INDIAN HIGHER EDUCATION

Devesh Kapur

University of Pennsylvania

DRAFT

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ABSTRACT

There is general agreement about the poor overall quality of Indian higher education. Indeed by many indicators the system is facing a deep malaise if not a crisis. Yet, this seems to have had little effect on conventional indicators of growth. The paper examines this paradox and argues that Indian higher education is both collapsing and thriving. Traditional multi-disciplinary universities are in a deplorable stage for reasons stemming from the cleavages afflicting India's political economy. However, skill development and knowledge creation is occurring, but outside traditional universities – in narrow specialized institutions (so called "deemed-to-be-universities"), workforce training within firms, through purely commercial ventures and purchase of higher education abroad. These second best solutions have worked reasonably well, but at a cost. Wage premiums are higher, few faculty are being trained (with implications for higher education in the future) and disciplines outside the professions (especially in the liberal arts) are collapsing. Does Indian face a future with a workforce that's reasonably well trained but narrow in its outlook and possibly less liberal?

INTRODUCTION[1]

If physical capital – its growth and distribution – was central to debates on economic development in the 20th Century, human capital increasingly occupies center stage (Kapur and Crowley, 2008). The very promise of higher education for developing countries is also making this a politically contentious issue. Universities are political because they influence the minds of young adults. And they are becoming even more so because of the growing awareness of the distributional implications of higher education. As private provision and international education grow, issues of equity and access become even more contentious. Many of the underlying handicaps faced by students from lower socio-economic groups appear to occur much earlier in the life cycle – at the primary and secondary school level – but policies to overcome these handicaps are pressed in higher education, often too little and too late.

While much of the attention has been on primary education, tertiary education is increasingly receiving greater attention. Unsurprisingly, the attention to higher education in developing countries has focused mainly on its economic effects, especially its links with labor markets. However, much less is know about its complex effects on an area of greater importance to developing countries (relative to industrialized countries), namely institutional development. Additionally, there is little understanding about the how the impact of higher education is mediated by the type of education and its beneficiaries.

The paper first outlines the principal characteristics of Indian higher education and its recent rapid growth, especially the number of students and institutions, the fields of study and the sources of supply. The next section focuses on the key challenges facing Indian higher education, especially the deterioration of quality. With the state unable to meet growing demand pressures, how has it tried to ensure not just quality but also equity and access? And how is Indian higher education adapting to the provision of higher education in an "open economy" – be it seeking education abroad or encouraging foreign providers into the country or simply linking domestic institutions with foreign quality assurance mechanisms? It then analyzes two key questions: why despite India's robust

[1] I am grateful to Ritu Kamal and Arjun Raychaudhuri for excellent research assistance.

growth and a legacy of one of the better higher education systems in developing countries, has quality deteriorated so markedly? And second, if quality is indeed poor, then why is this not manifestly handicapping India's rapid growth? It concludes with some questions on possible non-labor market effects of the current structure of Indian higher education.

GROWTH

The past quarter century has seen a massive expansion in higher education worldwide and especially in developing countries reflecting shifting demographics, changing economic structures and significant improvements in access to primary and secondary education. Tertiary education is a rapidly growing service sector enrolling more than 80 million students worldwide and employing about 3.5 million people. Demand pressures have been acute, the result of a population bulge in the relevant age group, increasing enrolment in secondary education, increasing incomes (and with it the capacity to pay), and rising wage premiums accruing from higher education. Meeting this escalating demand has placed public systems and resources under severe strain. And because this demand group is more urban and vocal, it also poses major political challenges.

As countries and university systems strain under the pressure of increasing demand, new supply responses are rapidly changing the higher education landscape in most countries. The financing, provision and regulation of higher education are witnessing two major shifts. The first is from pure public to private and mixed systems; and the second, a shift from provision and regulation that has traditionally been purely domestic to greater international influence. These trends broadly mimic what has been occurring in almost all aspects of the economy. This is true in India as well – but if anything the trend towards the private provision of higher education is even greater.

Indian Higher Education: Basic facts and Trends

In 1950-51 India had 27 universities, which included 370 colleges for general education and 208 colleges for professional education (engineering, medicine, education).

The system has grown rapidly, especially since the mid-1980s with student enrollment growing at about 5 percent annually over the past two decades. This growth is about two-and-half times the population growth rate and results from both a population bulge in lower age cohorts as well as increased demand for higher education. The gross enrollment ratio in higher education is approximately 11 percent of the age cohort with women constituting about 40 percent of enrollments.

By 2007 India had 416 Universities – 251 State Universities, 24 Central Universities, 103 Deemed to be Universities, 5 Institutions established under State legislation and 33 Institutes of National Importance established under Central Legislation.[2] In addition, there are 20,677 Colleges. At the beginning of the academic year 2007-08, the total number of students enrolled in universities and colleges was about 11.6 million. Of this 1.5 million (13%) were enrolled in university departments and 10.1 million (87%) in affiliated colleges. The number of doctoral degrees awarded by various universities during 2005-06 was 18730. Out of the total number of doctoral degrees awarded faculties of Arts had the highest proportion followed by the faculties of science. These two faculties together accounted for over 70% of the total number of doctoral degree awarded. In contrast the number of engineering PhDs is about a thousand – less than one per engineering college. The number of faculty was about half million of which 16% was in universities and the rest in the affiliated teaching colleges.

The bulk of students (nearly two-thirds) are enrolled in arts and science, with another one-sixth in commerce/management. Recent growth is much greater in professional colleges (especially engineering, management and medicine), as well as in private vocational courses catering especially to the IT sector. Virtually all of this growth is coming from new private colleges as cash-strapped state governments have virtually ceased to expand the list of government aided institutions, thereby increasing the percentage of "self-financed" or "private unaided institutions," most noticeably in professional and technical education (Agarwal 2006; Kapur and Mehta 2007). The vast majority of these, however, are affiliated to public universities whose role is increasingly

[2] Deemed-to-be-universities are an institutional innovation that may be sui generis to India. These institutions have narrow domains but can grant degrees. The original criteria was that they should be engaged in research and teaching in chosen fields of specialization which were innovative and of very high standards.

an affiliation and degree granting one rather than teaching or research. Consequently, enrolment at public universities is still almost 100-fold that of private universities, principally because of onerous entry regulations on the latter.

These private institutions are helping to meet the growing demand that the public sector cannot. Private institutions are less subject to political instabilities and day-to-day political pressures that often bedevil public institutions in developing countries. They are also more nimble and able to respond to changes in demands from employers and labor markets. Yet despite these positives, these institutions are of highly variable – and often dubious – quality. They are mostly teaching shops, and very rarely knowledge-producing institutions. Although most private provision occurs domestically, there is a small but growing trend towards international private provision.

The public sector supply which has been stagnant since the early 1980s is, however, poised for significant expansion if the targets announced for the XI plan (2007-08 to 2001-12) come to pass. It has targeted a GER of 15 % (21 million students), implying an annual growth rate of nearly 9 percent or an additional enrolment of 870,000 students in universities and about 6 million in colleges in the next 5 years. To this end the Central government intends setting up and funding 30 new central universities across the country, has ambitious plans in "Technical Education"[3] and intends supporting state governments to set up colleges in the 340 districts that have extremely low college enrolments. The GOI has also been talking about establishing a Science & Engineering Research Board (SERB) to serve as the apex research agency for planning and supporting research. Ideally such a body would identify research priorities and then fund researchers (and their institutions) through a competitive grant process. Until now at least, this talk has not translated into action. A host of funding initiatives has also been announced that follow the student instead of the institution.[4] By providing merit scholarships to 2 percent

[3] This includes setting up 8 (new) India Institutes of Technology (IIT), 7 India Institutes of Management (IIMs), 5 India Institutes of Science and Engineering Research (IISERs), 2 Schools of Planning and Architecture (SPAs), 10 National Institutes of Technology (NITs), 20 India Institutes of Information Technology (IIITs), and 50 Centres for Training and Research in frontier areas.

[4] Schemes under the Innovation in Science Pursuit for Inspired Research (INSPIRE) launched in XI Plan include (i) Scheme for Early Attraction of Talents for Science (SEATS) (ii) Scholarships for Higher Education (SHE) (iii) Assured Opportunity for Research Careers (AORC).

of total students in higher education, the government hopes that universities will have an incentive to compete and attract students rather than have all their costs covered.

QUALITY

The prevailing view regarding higher education in India is discouraging: by most quality indicators, Indian bachelors, masters and PhD programs are lagging behind domestic demand in terms of required quality of graduates. There are numerous studies that detail both the need for better higher education in the country and the challenges in recruiting a scientifically-competent workforce. According to the Prime Minister the Indian university system "is, in many parts, in a state of disrepair…In almost half the districts [340] in the country, higher education enrolments are abysmally low, almost two-third of our universities and 90 per cent of our colleges are rated as below average on quality parameters…[5] The Human Resources Development (HRD) Minister, Arjun Singh, recently called higher education the "sick child of education."[6]

Various indicators employed to study the quality of higher education in India, such as research output, infrastructure and placement of graduates, point to the need for reform in the higher education public and private sector. India's global rank in research output has dropped has dropped from 8th in 1985 to 14th in 2006, precisely at a time when given its high absolute and relative economic growth, one might have expected the opposite. The contrast with China is stark. In the last two decades the number of PhDs in S&E in India has increased by around 50% (from 4007 in 1985 to 6318 in 2003) whereas in China the numbers increased from a tiny 125 in 1985 to 12,238 in 2003 (and 14,858 in 2004). The annual number of PhD engineers produced in India today is about half per engineering school per year!

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[5] Prime Minister Manmohan Singh's address at the 150th Anniversary Function of University of Mumbai, June 22, 2007 http://pmindia.nic.in/lspeech.asp?id=555

[6] http://inhome.rediff.com/news/2007/oct/10arjun.htm

[Table 1 and Table 2 somewhere here]

The problems are even more acute in the social sciences. The number of PhDs produced by India's premier economics faculty – Delhi School of Economics – has dropped from about 4.5 a year in the 1970s and 1990s to barely 1.5 a year in this decade. This despite the fact that the number of economics departments in Indian universities grew from 72 in 1971 to 119 in 2001. As a recent official review of Indian social sciences put it, "an even more serious problem [than funding] is the severe, and increasing, shortage, of qualified researchers. Even research institutes and universities that have a good reputation for quality are faced with a decline in both the number and quality of Ph.D. students."[7]

The poor quality of Indian higher education is evident in the results of the Indian administrative service exams. The Applicants to Posts Ratio (APR), an index of the number of candidates aspiring for Civil Service posts through various examinations is an astounding 755 candidates for every post filled (for 2005). Even then suitable candidates are not found and positions are left unfilled (Table 3). More than 5000 candidates applied for just 30 positions for the Indian Economic Service/ Indian Statistical Service through Civil Services Examination. Even then barely 23 made the grade. It should be noted that this is a different problem from the disincentives to join the public sector because of (relatively) poor pay or working conditions, which might result in fewer applications and lead the best to leave after a few years. There are clearly a very large number of students with degrees in economics and statistics who want to apply – its just that less than half of one percent conform to certain standards. The result is that the Indian Statistical Service, a cadre of the federal government that over the decades has produced one of the best government statistics among developing countries, is being starved of talent with adverse consequences for the quality of government statistics. Indian newspaper editors when queried about the main constraint facing them, say it is the lack of availability of young people who can write even two pages of correct English prose.

[Table 3 somewhere here]

[7] The Indian Council of Social Science Research, "Restructuring the Indian Council of Social Science Research," Report of the Fourth Review Committee, March 2007, p. 22.

THE POLITICAL ECONOMY OF INDIAN HIGHER EDUCATION: WHY IS QUALITY POOR?

There are several reasons why Indian higher education, its universities in particular, are in such a poor state. A structural reason stems from a decision made in the 1950s to create separate research institutions outside the university system. Over time as universities became politicized, researchers fled the university system and migrated to public institutions under the umbrella of the Council of Scientific and Industrial Research (CSIR), the Department of Atomic Energy, the Indian Space Research Organization and Indian Council of Social Science Research (ICSSR). The bifurcation of research from teaching and the in-breeding of faculty, gradually led to an entrenchment of mediocrity.

The most acute weakness plaguing India's higher education system is a crisis of governance. Indeed the Indian Prime Minister, a former professor at Delhi University, himself has commented, "I am concerned that in many states university appointments, including that of vice-chancellors, have been politicised and have become subject to caste and communal considerations, there are complaints of favouritism and corruption." The core of the governance problem lies in the nature of highly centralized state regulation of higher education that seeks to micro-manage who can teach what to whom at what cost. Table 4 gives an overview of the regulatory structure of Indian higher education. Its effects on Indian higher education can be gauged by the bleak assessment of India's S&T Minster Kapil Sibal, "There is not such a thing as UGC [University Grants Commission] there is not such a thing as AICTE [All India Council for Technical Education], there is not such a thing as MCI (in the western world). They [have] destroyed our entire efforts to take education forward." [8]

[Table 4 somewhere here]

One might presume that an independent regulatory framework for any sector would shield it from the political interference. In the Indian case they are simply another mechanism for political influence. And when they do exercise regulatory independence they are quickly overridden by the Ministries even flouting the courts. To take one

[8] Business Standard July 9, 2008 http://www.business-standard.com/india/storypage.php?autono=328167

example: in 2003, the Supreme Court of India ruled that the MCI (Medical Council of India) was the only authority that could recommend an increase of student strength or renewal of permission for medical colleges. That order had directed the Central government "not to grant any further permission without following the procedure prescribed under the Indian Medical Council Act." In 2008 the MCI denied permission to two medical colleges to take new students based on a report by a government appointed lawyer that their facilities were "inadequate".[9] The very same day the Health Ministry permitted the very two private medical colleges to take in more students!

There is sufficient awareness of the problems afflicting Indian higher education at the highest levels of the Indian government as evident by the quotes cited above by a range of key cabinet members. Why then has the Indian state not acted and addressed them? One reason may be that higher education is arguably one of the most difficult sectors to reform – and not just in India. University employees (both faculty and administration) and students are among the most vocal and well-organized political groups in any country. Even as unions have weakened in virtually all aspects of economic activity, education remains a rare exception. Direct exit options – such as closing down poor performing departments or colleges – sharply increases the risks of an immediate political reaction. Visible strategies such as increasing fees are also fiercely resisted even when they could raise quality or lead to a less regressive income transfer to elites.

But the most severe handicap is the overall structure of higher education, plagued by misguided attempts at equity, poor administration and bureaucratization. The lack of institutional autonomy and poor academic governance has made it increasingly difficult for higher education to attract talent, especially since (unlike the past) that talent has alternatives. In many cases, talent out has been driven out and as individuals at the upper end of human capital distribution leave, the remaining pool is of poorer quality. This not only prompts the more talented to also consider leaving, but also discourages those who left earlier from returning, ensuring that mediocrity becomes entrenched in these institutions. While low salaries are an issue, in many cases a poor overall academic

[9] Amitav Ranjan, "Denied SC nod for admissions, 2 medical colleges get Health Ministry OK same day," *Indian Express*, September 29, 2008. http://www.indianexpress.com/news/denied-sc-nod-for-admissions-2-medical-colleges-get-health-ministry-ok-same-day/367138/0

environment is perhaps more important. In most government institutions, the focus is on process rather than performance, appointments are politicized, and autonomy in administration, financial and academic content is minimal. Resources are an undoubted constraint, but more flexible rules, access to modest research resources and a work environment that encourages innovative practices and research can achieve much.

Consequently, changes have occurred simply when public institutions deteriorate to such an extent as to force students to seek private sector alternatives. In other cases, fiscal constraints have limited public sector led supply increases, resulting in increasing rationing as demand escalates, thereby forcing excess demand to spill over to a burgeoning private sector. In both cases the result is the same – a massive increase in the share of the private sector in higher education.

A second reason for the problems afflicting the Indian university system is the rent seeking behavior that is the inevitable consequence of detailed administrative regulation. The sector is the last refuge of the "license raj" with severe political, administrative and regulatory interference on virtually every aspect of higher education be it admissions policies, internal organization, fees and salaries, and the structure of courses and funding. While the private sector has ramped up supply, the quality of most of the new private sector colleges (many linked to politicians) leaves much to be desired. Their governance problems may be different from public institutions, but are no less acute. And by making it so difficult for *quality* private universities to come up, the Indian state is jeopardizing the supply of faculty – and the training of future generations. First, the process of regulatory approvals diminishes the capacity of private investment to respond to market needs. Second, the regulatory process produces an adverse selection in the kind of entrepreneurs that invest since the success of a project depends less upon the pedagogic design of the project than the ability to manipulate the regulatory system. Consequently private investment in higher education is driven principally by profit making goals and not education as a public trust. Consequently, private sector investment has been confined to professional streams, bypassing the majority of students and also suffers severe governance weaknesses, raising doubts as to its ability to addresses the huge latent demand for quality higher education in the country. Third, there are significant market failures in acquiring physical assets that are necessary for institutions,

especially land. Fourth, regulatory approvals are extremely rigid with regard to infrastructure requirements (irrespective of costs or location) and an insistence on academic conformity to centrally mandated course outlines, degree structures and admissions policies. Fifth, a key element of a well functioning market – competition – is distorted by not allowing foreign universities to set up campuses in India, limiting benchmarking to global standards. Sixth, the central element of a well functioning market, informational transparency, is woefully inadequate.

A third reason – and the most important – lies in the key cleavages and drivers of India politics. As the cabinet minister for higher education, Arjun Singh, has argued, "Inclusion and access with equity are the core issues that confront us today [in higher education]."[10] While higher education is a prime casualty of the populism and fragmentation of the Indian polity, the underlying reason is that it has become a key battleground of distributional conflicts (and not just in India). The main reason is rising skill premia. While this is a global phenomenon – the last two decades have seen a significant increase in the skill premium in both industrialized and developing countries – it is more puzzling in developing countries. Despite numerous problems that afflict the measurement of skill premia, Goldberg and Pavcnik (2007) argue that since virtually all country studies show large skill premium increases, "it is unlikely that they are all a figment of the measurement problems," although the exact magnitudes may be affected by these measurement problems.[11] In India the skill premium (as measured by the return to a university degree) has increased by 13 percent (relative to primary education) between 1987 and 1999 (Kijima, 2006), and 25 percent between 1998 and 2004 (Dutta, 2006; OECD, 2007).

With identity politics emerging as the principal fulcrum of political competition in India, debates on affirmative action (or "reservations" as it is known in India) as the means to increase the representation of socially marginalized groups have been so

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[10] http://inhome.rediff.com/news/2007/oct/10arjun.htm

[11] The skill premium increases have been largest in Mexico, where the return to university education (relative to primary education) increased by 68 percent between 1987 and 1993 (Cragg and Epelbaum, 1996). In Latin America, a worker with six years of education earns on average 50 percent more than someone who has not attended school, a high school graduate earns 120 percent more and someone with a university diploma earns on average 200 percent more (World Bank, 2000).

contentious as to overwhelm virtually every other issue in Indian higher education. This debate of course is by means unique to India. There continues to be widely divergent views on the role of higher education in society. Governments increasingly want Universities to be "engines of social justice" on the one hand as well as "handmaidens of industry" or "implementers of the skills agenda" on the other. Recently, Alison Richard, Cambridge University's vice-chancellor, said that while institutions such as hers "try to reach out to the best students, whatever their background," and "one outcome of that is that we can help to promote social mobility. But promoting social mobility is not our core mission. Our core mission is to provide an outstanding education within a research setting."[12] And even if social mobility is an important goal, how should group rights be balanced against individual rights? Advocates highlight the important "role-model" effect of such programs for disadvantaged groups and the many positive pay-offs of diversity, while critics argue that these programs perpetuate racial stereotypes. How valuable is diversity in an educational environment? And what exactly is "diversity"? What criteria (or sunset clauses) should be used to phase out these programs? There is little agreement on even the most basic question. Under what conditions do such programs entrench identity politics or instead gradually erode them? Then there are practical questions of how to implement these programs. To what extent should governments use control or incentive mechanisms to oversee such programs? What should be the policy at private institutions given their growing importance? And how should design of such programs reflect not just the normative aspects but the reality of how political considerations will impact implementation?

While the framers of India's constitution were deeply concerned with the ideals of social justice and equality, these progressive ideas ran contrary to the pervasive and deep rooted social hierarchy and severe discrimination deeply imbedded in India's caste system. In order to redress centuries of discrimination against India's lowest castes (so-called untouchables or Dalits as they are now know) and indigenous peoples, the Indian constitution enshrined the most comprehensive system of compensatory discrimination for these groups know as "reservations." Seats in federal and state legislatures and jobs in

[12] Jessica Shepard, "Cambridge mission 'not social mobility'", *The Guardian*, September 10, 2008. http://www.guardian.co.uk/education/2008/sep/10/accesstouniversity.highereducation/print

civil services and state-owned enterprises were reserved in proportion to their share in the population. The same was the case in public higher education institutions (except in those run by minorities).[13]

But like the infant-industry argument, affirmative action programs tend to take on a life of their own, as more and more groups press their claims to avail of its benefits. The Indian constitution contains a clause allowing the federal and state governments to make "any special provision for the advancement of any socially and educationally backward classes of citizens or for the Scheduled Castes and Scheduled Tribes." Over time the expansiveness and ambiguity of the clause "any socially and educationally backward classes of citizens," opened up a Pandora's Box and became a favorite hunting ground for political populism. While affirmative action has had some success (albeit modest) in reducing inter-group inequality, it has tended to amplify intra-group inequalities. Broad social categories like "Scheduled Castes", "Scheduled Tribes" and "Other Backward Castes" tend to gloss over the fact that these are themselves extremely heterogenous categories with hierarchies within them. Consequently the benefits of reservations are disproportionately garnered by some sub-groups – those who were better off to begin with. Moreover, while the creation of educated elites from these social groups is indicative of some success, their children benefit much more than the vast majority in the group who, given the limited number of seats, are crowded out. This points to one chronic weakness in these programs – the absence of non-discretionary sunset clauses that allows the benefits of these policies to spread to other households *within* the group. Finally, perhaps the most inimical impact is that these policies have resulted in a political economy akin to that of rent-seeking. Enormous political energy and effort is spent by politicians promising ever more benefits to more and more social groups rather than improving and expanding the quality of supply by focusing on primary and secondary education. The Indian Supreme Court has ruled that reservations cannot exceed 50% (that would violate equality guaranteed by the constitution), but this has been flouted by several states setting the stage for a possible constitutional crisis.

[13] Article 15 of the Indian Constitution prohibits discrimination, based on religion, race, caste, sex, and place of birth.

In 2006, in an attempt to bolster its electoral base among India's largest social group, the Congress-led UPA government extended reservation benefits to the "*Other backward Castes*" (OBCs) in educational institutions run by the federal government. There are ongoing disputes about statistical data used by Government of India and Indian states for offering reservation benefits to these groups, especially since the possibility of entitlements has led to more and more social groups to claim they are more backward than the others.[14] Sundaram (2007) argues that representation of a social group can only be judged by a comparison of its share in enrollments in a given level of education with its share in the population eligible for entry into that level of education rather than the population as a whole. By this criteria India's OBCs (and especially for over 70 percent of them who are above the poverty line), the extent of under-representation of the OBCs in enrollments in Indian universities is less than 5 percent. Affirmative action programs that are based on identity rather than income or poverty, for a social group such as India's OBCs whose social and economic conditions reflect the average in the country, risk the better off within the group monopolizing all the privileges, with little benefit to the vast majority in that group.

Recent analysis of NSS data by Basant (2008) has confirmed that the under-representation of socially marginalized groups in higher education is much less once the likelihood of completion of high school is taken into account. The likelihood of undertaking higher education increases dramatically for the marginalized groups after they cross the threshold of school education. This increase is particularly the case for women and in rural areas. Table 5 lays out the degree of under/over representation across socio-religious groups. All socio-religious groups except upper caste Hindus and "other minorities" are under-represented. However, this declines once flow (rather than stock)

[14] As India's Supreme Court has observed, "The paradox of the system of reservation is that it has engendered a spirit of self denigration among the people. Nowhere else in the world do castes, classes or communities queue up for the sake of gaining the backward status. Nowhere else in the world is there competition to assert backwardness and to claim 'we are more backward than you'. This is an unhappy and disquieting situation, but it is stark reality. Whatever gloss one may like to put upon it, it is clear from the rival claims in these appeals and writ petitions that the real contest here is between certain members of two premier (population-wise) caste community classes . . . each claiming that the other is not a socially and educationally backward class and each keen to be included in the list of socially and educationally backward classes." Justice O.Chinnappa Reddy in *K.C.Vasanth Kumar v.State of Karnataka* (1985) [Supp. SCC 714, para 23].

measures are considered (suggesting improvements over time) and decline significantly when we compare across only the eligible population i.e. those who have completed high school. Take for example, the OBC group which will now benefit from reservation in higher education. Of the total population in the age-group 18-25, this group has a share of about 34 per cent; the group's share in the eligible population in this age group is 30.1 per cent while their share in the currently studying population is 28.5 per cent.

[Table 5 somewhere here]

If the problem of access is less acute than warranted by recent populist measures, the performance of "reserved" candidates compared to the rest raises further questions on the limits of this strategy. It is not just that reservations at elite educational institutions benefit at best a tiny minority of candidates from socially marginalized groups. The evidence is also strongly suggestive that admission alone will be insufficient to equalize career outcomes even for this tiny minority in the absence of better school-level opportunities. Chakravarty and Somanathan (2008) use data from one of India's most elite institutions (IIM-Ahmedabad) and find that that graduates who came through affirmative action (Scheduled Caste or Scheduled Tribe or SC/ST) get significantly lower wages (between a fifth and a third) than those admitted in the general category. However, this difference disappears once they account for lower Grade Point Averages of SC/ST candidates, suggesting that the wage differences could be due to the weaker (on average) academic performance of SC/ST candidates.[15] This appears to be the result of poor quality of schooling prior to entering higher education rather than discrimination per se in access to higher education (which in any case in India is almost entirely based on standardized exam scores such as state wide high school exam results or nationwide standardized entrance tests). Nonetheless, all major actors, be it politicians, courts, media and even many academics have focused on access issues in higher education, indicating that the equity rhetoric disguises what in reality is an intra-elite distributional conflict.

[15] They also find that (at least in this case) controlling for work experience and GPA, there is no wage penalty to being female; and unlike studies from US and British labor markets, there is only weak evidence of any wage premium to being more attractive.

THE EVOLUTION OF A SURROGATE HIGHER EDUCATION SYSTEM

There is little doubt that the Indian university system is in deep crisis. Given its well documented travails, its limited impact on India's growth needs some explanation. If the traditional university system is doing such a poor job, how have Indian firms addressed their human capital needs in recent years? Sectors, such as IT have been growing at a scorching pace. From a few million dollars in the mid-1980s its revenues are likely to cross well over 60 billion dollars for FY2008.[16] More recently the biotech and pharmaceutical industry has been growing rapidly. Indian biotech firms crossed the billion dollar revenue point in 2005, and have been steadily growing since.[17]

Of course it could be argued that that the poor quality has had an economic cost. Large increases in wage premia at the top end of India's talent pool imply that supply of quality talent simply has not kept up with the demand. Other costs may not be visible as yet – they be more long term or their negative effects may be more social and political rather than economic. While we will return to this issue in the conclusion, here it is suffice to discuss why the travails of Indian universities have not had a more inimical impact on Indian firms. I argue that just as Indian firms have been forced to adapt to chronic weaknesses in infrastructure, labor laws etc… they have also adapted to the weaknesses of the Indian university system. A surrogate higher education system has evolved and, in particular, workforce skill development is occurring outside the traditional domestic university model — within firms, by commercial providers, overseas, through open-source/virtual learning and in narrow specialized institutions, the so called "deemed-to-be-universities."

Skill Development by Firms

The private sector has long contributed to higher education through four key mechanisms: directly funding research (indeed in Japan, doctorates called *ronbun hakase*, were awarded by universities to dissertations which were written by researchers working solely in firms, with appropriate company personnel serving as advisers instead of

[16] NASSCOM Strategic Review 2008 <http://www.domain-b.com/organisation/Nasscom/20080211_indian_it.html>
[17] Jayaraman, K. S. "Biotech Boom." Nature Biotechnology 436 (2005): 480-83.

university professors); private philanthropy supporting gifts and endowments; working with weak public institutions to improve the quality of instructional material and infrastructure; and, most importantly through so-called "corporate universities – in-house company training and development initiatives. These have been around since the 19th century, when large companies such as DuPont and General Electric introduced "corporate classrooms" to provide additional training for employees.

In most market economies the direct and indirect training costs incurred by the private sector make it the largest provider of professional training. Corporations often have greater access to resources than do public universities and offer training in functional skills and new technologies that may not be otherwise available. Although most of these institutions serve only company employees, some corporate universities are opening their programs to fee-paying students or launching subsidiary for-profit universities.[18]

Recently the new MNCs from emerging markets have become innovators in this area, having to compensate for the weakness of the higher education systems in their countries by developing ambitious in-house programs. In principle there are many benefits when firms organize and pay for the labor market skills they need. Indeed all firms do that to some extent – in most cases relying on some variant of an apprenticeship system. However, developing countries have few large firms that can internalize the costs of these training universities. Moreover, as labor markets become more flexible, the greater turnover of employees reduces the incentives for in-house universities since the benefits of such training are not fully internalized.

Nonetheless, as Wadhwa et. al. (2008) argue, with firms forced to recruit from a subpar pool to fill their skilled labor needs, Indian industry has addressed this handicap by investing heaving in providing the necessary workplace training and development of their employees. An array of workforce skill development practices including new employee training, continual training, hiring managers from within the company, advanced performance appraisal systems and investing in education by partnering with universities have all gone a long way in improving the skills of their workforce.

[18] Motorola University (MU) exemplifies a large corporate university in a conventional MNC. Founded 1989 by the Motorola Corporation, MU is a $100 million global service business, managing 99 sites in 21 countries on 6 continents.

The private sector has also become involved in creating "corporate universities", to try and fill the gap between the skills required for employment and those produced by traditional universities. The most organized effort in this regard has been by the IT industry whose rapid expansion has led to growing skill shortages. Industry leaders, Infosys, TCS and Wipro, have all set up large campuses and training programs and are also working collectively through the industry body, NASSCOM to improve pedagogy and training in Indian engineering schools. Infosys has set up $450 million facility capable of training 18,000 fresh graduates annually at a cost of about $5,000 per student. Each of the candidates recruited by the software company has to spend eight hours a day at a residential company campus studying software programming and attending team-building workshops. In order to graduate, every trainee has to pass two three-hour-long comprehensive exams.[19] Similarly the Wipro Academy of Software Engineering recruits and trains about 14,000 annually. It screens science graduates and trains them in a four-year program with a well know private engineering school (BITS, Pilani) at the end of which they graduate with a Master's in software engineering and are employed by Wipro. Under a program called TCS Ignite, Tata Consultancy Services (TCS), hires science graduates from over 200 colleges in nine states and then puts them through an intensive seven-month customized curriculum before they are inducted as full-time employees. The condition is that these candidates must agree to stay on with the company for two years.

Collectively, efforts of companies like Infosys's Campus Connect Program and Wipro's Academy of Software Excellence aim to improve the quality of engineers through curriculum development and training in colleges. The IT industry apex body, NASSCOM, has been directing its efforts at standardized skills assessment and verification program and improve the skills of 10,000 faculty members in 1,500 engineering colleges over the next three years.

The surrogate education system is extending well beyond software companies. In finance and banking, accounting firm Ernst & Young, faced with a severe shortage of freshly-qualified chartered accountants for its tax audit business has opened a tax academy, which trains recruits as tax associates. While India's largest public sector bank,

[19] The sheer scale is amazing. Spread over 335-acres, the Global Education Centre (GEC) of Infosys has over 500 faculty rooms and 10,300 residential rooms in a built-up space of 6 million square feet and is capable of training 13,000 students in a single sitting.

State Bank of India, annually recruits about 20,000 new employees (from 2.4 million applicants) and has a long established training programs, new private sector banks are following suit. ICICI Bank recruits undergo a one-year residential classroom training at the ICICI Manipal Academy of Banking and Insurance, a joint venture between the bank and the private Manipal University. The bank and university have jointly designed the course content with courses in treasury, international banking and microfinance. The costs are paid by ICICI Indian Institute of Banking and Finance (IIBF).

Recently, even a seemingly lower skill sector, the rapidly expanding organized retail sector, has followed suit. Pantaloon (a large retail firm) has started a three-year BBA program with a focus on retail in association with the Madurai Kamraj University. The Bharti Group has started the Bharti Academy of Retail Academy for Insurance and is also setting up 60 learning centers across the country (with a target of 1,000 in the next three years) to offer courses in insurance, telecom and retail. Other training initiatives in this regard include Reliance Retail, the Future Group and Retailers Association of India.

Industry has also become involved in redesigning curricula. For instance the Confederation of Indian Industry (CII) has been putting together courses to improve soft skills, training the trainers for this course and to integrate related courses into the university curriculum. This initiative has been launched in the state of Tamil Nadu and will be extended to universities across other states. Firms and industry bodies, with the efforts of state governments are all working at enhancing skill development. CII is also working closely with the government and large companies in a public-private partnership model to upgrade the government-owned Industrial Training Institutes (ITIs) and align them more closely with the needs of industry.[20]

Interesting, mission oriented public sector organizations such as the Department of Space, Council for Scientific and Industrial Research (CSIR) and the Defense Research & Development Organisation (DRDO) are seeking to address their difficulties in recruiting qualified R&D personnel by setting up captive "deemed universities". For instance the Department of Space has set up the Indian Institute of Space Science and Technology and the Department of Atomic Energy the National Institute of Science,

[20] Companies that have adopted ITIs include Bosch, Hero Honda, Ashok Leyland, Larsen & Toubro, and Bharat Heavy Electricals Ltd.

Education & Research. The BARC training schools (established by the founder fathers of India's atomic energy program in 1957), provided the scientific personnel for the Department of Atomic Energy for nearly half-century. The programs were modeled on the Argonne International School of Nuclear Science and Engineering (1955) and Oak Ridge School of Reactor Technology (1950) in the US where many of the BARC pioneers had been trained. This is now being transformed into a "Deemed-to-be-University" – the Homi Bhabha National Institute (HBNI).

Buying Higher Education Abroad

Higher education and learning has always been had a strong international flavor. Where political constraints make any change unfeasible and the supply of higher education institutions with any signaling effect is severely limited, there is an increasing tendency to purchase higher education overseas. Since the late 1990s, the number of students crossing borders to receive education has increased by more than 50 percent. It is estimated that the number of students from developing countries studying abroad is likely to double before 2015 and double again by 2025. While China has emerged as the largest country of origin for international students, there has been a surge of students from India as well.

International student outflows from India have been growing rapidly. In contrast to past decades when these outflows were more the result of low payoffs to skill rather than underinvestment in higher education capacity, with the rapid rise in skill premiums and the difficulties of access to quality institutions within the country, the latter has become more important. In academic year 2006-07 (the last year for which figures are currently available), 83,833 Indian students were enrolled at U.S. institutions of higher education (the largest overseas student body). More than 70 percent of these were enrolled at the graduate level (IIE Open Doors 2007). In 1993 there were barely 300 Indian students in Australia. In 2008 this will exceed 60,000. While public higher education spending in India is about $4.5 billion, Indians are spending nearly $3.5 billion buying higher education overseas (Kapur and Mehta, 2008). However, most of this increase has been either at the undergraduate level and (especially) master's level, not at the doctoral level. Indeed the number of Science and Engineering doctorates received by

Indians in the US peaked in the late 1990s (around 1300 annually). Since then it has declined to about 800 annually between 2001-2003.

Until about the mid-1960s, Indian who went abroad for higher education tended to return. And when they did, the reentry vehicle was generally the public sector. From the mid-1960s to the end of the millennium, return rates fell sharply, especially for those with advanced degrees. The pendulum has again begun to swing back, but with one key difference: the reentry of Indians with advanced degrees is now almost entirely the private sector (especially the growing number of MNC R&D labs) with few joining public sector research institutions. In the latter case, many researchers have post-doctoral experience abroad, rather than doctoral degrees (this is especially true of the biological sciences).

While there are many gains from these outflows, there are two significant costs. One, a large number of students, especially those engaged in research, do not return. Despite the increasing attractiveness of India, the percentage of Indians obtaining PhDs in Science and Engineering (S&E) who had "definite plans to stay" in the US increased from 56.3% in 1994-1997 to 62.7% in 2002-05 even as the number of Indians obtaining PhDs in S&E declined by 30 percent (from 5014 to 3587). And two, the process incurs very large expenditures which are almost the same as the total higher education expenditures in the country – for a tiny fraction of the number of students in the country.

Although the number of students from developing countries seeking education abroad has sharply increased in recent years, the phenomenon itself is not new. What is more new, however, is the reverse: foreign higher education institutions, establishing programs in developing countries under a variety of arrangements ranging from cross-border franchised agreements, twinning agreements, joint programs, validation, subcontracting and distance learning activities.[21] To take an example: the growing demand for nurses in India (and abroad) has led to a burgeoning number of private nursing schools. Although these are accredited by the Indian Council of Nursing, this carries little signaling value. Recently a group of private nursing schools in India

[21] Under twinning arrangements, after initial training in their home country, students relocate overseas to receive their final training and degree from the foreign university. Under franchising programs, the entire program takes place in the home country, with the foreign institution providing curricula and assessment, and certifying the program with the university crest on the degree.

approached the Commission on Graduates of Foreign Nursing Schools *(*CGFNS), a statutory US body, to create a set of standards that could become an imprimatur and have a distinct signaling value.[22] The importance of external validation mechanisms is likely to increase.

The other alternative, attracting foreign higher education providers to the country, has faced strong resistance. There is no dearth of critics who fear the entry effects of foreign providers of higher education. Some fear that foreign providers – by importing curricula with little consideration of local traditions and culture – might prove to be Trojan horses of cultural imperialism. Others argue that foreign providers arguably undermine the sovereignty of the state, especially in its capacity to regulate education and its nation-building functions. A third concern is that since transnational education is aimed primarily at upper socio-economic groups, foreign providers may simply engage in "cream-skimming," exacerbating inequities in access to tertiary education. A fourth concern is of an internal "brain-drain" - wage differentials between faculty at public and private (foreign) institutions would result in public universities stripped of their most talented teachers).

These concerns must be juxtaposed against a reasonable counterfactual. It is not as if the current "closed" system higher education system has either sharply reduced social inequality or brought about exemplary "nation-building." If the choice is between students going overseas and spending money there or spending it mainly at home, the latter is surely a less-worse option. Indeed a policy of allowing any university ranked in the world's top 1000 could only improve Indian higher education given the handful of Indian universities that make the grade. But India's political economy makes this unlikely to occur.

Virtual Education

Technology is driving another mechanism of availing of higher education – virtual education. Distance learning is not a new phenomenon in developing countries- students have enrolled in correspondence courses for decades, especially in teacher

[22] Interview with Barbara Nichols, CEO, CGFNS, Cambridge, September 27, 2008.

training programs.[23] But these classes had little interaction between faculty and students and were plagued by high dropout rates. However, significant improvements in technology in the past decade have transformed these programs, drastically increasing their size and scope. Despite skepticism on numerous fronts, especially perceived weaknesses on key components of quality education – discussion, collaboration, and reasoning skills – virtual education has been increasing rapidly. There has been a dramatic expansion of resources available online, specifically through the use of "open courseware," in which high quality "open knowledge" materials, including course content, library collections, and research data is being made available online. In 2006 more than 100 higher education institutions and associated organizations from around the world launched the Open Courseware Consortium, each pledging to place course materials for at least 10 courses online for free.[24] By reducing constraints on access to quality content and instruction at low cost, virtual education has much promise. Nonetheless, making these resources available online does not solve the problem of access for the less privileged without addressing the availability of affordable internet access, which continues by to be critical impediment.

Despite the brouhaha about India's IT prowess, until recently there were only limited attempts at leveraging the potential of virtual education. However, a recent joint venture funded by the Indian government which includes all Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc), called the "National Programme on Technology Enhanced Learning" (NPTEL), aims to enhance the quality of engineering education in the country by developing curriculum based video and web courses. Dissemination is through an agreement with Google and YouTube. The NPTEL YouTube channel covering the courses hosts about 74 courses currently and has had more than 1.3 million visitors. However, the didactic importance of this mechanism is unclear as yet.

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[23] In 1996, all of the five largest distance-learning programs were based in lower or middle-income countries (World Bank, 2000). These include: Anadolu University in Turkey, founded 1982; China TV University, founded 1979; Universitas Terbuka, Indonesia, founded 1984; Indira Gandhi National Open University (IGNOU), India, founded 1985; Sukhothai Thammathirat Open University, Thailand, founded 1978.

[24] Other examples include Connexions, the Open University in the UK, and CMU's Open Learning Initiative. They offer some advantages in that they are specifically designed for online distance learning.

A major handicap is that 80 percent of India's Internet connections are in the country's 12 largest cities (which account for about one-tenth of the population). Until cheap broadband connectivity is available to the thousands of poorly equipped colleges (and this would require public funding), India will not be able to harvest the fruits of virtual education.

CONCLUSION

The paper has argued that the Indian university system suffers from deep infirmities, which has given rise to a vibrant surrogate higher education system. It is clear that there has been a substantial growth in higher education in India, whether measured by the number of students or expenditures (especially private). To the extent the Indian system has succeeded it is largely the result of Darwinian selection mechanisms. The formal labor market invariably selects from such an enormous pool, with selection ratios often less than one percent, with the assumption that while those selected may have limited skills but have the attributes to be trainable. And notwithstanding the many defects of the formal university system, the system has found a way to adapt, thereby limiting the costs at least for firms in the formal sector.

However, the paper also raises fundamental questions about just what we mean about higher education and the purposes it serves. Beyond selection, it is unclear what is the value added by higher education in India. It is entirely possible that the credentialing aspects of the few good higher education institutions benefit the few who have access to it and crowd out from labor markets others with similar ability but who lack access. Furthermore, with formal educational qualifications becoming more prevalent, the pressures to get these credentials are mounting. However, just as an arms race does not lead to greater security despite much greater spending, the upward spiral in education credentialing in India as elsewhere, may not yield social benefits commensurate to the expenditure (e.g. Wolf, 2004; Murray 2008).

The success of the evolving surrogate education system has (at least now) depended mainly on drastic selection mechanisms and the ability to pay private providers. But for the vast majority of graduates with worthless degrees, who are not selected into these

training programs and left to the vagaries of the informal sector, the risk of being locked into low productivity occupations is very real. The rapid increase in the number of credentialed but poorly educated young people posed significant political challenges for India in the 1970s at a time of economic stagnation. In an era of rapid growth these dangers are less apparent – but the sharp increase in their numbers and expectations, coupled with weak formal job market prospects for the majority of India's graduates may well come back to haunt the country if its growth falters.

Even otherwise success in labor markets does not imply success in knowledge creation. India's knowledge needs in areas with large public goods payoffs, in social sciences and a host of basic sciences, be it climate change, health economics, infectious diseases or agricultural technologies, have been woefully neglected. The Achilles heel of the system is that higher education in India has become so completely focused on professional education that the less instrumental aspects of higher education – what one might call the "liberal arts" – have atrophied significantly. It is hard to gauge the long-term effects of this decline, since there is little agreement on even the most fundamental question about higher education: What is the purpose of higher education? To train people for a labor force or train a labor force that is in turn trainable by employers? To create a middle class? Be an engine of innovation? Provide a ladder for social mobility or create national elites? To influence and mould the minds of young people? If the answer is "all of the above" (however weakly), the prognosis may be less bright than currently warranted.

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Table 1: Percentage of Engineering PhDs to Bachelors Engineering Degrees

	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002
India	2.21	2.13	2.03	NA	NA	0.58	0.4	0.93	0.87	0.83	0.66
China	0.09	0.15	0.65	0.67	0.88	1.11	1.51	1.67	2.11	1.98	NA
USA	4.08	4.99	6.79	8.38	9.09	9.48	9.81	NA	8.94	9.28	8.36

Source: Table 1.1.

Table 2: Science and Engineering Higher Education in China, India and USA.

		India (2006)	China (2003)	USA (2006)
Bachelors		237000	351500	74200
Masters		20000	35000	39000
Doctorates	**Science**	5500	32000	14200
	Engineering	1000	4300	8400
	Total	6500	36300	22600
Percentages	**Masters/Bachelors**	8.4%	10%	52.6%
	Doctorates/Bachelors	0.4%	1.2%	11.3%
Bachelors per million Population		214	272	246
Number of Institutions		1511	NA	4314*
Faculty		67000	NA	26700
Publications Science and Engg (2003)		12774	60,067	211,233

Source: Adapted from Table 1.12. Data is from most recent year available
China data is from Vivek Wadhwa, Duke Outsourcing Study: Empirical comparison of engineering graduates in the US, China and India, 2005.
*Taken from http://nces.ed.gov/programs/coe/2008/analysis/sa_table.asp?tableID=1053

Table 3: Indian Civil Service Exams

Name of Examination	No. of Posts	No. of Applicants	No. of Recommended Candidates	APR	RPR
Civil Services	457	3,45,106	*425	*755	*0.93
Engineering Services	262	74,363	229	284	0.87
Combined Medical Services	624	28,878	562	46	0.90
Central Police Forces	256	92,568	224	362	0.88
Indian Economic Service/ Indian Statistical Service	30	5,017	23	167	0.77
Geologists'	95	3,433	95	36	1.00
Total	**1,724**	**5,49,365**	***1,558**	***319**	***0.90**

Note: APR: Applicants to Posts Ratio; RPR: Recommended to Post Ratio.
Source: Union Public Service Commission 57th Annual Report, 2006-07, Table 5.

Table 4: Structure of Higher Education Regulation

FUNCTION	INSTITUTION	PURPOSE
Higher education policy	Central Advisory Board of Education (CABE)	Apex body that advises the Central and State Governments in the field of education.
Universities	University Grants Commission (UGC)	Regulates all aspects of universities and also provides funds.
All aspects of "Technical Education", including engineering/technology, architecture, management, hotel management & catering technology, pharmacy and applied arts & crafts.	All India Council for Technical Education (AICTE)	Maintenance of norms and standards and quality assurance through accreditation and, funding in priority areas. Except with the approval of the Council, no new Technical Institution or University Technical Department shall be started; or no course or program shall be introduced by any Technical Institution, University or University Department or College; or no Technical Institution, University or Deemed University or University Department or College shall continue to admit students for Degree or Diploma courses or program; no approved intake capacity of seats shall be increased or varied. Approval is based on the fulfilment of certain pre-conditions.
Medical Education	Medical Council of India (MCI), Pharmacy Council of India (PCI), Indian Nursing Council (INC), Dentist Council of India (DCI) Central Council of Homeopathy (CCH), Central Council of Indian Medicine (CCIM), Rehabilitation Council of India (RCI)	Accreditation and standards
Legal Education	Bar Council of India (BCI)	Accreditation and standards
Teaching	National Council for Teacher Education (NCTE) Distance Education Council (DEC)	Accreditation and standards
Agriculture	Indian Council for Agriculture Research (ICAR)	
	National Assessment and Accreditation Council (NAAC)	Assess and accredit institutions under the purview of the UGC that volunteer for the process, based on prescribed criteria
	National Board of Accreditation (NBA)	Assess the qualitative competence of institutions in Technical education approved by AICTE

Table 5. Participation in Higher Education by Socio-religious Category, 2004-05

Socio-religious group	Share in 20+ age group			Share in 20-30 age group			Share in 18-25 age group		
	Total Population	Graduates	Eligible Population	Total Population	Graduates	Eligible Population	Total Population	Currently Studying	Eligible Population
H-SC	17.1	6.3	7.8	17.8	7.7	9.6	18.1	11.1	12.8
H-ST	6.7	1.7	2.2	7.2	2.0	2.7	7.0	4.0	4.4
H-OBC	34.7	22.9	26.8	34.3	26.3	29.6	34.3	28.5	30.1
H-UC	24.1	55.0	48.1	22.6	49.6	42.6	21.5	39.7	34.8
M-OBC	4.5	1.7	2.2	4.8	2.1	2.5	5.2	3.7	3.5
M-G	6.9	4.3	4.3	7.6	4.7	4.7	8.3	5.7	6.5
OM	5.9	8.1	8.5	5.5	7.6	8.1	5.5	7.3	7.7
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Rakesh Basant (2008)

Note: H-SC: Hindu, Scheduled Caste; H-ST: Hindu, Scheduled Tribe; H-OBC: Hindu, Other Backward Caste; H-UC: Hindu, Upper Caste; M-OBC: Muslim, Other Backward Caste; M-G: Muslim, General; OM: Other Minorities.

Figure 1: Science and Engineering Doctoral Degrees: Selected Years, 1985-2005
(Source: NSF, Science and Engineering Indicators 2008, Appendix Table 2-43)