awarded by universities within and outside India	Collection and compilation of data relating to nurses, mid wives, health visitors	22 State Nursing Councils with different Acts having meaning and registering powers
8	Dental Council of India (DCI) The Dentists Act, 1948 Ministry of Health www.dciindia.org	To regulate dental education and profession of dentistry in the country.	Recommend to the central government to accord permission to start a dental college, start courses and on increase of seats.	Lay down course curriculum for various courses in dentistry	Ministry of Health
9	Central Council of Homeopathy (CCH) HCC Act, 1973 Ministry of Health www.cchindia.com	Proscribe and recognize qualifications in homeopathy	Maintain Central Register of Homoeopaths.	Prescribe curriculum and courses; code of ethics, requirement for recognition	State Councils
10	Central Council of Indian Medicine(CCIM) IMCC Act, 1970 Ministry of Health www.ccimindia.org	Proscribe and recognize qualifications in Indian medicine	Prescribes minimum standards of education in Indian Systems of Medicine viz. Ayurved, Siddha, Unani Tibb. And maintains a Central Register for the same.	Prescribe curriculum and courses; standards of professional conduct, etiquette and code of ethics to be observed by the practitioners	State Councils

11	Rehabilitation Council of India (RCI) RCI Act, 1992 Ministry of Social Justice www.rehabcouncil.nic.in	Standardize and regulate the training of personnel and professionals in the field of rehabilitation and special education.	Recognition of institutions for physiotherapy and related fields	Registration of professionals, assessment and accreditation; promotion of barrier free environment	-
12	National Council for Teacher Education (NCTE) NCTE Act, 1993 www.ncte-in.org	Planned and coordinated development of the teacher education in the country	Recognition of teacher education institutions	Lay down norms and standards.	DEC
13	Indian Council for Agricultural Research (ICAR) Not a statutory body Ministry of Agriculture www.icar.org.in	Coordinate agricultural research and education	Coordinate and fund agricultural education and research in 30 state and 1 central and several deemed universities for agriculture	Accredit agriculture universities; hold joint admission tests	UGC
14	Bar Council of India (BCI) The Advocates Act, 1962 Ministry of Law http://barcouncilofindia.nic.in	Lay down standards of professional conduct and standards of legal education	Lay down standards of professional conduct and standards of legal education	Listing of members of bar; listing of foreign universities whose qualifications are approved in India	State Bar Councils

Professional Associations

	Institute of Chartered Accountants of India (ICAI) ICAI Act,. 1949 Ministry of Company Affairs www.icai.org	Regulate profession of chartered accountants in India	Conduct professional courses, coordinate practical training and hold examination	Final Exam is equivalent to masters program if a bachelor's degree is obtained before	-
	Institute of Company Secretaries of India (ICSI) ICSI Act,. 1980 Ministry of Company Affairs www.icsi.org	Regulate profession of company secretaries in India	Conduct professional courses, coordinate practical training and hold examination	Final Exam is equivalent to masters program if a bachelor's degree is obtained before	-

	Institute of Costs and Works Accountants of India (ICWAI) ICWAI Act,. 1944 Ministry of Company Affairs www.icwai.org	Regulate and develop profession of cost accountants in India	Conduct professional courses, coordinate practical training and hold examination	Final Exam is equivalent to masters program if a bachelor's degree is obtained before	-

Other professional associations are – Institution of Engineers, India (IEI), Institution of Electronics and Communication Egieers (IETE), Institutions of Mechanical Engineers (IME) etc.

	Association of Indian Universities (AIU) Set up in 1925 as a membership-based organization - a Registered Society **www.aiuweb.org**	Promote inter-university activities and cooperation in the field of education, culture, sports and allied areas.	Publish University News and Handbook of Indian Universities and various other publications	Organize academic, sports and cultural events; Equivalence of Degrees/Certificates awarded by the accredited foreign Universities/educational Institutions.	UGC

In addition, there is a National Council of Rural Institutes (NCRI) set up in 1995 as a nodal organization for development of rural institutions in the country. This has been a non-starter.

* In most cases, there is some overlap in functions of professional councils and academic functions of the university concerned.

Source: *Compiled by the author with information from the respective website and also interaction with officials of various bodies.*

Annexure C

Statutory Bodies and List of their Regulations in India

(Illustrative List Only)

1. AICTE
(a) Regulations for approval process
(b) Regulations for admission and fee structure - Admission regulations,1992 - Admission and fee structure Regulations,1994 - Resolution of Govt. of India for Fee Structure,1997 - Regulations for NRI / Foreign Nationals / Persons of India origin
(c) Guidelines for constitution of governing bodies of self financing institutions
(d) AICTE Regulations, 2004 on admission under supernumerary quota for foreign nationals and persons of Indian origin
(e) AICTE Amendment Regulations, 2003
(f) Reservation under Persons with Disabilities
(g) Regulations for Entry & Operation of Foreign Universities / Institutions
(h) Interim Policy Regulation consequent to Supreme Court Judgment
(i) Guidelines for Engineering Admissions
(j) Guidelines for Common Entrance Test (s) for Admission to MBA/ PGDBM
(k) Guidelines for MCA Admissions 2004-05
2. Medical Council of India (MCI)
(a) Graduate Medical Education Regulations, 1997 (Summary)
(b) Post Graduate Medical Education Regulations, 2000 (Summary)
(c)Teachers Eligibility Qualifications, 1998 (Summary)
(d) Code of Medical Ethics Regulations, 2002
(e) MCI Regulations 2000
(f) Eligibility Certificate Regulations, 2002
(h) Screening Test Regulations, 2002
3. Dental Council of India
(a) B.D.S. Course Regulations
(b) M.D.S. Course Regulations 1983
(c) Rules & Regulations, Curriculum & Syllabus etc. for one year Postgraduate Diploma Course in eight specialties of Dentistry
(d) Dental hygienists mechanics regulations
7. Council of Architecture
The Architects Act, 1972
Minimum standards of architectural education regulations, 1983*
Council of Architecture rules 1973*
Council of Architecture regulations, 1982*

Source: *Compiled by the author from various sources*

Table A25 : Fees for undergraduate programmes in engineering (2005/06)

State	Average / Range (in Rs.)
Madhya Pradesh	23300-26000
Chattisgarh	20000-31900
Gujarat	30000-36000
Chandigarh	72000
Haryana	45000
Himachal Pradesh	41000
J&K	32000
Punjab	51500
Rajasthan	41000
Andhra Pradesh	22000
Tamil Nadu	25500-40000

Source: AICTE

Table A26: Higher Education System in United States and India

	United States	India
Size	Large and complex	Large and complex
Diversity	Highly diverse	Very little diversity
Role of Central (Federal) Government	Federal government has maintained an arms-length distance relationship with universities. The central government does not establish and maintain any institutions of higher education. It is responsible for majority of students' grants and loans almost half of the students receive federal financial aid.	Establish and provide grants institutions of higher education maintaining direct relationship with some of them. Small central funding for higher education largely goes for maintaining these institutions Very small central funding for the rest of the system.
Role of State Governments	Mainly authorise educational institutions to operate within states and license entry into certain professions; States prevent fraudulent practices of the higher education institutions and provide oversight of the minimum or threshold capabilities.	Most public higher education institutions funded by state governments. States have limited role in maintaining standards. Because of reducing funding role and weak oversight, states are considered as weak links in the Indian higher education system. Many state institutions operate outside the states
Higher education institutions	Strong commitment to internal accountability through regular programme reviews and systematic activities to assess student outcomes.	Commitment to internal accountability and external accountability (mainly to affiliating the universities) varies widely across range of institutions.
System	The federal government, the state governments and the voluntary accreditation agencies – called the 'Triad' play complementary roles with clear division of labour. Each carry out distinct activities with distinct purposes taking different paths to the same super ordinate goal of providing high quality education with diverse offerings and sound investment of public funds.	The central government, the state governments, largely statutory government controlled bodies like the UGC, professional councils and the universities (particularly the affiliating the afflicting universities) and the voluntary accreditation agencies create a multi-layered burdensome regulatory system trying to achieve often conflicting objectives. Due to poor public funding and weak regulatory mechanism

***Source**: Compiled by the author from various sources*

Annexure D

Brief Description of Various Modules in the proposed Higher Education Information Systems Project (HISP)

Grants Management System – This module is to monitor the flow of grants, physical and financial progress, rendition of accounts and utilisation; criteria-based funding for institutions maintained by it; online submission of proposals and its monitoring till sanctions under various schemes; generation of need-based reports state / university / scheme-wise, generation exception reports; withholding grants for non-compliance, unique numbering methodologies etc.

Statistics Collection and Compilation System – This module would facilitate the timely automatic data collection as well as innovative mechanisms for obtaining the relevant data from all higher education institutions for statistical analysis consistent with the International Standard Classification of Education (ISCED). The system should facilitate online compilation and query based responses for policy planners, administrators and researchers.

Recognition Management System – This module would provide credible information on the recognition, approval and accreditation status of higher education institutions and programmes essential for students and their parents at the time of admissions and to address the issue of fake institutions.

Research Project Management System – This module would develop and maintain a repository of research projects as well as a tool to monitor these research projects for their timely completion and the effective utilisation of the funds. This repository needs to be built around the metadata framework for effective tagging of resources and their timely retrieval. This may be expandable to include research projects funded by other agencies to monitor gaps and overlaps etc.

Expertise and Facilities Information and Interface System – This module would provide an interface between the academics and the society, in particular the industry to help continuously monitor the relevance of various curricula offered by the universities to the industry and the society as a whole. While the system covers various levels of e-enabling such as information, interaction, transactional and collaborative, this sub-system facilitates and promotes collaborative activities, for better use of limited facilities, facilitating and improving industry/Society interfaces.

Students Information System – This module would assign a unique number to each student entering in higher education system in the country. It would link such numbers with subsequent qualifications acquired to develop and establish qualification-skill-competency card integrated with the multi-purpose cards, to implement means-tested

scholarship and loan schemes to contain the problem of malpractices in higher education and to help track loan recovery, unemployment assistance etc. Student results could be announced and records maintained in this module.

Knowledge Repository – This is suggested to develop a mechanism for tracking academic information resources such as learning resources, curricula, question banks, national theses etc., published in various formats through systematic, internationally used metadata data framework for tagging such resources. Build an *Open Courseware* and allow the universities to use this content for both distance and classroom education. Subject experts, both from academia and industry, could be assigned to write these courses. Students would get multimedia, continuously updated interactive courses while universities would spend a lot less on building and managing courseware, particularly for the correspondence courses.

University and College Admission Management - To bring in transparency in the process of admissions by various institutions, to ensure reliability of such processes and to prevent malpractices in admissions, appropriate mechanisms need to be designed for effectively monitoring various tests for admissions such as aptitude tests, common admission test, national eligibility test, and information collection on seat allocation and counselling.

Web-based Standard Solution for an Educational Institution - This is suggested for developing standards for computerization for institutional functions in educational set up so that independently evolved computerization initiatives of different higher education institutions could be seamlessly integrated within each other and fit into the metadata framework of this project and develop a framework for a standard web-based standard solution for an educational institution.

Other functional modules - may be included during the study phase based on their relevance, rational and need.

Table A27: Action Framework Matrix

With a view to prioritize proposed actions, they have been assigned values ranging from 5 to 1 against four parameters, namely **I**mportance (ranging from 5 for most important to 1 for least important), **U**rgency (ranging from 5 for most urgent to 1 for least urgent), **C**ost (ranging from 5 for least expensive to 1 for most expensive) and **T**ime required for implementation (ranging from 5 for least time required to 1 for most time required).

Proposed action	**Purpose**	**Systems followed in countries**	**I**	**U**	**C**	**T**	**O**
Conduct of *All India Higher Education Survey*	To create baseline data for better understanding and better decision-making	USA, UK	5	5	5	4	19
Review of public funding mechanism for institutions	To improve efficiency and effectiveness in use of public funds by institutions	UK	4	4	5	4	17
Review and harmonize guidelines for competitive grants	To minimise burden of implementation and enhance impact with outcome focus	UK	5	5	5	4	19
Putting in place a *Social Equity Fund* as a comprehensive *Students Grants and Income Contingent Loan System*	To promote equity in access to higher education	Australia	5	5	3	3	16
To proactively woo big corporate sector and prestigious foreign research universities to set up research universities / campuses in India	To raise standards of research for long-term competitiveness of the country	China, Singapore	5	5	5	5	20
Enactment of an umbrella *Higher Education Act*	For better coordination and improved governance at the system level	Most Countries [xxxvii]	5	2	5	1	13
Review of recognition system for plugging the loopholes	For restoring credibility of degrees	US, UK	5	5	5	4	19
Putting in place disclosure standards (including transparency in accounts) and students *Right to Know* conditions	To address problem of information asymmetry and enable students / parents to take informed decisions.	US, UK	5	5	5	4	19
Restructuring of accreditation system	To make accreditation effective in addressing quality concerns	US	5	5	4	3	18
National Qualification Authority and Teaching and Learning Support Networks	To ensure seamless vertical and horizontal mobility and curricula renewal on a ongoing basis	UK, Australia, New Zealand	5	5	3	3	16
Unified Qualification framework for formal and non-formal system	Internalize non-formal training system	New Zealand, Australia	5	3	5	3	16
National Science Foundation	For overall coordination, cooperation and promotion of scientific research	US	3	3	1	3	10

To improve technology infrastructure – high bandwidth connectivity and campus networks	To enable technology to improve teaching- learning, research and governance of higher education system	US, Most of Europe Australia	5	5	2	5	17
To set up *Skill Development Agency and Sector-specific Skill Development Networks* led by Industry	To provide sustained engagement of industry with higher education and provide sector specific labour market intelligence.	UK	5	5	4	4	18
To set up a *Research Grants Portal*	For coordination, monitoring of research.	US	5	5	5	5	20
To develop a *Nationally Integrated Research Infrastructure* by pooling together all resources	To ensure that high end research infrastructure available to all researchers in the country	Australia	5	5	4	4	18
To develop manpower (PG and Doctorates) in new and emerging areas through collaborative efforts	To provide leadership to India / Indians in new and emerging areas.	-	5	5	4	4	18
To set up *a National Consortium for Library Resources* with pre-print archives and national e-theses repository	To improve access of scholarly publications to researchers by pooling of resources	UK, USA	5	5	4	4	18
To support fifty top higher education institutions for research	To bring up their research performance at par with world-class universities	China	5	4	3	3	15
To set up Learning Resources Repository	To enhance learning effectiveness through coordinated efforts	US	5	5	4	5	19
National Students Data Repository	Track enrolment and completion patterns, verification services etc.	US	5	5	4	5	19
Higher Information System Project	Basic information infrastructure for coordination across the sector at systemic level	Australia	5	5	4	4	18

The **O**verall score for the proposed action would help in sequencing proposed actions. Those interventions having overall scores are not only important and urgent and would require little money and can be implemented quickly.

Source: Author

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