

SKILL DEVELOPMENT IN INDIA

**THE VOCATIONAL EDUCATION AND
TRAINING SYSTEM**

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Abbreviations and Acronyms

AICTE	All India Council for Technical Education (within the MHRD portfolio)
AITT	All India Trade Test (administered under DGET)
ATI	Advanced Training Institute (within the DGET portfolio)
AVI	Accredited Vocational Institutes(s) (administered under NIOS)
BAT	Board(s) of Apprenticeship Training (administered under MHRD)
BTC	Basic Training Center(s) (administered under DGET)
CABE	Central Advisory Board for Education (within the MHRD portfolio)
CAC	Central Apprenticeship Council (within the DGET portfolio)
CAPART	Council for Advancement of People's Action and Rural Technology (within the portfolio of the Ministry for Rural Development)
CBSE	Central Board for Secondary Education (within the MHRD portfolio)
CII	Confederation of Indian Industry
COBSE	Council of Boards of School Education (in India)
COEs	Centers of Excellence (under establishment in ITIs with funding from the central and state governments)
CP	Community Polytechnic(s) (within the MHRD portfolio)
CSS	Centrally Supported Scheme(s)
CSSVSE	Centrally Supported Scheme of Vocationalisation of Secondary Education
CSTRI	Central Staff Training and Research Institute (within the DGET portfolio)
CTS	Craftsman Training Scheme (administered under DGET)
DGET	Directorate General of Employment and Training (within MoLE)
DWCRA	GOI program for Development of Women and Children in Rural Area
EACs	Employment Assistance Centers (related to National Renewal Fund)
EdCIL	Education Consultants India Ltd
FDI	Foreign Direct Investment
FICCI	Federation of Indian Chambers of Commerce and Industry
GDP	Gross Domestic Product
GER	Gross Enrollment Ratio
GOI	Government of India
GVA	Gross value added per worker
HRDF	Human Resources Development Fund
IABD	Inter American Development Bank
IAMR	Institute of Applied Manpower Research
ICS	Investment Climate Survey
ICT	Information Communication Technology
IIT	Indian Institute of Technology (within the MHRD portfolio)
IRDPA	Integrated Rural Development Programme of GOI
ISCED	International Standard Classification of Education
ITC	Industry Training Center(s) (private institutions affiliated with NCVT)
ITI	Industry Training Institute(s) (public institutions affiliated with NCVT)
JCVE	Joint Council for Vocational Education (within the MHRD portfolio)
JRY	Jawahar Rozgar Yojana (a GOI scheme)
JSS	Jan Shikshan Sansthan (Community Education Organisations)
KAM	Knowledge Assessment Methodology

KEI	Knowledge Economy Index
KVIC	Khadi and Village Industries Commission
MHRD	Ministry of Human Resource Development
MoLE	Ministry of Labor and Employment
NAC	National Apprenticeship Certificate (administered under DGET)
NBA	National Board of Accreditation (within AICTE)
NCERT	National Council for Educational Research and Training (within the MHRD portfolio)
NCTA	National Competency Testing Agency (proposed agency within the MHRD portfolio)
NCTE	National Council for Teacher Education
NER	Net Enrollment Ratio
NCVE	National Council for Vocational Education (within the MHRD portfolio)
NCVT	National Council for Vocational Training (within the DGET portfolio)
NGO	Non Government Organization
NIEPA	National Institute of Educational Planning and Administration
NIIT	National Institute of Information Technology (within the MHRD portfolio)
NIOS	National Institute of Open Schooling (within the MHRD portfolio)
NITTTR	National Institute for Technical Teacher Training and Research (within the MHRD portfolio)
NRF	National Renewal Fund (established by the GOI)
NTC	National Trade Certificate (administered under DGET)
OBE	Open Basic Education (offered through NIOS)
PMRY	Prime Minister's Rozgar Yojana (a GOI scheme)
PSSCIVE	Pandit Sunderlal Sharma Central Institute of Vocational Education (administered under NCERT)
PUC	Pre-University Certificate
RIC	Related Instruction Center(s) (administered under DGET)
RPL	Recognition of Prior Learning
SAP	Structural Adjustment Program
SATS	Statutory Apprenticeship Training Scheme (administered in separate parts by DGET and MHRD)
SCVE	State Council(s) for Vocational Education (administered by respective state governments)
SCVT	State Council for Vocational Training
SDF	Skills Development Fund (established in Singapore)
SSLC	Secondary School Leaving Certificate
STEP	Support to Training and Employment Program (under the portfolio of MHRD of GOI)
TAFE	Technical and Further Education (Australia)
TFP	Total Factor Productivity
TRYSEM	GOI program for Training of Youth for Self-employment
UCEP	Underprivileged Children's Education Program (in Bangladesh)
UGC	University Grants Commission (within the MHRD portfolio)
UT	Union Territory
VET	Vocational Education and Training

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A companion study on the secondary education system in India is led by Kin Bing Wu. In parallel, a study on labor markets in India is led by Ahmad Ahsan and Ashish Narain. By design, Chapter One in both the Secondary Education Report and the Vocational Education and Training Report have overlapping coverage.

Preface: The Rationale for Reform

This paper has been prepared at the request of the Government of India. Despite the fact that India is a fast developing economy, difficulties have led the Government to conclude that far more needs to be done to engender more employment opportunities for the majority of Indians, to enable them to participate in the benefits of growth and to contribute to that growth. To do this they must have education and training that equips them for the labor market. One of the sources of the skilled workforce is the vocational education and training system. However, the government realizes that the system is not being able to appropriately respond to the needs of the labor market. A key issue, then, is what reforms/interventions are needed to improve the effectiveness of the system. Answering that question is far from easy and this paper attempts to provide some options for doing so.

On the one hand India faces the future with its changing realities, on the other hand it must deal with the nature of its established traditions and structures.

Changing realities – Globalization, competitiveness and the knowledge economy

India's transition to a knowledge-based economy requires a new generation of educated and skilled people. Its competitive edge will be determined by its people's ability to create, share, and use knowledge effectively. A knowledge economy requires India to develop workers – knowledge workers and knowledge technologists - who are flexible and analytical and who can be the driving force for innovation and growth.

To achieve this India needs a flexible education system: basic education to provide the foundation for learning; secondary and tertiary education to develop core capabilities and core technical skills; and further means of achieving lifelong learning. The education system must be attuned to the new global environment by promoting creativity and improving the quality of education and training at all levels.

Countries that have had the most rapid increases in educational attainment, as well as sustained economic growth, have upgraded education sequentially. In a globalized economy, a large pool of skilled workers is indispensable for attracting foreign direct investment. Developing skilled workers enhances the efficiency and flexibility of the labor market; skills bottlenecks are reduced, skilled workers are more easily absorbed into the economy, and their job mobility is improved. It is crucial to invest in quality secondary and tertiary education and in vocational education and training (VET) if India's economy is to develop and remain competitive in world markets.

Established realities – Demographic pressures and financial constraints.

India's ability to deal with these changing realities is constrained as in few other places. While its population growth rate has declined over many years the labor force is still projected to grow by close to 2 percent or some 7 million or more a year over the next few years. Much of the economy and much of the population are still rooted in traditional activities and structures. Significant elements such as the cultural, social and political traditions of the country should, of course, be retained and education has a particular role to play in that.

But other aspects should change if people are to move out of poverty. Over half of the labor force is still engaged in rural activities. Although there has been a significant movement away from

agriculture this has still left most of the labor force, over 90 percent, working in the informal sector, much of it at low levels of productivity.

For this majority group, access to secondary education and VET is crucial and for most of them secondary education and VET will be the last stage of their formal schooling. An effective school to work transition for these young people, made possible by higher quality secondary and tertiary education and VET, will improve their employment prospects and lifetime earnings.

Key Data Sources and Data Limitations

Data Sources

The information compiled in this report has drawn on several different data sources. The main ones used are:

- National Sample Survey (NSS) conducted by the census bureau – This provides data on wages and education levels. The NSS rounds used for the analysis were 1983/4, 1988/9, 1993/4, and 1998/9.
- Directorate General of Employment and Training (DGET) data – Various data sources within DGET have been tapped to obtain data on enrolments, number of training institutions and financing of vocational training.
- Ministry of Human Resources Development (MHRD) data – Various data sources within MHRD have been tapped to obtain data on enrolments, number of schools and financing of vocational education.
- Survey of Private Providers – Educational Consultants India Ltd. (EdCIL) conducted survey of private providers in eight states in 2002, as part of a GTZ financed study on vocational training. These data have been reanalyzed for the purposes of the current study. In addition, EdCIL conducted an in-depth field survey of training institutions in Rajasthan and Tamil Nadu for the purposes of the current study.
- Investment Climate Survey (ICS) conducted by the World Bank and Confederation of Indian Industries – The 2003 India Investment Climate Survey has been analyzed to study issues surrounding in-service training.

Data Limitations

The NSS rounds do not allow for a clear distinction between vocational education and general secondary education, and between vocational training and tertiary education. Hence, it is very difficult to do any detailed analysis of vocational education or vocational training on the basis of NSS data. There are also no other nationally (or state-wide) representative data that provide such information. The 2004 round of the NSS which has just been completed, has a module on vocational training and it is anticipated that future that this module can be used in the future for undertaking more in-depth analysis on vocational training.

Another lacuna is the lack of evaluative evidence on the impact of vocational education or training. There have been no impact evaluations that have been conducted which examine the wage and employment outcomes for graduates of these institutions as compared to those for a control group of individuals who did not participate in these programs. This makes it difficult to make informed decisions about the effectiveness of vocational education or vocational training programs.

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EXECUTIVE SUMMARY

1. This summary presents a brief synopsis of the different sections of the paper and highlights key constraints faced by the vocational education and training system as well as the potential options to address some of these constraints.
2. Realizing that it is not feasible to implement all these options immediately, the last section of the summary aims to provide a possible timeline in which reforms should be sequenced: – (i) an initial phase – focusing on reforms that need to be addressed in the very near future; and (ii) a medium-term phase consisting of interventions that can be implemented over the next 2-3 years.

The Vision of Vocational Education and Training Reform

3. *The Government has a clear vision regarding the vocational education and training system.* Recognizing that the system is outdated and resembles a closed, centrally planned system for a centrally planned economy, the Government is keen to reform the system. While the system is relatively small, it is clear that major reforms are needed before any thoughts are given to expanding the system. What is needed is the development of a system where the Government plays a key role in policy development, standards setting, financing and monitoring and evaluation, while engendering greater competitiveness and accountability by training providers. For reforms to succeed, close involvement of the private sector at all levels – from policymaking to being involved in running institutions, is critical and the Government is working closely with the private sector to move forward in transforming this vision into reality.

I. The Labor Market Context and Supply of Skills

4. *Largely because of the growth in factor productivity, India's economy has grown rapidly over the past decade.* Continuing to raise labor productivity while at the same time generating enough jobs for a growing labor force is proving a massive challenge. This issue has come into sharp focus over the previous decade when economic growth accelerated but employment growth fell to less than half that of the 1980s, raising fears that India is witnessing jobless growth.
5. *Education and skill acquisition are important determinants of firm productivity.* The wages of workers with qualifications beyond primary school have grown far more rapidly than those of workers with primary school or less; the greatest increases being for workers with tertiary qualifications. This movement in wages shows that education and skill acquisition are important determinants of job prospects.
6. *There is evidence of growing demand for workers with secondary education but the same cannot be said of workers with technical/vocational skills.* Since the early 1980s, the relative wages of workers with secondary education have been growing even as these workers have become relatively more abundant. However, the relative supply of workers with technical/vocational skills has declined throughout this period while their relative wages have also come down since the early 1990s. This may be due more to the fact that workers with technical/vocational qualifications do not have skills that meet the labor market (often because of the poor quality of training provided) than that there is little demand for skilled

workers. It is also possible that students see little labor market benefits from undertaking VET courses and opt for other more attractive educational options.

7. ***Although the number of workers with some education has grown, the overall educational attainment remains low in absolute terms and by comparison with other countries.***

Analysis shows that India has only marginally improved its performance in education since 1995, whereas countries such as China, Mexico, South Africa, and Russia have made much larger gains in strengthening their education pillar – not only in terms of quantity but also in terms of quality.

8. ***Although productivity has been increasing and education levels rising, India still needs to improve education and training quality.***

While significant improvements will need to be made on quantitative indicators, little is known about qualitative indicators – e.g. because India does not participate in standardized international examinations, there are no good comparative measures of quality.

Providing more education and skills cannot, by itself, be enough – quality and labor market relevance is crucial.

The education and skills provided must be relevant to the labor market. Acquiring skills is essential, provided those skills are not out-dated or do not meet industry requirements

While India has improved its performance in education, its competitors have made much larger gains in this area over the previous decade.

II. Vocational Education

9. ***The vocational education stream is quite small enrolling less than three percent of students at the upper secondary level.***

Vocational education courses are offered in schools at Grades 11 and 12 (in most states with vocational streams, vocational and general courses are offered by the same institution). These are aimed at preparing students for entry into the labor market. There are 6800 schools, almost all in the public sector, enrolling close to 400,000 students in the vocational education scheme – utilizing just 40 percent of the available student capacity in these institutions. These schools offer a total of over 100 courses in various areas - agriculture, business and commerce, humanities, engineering and technology, home science and health and para medical skills.

10. ***Vocational students appear intent on entering higher education rather than entering the labor market.*** Overwhelmingly, students who get through the vocational stream want to proceed to further education. This is not surprising given the relatively weak labor market outcomes. The few rigorous evaluations of program impacts that have been undertaken point to low levels of gainful employment of these graduates.
11. ***Despite the poor outcomes, policymakers remain keen to expand vocational education.*** The Central Government has planned to increase enrollments in the vocational education system to about 25 percent of total secondary enrollment. Even though enrolments in vocational education in India are small when judged by international comparisons, expanding the numbers or re-targeting the program would not be justified unless a model is found that would substantially improve outcomes.
12. ***International experience suggests that employers mostly want young workers with strong basic academic skills, and not necessarily vocational skills.*** What employers are looking for are individuals who have the ability to communicate, solve problems and teamwork, – and

not students trained in a narrow vocational skill. Even in countries with large vocational education systems there is a trend towards moving to a more general education system and increasing generalization of the vocational curricula. Experience worldwide suggests that India would do well to not expand its vocational education system but focus on strengthening its general education system.

13. ***To make the existing vocational education system relevant to market needs, a major restructuring of the system and how it is managed will be needed.*** If India wants to emulate countries where the vocational education system has succeeded, sweeping reforms are needed. This will require significant commitment on the part of policymakers. Many of these reforms are similar to those being proposed by the 2005 Central Advisory Board for Education (CABE) Committee report on Universalization of Secondary Education. Key among them include:

- *Ensuring private sector participation in management of institutions and curriculum design* to ensure a direct connection to the labor market for graduates, and an effective medium for bringing about organizational and productive innovations.
- *Strengthening the general education component of these programs* for providing basic knowledge in humanities and sciences, preparing students to work in various occupations, teaching them to solve problems and encouraging them to continue learning.
- *Funding and budget allocations* - moving from a system which is exclusively financed by the government to a system which is increasingly financed by the private sector and by students paying user fees. The private sector would be willing to contribute only if they see that the system is producing relevant graduates. Students are likely to contribute if they see accrual of labor market benefits from vocational education.
- *Ensuring that vocational education is not a dead end* - allowing well performing students in the vocational education track to proceed onto higher education will ensure that the vocational stream is not seen as an option of last resort by prospective students.

Successful reforms make vocational education more like general education in two ways: the content is made more general and the vocational track is less a dead-end.

III. Vocational Training in the Public Sector

14. ***Certificate level crafts training provide training to about 700,000 students.*** It is open to 5 million or so students a year who leave school after completing Grade 10. About 80 percent of the students take admission in engineering courses, and the remaining in the non-engineering trades. In addition, there are about 150,000 apprentices in various industries.
15. ***Labor market outcomes for graduates of the training system are fairly poor.*** Even three years after graduation, over 60 percent of all graduates remained unemployed. Although a significant proportion of apprentices find employment, close to two-thirds are not employed in the trade for which they were trained – a third of these had been trained in obsolete trades. There appear to be three reasons for this: (a) limited growth and labor demand in the manufacturing sector, (b) mismatch between the skills attained and those actually in demand, and (c) mismatch between the skills taught and the graduates' own labor market objectives.
16. ***Employers still experienced problems finding employees with the right skills.*** In most cases, these shortages were in trades that were supplied by the ITIs/ITCs – implying that their graduates did not suit employers' needs. Most employers felt that ITI graduates did not

perform well enough in the use of computers, practical use of machines, communications and team work practices. Employers also felt that graduates lack practical knowledge and need significant on-the-job training to bring their skill levels to match the needs of the industry.

17. ***These poor outcomes arise owing to the public training system facing many constraints.***

These include the following:

- *The management of the system is fragmented.* Management of the system is shared between central and state authorities – the National and State Authorities for vocational training (NCVT and SCVTs). While different authorities have clearly specified functions on paper, there is little coordination between them leading to diverse accountability. There is often a duplication of effort with different agencies often performing the same functions. Furthermore, a preoccupation with providing and financing training has resulted in the government neglecting a key role – providing information about the availability and effectiveness of training programs.
- *Institutions do not have incentives to improve their performance.* Institution managers have little freedom to fill places to capacity, replace training courses with new ones, and ensure that students receive quality training.
- *Industry involvement in the vocational training system is nascent.* Until recently there was limited participation of employers in defining training policies and developing courses. This is now changing, and industry associations and individual employers are showing considerable interest in involving themselves in developing and managing ITIs.

A preoccupation with providing training has resulted in the government neglecting the key role of providing information about the availability and effectiveness of training programs.

18. Options for reform at the policymaking and institutional levels include the following....

19. ***NCVT could be transformed into an independent coordinating authority for vocational training.***

At the very least, a clear demarcation needs to be made regarding the functions of DGET, NCVT and the SCVTs and an effective coordination mechanism between these agencies needs to be developed. However, it may be appropriate to think further in the medium-term. While DGET should still be responsible for overall policy making, NCVT could be restructured to play a more central role in coordinating and overseeing the system as an independent Coordination Authority - coordinating the overall training system, overseeing financing of training, curriculum development, supervising skills testing, certification and accreditation, and provision of information on the quality and effectiveness of institutions. Critical to the success of such a body is the role of employers – unless employers are given a prominent role in the decision making process, training may not be adjusted sufficiently to meet the needs of employers. If the NCVT is reoriented to perform these functions, the SCVTs should also be reoriented to be accountable to NCVT and perform similar functions at the state level.

20. ***A key role NCVT and SCVT's should play is in the provision of information and facilitating the evaluation of training provided in institutions.***

A key function for the NCVT and the SCVTs is to provide information on the nature and quality of training available, and facilitating regular and independent evaluations on the impacts of training programs –expanding this role may be one of the most effective ways for governments to foster the development of a relevant and cost-effective VET system.

21. *At the institutional level, involving private sector in management is going to be critical if institutions are to be responsive to labor market needs.* Institutional Management Committees, chaired by the private sector and involving employers, are increasingly being formed. However, as yet these bodies only act with limited decision making powers and that, too, in respect of a few training programs. Unless they are given greater control over decision making at the institution level, their efficacy will be limited.
- Critical to the success of any reform in public training system is buy-in from employers and their participation in decision making not only at the national and state-levels but also at the institutional level.**
22. *Involving employers in management will only yield positive results if state governments are willing to provide institutions with greater autonomy and make them more accountable for performance.* This means letting institutions administer themselves and keeping the funds they raise through fees and production. Elements of autonomy that should be introduced include – letting ITIs, in consultation with employers, decide on their own training programs; giving institution managers the freedom to hire and fire teachers, including contract teachers and non-teaching staff; allowing ITIs to generate revenues by selling goods and services; and allowing ITIs to set more realistic fees (while the government will still bear a significant portion of the financing). However, autonomy is not a panacea. It needs to be accompanied by a new accountability framework for ITIs. Indicators of internal and external efficiency should be used to measure the performance of institutions and to match performance to financing. (in point 21 in line 2, Fayez wants to know Who/What is “they”?)
23. *In the medium-term, a further development designed to bring about greater consistency and cohesion among the many players may be the establishment of a National Qualifications Framework (NQF).* While both DGET and MHRD have proposed something covering their individual responsibilities, it will be important to develop an NQF based on specified standards of training, leading eventually to the development of industry-relevant modular courses. It should also provide a framework for establishing course assessment requirements and entry pre-requisites. The development of the NQF needs to be managed by the National Coordinating Authority but implementation must be left to the states.

IV. Training for the Informal Sector

24. *Over 90 percent of employment in India is in the ‘informal’ sector, with employees working in relatively low productivity jobs.* Provision of appropriate skills may thus be an important intervention to increasing the productivity of this workforce. However, both demand as well as supply-side constraints have inhibited skills development. On the demand-side, few employees in the informal sector see the importance of skills training. Many identify lack of access to capital, cumbersome bureaucratic bottlenecks, and lack of access to quality equipment as their main challenges.
25. *On the supply-side, there has been a variety of attempts to assist with training in the informal sector.* The most important are probably Community Polytechnics (training about 450,000 people a year within communities), Jan Shikshan Sansthan (offering 255 types of vocational courses to almost 1.5 million people, mostly women) and the National Institute of Open Schooling (NIOS) (offering 85 courses through over 700 providers recognised by the NIOS). None of these programs has been evaluated rigorously.

26. ***Public training institutions play a limited role in producing skills for the informal sector.*** While one of the mandates of ITIs and ITCs is to train workers for the informal sector, evidence shows this is rarely the case. The share of ITI graduates who entered self-employment or became employers was not much greater than 10 per cent while only around 5 per cent of ITC graduates joined the unorganized economy. The main reason is that running a small business requires much more than simply possessing a particular occupational skill. It requires the ability to run a small business, which requires a person to be multi-skilled. This sort of training is not imparted in the ITIs and ITCs.
27. ***The diverse training needs of informal sector operators cannot be met by simply reorienting public training institutions.*** Public institutions would find it difficult to make the changes and serve both the formal and informal sectors with the same skill and experience. It would require a major investment to upgrade facilities and equipment, to attract, develop, and retain new staff, and to develop new curricula and materials to be able to provide the package of skills needed by the informal sector. Locally based non-government training providers – often NGOs - may be more effective in providing services that meet the needs of the informal economy.
- Innovative public-private partnerships are needed to meet the diverse skill needs of the informal sector – which involves not only training but support services such as assistance with running a small business, marketing and information on technology.**
28. ***Outside of institutions, training in the informal sector is provided through traditional apprenticeships but they have significant weaknesses.*** More young people acquire competence through traditional (informal) apprenticeships - although reliable data for India are not available, figures for other countries suggest it could amount to anywhere between 50 to 70 percent of employees in micro-enterprises. These apprenticeships are based on traditional technologies and ideas from previous generations, and the quality of training is only as good as the skills of the master and the master's willingness and ability to pass on those skills. The theoretical aspect of learning is weak or absent; only the simplest skills are learnt, resulting in low quality products.
29. ***The governments can play a facilitating role in training for the informal sector.*** Instead of delivering training themselves, governments could focus on creating an environment to support non-public providers through: (i) establishing a policy framework (regulations and incentives); (ii) supporting curriculum development, training of trainers, and competency-based skills testing; (iii) stimulating investment through tax incentives or financial support so as to increase the capacity and the quality of training; and (iv) revising apprenticeship acts that are outdated and contain regulations that hamper enterprise-based training.
30. ***Although it is not easy to improve the quality of informal apprenticeships, there are successful examples.*** The strategy revolves around traditional form of training, by upgrading the technical and management skills of the masters as well as their skills in pedagogy. Traditional apprenticeships should be linked with specialized training providers or master craftsmen, with the governments acting as facilitators.

V. Private Provision of Pre-employment Training

31. ***Data suggests that, apart from ITCs, India has a weak non-public training market.*** While it is not possible to document the size of the private training sector owing to the large number

of unaccredited training providers, the number of places on offer appears to be less than the number of places offered by ITIs/ITCs. However, anecdotal evidence suggests that the size of this sector is increasing.

32. ***There are significant differences between public and private provision of training.*** Only about 15 percent of students are enrolled in engineering-related trades, compared to over 80 percent in ITI/ITCs. The average duration of courses is also shorter than in ITIs/ITCs and student/teacher ratios are significantly higher. While some institutions receive funds from the government, most are financed through fees.
33. ***In terms of outcomes, the results appear mixed.*** ITC graduates do not fare better on the labor market than do graduates from ITIs. The other private training providers reported that only 50 percent of their graduates were employed within six months of leaving the centers. However, it is interesting to note that employed workers trained in private institutions derive productivity benefits from participating in training (while gains to employees receiving training in public institutions are insignificant).
34. ***Key problems faced by private training providers include lack of access to resources and regulatory barriers hindering entry into the training market.*** Many private providers identified the lack of access to credit, and financing of initial investments in the private training center as key constraints to setting up training centers with adequate facilities, and in upgrading centers. While the level of regulations are not uniform across states, in many cases private providers complain about excessive government bureaucracy in the registration of training institutions, as well as in accreditation and certification of courses provided. In order to get around this, many institutions often end up being unaccredited.

Implementation of clear and balanced legislation in setting up institutions will help in 'leveling the playing field' for private training providers

35. ***To assist the growth of private training provision, the government should remove constraints on setting-up training institutions.*** Constraints on setting-up training institutions should be removed. Making legislation clear and registration procedures simple and unbureaucratic will ensure a vigorous private sector response.

Furthermore, public provision should not be allowed to crowd out private supply - the government should not set up subsidized training institutions in sectors where the private sector is likely to proliferate.

36. ***Here again, a key role that the government can play is in disseminating information on quality of training provided.*** State governments should instead take a more active role in disseminating relevant information (for example, type of training provided, fees, and particularly the dropout and completion rates of different providers).

VI. In-service Training

37. ***While important, skills rank below other constraints to productivity among Indian firms.*** Indian employers rank four other constraints as more important than “skills and education of available workers”. The top three constraints are “tax rates”, “policy uncertainty”, and “access to finance”.
38. ***This may account for manufacturing establishments in India providing less in-service formal training than the average for Europe, East Asia and Latin America.*** Surprisingly, in-service training in India is also lower than other countries in the South Asia region. No

more than 7 percent of employees received training in a given year. The proportion of workers being trained is especially low among micro and small firms where fewer than 4 percent of employees have received training. Firms that use more sophisticated technologies are more likely to train their workers. There are also significant variations in the provision of training across states.

39. ***Under-investment in in-service training requires policies that improve the business environment in general.*** Improving the investment climate in India should, of itself, create incentives for the private sector to invest in physical and human capital. Private sector demand for training would be increased by policies to improve access to new technologies and to funding for investments in technology upgrading and upgrading worker skills.

Government can facilitate an increase in-service training by putting in place financial incentives that encourage firms to train their workers

40. ***Market failures diminish employer incentives to train and there are several policy measures that the government can take to alleviate this problem. These include: :***

- alleviating the high cost of training by undertaking financial sector reforms that improve access to funding for all kinds of investments, including training;
- addressing lack of adequate information by widely disseminating the evidence of the productivity benefits of training, best practices in training know-how, and information about the availability, offerings and cost of services from different public and private providers; and
- providing financial incentives (e.g. tax deductions, matching funds) to employers to encourage them to train their workers (see below).

VII. Financing Vocational Education and Training

41. ***Funding is still narrowly focused on publicly provided training.*** With state training authorities focused on providing training through the public sector, almost no attention is paid to using financing as an innovative means to encourage either good quality public training, private training or as a way of providing incentives to enterprises to train their workers. States are losing a valuable opportunity to leverage their limited training financing resources.
42. ***It is difficult to get a clear picture regarding trends in financing.*** This is mainly because data on financing of both vocational education and training are difficult to obtain. State level finance data on vocational education are usually reported together with data on general secondary education, while finance data on vocational training are reported together with data on other training. It is extremely difficult to disaggregate the financial data. In addition, vocational education and vocational training do not fall under the ambit of MHRD and MoLE in many states and comparability of data across agencies is difficult. Having said that, the limited available data suggest that the total public funding for vocational education is around \$40 million/year, while that for vocational training is around \$250 million annually.
43. ***The funding model used by the states is largely ineffective.*** Although the resources available to the states are limited, no state seems to follow a transparent funding formula in funding vocational education or training. Once an institution begins to receive funding, subsequent funds are guaranteed irrespective of the institution's performance. The same levels of finance are allocated to poorly performing institutions with high drop-out rates as to those that maintain a high quality of teaching and performance.

44. ***Training providers have insufficient interest in their financial state of affairs.*** Student fees in ITIs are retained by the respective state governments and the institutional functionaries have no financial incentive to meet labor market needs - a common failing of supply-driven models of VET. Although unit costs are high, expenditure on critical training inputs remains low as the majority of the funds are spent on salaries.
45. ***While the government remains a major financier of pre-employment training, emerging skill needs need innovative solutions.*** The public training system still constitutes an important provider and financier of pre-employment training in India. This simple financing framework has become inadequate to meet the skill development needs in a rapidly globalizing economy, and it has become important to consider how financing can also foster increased in-service training among enterprises, greater private provision of training, as well as greater cost-sharing with beneficiaries. Given this, there are two sets of issues: (a) how to best mobilize resources for training; and (b) how to allocate resources most effectively to arrive at the desired objectives.

Resource Mobilization...

46. ***There is a need for students and the private sector to bear some of the costs of training.***

Options include:

- ***Students:*** Currently students pay fees that amount to less than five percent of course costs. A more realistic costing structure should be considered, where the students pay a larger proportion of actual training costs. Realistic fees could, of course, shut out those who are unable to pay. For these individuals, targeted programs like scholarships or reduced subsidized fees can be introduced.
- ***Firms:*** Firms could be charged training levies (a certain percent of payroll contributions – similar to the education cess) and then be reimbursed part or whole of that amount depending on the amount of training they undertake in recognized public or private sector firms. This would not only stimulate firms to train more, but would also have the additional benefit of making training providers more responsive to the labor market. However, levy schemes are difficult to design and require a high degree of administrative efficiency and transparency, so this option needs to be carefully thought through before it is pursued in the medium-term.

There is a role for greater involvement of employers and students in the financing of training, but this will only happen if the outcomes of the training system are demonstrably improved.

47. ***Additionally, institutions should also be given greater latitude to generate resources and use the proceeds for operating costs.*** Income generated from the sale of production and service activities of trainees can constitute a useful form of additional institutional income. It is possible to produce output for sale in the local market, and exposure to local markets may lead to more relevant, market oriented training. Here the issue is one of maintaining a healthy balance between these two activities. As more weight is given to instruction, the income potential from production declines; alternatively, quality of training will suffer as emphasis is placed on production rather than instruction.
48. ***However, these options to generate additional resources can be implemented successfully only when the external efficiency of the system improves.*** Students and firms will only be willing to participate in the financing of a system that shows demonstrable impacts in terms of efficiency and outcomes. Hence, the first step may involve paying greater emphasis to

reforms aimed at enhancing the management of the system and removing impediments for the private sector participation in training.

Resource Allocation...

49. ***Irrespective of the source or volume of funds, a better method for allocating them is needed.*** A Training Fund could be an important vehicle for doing this. A Fund unifies and augments public funding and allocates resources in line with national policies and priorities. Its main purpose is to move systems from supply-driven to demand-driven models – for that reason it should include even government contributions. Institutions are not *given* funds but are required to apply for them, ideally in a competitive field. The fund is best managed by the sort of national training coordination agency discussed earlier.

50. ***Even if a Training Fund is not established some of the principles behind its operation should still apply to the allocation of funds.*** Instead of transferring resources to institutions

Ad-hoc resource allocation should stop. Resources to institutions must be allocated on the basis of some transparent funding formulae based on measures of inputs, outputs/outcomes or both.

on an ad hoc basis, public resources could be transferred on the basis of input or output criteria. Institutions could be financed according to the estimated cost of inputs; for example by using norms such as the number of trainees enrolled or number of classes. *An alternative may be to fund institutions based on outputs or outcomes.* Output targets can be defined in absolute terms (e.g. number of course completions, pass rates on examinations) or in relative terms (e.g. years to

completion). Outcome targets measure the success of training providers in meeting labor market needs (e.g. job placement within a reasonable time). The key is to define transparent criteria that are easily measured but not easily manipulated.

51. ***A key element for resource allocation that should be built in over time should be competition for funds.*** Competition for funds, between public and private providers, will lead to improved institutional performance. Funding needs to be linked to some input or output based criteria and accredited public and private providers should be able to compete for these resources. International evidence is by and large positive in this regard – competition for resources has led to a reduction in costs for training among competing institutions while also leading to positive labor market outcomes.

VIII. The Way Forward: Sequencing the Reforms

52. ***This paper has laid out some key reforms that must be undertaken in different areas to make the vocational education and vocational training systems more responsive to the needs of the labor market – and these have been summarized above.*** The reform agenda is fairly comprehensive and all the reforms cannot be implemented immediately.

53. ***Given this, we have laid out below some of the critical reforms that need to be undertaken in the short-run (first phase) followed by others that can be undertaken over a period of 2-3 years.*** The first phase focuses on reforms aimed at improving the quality and labor market relevance of the existing system, while the medium-term agenda also includes moving forward on mobilizing additional resources for the system, especially once the quality has improved. However the background work needed to undertake reforms in the medium-term

should also commence immediately. All the reforms proposed below are discussed in more detail in the main body of the paper.

54. ***These reforms should be treated as a package.*** If only some are instituted, while others are not, it is unlikely that the objective of developing a truly demand-responsive system will be effectively met. The table below highlights the key reforms that need to be undertaken in the 1st phase and over the medium term, the advantages of undertaking these reforms and the potential challenges that need to be addressed to ensure successful implementation of reforms.

Issue	Reform	Advantage	Challenges to Implementation
<i>Vocational Education...</i>			
The vocational education system is largely irrelevant to the needs of the labor market - employment outcomes of graduates are poor	<i>Ist phase:</i> Avoid expanding vocational education and reform the system to make it more demand responsive.	- Policymakers can focus on strengthening general secondary education where returns are higher as employers are looking for graduates with well-rounded skills rather than narrow specialization. - Reforming system will make it more demand responsive.	Reforming system will entail a complete turnaround in how the system is managed. It will need private sector participation in curriculum design, and strengthening the general education component of vocational education programs.
<i>Improve Management of Vocational Training System...</i>			
The management of the vocational training system is fragmented and lacks basis for informed policy decisions.	<i>Ist phase:</i> A clear demarcation needs to be made regarding the functions of DGET, NCVT and the SCVTs and an effective coordination mechanism developed	This is a top priority in the short-run as it will begin to ensure better management of the public provision of training.	Strong political will and leadership needed to ensure that these agencies begin working in a coordinated fashion.
	<i>Ist phase:</i> Significant involvement of employers in the decision making process of these bodies.	This is critical to ensure that the system is responsive to demand. Major employer federations in India have expressed their interest in participating in such an initiative.	Employers will fully participate <i>only</i> if they have a key role in decision making and <i>not</i> if they are just in an advisory capacity. The government will have to be willing to allow employers such a key role.
	<i>Ist phase:</i> Provision of information on the nature and quality of training, and facilitating regular and independent evaluations on the impacts of training programs.	Government and stakeholders will be able to see whether the system is responding to employer needs and devise policies accordingly.	A key challenge will be to ensure that the results of evaluation are effectively feedback into policymaking.
	<i>Medium-term:</i> Setting up an independent National Coordination Agency for vocational training	Rather than having different bodies perform different functions, there should be a single independent vocational training coordination agency. NCVT could be transformed to perform this function. This entity would be	- This reform will only succeed if DGET, NCVT and SCVTs have begun to coordinate their activities, and if employers are clearly involved in decision-making for the system as a whole.

Issue	Reform	Advantage	Challenges to Implementation
		responsible for coordinating the overall training system, overseeing financing of training, curriculum development, supervising skills testing, certification and accreditation, and provision of information on the quality and effectiveness of institutions. SCVTs could support NCVT perform these functions in the states.	- Will need significant reorientation and capacity building of NCVT and SCVTs, which is likely to take time.
	<i>Medium-term:</i> Developing of a National Qualifications Framework (NQF).	An NQF will provide a uniform framework for establishing course assessment requirements and course entry pre-requisites.	- Developing an NQF takes time and requires extensive consultations with employers. Willingness of employers to participate will be dictated by the success of the reforms mentioned above.
<i>Improving Effectiveness of Public Training Institutions...</i>			
Institutions have few incentives to respond to market needs	<i>1st phase:</i> Involving the private sector in institutional management.	Allowing the private sector a key role in Institutional Management Committees will lead to greater demand-responsiveness	For employers to take this role seriously, IMCs need to be given the authority by state governments to make decisions for institutional management.
	<i>1st phase:</i> Allowing institutions greater autonomy - deciding on training programs, hiring or firing of teachers, and generating revenues by selling goods and services. This would include the development of short-courses on demand and the greater use of public sector resources (equipment and materials) for use by employers, NGOs and the private sector for training.	Piloting this intervention and then studying its effectiveness will give a good idea of whether institutions can respond positively to incentives and if this pilot can be successfully expanded in the medium term.	- Institutions have limited capacity to manage and take decisions on their own, and they will need to be supported to develop this capacity. - Teachers will resist the idea of being held accountable for performance.
<i>Private Provision of Training...</i>			
Private training cannot compete on a 'level' playing field. They face	<i>1st phase:</i> Excessive constraints and regulations on setting up private institutions should be removed	Keeping legislation clear and registration procedures simple will ensure a vigorous private sector response in areas where it has a comparative advantage	State governments' willingness to allow strong growth of the private sector, especially as it may lead to a reduction in public provision of training

Issue	Reform	Advantage	Challenges to Implementation
regulatory barriers for entry into the training market			
<i>Training for the Informal Sector ...</i>			
Despite a significant majority of employment being in the informal sector, training – and other related interventions - are not really geared to the needs of this sector	<i>1st phase:</i> The Government needs to develop a policy framework which outlines how it plans to stimulate training for the informal sector.	This needs to be the first step in a coherent support to the sector. Such a framework will allow the development of innovative ideas for public-private partnerships to encourage informal sector training, and the types of incentives and support services that will be provided to increase the productivity of the informal sector.	A champion needed in the government to play a lead role in formulating this policy and facilitate partnerships and coordination between several ministries who are actively involved in supporting the informal sector, as well as the involvement of NGOs and other providers involved in the delivery of training and related services.
	<i>Medium-term:</i> Implementing the policy framework for training workers in the informal sector.	Once this policy framework is developed, it may be worthwhile to pilot some of the proposed interventions and assess their effectiveness, prior to a large scale roll out.	Coordinating with NGOs and other non-government bodies that are involved will require significant effort on the part of the government.
<i>Financing of Institutions...</i>			
Financing of the vocational education and training system is ad-hoc and not linked to any measure of performance	<i>1st phase:</i> Moving from ad hoc financing of institutions to transferring resources on the basis of input or output criteria or some combination.	Institutions are funded on the basis of clear criteria that would stimulate enhanced performance	<ul style="list-style-type: none"> - Institutional management may resist a move in this direction. - Criteria have to be simple and easily measurable
	<i>Medium-term:</i> Mobilizing additional resources by broadening the financial resource base. There is a role for students and employers to contribute to the costs of training.	<ul style="list-style-type: none"> - More resources will be available for training - Students could be charged more realistic fees – reflecting a larger proportion of actual training costs. - Firms could be charged training levies (akin to the education cess) and then be reimbursed part or whole of that amount depending on the amount of training they undertake. This is likely 	Students and firms will only be willing to contribute to this if they see improvements in the system in the short-run – i.e. trainees are becoming more employable, and firms are seeing productivity benefits of engaging these individuals.

Issue	Reform	Advantage	Challenges to Implementation
		<p>to stimulate firms to train more, and additionally increase the market responsiveness of training providers.</p> <p>- Institutions should also be allowed to raise their own resources through production activities.</p>	
	<p><i>Medium-term:</i> Establishing a training fund for the allocation of resources</p>	<p>Moving towards input/output based financing, which has been proposed as a first phase measure is an important step in this direction. This can be taken further by having the National Coordination Agency set up a training fund to manage the mobilization of resources and then allocate these resources <i>competitively</i> to well-performing institutions in either the public or private sector.</p>	<p>Establishing a training fund is a challenging endeavor. Requires extensive capacity building in terms of fund management and clear criteria for the allocation of resources.</p>

I. THE ECONOMIC AND LABOR MARKET CONTEXT

I. The Impact of Economic Growth and Restructuring on Labor Demand

1. **Largely because of the growth in total factor productivity (TFP), India's economy has grown rapidly over the past decade.** TFP growth rates in East Asia and the Pacific and South Asia (Table 1.1) have all been relatively high and India is among the better performers. Only a few developing and developed countries (e.g. Argentina, Chile, Singapore and Norway) have had higher growth rates.

Table 1.1: TFP Growth Rates 1990-99 (GDP Weighted)

Region/Country	Annual TFP Growth Rates
<i>Regions</i>	
East Asia and Pacific	2.01
Eastern Europe	0.30
Middle East and North Africa	0.85
Latin America & Caribbean	0.45
OECD	0.56
South Asia	1.72
Sub-Saharan Africa	-0.43
<i>Countries</i>	
India	2.01
Argentina	2.81
Brazil	-0.42
Chile	2.22
Mexico	0.31
Korea	1.30
Malaysia	0.98
Singapore	2.62
Australia	1.31
Norway	2.09

Source: De Ferranti et al. (2003)

2. **However, continuing to raise labor productivity while at the same time generating enough jobs for a growing labor force is proving a massive challenge.** This issue came into sharp focus in the 1990s when economic growth accelerated but employment growth fell to less than half that of the previous decade, raising fears that India was witnessing “jobless growth”(Table 1.2). Relatively few jobs were created in the better paying “organized” sector which is the sector of choice for Indian workers, especially the educated. Employment in this sector grew by only 0.6 percent annually from 1994-2000. Most jobs were created in the unorganized sector where the level of productivity tends to be low. Employment in the unorganized sector grew by 1.1 percent annually. Unemployment rates also rose to over seven percent by the end of the 1990s.

Table 1.2: Key Trends in Employment and Labor Market Trends in India

	Absolute Numbers (million)			Growth per annum (%)	
	1983	1993-94	1999-2000	1983 to 1993-94	1993-94 to 1999-2000
<i>All India...</i>					
Population	718.2	894.0	1,004.0	2.0	2.0
Labor Force	261.3	336.0	363.3	2.4	1.3
Employed	239.6	315.8	336.8	2.7	1.1
Unemployed	21.8	20.1	26.6	0.08	4.7
Unemployment rate (%)	8.3	6.0	7.3		
<i>Rural...</i>					
Population	546.6	658.8	727.5	1.8	1.7
Labor Force	204.2	255.4	270.4	2.2	1.0
Employed	187.9	241.0	250.9	2.4	0.7
Unemployment rate (%)	8.0	5.6	7.2		
No. of unemployed	16.3	14.3	19.5	1.2	5.3

Source: Narain (2005); Planning Commission, Economic Survey (2001-02)

3. **Economic growth has brought changes in the structure of the economy but, so far, a less significant impact on the sectoral composition of the employed labor force.** Most obviously, the share of agriculture in total GDP and in total employment has fallen while that of services has increased commensurately.²³ However, the labor market adjustments have been smaller than the changes in the economic structure, as shown by the very different estimates of the gross value added per worker (GVA) between sectors (Table 1.3). The agricultural sector had the lowest GVA in 1993-94, and low growth in GVA over the 90s. Services had high value added per worker in 1993-94, and relatively good growth during the decade.
4. **Employment growth has been the strongest in the services sector.** The Indian economy created 23.2 million jobs between 1993-94 and 1999-00, the growth being spilt between services (58 percent) and secondary sectors (42 percent). Three broad sectors--Trade, Hotels and Restaurants; Construction; and Manufacturing--accounted for the bulk (81 percent) of them. Retail trade alone generated 7.5 million new jobs, mostly in urban areas and much of it in the unorganized sector. Although this sort of growth may reflect some increase in demand, it also reflects the capacity of the sector to absorb, informally, the surplus labor.

²³ Between 1982/83 and 1999/00, agriculture's share of GDP fell 13 percentage points, while the services share increased by 10 points. Correspondingly, agriculture's share of employment declined by 8 percentage points, while the services share increased by about 5.5 points.

Table 1.3: Composition of Employment by Industry Sector

Sector	Employment Share (%)			GVA per Worker (Rs) 1999-2000	Annual Growth (%) over 1993-94
	1961	1993-94	1999-2000		
Agriculture	75.9	63.8	59.9	12,323	3.2
Mining and Quarrying	0.5	0.7	0.6	116,863	7.7
Manufacturing	9.5	11.6	12.2	40,741	5.8
Electricity, gas and water supply	0.1	0.4	0.3	269,323	12.0
Construction	1.5	3.2	4.4	33,334	-0.1
Trade, hotels and restaurant	4.3	7.6	9.4	45,344	4.5
Transport, storage and communication	1.7	2.9	3.7	57,245	3.2
Financial, insurance, real estate and business services	0.3	1.0	1.2	193,247*	7.2
Community, social & personal services	6.1	8.8	8.4	45,818	8.2
All sectors	100.0	100.0	100.0	27,722	5.8

Source: Narain (2005)

5. **Trends suggest that the accumulation of human capital in rural areas has been low and growth will be centered on urban areas.** Only 40 percent of the jobs created in the six years (between 1993-94 and 1999-00) were in rural areas. Some researchers have argued that the slow shift away from the primary sector may signal low levels of human capital among rural workers and their inability to gain better jobs in other sectors (Chadha and Sahu, 2002).²⁴ Occupations in demand over the 90s included administrative, executive and managerial workers, sales workers, low-skill construction workers, skilled workers like toolmakers, and machine and transport equipment operators (Table 1.4). Declines occurred in occupations that had been among the largest employers of workers with low educational attainments, including housekeepers, cooks and maids, and occupations based on agriculture and allied activities. The textile industry also lost jobs in urban areas, reducing employment in occupations like spinning, dyeing, weaving and knitting. Even in rural areas, employment prospects are better for the more qualified and the situation is likely to become tougher for the untrained or uneducated workers.

²⁴ Only one in four rural workers is educated beyond primary compared to 56 percent of urban workers.

Table 1.4: Occupational Distribution of Employment by Rural-Urban Residence

Occupational group	1993-94 (%)			1999-2000 (%)		
	Rural	Urban	Total	Rural	Urban	Total
Professional, technical related workers	2.2	8.7	3.7	2.0	8.9	3.7
Administrative, executive, managerial	0.8	5.7	1.9	1.4	8.4	3.1
Clerical and related workers	1.2	9.2	3.0	1.3	8.8	3.2
Sales Workers	4.0	16.6	6.8	3.9	16.5	6.9
Service workers	1.8	9.0	3.4	2.4	9.6	4.1
Farmers, fishermen, hunters, loggers	78.1	12.3	63.6	75.3	9.2	59.4
Production and related workers, transport, equipment operators, laborers	11.8	38.4	17.6	13.7	38.5	19.7

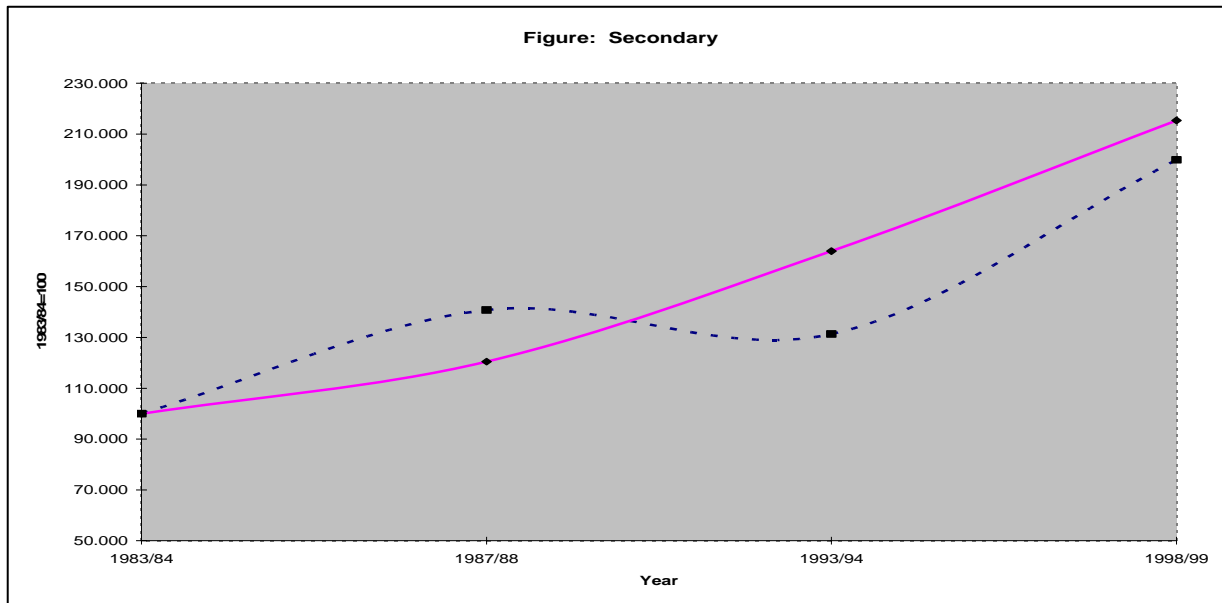
Source: Narain (2005)

6. **Education and skill acquisition are important determinants of firm productivity.** Consistent with the belief that education raises productivity, analysis of an Investment Climate Survey (ICS) for India in 2003 (Tan and Savchenko, 2005) indicates that increased educational attainment of a firm's workforce of one year is associated with higher levels of firm-level productivity of about 6 percent, as well as increased wages of 7 percent. (The ICS is discussed further in Chapter 6). The question then is how the different categories of qualified workers have fared.
7. **Technological innovations and rapid economic growth have fueled the demand for skilled workers.** As seen below, firms have substantially increased their demand for educated workers, especially those with secondary and tertiary education. The evidence for workers with vocational/technical skills is more mixed.
8. **The relative wages of workers with secondary education are increasing even though they are becoming more abundant.** Figures 1.1 shows the relative wages²⁵ and relative supply of workers with secondary education respectively from 1983/4 to 1998/9. All series have been normalized so that relative supply and relative wages are given a value of 100 in the 1983/4. The figure shows that the relative wages and relative supply²⁶ of workers with secondary education rises relative to those with primary education (and similarly for workers with tertiary education relative to secondary education) fairly steadily during this time period.

²⁵ These are the mean wages for ages 15-59.

²⁶ Relative wage is the dotted line and relative supply is the solid line.

Figure 1.1: Relative Wages and Relative Supply of Workers with Secondary Education²⁷ (1983-1999)



Source: NSS Data (various years)

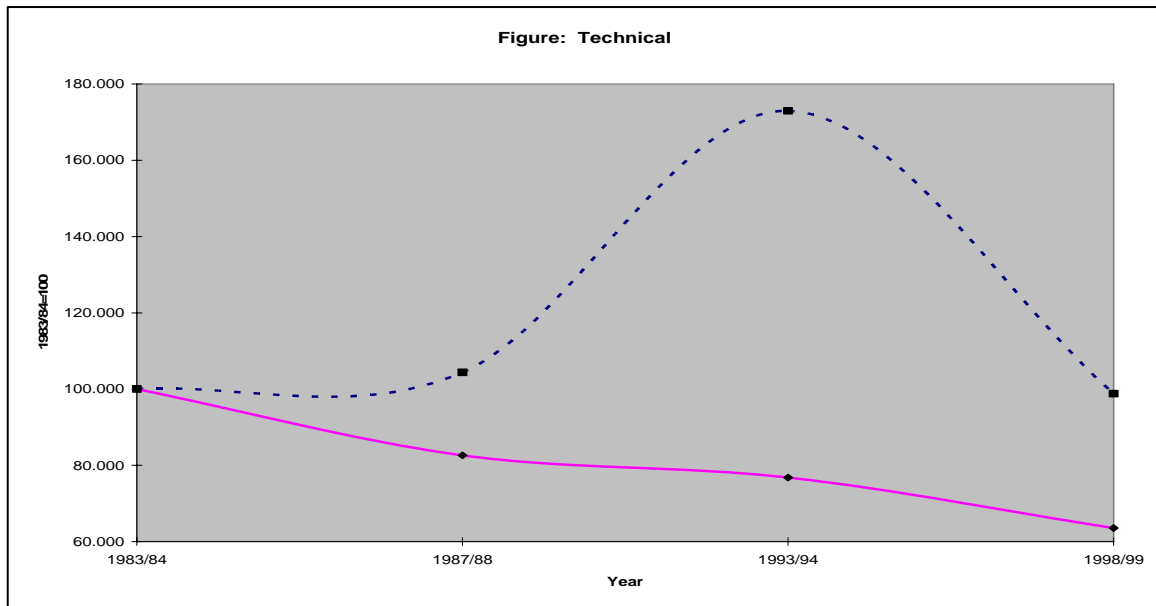
9. **The same cannot be said of workers with technical/vocational skills.** The relative supply of workers with these skills has declined throughout this period while their relative wages have also come down since the early 1990s²⁸ (Figure 1.2). So the evidence, especially in the last few years, seems to point towards a decline in demand for workers with technical/vocational skills.
10. **Several potential explanations need to be considered when interpreting the relatively low wage premium for workers with technical/vocational qualifications.** First, because it is difficult to distinguish between technical and vocational graduates in the NSS data, they are combined for the purpose of these figures. It is not clear what different impacts the two separate groups have had on changes in either relative supply or relative wages of the whole group. Second, the data refer to workers with qualifications. Not all skilled workers are qualified and not all vocational/technical graduates work in vocational or technical occupations. It is conceivable (as discussed in later chapters) that the relative demand for skilled workers is high but employers do not choose to find them from among people with technical/vocational qualifications. Instead, they could be recruiting engineering tertiary graduates, whose own skills may be not that much greater than needed for skilled workers; or they may choose general secondary students and train them in-house. Finally, it is possible that employers perceive that the quality of graduates who come out of the system is poor and are, thus, unwilling to hire them.

²⁷ The figure shows the wages and supply for the group with secondary education as a ratio of wages and supply of workers with no more than primary education. The solid line represents wages and the dotted line represents supply.

The ratios are indexed to a value of 100 in 1983-84.

²⁸ It should however be mentioned, that this figure should be treated with some caution as it is not possible to distinguish between technical and vocational graduates in the NSS data so we have combined them for the purpose of this section. Technical graduates are those attending polytechnics and usually earn a diploma in an engineering field.

Figure 1.2: Relative Wages and Relative Supply of Workers with Technical/Vocational Skills²⁹
 Source: NSS Data



11. **Social pressures have also affected the demand for workers with vocational skills.** While empirical data to back up this point are not available, anecdotal evidence points to social pressures and attitudes which are pushing students and families to aspire for higher levels of education and the acquisition of formal degrees – as seen in the mushrooming of colleges/universities over the past decade or so offering engineering and related degrees. In addition, there has always been a stigma associated with vocational education/vocational training and this persists till today.

2. The Changing Supply of Skilled Labor

12. **Labor force participation rates, mainly moderated by the spread of education, have shown a declining trend.** Labor force participation rates³⁰ have been falling since the 1980s (Table 1.5), particularly among the young (15 to 29 years) whereas the student-population ratio has increased significantly. Figure 1.3 also shows that labor force participation varies by educational qualifications. In the main, this would be the result of continuing participation

²⁹ The graph shows the wages (and supply) of the group as a ratio of wages (supply) of workers with no more than secondary education. The solid line represents wages and the dotted line represents supply. The ratios are indexed to a value of 100 in 1983-84.

³⁰ In accordance with the NSS, a person is defined as being in the labor force if her/his principal status is either working or seeking work. People who are attending educational institutions, or who undertake domestic duties are not considered part of the labor force. There are conceptual problems with this definition which arguably underestimate female participation. Since attending to domestic duties is not considered an economic activity, persons engaged in unpaid household work (who mostly tend to be women) are not counted as working. Thus there is an underreporting of women in the labor force.

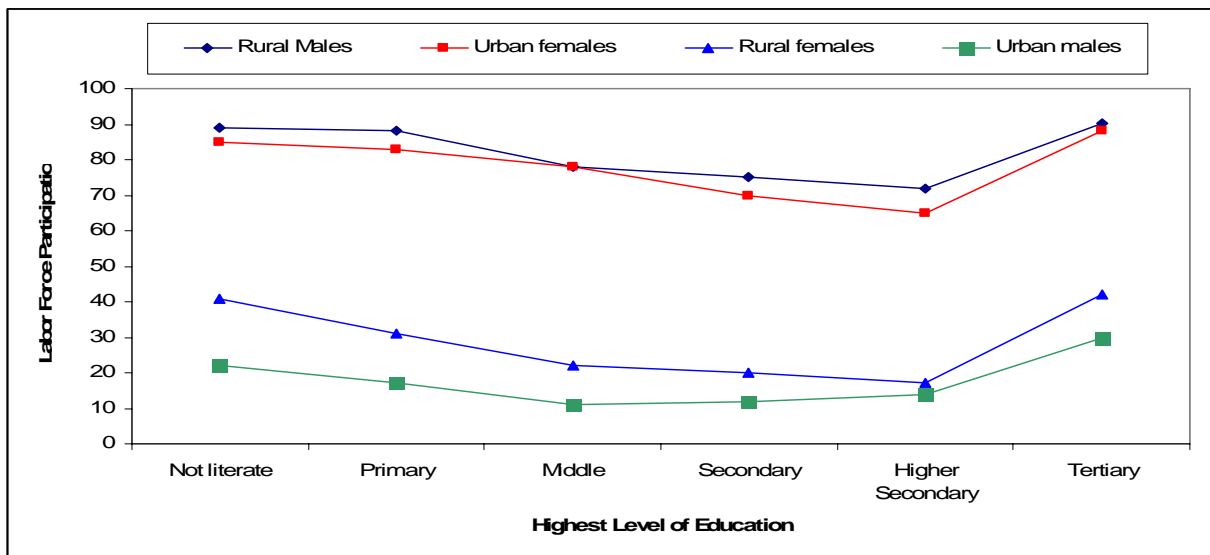
in education, especially for the young who have not yet completed their education (those with up to secondary education). It has also been argued that some young unemployed workers may have withdrawn from the labor force. The preferred occupation of educated Indians (even those with only middle level education) is a non-manual job in the organized sector (Planning Commission 2002). If these aspirations cannot be met, they may become discouraged and leave the labor force altogether. However, it is not possible to gauge this effect accurately. The participation of women is also especially low, something that warrants further study. Preliminary evidence seems to indicate that social and cultural norms may be a binding constraint to their participation and that family responsibility has a significant effect on their participation. Women also tend to become discouraged workers easily especially in rural areas. Overall they seem to be tentative entrants to the labor force: entering when employment conditions are good, and exiting when they are not.

Table 1.5: Labor Force Participation Rates for Men and Women in the Age Group 15-59

Year	Male	Female	All
1983	88.9	35.8	62.7
1987-88	87.6	36.5	62.5
1993-94	86.9	32.9	60.6
1999-2000	85.9	32.7	59.8

Source: Narain (2005)

Figure 1.3: Labor Force Participation Rates by Education Level (1999-2000)



Source: Narain (2005)

13. **Although the number of workers with some education has grown, the overall educational attainment remains low in absolute terms and by comparison with other countries.** Between 1990 and 2002, the average years of education of the adult population rose from a little over three years to close to five years. Although this is a positive development, it is still significantly lower than the more successful East Asian, Latin American and OECD countries (Table 1.6).

Table 1.6: Levels and Distribution of Educational Attainment (Ages 25 years and Above)³¹

Country	Average Years of Schooling	Proportion of Adult Population with:			
		No Education	Some Primary	Some Secondary	Some Tertiary
India	4.9	51.0	31.6	11.7	5.7
Argentina	8.5	5.8	49.6	24.9	19.7
Brazil	4.6	21.3	56.8	13.5	8.4
Chile	7.9	5.3	42.9	36.0	15.8
Mexico	6.7	12.4	47.3	29.0	11.3
Korea	10.5	8.0	26.6	47.4	25.8
Malaysia	7.9	13.9	35.6	43.0	7.5
Singapore	8.1	12.6	28.3	48.5	10.6
Australia	10.6	1.7	21.1	38.6	29.8
Norway	11.9	1.2	11.5	62.5	24.8

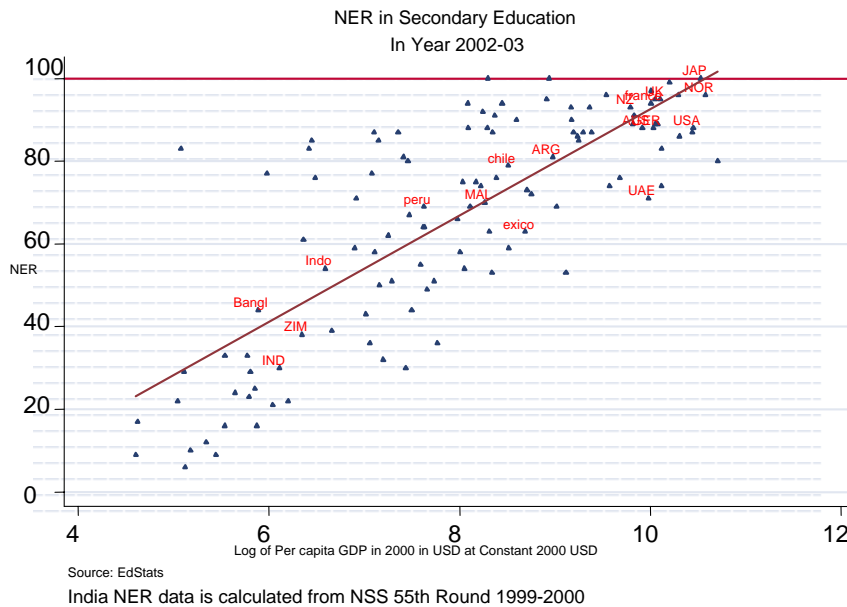
Source: World Bank database

14. **Compared to other countries, India has a much higher proportion of adults with no education and a much lower proportion with at least some secondary education.** The distribution of the adult population across various levels of education clearly shows India lagging behind. Even Brazil (where the average number of years of education is slightly lower than India) has a higher proportion of adults with at least some secondary education. Of course, there are significant variations within India – for example, close to a quarter of adults in Kerala have had some secondary education while only 15 percent are illiterate, while in Bihar the corresponding numbers are 13 percent and 66 percent respectively.
15. **The educational attainment of the population is the result of the accumulated flow of investments in schooling in earlier decades.** Present enrollments determine how the stock will evolve in the future, and new cohorts will form the labor force in the coming decades. We turn to a brief discussion of current investments in education by examining enrollment rates at different levels.
16. **India does not have a deficit in enrollment in primary education.** Benchmarking India in terms of net primary enrollment rates³² suggests that while a large proportion of the population does not have primary education, India does not under perform as compared to other countries with similar income levels on this indicator.
17. **However, India has a deficit in enrollments in secondary education.** As shown in Figure 1.4, India has a comparative deficit at the secondary level. Denoting the secondary education ‘deficit’ as the difference between the observed net secondary enrollment rate and its predicted value (which is the solid line in the figure), India’s secondary education deficit is around 12 percentage points compared to a surplus of about 19 points in Korea and 26 points in Malaysia; although it compares favorably to the 36 percentage points deficit in Brazil. Again, there is a significant variation across states.

³¹ These figures are from different years between 1998 and 2003 for the different countries

³² A population weighted regression of primary net enrollment rate was run on log(GDP) with a dummy for India. The coefficient on the dummy was positive but insignificant.

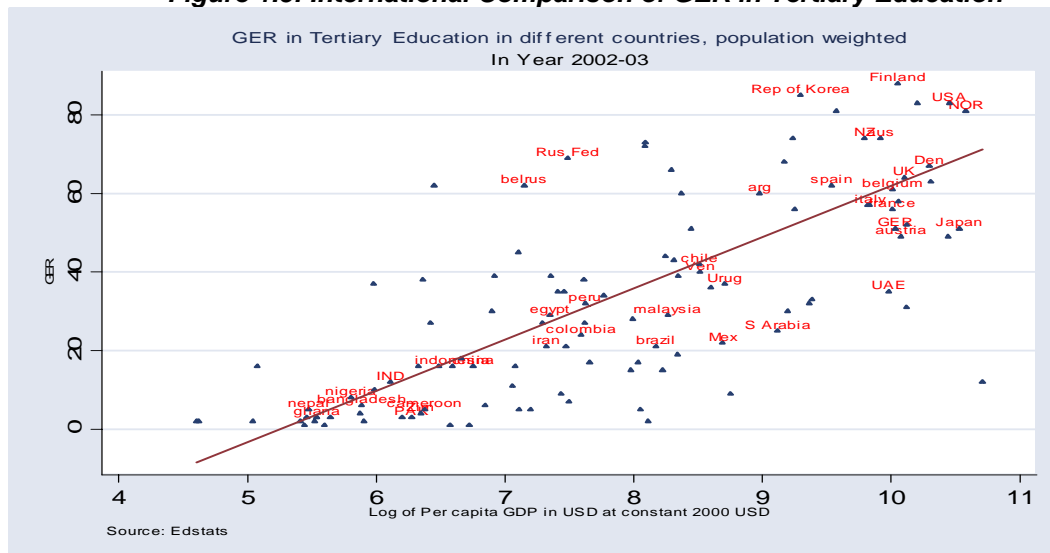
Figure 1.4: International Comparison of NER in Secondary Education, 2002-03



Source: EdStats - India figure is calculated from NSS 55th Round 1999-2000

18. On the other hand, India does not have a comparative deficit in enrollments at the tertiary level³³ (Figure 1.5). While India's performance exceeds that of Latin America (with a deficit of 10 percentage points), it lags behind the high growth East Asian countries, which have a 'surplus' of 5 percentage points, and OECD countries, which have a surplus of 14 percentage points.

Figure 1.5: International Comparison of GER in Tertiary Education

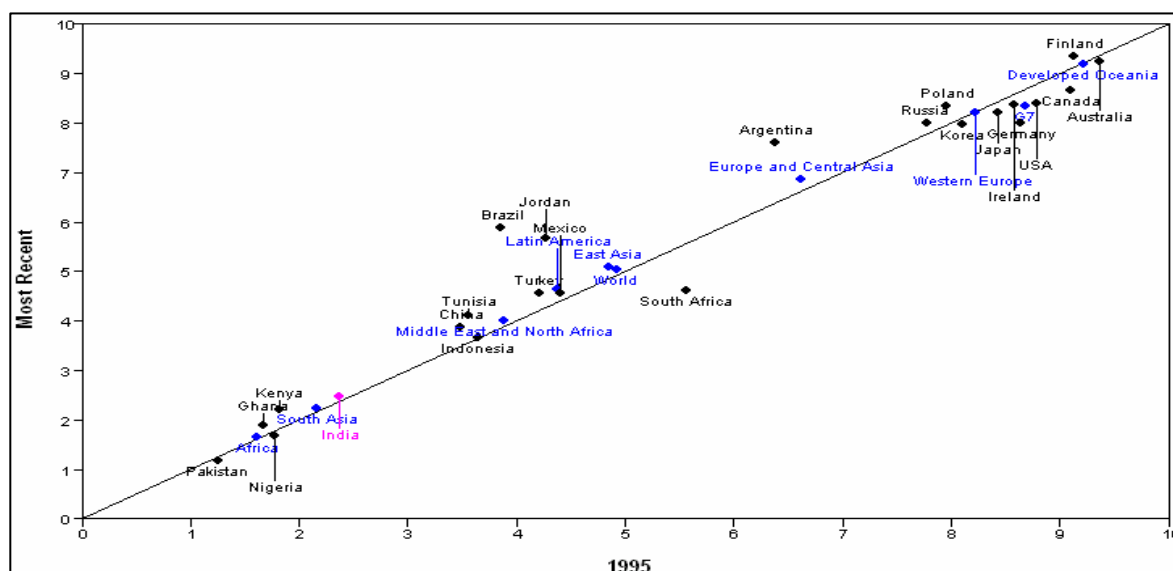


Source: EdStats - India figure is calculated from NSS 55th Round 1999-2000

³³ For India, the tertiary enrollment numbers include technical and vocational enrollments.

19. **A similar picture emerges when attempting to benchmark India's educational performance using the KAM methodology.** The KAM³⁴ allows India's performance to be compared with its neighbors, with comparator countries such as Brazil, Russia and China, and with other emerging economies. Figure 1.6, based on the KAM, shows the Knowledge Economy Index (KEI) for education. It is comprised of three variables—adult literacy rate, secondary enrollment and tertiary enrollment. It shows India ahead of the South Asia and Africa Regions in education but lagging behind countries such as China, Mexico, South Africa, and Russia. India has only marginally improved its performance in education since 1995, whereas other countries have made much larger gains in strengthening their education pillar.

Figure 1.6: International Comparisons Based on the Knowledge Economy Index, 1995³⁵



Source: Utz (2005), Dahlman and Utz (2005)

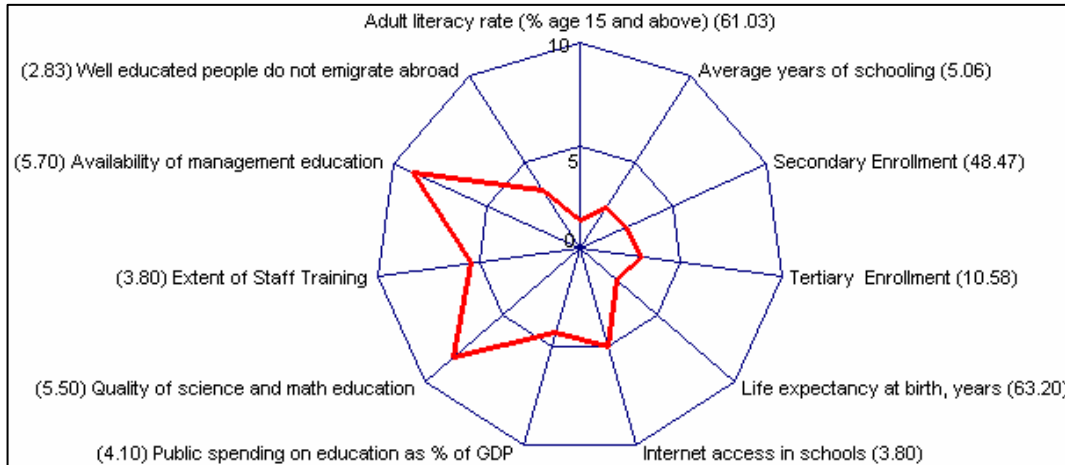
20. **The detailed education scorecard for India also shows a mixed picture.** Even though India has made progress in increasing adult literacy (age 15 years and older), secondary and tertiary enrolment rates lag behind comparator countries (Figure 1.7). However, it does have several advantages—it ranks quite highly compared with China, Mexico, Russia and South Africa on Internet access in schools (Brazil is the only comparator that does better than India

³⁴ The World Bank Institute's interactive web-based Knowledge Assessment Methodology (KAM) is comprised of 80 quantitative and qualitative variables that compare countries in terms of four pillars of the knowledge economy: economic and institutional regime, education and human resources, innovation, and ICTs. The KAM helps to identify problems and opportunities a country faces in making the transition to a knowledge economy and where it may need to focus policy attention or future investments. The strength of the KAM is its cross-sectoral approach, allowing users to take a holistic view of a wide range of factors rather than focusing on just one pillar. The fuller the scorecard, the better poised a country is to embrace the knowledge economy. An economy should not necessarily aim for a score of 10 on all variables; scorecards may be shaped by the particular structural characteristics of an economy or by trade-offs that characterize different development strategies. KAM has been used to assess 128 countries, including most of the developed economies of the OECD and more than 90 developing countries.

³⁵ Countries above the 45-degree line have improved their position in education for the most recent period for which data are available relative to their position in 1995 (or closest available date in the mid-1990s) and vice versa for countries below the line.

in this regard). It is also ahead of comparator countries in the quality of management education, which is available in first-class business schools. It is ahead of China and Russia in terms of investment in staff training.

Figure 1.7: India's Scorecard on Education; Selected Variables³⁶



Source: World Bank, "Knowledge Assessment Methodology," <http://www.worldbank.org/kam>.

III. Conclusions

21. **These analyses confirm that although productivity has been increasing and education levels rising, India still needs to improve its educational achievements.** It has large deficits on important quantitative education indicators (average years of education and net secondary enrolments) and demand for workers with technical/vocational skills seems to be falling. In addition little is known about qualitative indicators – because India does not participate in standardized international examinations, there are no good comparative measures of quality. In comparison, most East Asian and OECD countries have comparative surpluses in the quantitative measures, although some of the Latin American countries are doing just as poorly as India. The comparative shortfall in the number of educated workers in India reflects inadequate investment in education in the past. However, any shortfall in the future flow of educated entrants to the labor market should be minimized. As the previous section showed, demand for educated/skilled workers in India is rising. In order to maintain high levels of productivity and compete effectively with rapidly growing economies, India will need to develop policies to ensure that more people acquire higher quality education and more skills.

³⁶ Values in parentheses denote actual values for the most recent period for which data are available. Each of the variables in the KAM is normalized on a scale of 0 to 10.

2. VOCATIONAL EDUCATION

I. System Description

22. **Vocational education in India refers specifically to vocational courses offered in school Grades 11 and 12 under a centrally sponsored scheme termed ‘Vocationalization of Secondary Education’.** The Vocational Education Program (VEP) was started in 1976-77 under the programme of Vocationalisation of Higher Secondary Education in general education institutions. The National Working Group on Vocationalisation of Education (Kulandaiswamy Committee, 1985) reviewed the Vocational Education Programme in the country and developed guidelines for the expansion of the programme. Its recommendations led to the development of the Centrally Sponsored Scheme (CSS) on Vocationalisation of Secondary Education, which started being implemented from 1988. Its purpose is to “enhance individual employability, reduce the mismatch between demand and supply of skilled manpower and provide an alternative for those pursuing higher education without particular interest or purpose.”³⁷ Vocational education falls under the purview of the Ministry of Human Resources Development (MHRD). The All-India Council for Vocational Education (AICVE), under MHRD, is responsible for planning, guiding and coordinating the program at the national level. State Councils for Vocational Education (SCVE) perform similar functions at the state level.

23. **Courses are offered in six disciplines.** The Pandit Sunderlal Sharma Central Institute for Vocational Education (PSSCIVE), responsible for developing the courses, has listed 104 and has developed course materials for only a quarter of those. The six disciplines are:

- Agriculture (for example: veterinary pharmacist/technician; watershed management)
- Business and commerce (for example: taxation practices; stenography)
- Humanities (for example: classical dance; entrepreneurship)
- Engineering and technology (for example: lineman; cost effective building technology)
- Home science (for example: textile design; gerontology)
- Health and para-medical skills (for example: x-ray technician; health/sanitary inspector)

It is difficult to tell from the titles of the courses what their content might actually be. In many cases, similar courses are offered in other systems particularly in vocational training centres and through informal training mechanisms but with completely different course durations.

24. **There is little capacity in vocational education and even that is under-utilized.** MHRD’s original intention was to place 25 percent of all Grade 11-12 students into vocational courses by the year 2000. This has not happened. Only 6,800 schools have received grants and the total enrollment reported is only about 5 percent at most.³⁸ In fact, this figure more closely approximates the capacity of schools to offer vocational education rather than enrollments. More recent information suggests that the enrollment figure is less than three percent of the students attending Grades 11-12. Slightly incomplete data from PSSCIVE show a total capacity of about 846,100 places for vocational education in all but 4 states (which account for 95 percent of the country’s population). The weighted average capacity utilization of the schools receiving grants is about 42 percent. This implies that between 350,000 to 400,000 students are enrolled in vocational education, which works out to less than 3 percent of the 14

³⁷ Quoted in Clarke, 2003

³⁸ See, for example, Clarke, 2003

million students or more in Grades 11 and 12. It would also imply that less than one percent of students who had entered Grade 1 over the last decade or so would have eventually participated in vocational education.

25. **Students are selected into the vocational stream on the basis of performance in Grade 10 examinations.** In most states, students are streamed into vocational education on the basis of state-level standardized examinations in Grade 10. While a comparison of student performance in this examination for those going into different streams has not been done, the premium placed on general secondary and higher education by students and their parents, leads one to believe that students joining the vocational system are those who perform poorly in the Grade 10 examination.
26. **Qualifications of teachers are similar to those of general secondary school teachers.** Full-time teachers need to have a masters degree, and are often the same as teachers who teach general subjects. In addition, part-time teachers are also hired by institutions to teach specific courses – these individuals are usually hired on the basis of their professional expertise in a particular field.

II. Outcomes and Issues

27. **The outcomes of the vocational education should be judged in the same labor market terms in which the program was justified.** However, there are very few evaluations that allow this to be done. A study by the Operational Research Group in 1998 reported only 28 percent graduates of vocational education were gainfully employed. PSSCIVE's reports on the program appear to be case studies demonstrating the employment outcomes for selected individuals. No conclusions can be drawn about the overall outcomes; or whether alternatives could be worthwhile (for example, whether courses could be constructed and delivered in other ways). No conclusions can be drawn as to whether the courses are relevant to the labor market.
28. **In fact, even vocational students appear intent on entering higher education rather than entering the labor market.** Overwhelmingly, students who get through to Grades 11 and 12 want to proceed to further education and the very low intake into degree vocational courses shows they are not easily diverted to the vocational stream. Evidence of this comes from a study³⁹ in Kerala (Box 2.1). Vocational education students in Kerala are required to take English and a general foundation course. Those wishing to preserve the possibility of proceeding to higher education must also select other general subjects from a range of options.⁴⁰ They *all* do so even though it means taking on a considerable additional work burden. The study comments, “with the exception of a few vocational trades that have a certain employment potential and that are therefore highly in demand by the public, most of the courses cannot provide – under the present financial, material and human resources – any adequate preparation for their former participants to face the world of work”.
29. **There seems to be limited private sector involvement in running the system.** The private sector is represented in the Joint Council for Vocational Education, but it seems to be only marginally involved in setting course contents and curricula and in managing the vocational schools.

³⁹ Kremer, 2000

⁴⁰ Students wanting to preserve the possibility of proceeding to higher education must select one of the following subject groups: physics, chemistry, mathematics; physics, chemistry, biology; history, geography, chemistry; or business studies, accountancy and management.

30. **Despite these poor outcomes, policymakers remain keen to expand vocational education.**

As in many countries, they are concerned at the large number of students completing primary and secondary education with no occupational skills – the assumption being that having occupational skills will make an individual more acceptable to the labor market. Hence, there is some desire to make general secondary education more ‘vocational’. A debate about how to achieve this is now proceeding, some arguing for expanding the scheme in its current form – essentially by providing more resources to the program – while others argue that the program should target students in lower school grades, perhaps to Grades 9 and 10. Already ‘vocationalization’ has spread to universities, especially in Arts degrees. The problem would seem to be that current courses are not vocationally relevant, in which case the approach should be to *make* them more relevant. But vocationalization has led to the introduction of courses like sericulture, science journalism and event management.

Box 2.1: Vocational Education in Schools: The Example of Kerala

On a per capita basis, Kerala received the highest level of GoI grants for vocational education among the States. It has been more enthusiastic about vocational education than most States but currently has concerns with the program. Courses operate through 375 Vocational Higher Secondary Schools. Two percent of places in diploma courses in polytechnics are reserved for vocational education graduates. Graduates may gain entry to Universities in Kerala (and some outside the State) provided they have also completed courses in other subjects (offered as options) that are entry pre-requisites for university.

The State Planning Board’s current views about the future of vocational education are:

- There is no scope for increasing the number of schools or intake during the Tenth Plan
- Vocational education has to be revamped during the Tenth Plan
- Obsolete courses should be identified and dropped in a phased manner
- Courses should be restructured based on labor demand
- A demand survey should be conducted before introducing any new course
- The relative weight of academic and vocational subjects should be revised
- The curricula of subjects need to be revised
- Laboratory and library facilities should be modernised
- Casual and temporary appointment of teachers should be done away with so as to have continuity in the teaching of subjects.

Source: Prospects for Vocational Higher Secondary School, Kerala, 2004-05

31. **While vocational education has been of only marginal benefits, significant expansions were proposed although, so far, not implemented.** The 10th Five Year Plan proposed a scheme to expand the target group to include early school leavers, skilled workers, semi-skilled workers, unskilled workers, and unemployed youth. The scheme would allow ITIs, polytechnics or NGOs to deliver the courses. Such of these institutions that qualify the selection criteria would be financially supported by the MHRD to offer modular courses at different levels (Level-I, Level-II, etc) to all interested persons outside the formal vocational education/training systems. Registrants for these programs would be offered bridge courses based on their individual needs. The proposed National Competency Testing Agency (NCTA), located within MHRD, for testing and certifying graduates of these courses is yet to be established.

III. Potential Options

32. **It is certainly true that enrolments in vocational education in India seem small when judged by international comparisons.** It is difficult to make these comparisons for vocational education. Different systems may have quite different proportions of general education content in their technical/vocational tracks and quite different modes of delivery. Even so, the numbers in India appear very small (see Table 2.1).

Table 2.1: International Comparisons on the Size of Vocational-Technical Secondary Education

Country	Secondary enrollment ratio	Number of students (thousands)	Vocational-technical share ⁴¹
Russia	88	6,277	60
China	52	15,300	55
Indonesia	43	4,109	33
Malaysia	59	533	11
Korea	93	2,060	31
Chile	70	652	40
Mexico	58	—	12
South Africa	77	—	1

Source: Various Sources

33. **However, expanding the numbers or re-targeting the program would not be justified unless a model is found that substantially improves outcomes.** International experience would suggest that it is difficult to find an appropriate model (Box 2.2). Employers want to recruit trainable workers and whether the individual possesses specific vocational skills is not necessarily their major concern. What they want most from young workers are the basic academic skills that are taught in primary and, especially, general secondary education – the ability to communicate, solve problems and teamwork. With these skills, it is easier and more cost-effective to train workers who are adept at learning. This would appear evident from the earlier analysis of relative wages for workers who complete secondary school and those who have technical/vocational qualifications. This issue is also highlighted in the boxes below – which show that successfully reforming countries are moving in the direction of providing youth with good quality general education.

⁴¹ As a percentage of total secondary enrollments.

Box 2.2: International Evidence on the Relevance of Vocational Education

This box summarizes some key findings on international experience of vocational education.

- Vocational subjects are desirable on general education grounds, as part of a well-rounded education intended for everyone but they should not detract from efforts to improve the quality of core subjects. No study has shown that vocational courses offered as a minor part of a student's total curriculum give an advantage in finding work (let alone self-employment) within the first few years after leaving school. This is particularly so when the labor market conditions for youth are severely depressed. Vocational subjects may foster an interest in the types of work for which the subjects are broadly intended and the skills learned may have private uses but tracer studies have found no positive impact on access to work after students leave school and no strong effect on access to relevant further technical training.
- Vocationalization is costly. Most variants are more costly per student class period than general education subjects, primarily because of smaller classes and the greater cost of facilities, equipment, and consumables. Unless a course can be taught to a full class of students (few can), operating costs will be more than twice that of non-laboratory academic subjects.
- Enrollment in some types of vocational courses is often strongly gender biased. Many skills taught are culturally identified with one gender only; for example, domestic science and secretarial skills with girls, industrial arts skills with boys.
- Vocationalization is hard to implement well. It requires specially trained instructors, preferably with work experience in the types of skills being taught. Teachers with these qualifications are hard to recruit and retain. Time spent on vocational skills training can detract from the teaching of basic academic skills, which are badly in need of improvement and also essential for labor market purposes.

Source: Johanson and Van Adams(2004)

34. **Even in countries with large vocational education systems, there is a trend towards increasing generalization of the vocational curricula** and making the system non-terminal. In New Zealand, for example, the first strategy was to make 13 years of education (general and basic education, including one year of pre-school) compulsory for the entire population and ensuring the delivery of quality education as measured against approved standards and qualifications. The second strategy was to set up a series of equivalences based on acquired national standards, by which institutions in the general academic post-secondary level, namely universities, would recognize credits obtained in vocational education institutions. This ensured that vocational education was not viewed as a dead end. The Korean experience (Box 2.3) is similar.
35. **It would seem, then, that the policy to 'vocationalize' Grades 11 and 12 may be largely misplaced.** The GoI's objective is to provide alternatives to those students who do not want to pursue higher education but the program focuses on Grade 11 and 12 students, the considerable majority of whom *do* want to pursue higher education. In any case, the courses being offered seem misconstrued. Most are occupation specific and seem inappropriate for schools to deliver. Instructional materials have been prepared for only a quarter of the courses supposedly available, making it impossible for many of them to be implemented widely. Presumably, one advantage of using schools to provide vocational courses is that they can give greater access to vocational courses than could be achieved by other providers.

Yet rarely could there be sufficient numbers of trained teachers and training materials to deliver the vast majority of the courses.

Box 2.3: The Evolution of the Korean Vocational Education System

The Korean vocational education system has evolved considerably since it was set up in the early 1960s. While initially the emphasis was on churning out semi-skilled workers for the industry, the current focus is on equipping students with basic knowledge and skills and providing them with a foundation which will enable them to learn further.

Some key features of the system include:

- Delaying streaming into vocational education till high school (for three years after grade 11). All students undertake a common national curriculum in the first year of high school, following which they choose to enter the general or vocational stream for the remaining two years – however the vocational stream includes extensive elements of general education;
- Ensuring the vocational stream is not dead-end – by allow vocational students to proceed to higher education;
- Financing vocational education through government and private resources – about 40 percent of financing for vocational education comes through entrance and tuition fees;
- Linking up vocational schools with specific industries to ensure that curriculum and outputs match industry needs.

Even though the vocational system is flexible, the number and proportion of entrants into the system has been declining rapidly and a larger proportion of graduates are transiting to higher education.

High School	1995	2003
Total Students	2,303, 899	1,766,529
% General	54.1	69.0
% Vocational	45.9	31.0
Total General Graduates	390,520	400,903
...% entering HE	72.8	90.2
Total Vocational Graduates	259,133	189,510
...% entering HE	19.2	57.3

Source: Pillay (2005)

36. **Models of good practice can be found on smaller scales but it is a moot point whether they can be replicated by state school systems.** Such a model is Chile's CODESSER program, which embodies some of the principles for reforming the vocational education system. CODESSER demonstrates that the key to success is a business arrangement that covers performance criteria and financing (Box 2.4).

Box 2.4: Vocational Education for Chilean Farming: The CODESSER Model

CODESSER is a non-profit organization created by the National Society of Farmers in 1976. Initially, it administered four schools whose reputations were poor and it was difficult to attract students.

Today, some schools receive more than 300 applications for 45 first-year openings and additional schools have been included because of the growing demand. Recent figures show that more than 75 percent of graduates from agricultural schools hold mid-level management positions in agriculture; a far cry from the 15 percent match between vocational training and the job descriptions of the schools' graduates in the 1970s. In industry, where CODESSER's impact is more recent, this percentage is close to 62.

Although the healthy growth of labor demand in the Chilean economy since the mid-1980s has helped CODESSER to achieve success, its management model has also contributed and merits special attention. It has the following features:

- *Private sector participation in management.* A directorate of seven farmers or industrial entrepreneurs oversees each school. This ensures greater job-skill matches, a direct connection to the labor market for graduates, and an effective medium for bringing about organizational and productive innovations.
- *Teachers hired as private sector employees.* Personnel policy (including selection and promotion criteria, and new contracts) conforms to the Labor Code that regulates private sector employees. Teachers' salaries are about 50 percent higher than in municipal schools and there has been a consistent effort to upgrade teacher training.
- *Educational programs.* These provide basic general knowledge in humanities and sciences, prepare students to work in various occupations, teach students to be problem solvers and encourage them to continue learning. Schools emphasize general growth and the development of responsibility, leadership and personnel management. To give the curriculum local relevance, CODESSER updated the programs after a thorough field study and approval by the Ministry of Education.
- *Curriculum revision.* CODESSER conducts periodic surveys of job requirements in the areas around each school. The surveys are used to adjust vocation-specific components in the curriculum and to prepare teachers in those areas.
- *Student selection.* Student selection examinations in Chile are graded from one to a seven. Students must achieve at least grade five in each course to be considered for admission. Prospective students must present a recommendation letter, spend two days at the school to take written examinations in four basic areas, go through a personal interview and psychological tests and undertake a farming activity. Schools select their best applicants.
- *Funding and budget allocations.* The real value of public subsidies fell in the early 1980s and declined again by about 15 percent between 1987 and 1991. As a result, schools developed independent funding. In 1982 the public subsidy represented the bulk of schools' budgets; it is now less than 50 percent..

Source: Cox-Edwards (2000, 2004)

37. **In conclusion, a major restructuring of the system and how it is managed is needed to ensure that it responds effectively to the needs of the economy.** Key recommendations, many of which are similar to those being proposed by the 2005 CABE Committee report on Universalization of Secondary Education, include:

- *Ensuring private sector participation in management of vocational education institutions and in curriculum design* – to ensure a direct connection to the labor market for graduates, and an effective medium for bringing about organizational and productive innovations.
- *Strengthening the general education component of vocational education programs* - providing sound basic knowledge in humanities and sciences, preparing students to work in various occupations, teaching students to be problem solvers and encouraging them to continue learning.
- *Allowing greater cost-sharing* – i.e. moving from a system which is exclusively financed by the government to a system which is increasingly financed by the private sector –who would be willing to do so if it sees the system producing relevant graduates - and the students paying user fees. Students are unlikely to contribute if they do not see accrual of labor market benefits from vocational education.
- *Ensuring that vocational education is not a dead end* - allowing well performing students in the vocational education track to proceed onto higher education will ensure that the vocational stream is not seen as an option of last resort by prospective students.

3. VOCATIONAL TRAINING IN THE PUBLIC SECTOR⁴²

I. System Description

38. **Unlike vocational education, vocational training programs in India fall outside the formal schooling cycle.** As discussed below, vocational training is institution-based with varying entry requirements as well as course durations (based on the course). The proportion of practical to theoretical instruction in vocational training programs is also higher than in vocational education.

(a) Training for Crafts Level Occupations

39. **Certificate level crafts training provides about 400,000 places a year.** It is open to students who leave school after completing anywhere from Grade 8-12. Programs administered under the Craftsmen Training Scheme (CTS) are operated by Industrial Training Institutes (ITIs) and Industrial Training Centers (ITCs). Students who eventually complete crafts courses sit for an All India Trades Test, conducted under the aegis of the National Council for Vocational Training (NCVT) but administered by the States. Individual states administer tests for state-approved trades that are not affiliated with the NCVT (Box 3.1 and Table 3.1). Successful students receive a National Trade Certificate (NTC).

40. **The CTS operates through 5,253 ITI/ITCs with places for 740,000 students (mostly in two year courses).** Starting from 54 institutions in 1953, the number of institutions has grown to over 5,000 in 2004 (see Figure 3.1), most of it between 1980 and 2000 though the growth rate appears to have slowed down considerably since then. Enrollment numbers have also increased from less than 10,000 in the early 1950s to over 700,000 at present. This growth has been fueled mainly by the growth in the number of ITC's. There are two types of institutions:

- ITIs - financed and managed by state labor ministries and providing places for about 400,000 students in 3,358 institutes.
- ITCs - owned, financed and managed by private organizations or NGOs and providing places for about 340,000 students in 1,895 centers. While the state governments have no direct control over the functioning of these institutions, they are accredited to either the NCVT or an SCVT.
 - Other training institutions that are privately owned or managed by NGOs but are not accredited to either the NCVT or an SCVT. These institutions are discussed in the next Chapter.

⁴² For the purpose of this study, in terms of the public sector, we have focused on vocational training under the auspices of the MoLE and the MHRD. MHRD is also responsible for technical and higher education. There are some 15 other ministries providing training – the key ones being Ministry of Health and Family Welfare, Ministry of Agriculture and the Department of Information Technology (Annex A).

Box 3.1: Management Structure of the Vocational Training System

Under the Constitution of India, the Central Government and the state governments share responsibility for vocational training.

At the National Level:

The National Council for Vocational Training advises the central government on vocational training. Two tripartite bodies, the Central Apprenticeship Council, a statutory body and the National Council of Vocational Training, a non-statutory body, operate as advisory tripartite institutions.

The NCVT is chaired by the Minister of Labor & Employment (MoLE). Members represent central and state government departments, employers' and workers' organizations, professional bodies, the All India Council for Technical Education, representatives from scheduled castes and scheduled tribes, the All India Women's Organization, etc. Its functions include:

- establishing and awarding National Trade Certificates;
- prescribing training standards;
- arranging trade tests and developing standards for National Trade Certificates; and
- recognizing training institutions for the purpose of issuing National Trade Certificates and laying down conditions for such recognition.

Administrative responsibility is held by the Directorate General of Employment and Training (DGET), located within the MoLE. ITIs and ITCs operate under the guidance of DGET, which formulates policies and lays down standards and technical requirements such as developing curricula, instructor training, and skills testing. It governs a number of specialized training-related institutions.

At the State Level:

State Councils for Vocational Training (SCVTs), as well as Trade Committees, have been established to assist the NCVT. They advise state governments on training policy and co-ordinate vocational training in each state.

State government departments deliver vocational training through: (a) the ITIs that operationally report to and are funded by them, and (b) the ITCs that are privately funded and managed (some of these get financial support from the state governments).

Table 3.1: Responsibilities for Vocational Training: Central & State Governments and Industry

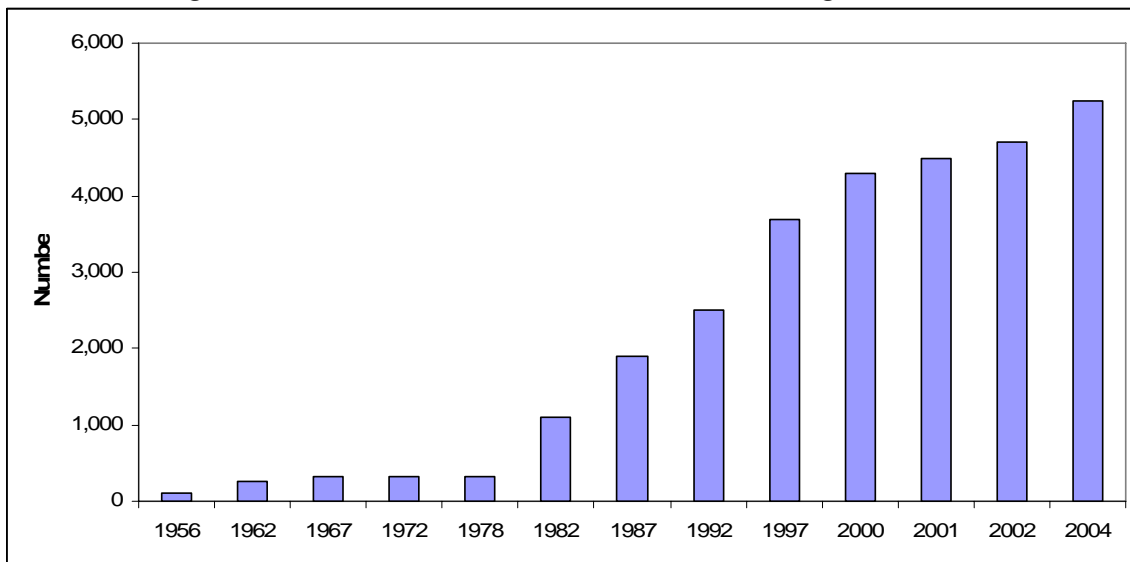
Training Scheme	Government of India	State Government	Industry
Craftsmen Training	<ul style="list-style-type: none"> • Policy and procedures, standards, duration etc. in consultation with the NCVT. • Conduct final trade tests on behalf of NCVT 	<ul style="list-style-type: none"> • Day to day administration of institutions 	<ul style="list-style-type: none"> • Render advice at Central and State Governments and institutional levels. • Assist with final trade tests.
Craft Instructors Training	<ul style="list-style-type: none"> • Policy and procedures, standards, duration, etc. in consultation with the NCVT. • Implementation and administration of the programme in ATIs. • Conduct final Trade Tests on behalf of NCVT. 	<ul style="list-style-type: none"> • Depute ITI instructors for training in ATIs 	<ul style="list-style-type: none"> • Advise at Central Government institutional levels. • Assist in final trade tests.
Apprenticeship Training	<ul style="list-style-type: none"> • Policy, procedure, notification of industries, 	<ul style="list-style-type: none"> • Assist, co-ordinate and regulate 	<ul style="list-style-type: none"> • Implement practical training program in

Training Scheme	Government of India	State Government	Industry
	designating trades, syllabi, standards, etc. in consultation with the Central Apprenticeship Council. <ul style="list-style-type: none"> • Assist, co-ordinate and regulate programs in Central public sector industries. • Concurrent jurisdiction with the States to assist, co-ordinate & regulate programs in private industries. • Conduct final trade tests on behalf of NCVT. 	programs in State public and private sector industries. <ul style="list-style-type: none"> • Impart related instructions. • Impart basic training in the case of those industries in the private sector which employ less than 500 workers. 	accordance with the Apprentices Act and regulations. <ul style="list-style-type: none"> • Arrange for basic training (by employers, employing more than 500 workers). • Advise the Central and the State Governments.

Source: DGET Annual Reports (Various Years)

41. **Students are selected on the basis of grades in examinations.** Potential students can be anywhere between the ages of 14 – 40. Depending on the trade, the individual should have passed at least Grade 10. Admissions to ITIs/ITCs are made purely on the basis of marks secured by the candidate in the public examination prescribed for the individual trade. Where ever there is no public examination, written examinations are conducted by the State Directorate of Training for the purpose of admission to the particular trade. As is the case with vocational education, the students who perform relatively poorly in the general education stream end up joining vocational training.

Figure 3.1: Growth in the Number of ITIs/ITCs; during 1956 - 2004



Source: ILO(2003); DGET (2005 – annual report)

42. **Most CTS students are in two-year training courses, more than 80 percent of them in engineering trades.** Although courses vary from six months to three years in duration, all but six of the 49 engineering trades are of either one or (mostly) two years duration. Most of

the non-engineering trades are one year long, and enroll fewer than 20 percent of students. Even in Madhya Pradesh, where almost a third of the total capacity of ITI/ITCs has been reserved for non-engineering trades, actual admissions are only 20 percent of the State's ITC enrollments and 14 percent of ITI enrollments. A recent emphasis on introducing shorter courses may change this situation as they are mainly focused on non-engineering areas. This has been justified on the grounds that this may open up opportunities for young people in geographic locations where there are no other providers.

43. **Though ITIs widely report that there are many applicants for each place, especially in the most popular courses, the overall seat availability is quite limited.** Table 3.2 shows the distribution and characteristics of ITIs (public) and ITCs (non-public) across various States. On average, public institutions have twice the capacity of the non-public institutions. The five states, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala and Orissa, have distinguished themselves by accrediting two thirds of all ITCs and almost three quarters of the total ITC seating capacity. For every million of their population aged 15 to 19 years, these five states have created about 13,000 places in ITI/ITCs; the remainder of the country has created a little over 5,000 places per million.
44. **DGET also administers some specialized training institutions**
- Six Advanced Training Institute (ATIs), which provides training in advanced skills such as tool design, tool and die-making, heat treatment, metallurgy, machine tool maintenance, electronics and advanced welding etc.
 - Foreman Training Institute, Bangalore, which provides training in further skills and in managerial skills for first line supervisors.
45. **Teachers are recruited through a selection process at the state level.** Qualifications are prescribed based on the trade. Teachers are directly recruited through a selection process involving written examinations and interviews. The qualifications for the posts are:
- Principal/Vice Principal: Degree in Engineering with 5 years experience or a Diploma in Engineering with 8 years experience in industry;
 - Superintendent/ Group Instructor: Diploma with 5 years experience in industry; and
 - Instructors: National Trade Certificate/National Apprentice Certificate/Diploma.
46. **DGET operates seven Central Training Institutes (CTIs) to upgrade skills of instructors.** They conduct refresher and retraining programs for instructors in various engineering and non-engineering trades. In addition, the Central Staff Training and Research Institute (located in Calcutta) provides training for officers and staff of the Central and State Governments and from industry, who control, regulate and direct Vocational and Apprenticeship Training Programs. The Institute undertakes research and developmental activities in vocational training including, as already mentioned, the major part of the curriculum development for DGET programs.

Table 3.2: Number and Capacity of ITIs and ITCs , in States and Union Territories, 2005

States	Number of Institutions			Total Capacity			Population (millions)	Capacity per million population			Ratio of private to public	
	ITIs	ITCs	Total	ITIs	ITCs	Total		ITIs	ITCs	Total	Institutes	Seats
States with Dominant Private Sector												
Andhra Pradesh	92	476	568	24,239	87,346	111,585	75.7	320	1,153	1,474	5.2	3.6
Tamil Nadu	71	605	676	24,812	62,191	87,003	62.1	399	1,001	1,401	8.5	2.5
Kerala	82	467	549	16,176	43,945	60,121	31.8	508	1,380	1,888	5.7	2.7
Karnataka	131	610	741	21,340	38,576	59,916	52.7	405	732	1,136	4.7	1.8
Orissa	27	147	174	7,328	16,660	23,988	36.7	200	454	654	5.4	2.3
States with Dominant Public Sector												
Maharashtra	347	267	614	67,390	29,794	97,184	96.8	697	308	1,004	0.8	0.4
Gujarat	135	129	264	70,500	16,626	87,126	50.6	1,393	329	1,722	1.0	0.2
Uttar Pradesh	185	128	313	38,644	13,284	51,928	166.1	233	80	313	0.7	0.3
Madhya Pradesh	136	33	169	19,538	2,860	22,398	60.4	324	47	371	0.2	0.1
Punjab	110	71	181	14,351	4,716	19,067	24.3	591	194	785	0.6	0.3
Bihar	29	29	58	10,496	4,472	14,968	82.9	127	54	181	1.0	0.4
Haryana	81	25	106	13,477	1,428	14,905	21.1	639	68	707	0.3	0.1
Chhatisgarh	80	57	137	8,984	5,880	14,864	20.8	432	283	715	0.7	0.7
Rajasthan	91	45	136	9,472	3,868	13,340	56.5	168	68	236	0.5	0.4
West Bengal	49	18	67	11,956	964	12,920	80.2	149	12	161	0.4	0.1
Delhi	14	48	62	6,088	1,592	7,680	13.8	442	116	557	3.4	0.3
Uttaranchal	57	16	73	6,088	1,592	7,680	8.5	718	188	906	0.3	0.3
Himachal Pradesh	55	8	63	5,649	980	6,629	6.1	930	161	1,091	0.1	0.2
Jharkhand	14	22	36	2,564	3,124	5,688	26.9	95	116	211	1.6	1.2
Assam	24	3	27	4,536	84	4,620	26.6	170	3	173	0.1	0.0
Jammu & Kashmir	38	0	38	4,332	0	4,332	10.1	430	0	430	0.0	0.0
Goa	11	4	15	2,652	420	3,072	1.3	1,973	313	2,286	0.4	0.2
Combined other States	23	142	165	2,784	320	3,104	12.4	225	26	250	6.2	0.1
Combined UTs	13	8	21	3,316	664	3,980	2.7	1,242	249	1,491	0.6	0.2
Total All India	1,895	3,358	5,253	396,712	341,386	738,098	1,027	386	332	719	1.8	0.9

Source: DGET (direct provision), data are as at January 2005 and are presented in order of seating capacity.

(b) Apprenticeship Training

47. **Apprenticeship Training, regulated under the Statutory Apprenticeship Training Scheme (SATS), has separate parts administered by MHRD and DGET.** MHRD administers its responsibilities through four Boards of Apprenticeship Training⁴³ (BATs). DGET administers its responsibilities through a Central Apprenticeship Council (CAC; see Annex B) and six Regional Directorates.⁴⁴
48. **There are four types of apprentice – depending on their previous education and training.** MHRD is responsible for three of these: engineers with degrees may enter the system as "Graduate" Apprentices; engineers with diplomas may enter as "Technician" Apprentices; and vocational education graduates may enter as "Technician (Vocational)" Apprentices. DGET is responsible for the fourth type; of trainees--those who have either attained a National Trades Certificate or who can demonstrate they have achieved equivalent entry pre-requisites. The DGET trainees are simply termed Apprentices. The minimum age of an apprentice is 14 years, with entry pre-requisites varying from Grade 8 to Grade 12 completion. Training lasts from 6 months to 4 years depending on the trade. The skill levels go from craftsmen to engineers, and the occupations include those in agriculture, business, commerce, health and paramedical, home science, humanities, and engineering.
49. **The number of apprentices is not especially significant in engineering, virtually insignificant elsewhere, and there would appear to be an extremely small number of ‘graduate’, ‘technician’ or ‘technician (vocational)’ apprentices.** Although SATS covers 254 industries and 140 trades, there were only 158,000 registered apprentices in 2001, 77 percent of whom had obtained an NTC.⁴⁵ This implies that only about 35,000 apprentices had previously been degree or diploma engineers or were vocational education graduates. This is despite the fact these types of entrants are given credit for their previous work. Vocational education students, for example, enter as third year apprentices and are therefore regarded as equivalent to a third year apprentice who had entered the system straight from Grade 10. The preponderance of NTC-based apprentices also makes it clear that the major occupational grouping by far is in engineering.

II. Outcomes and Issues

50. **Although ITI graduates may do relatively better in the labor market than Grade 10 and Grade 12 completers, their labor market outcomes are still poor.** A study in Karnataka⁴⁶ of 209 ITI graduates from 1998 traced their activities in 1998, 1999, 2000 and 2001. The study also made a comparison with students who had appeared in the Secondary School Leaving Certificate (SSLC - Grade 10 examinations) and the pre-University Certificate (PUC

⁴³ The BATs (located in Kanpur, Kolkata, Mumbai and Chennai) are intended to (a) establish liaison between technical institutions and local industries; (b) secure facilities for training in different establishments (government, private and public sector) for the products of technical institutions; and (c) develop training programs in consultation with industry and other agencies and promote Industrial Relations in the area of engineering and technology.

⁴⁴ The functions of DGET's Regional Directorates (located in Kanpur, Kolkata, Mumbai, Chennai, Hyderabad, and Faridabad) are to: (a) regulate apprenticeship training in industry through guidelines laid down by the Central Apprenticeship Council; and (b) utilize facilities available in industry for providing practical training.

⁴⁵ *Trade Apprenticeship in India Under Apprenticeship Training Scheme*, DGET, October 2003

⁴⁶ World Bank, 2002

– Grade 12 examinations) in 1998. Table 3.3 shows the status of these graduates in 2001. Students in SSLC or PUC are significantly more likely to go on to further education than ITI graduates – not surprising, as few avenues for further education are open to ITI graduates. The labor market outcomes for all three categories were very poor - even three years after graduation, over 60 percent of all graduates remained unemployed. However, these results may also highlight why there is a relatively high demand for ITI/ITC courses – these graduates still perform relatively better than students with SSLC/PUC.

Table 3.3: Comparison of Graduate Employment Outcomes, Selected Types of Institutions, 1998

Status	SSLC	PUC	ITI
Studying	51.10	70.03	17.27
Of those in the Labor Market...			
Employed	32.84	29.17	38.84
Unemployed	67.16	70.83	61.16

Source: World Bank (2002)

51. **There appear to be three reasons for the high rates of unemployment but no way to distinguish between them.** First, there could be limited growth and labor demand in the manufacturing sector; in effect, students are trained for jobs that do not exist. Second, there could be a mismatch between the skills attained and those actually in demand; courses could be obsolete or the quality of the courses too poor. Third, there may be a mismatch between the skills taught and the graduates’ own labor market objectives. The study commented, “it is possible that some ITI graduates were unwilling to take up employment in manufacturing, showing a preference for government desk jobs, consistent with their socio-economic background”.
52. **A comprehensive assessment of vocational training programs was conducted by the ILO in 2002/03.** ILO examined the internal and external efficiency of ITIs and ITCs in the states of Orissa, Andhra Pradesh and Maharashtra. Data were collected from institutions, graduates and employers. While the study did not compare the performance of ITI/ITC graduates with other groups, it provided a useful insight into the efficiency of the system, as well as the comparative performance of public and private training institutions.⁴⁷
53. **The ILO Study shows the internal efficiency of ITCs to be higher than that of ITIs.** This is especially true of Andhra Pradesh (Table 3.4). Only 77 percent of ITI places in AP were actually filled (102 percent in Orissa and 92 percent in Maharashtra). AP records poor performance in other ways: of those who first enrolled only 68 percent sat for the final NTC exams (81 percent in Orissa and 86 percent in Maharashtra). Once pass rates at the examinations are also taken into account, the end result is that the ratio of graduates to training places in AP was only 32 percent (74 percent in Orissa and 63 percent in Maharashtra). ITCs have better performance on almost all these measures in the three states, with the proportion of places generating graduates being 46 percent in Andhra Pradesh, (91 percent in Orissa and 66 percent in Maharashtra).

⁴⁷ 121 institutions (78 ITIs and 43 ITCs) were included in the sample. Over 8,500 graduates of public training institutions and 2,600 graduates of private training institutions were sampled as part of the study. Over 70 employers were also surveyed.

Table 3.4: Internal Efficiency of ITIs and ITCs in 3 States

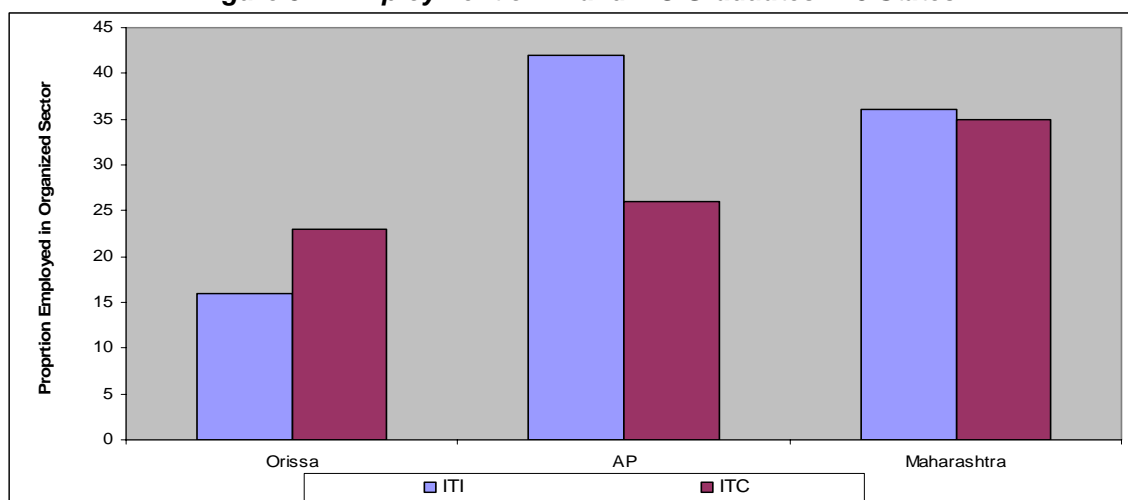
Indicator	Orissa		Andhra Pradesh		Maharashtra	
	ITIs	ITCs	ITIs	ITCs	ITIs	ITCs
Student retention	80.9	94.9	68.3	84.8	85.6	89.0
Graduation rate	88.3	95.6	62.9	62.7	77.5	79.4
Capacity Utilization	102.1	101.0	77.4	83.3	92.2	91.0
Student: teacher ratio	9.3	5.4	5.5	9.6	Na	
Overall Internal Efficiency	73.8	90.9	31.8	45.7	62.6	61.1

Source: ILO (2003)

54. However, in terms of external efficiency, neither ITI nor ITC graduates perform well.

According to the study, employment of ITI/ITC graduates in the organized sector is very low. In none of the states did more than 50 percent of the graduates find wage employment, or become self-employed, or work in a family business (see Figure 3.2). Unemployment rates were extremely high in Andhra Pradesh—the study found the unemployment rate of ITI graduates to be around 33 percent and more than 70 percent for ITC graduates; in Maharashtra these rates were 23 and 27 percent respectively.

Figure 3.2: Employment of ITI and ITC Graduates in 3 States



Source: ILO (2003)

55. It is slightly surprising that the labor market success rates of ITI graduates are somewhat better than those for ITC graduates even though the internal efficiency is lower. There are several potential explanations for this, and possibly the reasons vary from state to state. The first one is that ITIs have a screening mechanism – and accept ‘better’ students into the institutes. Alternatively, they may be more stringent in terms of grading students in their intermediate examinations so that the poorly performing ones drop out early. Finally, it is also possible that the trades they offer may be more in demand in the labor market than the trades offered by ITCs.

56. A 2003 DGET study of graduates of apprenticeship training also concluded that the labor market relevance of much of the training was in doubt.⁴⁸ The study reviewed the

⁴⁸ *Tracer Study of Trained Apprentices to Assess the Effectiveness of the Apprenticeship Training Scheme (ATS)*, DGET 2003.

employment experiences of former apprentices in six states⁴⁹. Although a significant proportion of those surveyed were employed, close to two-thirds of them were not employed in the trade for which they were trained – a third of these had been trained in obsolete trades.

57. **Despite the relatively large number of ITI/ITC graduates, employers in the three States still experienced problems finding employees with the right skills.** In most cases, these shortages were in trades that were supplied by the ITIs/ITCs – implying that their graduates did not suit employers’ needs (Table 3.5). Most employers felt that ITI graduates did not perform well enough in the use of computers, practical use of machines, communications and team work practices (See also Box 3.2).

Table 3.5: Percentage of Companies Experiencing Problems in Finding Skilled Employees

State	Never	Occasionally	Frequently
Orissa	11.1	66.7	22.2
Andhra Pradesh	16.7	58.3	18.0
Maharashtra	43.8	43.8	12.4

Source: ILO (2003)

58. **This limited relevance may be due to imbalances – in the organized sector - between demand and supply.** The DGET study compared the ratio of graduates from public and private training institutions to the number of people currently employed in different trades *in the organized sector*. For a large number of trades, this ratio was over 0.5 – implying that every year training institutions were turning out over half the stock of trades worker in the organized sector. These ratios are high – international experience suggests that a reasonable ratio would be closer to 0.1. This implies that graduates in many trades would have to find employment in the unorganized sector or, if they were not willing to do this, find themselves unemployed.

Box 3.2: Employers Perceptions of ITIs in Karnataka

A Karnataka study found that employers were dissatisfied with graduates from ITIs. Employers felt that ITIs produce graduates who are not needed by industry and who lack basic scientific/technical understanding of their trades. Major findings of the study are:

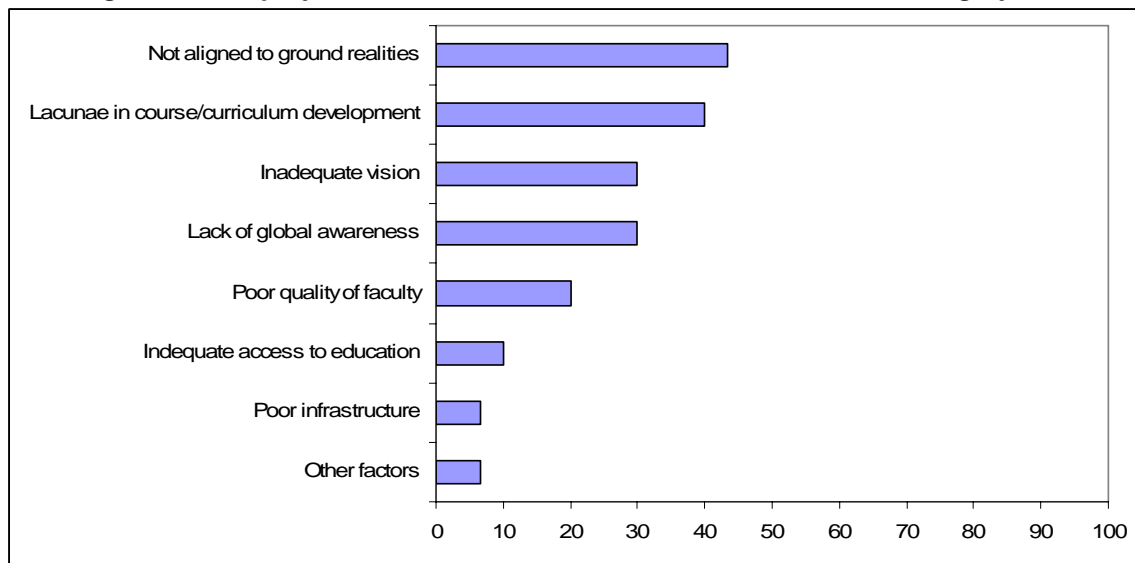
- Rapid developments in technology have made many occupations and trades - such as turners, machinists and grinders, and draftsmen - obsolete, while others need to be modified.
- Many trades have lost their relevance in the face of automation. Engineering trades (fitting, electronics, electrical and mechanical, welding, tool and die-making, and turning) are in high demand from students but syllabi are out-dated and trainers are out of touch with changes in technology and work organization.
- Courses should not be based on narrow specializations. Technicians need to be trained through integrated courses dealing with two or more skills and be capable of managing three or four operations at a time.

Source: World Bank (2002)

⁴⁹ The six states were Andhra Pradesh, Delhi, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal. The sample consisted of 246 enterprises (roughly 40 per state), which had employed 6,499 (roughly 1,000 per state) over the previous 5 years. The survey was stratified by category of employer (central, state, private), size of establishment, trades and year of graduation. The survey included 57 central government enterprises, 26 state enterprises, 163 private enterprises. Of these, 83 were large, 90 medium, and 73 small size; 96 provided training only while 150 provided training and employed ex-apprentices.

59. **A survey by the Federation of Indian Chambers of Commerce and Industry (FICCI) shows similar results.** The survey of 55 enterprises in late 2001 assessed the quality and relevance of vocational/technical training from an industry perspective (see Figure 3.3). Close to 60 percent of the respondents felt that institutions were not geared up to meet the challenges of the global economy and over 43 percent felt that academic institutions were not aligned to the needs of industry. Eighty seven (87) percent felt that institutions should have greater exposure to industrial practices. They stressed the importance of a collaborative approach between academia and industry as a means of ensuring a better match between what industry wants and what the institutions produce.

Figure 3.3: Employers' Concerns with Vocational Education & Training System



Source: FICCI (2002)

60. **This empirical evidence has been reinforced in interviews with employers and employer federations.** Employers feel that the lack of appropriate technical skills (and corresponding “soft” skills –such as teamwork, innovativeness) ranks high on the list of bottleneck that firms in India face as they try to expand and increase productivity. The general feeling among employers seems to be that individuals coming out of the technical and vocational institutions lack practical knowledge and need significant on-the-job training to bring their skill levels to match the needs of the industry. In order for the system to be more responsive, employers believe it is crucial that they participate more at the institute level and that students and teachers be given practical experience in industry. ***Most importantly, they feel that the regulatory regime governing institutions inhibits any kind of autonomy, innovation and responsiveness to demand, and needs to be reformed substantially.***

61. **The poor outcomes arise owing to the public training system facing many constraints.** These include a lack of accountability and responsiveness to the needs of the labor market, limited involvement of the private sector in managing training, poor coordination among those managing the sector, and limited flexibility for institutions. Many of these problems have been outlined in the Government’s own assessment of the system (Box 3.3).

Box 3.3: Central Government Assessment of Public-funded Training

The Government has expressed concerns about the quality of vocational training institutions. Evaluations of ITIs have shown significant variability in the quality of different ITIs, reflecting differences across states and, partly, the characteristics of individual ITIs. Many states have created new ITIs to cover new areas but with inadequate preparatory work or resource input or effective follow-up action. The following deficiencies have been noted:

- Much of the training provided in the ITIs is for skills that are in little demand. Curricula have not been revised for many years and are not attuned to current market requirements. Some revision has taken place but a lot remains to be done. One reason for the lack of attention to market requirements is the lack of involvement of the industry in the management of ITIs.
- The transfer of skills needs to be improved and testing procedures need to be made more reliable. All ITIs and ITCs rely on formal certification by an independent authority. However, there is a widespread perception among employers that students obtain certificates even though the actual skills acquired are very poor.
- The facilities and infrastructure in most ITIs are inadequate, with obsolete equipment in laboratories and workshops. Maintenance is poor. These deficiencies reflect the scarcity of resources available to State Governments. They have been exacerbated by a tendency to create new institutions in places where they do not exist, even though existing institutions are under-funded and under-utilized.
- There is a shortage of suitably trained teachers in most ITIs.
- There is hardly any follow-up of trainees and some courses are obsolete and piecemeal. There is no certainty that graduates will be placed.
- The quality of apprenticeship training varies according to the nature of the firm. The bulk of the apprenticeship places are in public sector firms. Private sector firms do not generally comply with legislative requirements.
- Apprentices view their indenture mainly as an avenue for subsequent employment rather than a mode of training. Although regulations do not entitle apprentices to employment, the courts have interpreted the law to mean that apprentices must be given preference in employment in the company where they were trained. This discourages employers from fulfilling their obligations under the Act.

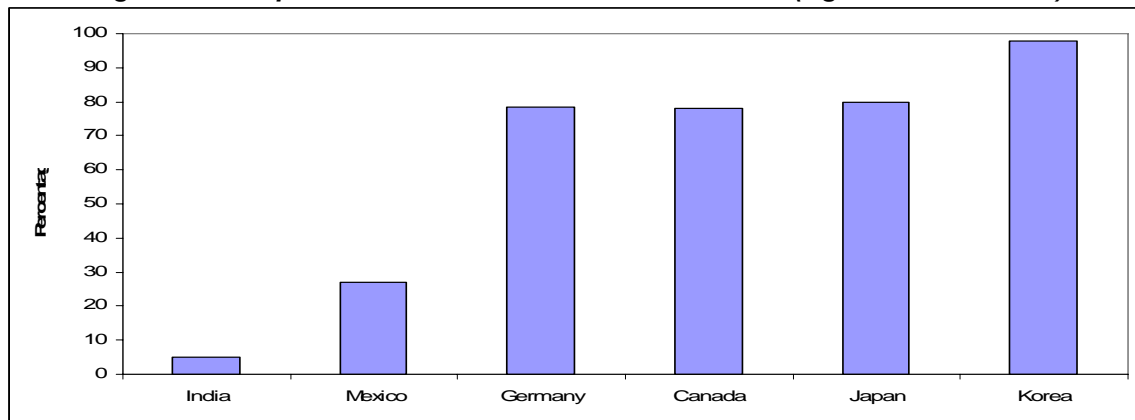
By and large, efforts are not directed to training for the informal sector and certainly not to vulnerable informal workers. The training system is typical of government, supply-led systems where the government has prime responsibility for formal sector training. There is little or no pressure and few incentives for employers to train.

Source: Government of India (2002).

62. **Although the vocational training system is relatively small compared to other countries, management of the system is fragmented.** As shown in Figure 3.4, the proportion of workers aged 20-24 who have received some vocational training is significantly lower than in some other developing and OECD countries. In spite of the fact that the system is relatively small, management of the system is fragmented. The system is shared by DGET, NCVT and SCVTs. At the national level the distinction between the roles of DGET and NCVT are blurred and there is a lack of effective coordination between them. At the state level, the SCVTs are also unclear about their roles and responsibilities, and their relationship to the national level agencies. This results in diverse accountability and makes the delivery of training complex. Further, there is also little coordination between ministries, especially between MoLE and MHRD, which has responsibility for vocational education and for aspects of SATS. This leads to a duplication of effort with many courses offered under vocational education and vocational training purporting to provide similar skills. Making the system accountable to more than one government agency can result in training that is isolated from

market forces. Furthermore, different agencies seem to place great deal of emphasis on simply delivering training rather than on policy guidance and ensuring quality standards.

Figure 3.4: Proportion of Vocational Trained Workforce (Aged 20 to 24 Years)



Source: ILO (2003)

63. The Government is not fulfilling its role to provide information on vocational training.

A preoccupation with providing and financing training has resulted in the government neglecting a key role of providing information about the availability and effectiveness of training programs. There is little information, at either central or state level, regarding the financing of training, the quality of training and the effectiveness of public programs.

Governments have very limited information about privately provided vocational education and training (VET), which can lead to the public sector crowding out private providers by entering areas where there is already a private supply.

64. Institutions have few incentives to improve their performance. ITI managers have little freedom to fill student places to capacity, replace training courses with new ones, and ensure that students receive quality training. Most courses are in basic industrial trades and there is a perceived reluctance among state directorates and institutions to offer courses in more marketable service sector trades. The main problem is the way institutions are governed. ITIs are part of the government – teachers and trainers are civil servants and resources are part of government budget – which is an obstacle to improving performance.

65. Until recently, it had been hard to detect the hand of industry in the vocational training system. ITIs should have close links and regularly consult employers. However, until recently there was limited participation in defining training policies and developing courses. Industrial associations that integrate small and micro-enterprises in the informal sector were not consulted or invited to be partners in the system. Curricula are supposedly determined by employer representatives but poor employment outcomes suggest that this has not been effective. This is changing to some extent now, and industry associations and individual employers are showing considerable interest in involving themselves in developing and managing systems, especially ITIs. This is demonstrated by the active participation of employers belonging to the two largest industrial associations in India - the Federation of Indian Chambers of Commerce and Industry (FICCI) and the Confederation of Indian Industries (CII) – in the management committees of ITIs. This is discussed in some more detail later in this chapter.

66. There also seems to be a lack of employer interest in the apprenticeship system.

Regulations require public and private sector employers in designated industries to engage

apprentices according to set ratios of apprentices to workers for prescribed trades. Places for apprentices are found and registered by Apprenticeship Advisers on the basis of the ratios and available training facilities. Despite the legislation, only 1,900 private establishments were registered for the Apprenticeship Scheme in 2001; compared to some 16,000 other establishments, essentially government agencies and enterprises. This lack of private sector interest compares to the 250,000 establishments covered by the Employee Provident Fund.⁵⁰

67. **The quality of teachers appears to be poor.** A slightly dated survey conducted of over 262 ITI teachers in 14 states (Aggarwal, 1998) showed that 61 percent of teachers have less than 12 years of schooling, and a third had no industrial experience. Of those who had some industrial experience, a significant majority had less than two years of experience. Furthermore, two-thirds of instructors had not received any training in the past five years.

III. Potential Options for Improving the Effectiveness of the System

68. **What is the appropriate role of the public sector in training?** Finding the right role for the public sector in training remains a critical issue. The fact that the central and state governments have an interest in removing skill bottlenecks does not mean that this should do so solely by providing training. State-sponsored provision of training may be used to address equity issues or address market failures (e.g. provision of training for the informal sector), but it may not be necessary in an environment where private capacity exists. Hence it is important to find the appropriate balance between government and non-government provision and financing of skills. However, there are many things that the non-government sector cannot do –developing policies and standards, preparing teaching materials, training instructors, provision of information on training – and it is in these areas that the government has a very important role to play (Box 3.4).
69. **Support could be given to reforms proposed by the National Planning Commission, DGET, and other government agencies.** These include (a) encourage expansion of the private training provision; (b) strengthen interaction between industry and ITIs; (c) form national/state-level bodies to provide guidance to ITI operations; (d) review the formal status of public training institutes that currently do not support their operational flexibility and responsiveness; (e) re-establish some 500 ITIs as Centers of Excellence that will be registered as autonomous bodies and have linkages to industry; and (f) develop a policy framework for enabling training for the unorganized economy.
70. **However, many of the reforms have not been implemented as yet.** Part of the problem lies in the fact that there is little coordination and dialogue between the various bodies responsible for overseeing training, and the lack of an overall champion to guide these much-needed reforms further. Furthermore, with the incentive framework not clearly articulated, there is little enthusiasm among institutional management and staff to try and move away from the supply-driven system of training that has persisted for the past few decades.
71. **In the remainder of this section, we will present some options for moving forward in some of these directions.** Some potential reforms are discussed in more detail below.

⁵⁰ *Tracer Study of Trained Apprentices to Assess the Effectiveness of Apprenticeship Training Scheme (ATS)*, DGET 2003

Box 3.4: Appropriate Role of the Public Sector in Training

There has always been an extensive debate regarding the appropriate role of government in the provision and financing of training. While the debate is by no means resolved, international experience points towards some guiding principles in this regard.

No government today can afford to provide and finance all the skills needed by a modern economy. Finding the appropriate balance in government and non-government provision and financing of skills is essential. The highest priority for government is in getting the policies right to facilitate skills development that encourages each of the partners to pursue its comparative advantage in a market context. The balance in the partnership may vary from country to country given the economic context and will need to be informed by analysis of this context.

Some rather clear roles for government emerge where ensuring equity of access to training is concerned and where markets fail to provide the right signals to guide training decisions. Encouraging cost recovery for training can improve the efficiency with which training resources are used but reduce access to training for those without a capacity to pay. The state has a clear role to promote equity in access and can use its financing in a targeted fashion to achieve this goal in state-sponsored and non-government sources of skills training. Where markets fail to send the right signals to guide training decisions, governments can also justify financing interventions. The presence of social benefits to training that are not captured in increased earnings for the trainee or higher profits for the enterprise will lead to lower levels of private investment in skills development than needed from a social perspective. Targeting public financing to those who would invest in these skills can improve the performance of the market.

State-sponsored provision of training can also be used to address equity and market failures, but it is not a necessary condition in an environment where non-government capacity for skills development exists. Determining the role for the public sector in the provision of training therefore requires carefully assessing what the non-government sector is willing to do and whether, with appropriate incentives, it can be encouraged to fill training gaps.

There are many things the non-government sector does not or cannot do. These include overall policy development and guidance, standard setting, the provision of information about the benefits and location of training, preparing teaching materials, training instructors, and running standardized examinations of graduates. Here, the state's role is clear and positive.

Source: Johanson and Adams (2004)

(a) National Coordination

72. **The institutional setup for vocational education and training in India is complex (Figure 3.5) even though the system, with less than two million students, is small.** This sort of complexity is not unusual in any country – VET itself is complex – and developing a viable framework to deal with it is not straightforward. Box 3.5 and Figure 3.5 3.6 present five models that have developed elsewhere. The Indian system could be said to resemble most closely the Latin American model.

Box 3.5: Training Systems Around the World

At the risk of oversimplifying things, and bearing in mind that all of these systems are constantly changing, six basic approaches can be distinguished (Figure 3.6):

- The **Japanese system** may have the simplest design. Students completing basic education go to general secondary education, and from there they either enter firms that provide entry-level training or go on to tertiary education.
- The **North American system** has no “streaming” until after secondary education and it relies on post-secondary education to facilitate transition to work. Students completing secondary education go to community colleges and polytechnic institutes (which provide vocational-technical instruction) for short courses, and to universities, which provide both general and professional training.
- The **French system** streams students into vocational courses at the secondary level. Students in vocational courses are prepared for entry to the labor market, and those in the humanistic-scientific streams are prepared for higher education.
- The **German system** is based on a long tradition of apprenticeships. For a (diminishing) majority of secondary school students, instruction consists of school-based general instruction and firm-based occupation-specific training (the “dual” system). The system, regulated by guilds, has a set of qualifications that provides broad equivalency between graduates of the academic and the dual subsystems.
- The **Latin American** training system is a hybrid of the French and German models. For students completing basic education: (a) it relies on autonomous vocational training institutes for those proceeding to the labor market, (b) on general (humanistic-scientific) education at secondary level for those proceeding to tertiary education, and (c) on school-based vocational education for others.
- The **Australian** system allows transitions between the vocational and tertiary education systems. Employers play a key role in the management of the vocational system.

Source: DeFerranti et al. (2003)

Figure 3.5: Education and Training System in India

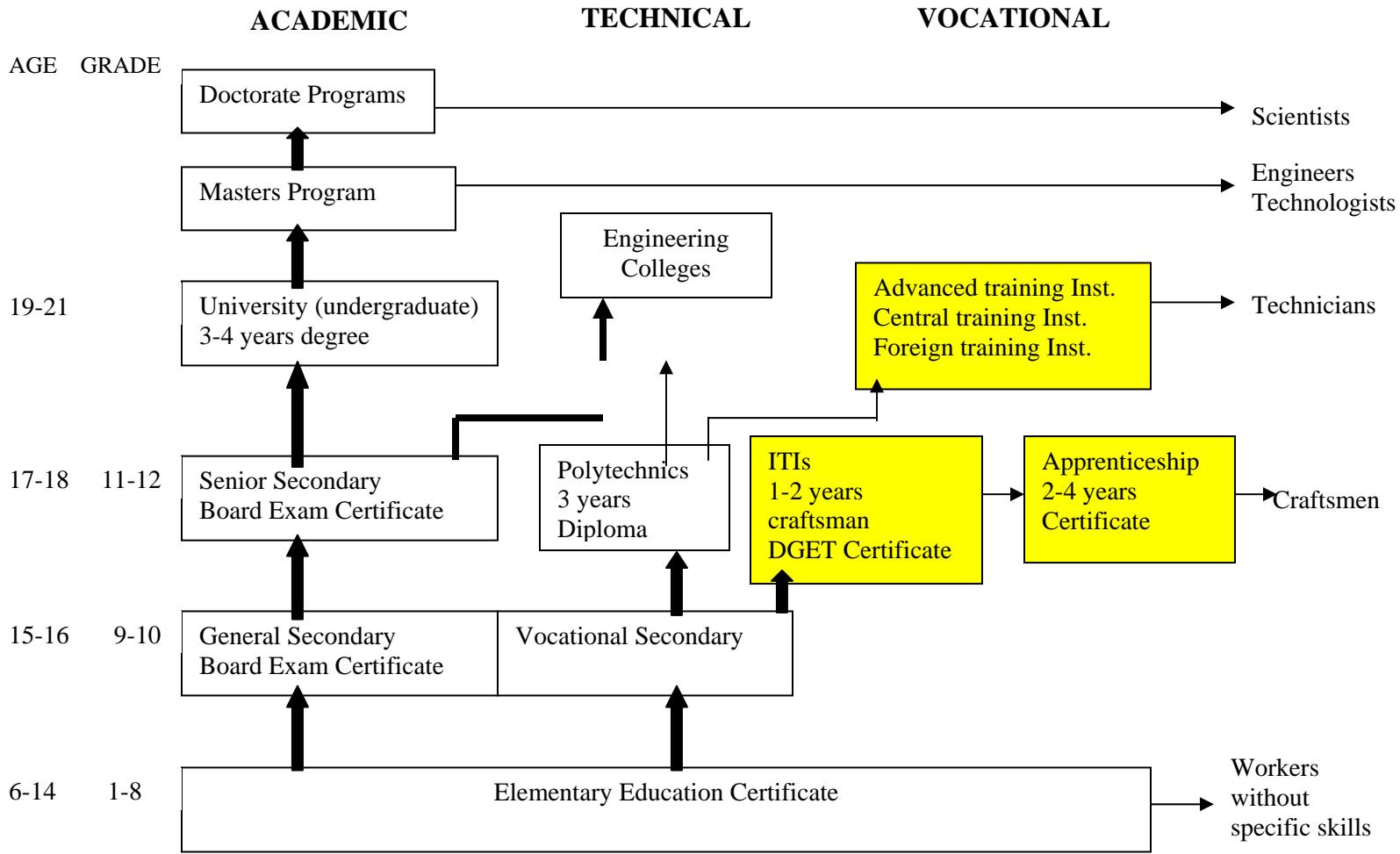
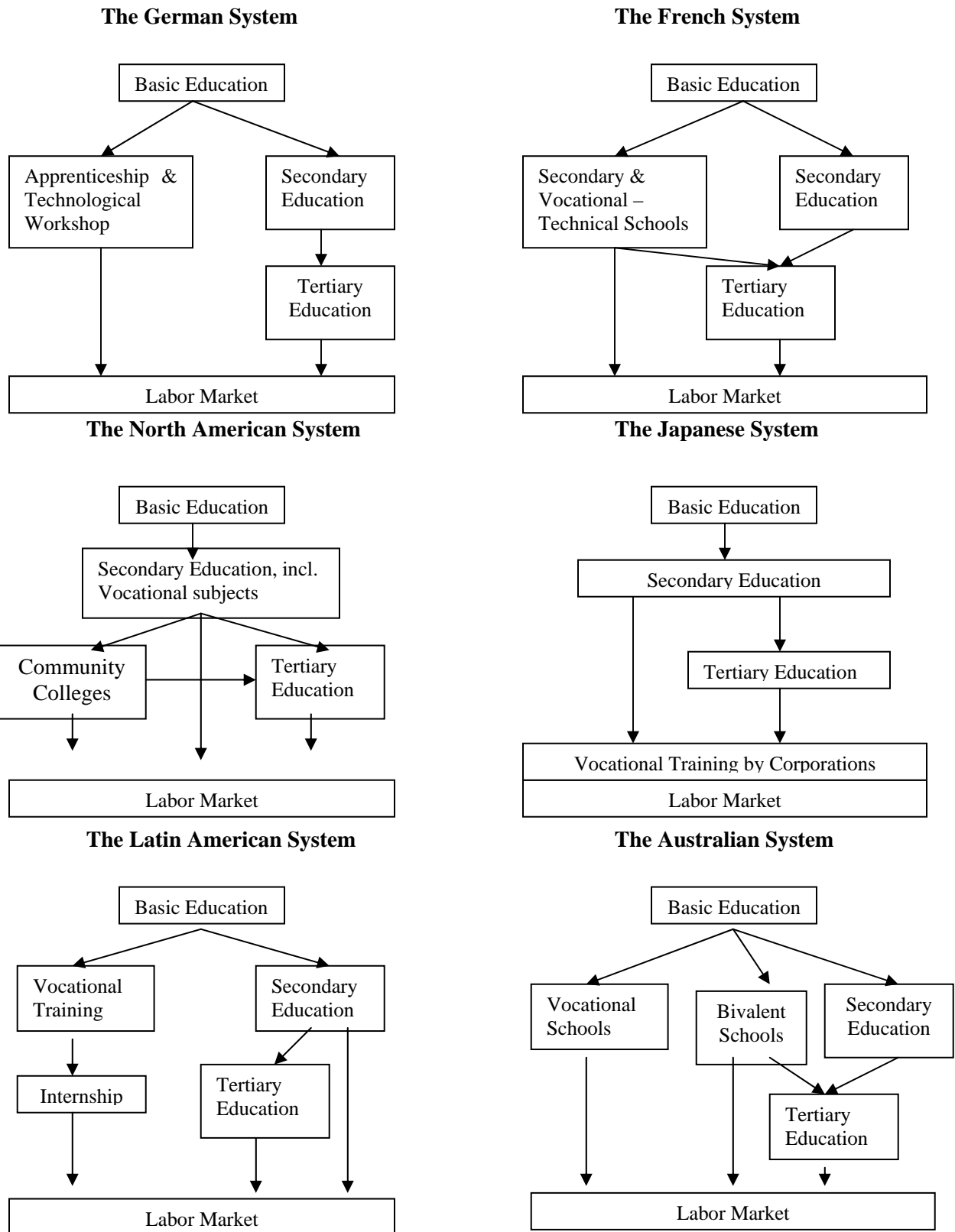


Figure 3.6: Education and Training Systems around the World



73. **The question becomes whether India could adopt a particular framework, or develop a framework in its own way, or simply leave things unchanged.** Leaving things unchanged seems unwise. Duplication and lack of coordination are already features of the system and if it is to grow substantially, some guiding framework is essential. Adopting frameworks used elsewhere is rarely possible, as too many precedents, and constitutional and institutional factors have to be taken into account. Developing a uniquely Indian framework would seem the only way to proceed, though this should be informed by international experience.
74. **NCVT could be transformed into an independent coordinating authority for vocational training.** At the very least, a clear demarcation needs to be made regarding the functions of DGET, NCVT and the SCVTs and an effective coordination mechanism between these agencies needs to be developed. However, it may be better to even go a step further. While DGET could continue to be responsible for overall policy making, NCVT could be restructured to play a more central role in coordinating and overseeing the system as an independent Coordination Authority. Many countries (Argentina, Australia, Brazil, Chile, Malawi, Mauritius, South Africa and the U.K.) have such bodies. However, in India, the key role of the NCVT is limited to standards setting and accreditation. In countries where they have been more successful, the role of these authorities is broader. To respond effectively to skill needs of the economy, these authorities have been set up as autonomous bodies, independent of line ministries. They play a key role in the coordination of the overall training system, in financing training, curriculum development, supervising skills testing, certification and accreditation, and provision of information on the quality and effectiveness of institutions. Critical to the success of these bodies is the role of employers – unless employers are given sufficient role in the decision making process, training may not be adjusted sufficiently to meet the needs of employers. If the NCVT is reoriented to perform these functions, the SCVTs would also need to be reoriented to be accountable to NCVT and perform their functions at the state level. Australia’s reforms in setting up a national training body (see Box 3.6) and Brazil’s initiatives in moving the management of these training authorities to the private sector (see Box 3.7) – both in federal systems - are particularly relevant to the Indian context.
75. **A key role NCVT and SCVTs could play is in the provision of information and facilitating the evaluation of training provided in institutions.** As mentioned above, the lack of reliable information about the effectiveness of public training programs and the availability of privately provided VET programs significantly hinder a more complete analysis of the system. A key function for the NCVT and the SCVTs is to provide information on the nature and quality of training, and facilitating regular and independent evaluations on the impacts of training programs – an expansion of this role may be one of the most effective ways for governments to foster the development of a relevant and cost-effective VET system. Key data would include institutional capacity, enrollment, completion information, and graduate follow-up data from all registered vocational institutions, and annual tracer study/survey of graduates from vocational institutions. Better information about VET programs would help Indian policymakers redesign their VET policies and interventions to ensure that they are responsive to labor market demands. Wider access to information on the availability and quality of training supply can better protect prospective trainees from unfair trade practices.

Box 3.6: Australia's Systemic Level Reforms

A major reform in Australia was the establishment of the Australian National Training Authority (ANTA) by the federal and state governments. The authority was established as a company, with the federal and state governments being equal shareholders, but these governments recognized that their role in managing VET reform could not supersede the role of employers and workers. ANTA has a board of five industry representatives and the aims of ANTA include: (a) developing a national TVET system with agreed objectives and priorities, assured funding, consistent national strategies and a network of providers delivering high quality programs at the state and local level; (b) ensuring close interaction with industry and TVET providers so that the strategic plan reflects industry needs and priorities; (c) developing effective training market with public and private provision of both high level, advanced technical training and further education opportunities for the workforce and community generally; and (d) enhancing efficiency and productivity of publicly funded providers that could compete effectively in the training market

In addition, Australia ensured extensive coordination among the relevant government VET agencies at the federal level for more coherent policymaking and allocation of public funds. This has led to distinct changes in the relationship between the ministries of Employment and Education. The government had increased the Ministry of Employment's responsibilities for developing traineeships, interacting with employers to determine the types of training required, and implementing programs for the unemployed, but VET, which fell under the purview of state education ministries, remained the country's major vehicle for the system's formal training component. The federal government became unwilling to tolerate the division and combined the ministries of Employment and Education ministries into the Department of Education, Employment and Training. Bearing in mind that its role in education was mainly as financier rather than administrator, the federal government took major initiatives in setting policy. Its actions eventually led to some states also to combine their education and labor ministries.

Source: Abrahart (2000), Clarke (2005)

Box 3.7: Employer-Owned and -Managed Training in Brazil

Experiences in Brazil underscore the importance of ownership and employer participation. A chronic gulf between supply and demand was bridged by giving control of training to its users. The National Industrial Apprenticeship Service (Serviço Nacional de Aprendizagem Industrial [SENAI]) was created in the 1940s and operates under the ownership of the Federation of Industries. SENAI was followed by four other sector-specific services: commerce (SENAC), rural areas (SENAR), small enterprises (SEBRAE), and transport (SENAT). All the services operate under the same basic structure and legal framework. Chambers of employers finance their training programs through a one percent payroll levy and run the services with full independence and under private sector statutes.

The five services have evolved in different directions although they operate with the same rules and legal framework. SENAI has a network of 500 training institutions and trains two million workers a year. SENAR and SEBRAE were first created as government bureaucracies but this led to inefficiencies, lack of responsiveness and flexibility, and to political spoils. They were recreated with ownership, management, and budgets given to the relevant employer associations. Because training markets had already been developed in the country, the rejuvenated SENAR and SEBRAE opted to buy training in the market rather than to establish their own training institutions. SENAT, the newest service, took a different path. It created an extensive satellite network for training employees of more than 1,000 firms throughout the country.

Source: Inter American Development Bank, IADB (2005)

(b) Institutional Level Reforms

76. **At an institutional level, involving employers should be a key management objective.** Institutional Managing Committees (IMCs) were introduced in 1998 so as to involve employers into overseeing ITI operations. There are now 350 IMCs in 18 States with more in the pipeline. IMCs are supported by the Confederation of Indian Industries (CII) and the Federation of Indian Chamber of Commerce and Industry (FICCI), with each IMC being chaired by a local industry representative. Current IMCs have limited decision making powers and that too in respect of a few training programs. Although GoI has proposed that IMCs should have significant financial autonomy by being allowed to retain student fees and other revenue collected by the ITIs, this development depends on agreements being reached with the States, something that cannot be assured.
77. **In order to make ITIs more relevant to market needs, GoI has envisaged a program to establish Centers of Excellence in 500 ITIs.** The program that has already commenced in 100 ITIs aims to make courses more relevant to the labor market. Financial sustainability of the proposed Centers of Excellence would probably depend on States carrying the cost of salaries. The CII and other employer groups support the program under some conditions, mainly relating to the need for joint management of institutions (Box 3.8). In Karnataka, the State Government and the Bangalore Chamber of Industry and Commerce have signed a Memorandum of Understanding that has broad economic objectives designed to foster economic development in the State; among other things, the Chamber would consider managing ITIs and selected state government institutions through a public-private partnership.

Box 3.8: The Confederation of Indian Industry Position on Managing ITIs

The CII considers that all Centers of Excellence should be administered through IMCs and that a number of conditions should be mandatory if IMCs are to be effective, that is, if ITIs are to deliver demand-driven training in their catchment areas. The CII believes IMCs should be responsible for:

- Selecting staff and for staff training and development. Existing staff should undertake some form of skills upgrading.
- Setting student entry requirements and for selecting students.
- Developing and maintaining information systems.
- Developing and maintaining placement cells for graduates.
- Upgrading curricula, within national norms, including adopting new courses or abolishing existing courses.
- Introducing compulsory industry training for students, with employers assessing the practical skills of students as part of the overall assessment.

IMCs should also be free to generate and retain resources through projects for industry. However, the CII position says nothing about fees for students.

Source: CII (2005)

78. **These are steps in the right direction but enhancing autonomy at the institutional level will be critical.** Involving employers in managing institutions would only yield results provided institutions have more autonomy and are more accountable for their performance. This means letting institutions administer themselves and keeping the funds they raise through fees and production, thus forcing them to find their own markets. This breaks the long decision-making circuits in centralized systems that militate against realistic timetables

when trying to react to the labor market developments. Relationships between training centers and enterprises are easier to promote at the local level. Elements of autonomy that should be introduced include: (a) letting ITIs, in consultation with employers, decide on their own training programs; (b) giving institution managers the freedom to hire and fire teachers, including contract teachers and non-teaching staff – this may, over time, help solve some of the problems that many ITIs have with poorly qualified staff; (c) allowing ITIs to generate revenues by selling goods and services; and (d) allowing ITIs to set fees – instead of the current system where most students get a stipend. Delegating responsibilities from central to institutional authorities is being tried in a number of countries (see Box 3.9).

Box 3.9: Zambia: Granting Autonomy Gradually to Public Training Institutions

The government of Zambia is changing its role in training from provider to financier, regulator, and coordinator. It has transferred control of 21 public training institutions to autonomous Management Boards and devolved greater responsibility to local authorities.

The Boards (established in 2000) are responsible for the curricula, for maintaining standards prescribed by the Technical Education and Vocational Education and Training Authority, administering institutions including their finances, and providing such services as needed. Staff members of public institutions were removed from the government payroll and offered severance benefits. The government will continue paying the salaries of those who opted to work under the new Boards for 2 to 3 years. After that, institutions will have to compete for finances on the basis of quality, cost-effectiveness, and responsiveness to demand.

The government considered two options for implementing the new plan—doing so over several years or with the stroke of a pen. To avoid resistance by vested interests, the government chose the latter.

Source: Johanson and Van Adams (2004)

79. **Delivering short-term training courses in public funded institutions should be encouraged, but not so as to crowd out the private sector.** Institutions should be free to provide short-term courses on a fee-for-service basis. Courses should be demand-driven and should generate positive externalities by forcing instructors to be involved in workplace environments and to devise curricula that respond to market needs. To ensure that public and private institutions compete on a level playing field, course charges should cover operational and maintenance costs, and the amortization of equipment and buildings. The experience of Maharashtra (Box 3.10) suggests the potential of this approach but it will have to be studied carefully before taking it to scale.

Box 3.10: Introduction of Short-term Courses – The Maharashtra Pilot

The Maharashtra State Training Directorate curtailed long-term training programs in certain trades as the demand contracted rapidly. Because of the lower admissions, a considerable amount of the training equipment and teachers became under-utilized.

So as to use the facilities efficiently, the Government empowered ITIs to conduct short (three to six months) courses in basic trades according to student demand. Courses were implemented under a pilot “Production-oriented Training Scheme”, which aims to facilitate new trades and achieve some cost recovery. Between January 2002 and April 2003, around 6,560 youth were trained. Fees were around Rs.300-400 per course (\$7-10) and students were charged for the cost of raw materials and equipment depreciation. The labor cost for delivering short-term training courses is based on Rs.50 per hour (\$1).

Overhead charges and the amounts earned from depreciation of training equipment are credited to the state government budget. Half of the revenue earned towards wage-related charges is credited to ITI development accounts while the other half is distributed among the administrative and teaching staff.

Source: ILO (2003)

80. **However, autonomy is not a panacea.** International experience shows that institutional autonomy can be fraught with problems unless it is carefully planned. It needs to be accompanied by a new accountability framework for ITIs. Indicators of internal and external efficiency will have to be developed so as to measure the performance of institutions and to match performance to financing. Any move towards institutional autonomy should include the development of appropriate management capacity, new accounting systems and training for board members.

(c) Developing a National Qualifications Framework

81. **A further development designed to bring about greater consistency and cohesion among the many players is to establish a National Qualifications Framework (NQF).** Formalizing existing qualifications into a National Qualifications Framework is now quite common internationally and is important in identifying weaknesses in what are usually ad hoc structures. Both DGET and MHRD have proposed something similar although only covering their individual responsibilities. Since one of the main issues is the lateral and vertical transfer of students between systems, neither proposal would be sufficient. The proposals also do not adequately address the question of industry involvement. Some key principles to be followed include:
82. **The NQF must be based on specified standards of training, leading eventually to the development of industry-relevant modular courses.** Standards should be developed irrespective of what institutional framework is put in place to manage the NQF or even whether one is put in place at all. The standards must depend on industry involvement – standards cannot be developed solely in-house by curriculum development units. To that extent, the idea that industry can be simply consulted is not correct. Direct involvement is required. That should not mean that industry actually has to develop the curricula or painstakingly develop the standards itself. In the end, curriculum development units must do much of the work, but it should be through industry working parties.

83. **The NQF will provide a framework for establishing course assessment requirements and course entry pre-requisites.** This would seem to be a priority for India. Eventually, the NQF would need to guide the articulation of courses between qualifications and across institutions, and the overall process of certification. Individual systems need neither be subsumed by nor lost to any over-arching system. But there should be some consistency, without the need for individual elements of the education and training system to strike out alone. Australia, a country that has had an NQF for many years, has re-introduced vocational courses into schools (entitled 'VET in Schools') but the courses have been developed as 'foundation' vocational skills already defined and standardized by the Australian National Training Authority, the single tripartite body responsible for training standards (See Box 3.11).

Box 3.11: Accreditation Schemes in Australia's Vocational Education System

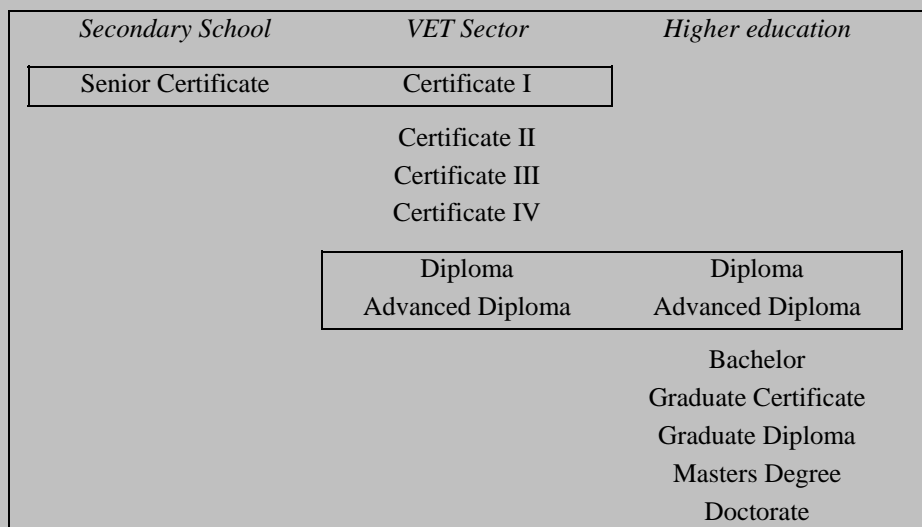
A major concern for all governments has been the inconsistent accreditation procedures across the states. Some of the states did not necessarily recognize courses of study and diplomas offered in other states, skills learned on the job were not readily recognized, and no ready formal method was available to distinguish between the courses offered by public and private institutions. It was realized that the development of competency-based training and the subsequent adoption of a set of national competency standards would help overcome some of these problems.

The move to achieve competency-based training is largely industry driven. The skills in demand in the economy and the standards to be achieved in those skills are being set by industry. The public VET system, essentially TAFE (Technical and Further Education), is being required to adhere to those standards and to issue certificates that attest to that fact. So too are major enterprises, such as those in the motor vehicle industry, that have long conducted both on-the-job and off-the-job training, the latter in formal classroom settings that are as well established as any public institution. Such industry courses are being accredited through the same process as the TAFE courses.

The burgeoning private sector training providers have the choice to also subscribe to the same accreditation processes if they choose to do so. Long-established private providers have well-earned reputations that suggest that there is no great need or urgency for them to subscribe. Indeed, they are likely to be more instrumental in setting the standards than following them.

One major advantage of the move to training standards is that it allows the participants maximum flexibility in moving between education systems, from secondary school to VET and from VET to higher education. As important as anything else in the system is the notion that development paths, especially for the young, should not be closed. The figure below schematically represents the system.

Level-I Certificates from the VET system are regarded as educationally equivalent to Senior Certificates from secondary schools, and Diplomas and Advanced Diplomas may be issued by the VET system or by higher education institutes. Depending on the courses of study, credits may be allowed to be accumulated as participants choose to move between the three sectors. Note that some VET certificates may now be issued with little or no formal training, for example, to enterprise workers who have obtained their skills over a number of years on the job.



Source: Abrahart (2000), Clarke (2005)

84. **The NQF will provide a framework for accrediting providers and for setting procedures for certifying student achievements.** Again, individual systems need not be subsumed by or lost to any over-arching system. In fact, it is quite desirable that this not happen. Of the two features, certification of student achievements is probably the more critical. Certification is the means by which institutions can satisfy themselves that applicants have met any course pre-requisites. But certification must be consistent.
85. **The development of the NQF needs to be managed by a National Coordinating Authority but implementation must be left in the hand of the states.** As discussed above, one of the key functions of the National Coordinating Authority would be to develop the accreditation system, with the industry playing a key role. However, a national agency can only develop the principles for an NQF whose implementation should be left with the States. It may be something of a misnomer to refer to State-based systems as part of a National Qualifications Framework but the Framework, when cut back to its basics, need only be a set of principles. Countries in Europe, for example, have a variety of NQFs without any great difficulty in adhering to a set of principles that underlie an overall approach by the European Union. The difficulty would come when individual States do not accept the principles. At that point the GoI could resort to financial incentives – (finance for remedial education and training, or finance for upgrading ITIs) – to make the States fall into line.

4. TRAINING FOR THE INFORMAL SECTOR

86. **Over 90 percent of employment in India is in the so called ‘informal’ sector, with employees working in relatively low productivity jobs.** Provision of appropriate skills may thus be an important intervention to increasing the productivity of this workforce. However, both demand side as well as supply-side constraints have inhibited skills development for this sector.
87. **On the demand-side, few employees in the informal sector see the importance of skills training.** Many identify lack of access to capital, cumbersome bureaucratic bottlenecks, and lack of access to quality equipment as their main challenges. These issues are hardly unique to India – as shown by Johanson and Van Adams (2004) in their study on VET in Africa. In some sense the workers are correct – training in itself is not enough to improve the productivity of the labor force. If this is not accompanied by a package which includes access to credit, markets and technology, it will have little positive impact on productivity. However, skills development is an essential element of that package.
88. **On the supply side, there are a number of institutions which are trying to provide skills training geared to the needs of the informal sector.** As shown below, these efforts are fairly small, not well coordinated and often do not take into account the wholistic needs for training and other support services of informal sector workers.
89. Given that informal sector workers are such an important segment of the labor market, this chapter focuses on their needs for skills development and access to related services.

I. System Description

90. While there are no formal programs of training for the informal sector, a number of institutions are involved in providing training which is geared to the needs of informal sector employees. Some of the key ones are listed below.

(a) Community Polytechnics

91. **Community Polytechnics have been established as entities within polytechnics rather than as autonomous institutions.** To that extent Community Polytechnics (CPs) are part of the formal system. However, they provide training *within* communities²⁹ and their approach should be considered informal. There are now 675 CPs, training about 450,000 people a year. Courses are of 3 to 9 months duration and there are no entry pre-requisites. The MHRD intends to incorporate CPs into *all* AICTE-accredited institutions by the end of the 10th Plan. The typical courses and services provided by the CPs are shown in Box 4.1.
92. **CPs deliver the same types of courses – in a community environment – that are delivered through vocational education in schools, but the focus would seem to be on the informal sector of the economy.** The content of CP courses would surely be different to those in schools. Office management and fashion design, for example, are described in Box 4.1 as six month duration courses. Courses with these titles are also offered as two year duration courses under vocational education. Participants in CP courses gain no special qualification and no particular credit toward any further training in ITIs or polytechnics. CPs do not,

²⁹ Care should be taken not to draw similarities to the term Community College in North America and Canada.

therefore, fit into any qualifications framework. According to the 10th Plan, the courses and services of CPs should emphasize the transfer of technology to communities, manpower development and rendering of technical and support services. Whether CPs do provide all of the services described in Box 4.1 and whether they provide them effectively is not known.

(b) Jan Shikshan Sansthan

93. **Jan Shikshan Sansthan (JSS) was launched as an adult education program aimed at improving the vocational skills and quality of life of workers and their family members.** JSS (literally, Institute for People’s Education) is financed by the Adult Education Directorate within MHRD. The program initially focused on adults and young people living in urban and industrial areas and on people who had migrated from rural areas. The target group has since shifted to newly literate workers and to unskilled and unemployed youth in both rural and urban areas. JSS acts as a district level resource to organize vocational training and skill development programs. At least 25 percent of the program beneficiaries must be neo-literates.

Box 4.1: A Typical Community Polytechnic

The Polytechnic at Mayem Bicholim, Goa, offers courses and services to the local community through its associated Community Polytechnic (CP). The CP describes its objectives as:

- To assess the needs of rural areas so that development programs can be designed and carried out;
- To train village youths for self and wage employment;
- To enhance production and productivity in rural areas to raise their standard of living;
- To make available repair facilities at the doorstep;
- To start people’s participation in development; and
- To increase awareness of various development schemes floated by different agencies.

Its courses have no entry pre-requisites. The various courses offered are:

- One month duration courses
 - Glass painting; screen printing; purse making; carving, soft toys making.
- Three month duration courses
 - Mobile and telephone repair; helper for hospital and nursing homes; electric motor winding.
- Six month duration courses
 - Office management; electrician; plumbing; 2-3 wheeler mechanic; dressmaking, designing, embroidery and fabric painting; fashion designing.

It also provides direct community services as below:

- | | |
|--------------------------------------|--------------------------|
| ➤ Mahila Mandal | ➤ Educational film shows |
| ➤ Rural roads | ➤ Medical camps |
| ➤ Nutrition camps | ➤ Safe drinking water |
| ➤ Social service camps | ➤ Student counselling |
| ➤ Tree plantation camps | ➤ Village environment |
| ➤ Financial help for self employment | ➤ Youth club |

94. **By the end of the 9th Plan there were 122 JSSs offering 255 types of vocational courses.**³⁰ Courses ranged from candle and *agarbatti* making, sewing and embroidery to computer courses. In 2001-02, almost 1.5 million people received vocational training or participated in other JSS activities. Just over 60 percent of participants were women. All the JSSs are managed by non-government organisations (NGOs) under Boards of Management

³⁰ This information is taken from www.nlm.nic.in, the website of the National Literacy Mission in India.

that include a GoI representative. They must be registered under the Societies Registration Act, 1860, incorporating a Memorandum of Association, Rules and Regulations.

(c) National Institute of Open Schooling

95. **The National Institute of Open Schooling (NIOS) provides “opportunities to those who would have otherwise missed out.”**³¹ NIOS offers Open Basic Education (OBE) programs designed to bring students to Grade 3, Grade 5 or Grade 8 level. Its mandate especially covers designated groups described as girls and women, working men and women, scheduled castes and scheduled tribes, the handicapped, other disadvantaged groups and rural youth. By assisting rural youth, NIOS potentially serves the largest group of new entrants to the labor market, a group most likely to find itself working in the informal labor market.
96. **NIOS has accredited 731 training providers to deliver a Vocational Education Programs.** These Accredited Vocational Institutes (AVIs) include government financed institutions such as JSS, which provide non-formal vocational courses in urban areas and ITIs (in Uttar Pradesh but no other States). It also includes non-government providers. Courses may be taken in combination with academic subjects at secondary and senior secondary levels. Of the 85 courses offered, only 12 are open to students who have less than Grade 8 completion; 54 courses (almost two out of three) require at least Grade 10 completion.

(d) Other Training for the Informal Sector

97. **A number of agencies provide smaller programs for the informal sector.** These are described in detail in Annex C. Almost all central and state line ministries provide some form of training. They include:
- The Ministry of Rural Areas and Employment administers schemes aimed at creating sustained employment opportunities to secure a certain minimum level of employment and income for the rural poor. They include the Jawahar Rozgar Yojana (JRY) Employment Assurance Scheme, the Integrated Rural Development Programme (IRDP), the Programme for Development of Women and Children in Rural Areas (DWCRA), and the Training of Rural Youth for Self-employment (TRYSEM).
 - The Department of Women and Child Development runs Support to Training and Employment Programs (STEP), a NORAD-assisted program on employment cum income-generation. The scheme offers condensed courses of education and vocational training program for women.
 - The Khadi and Village Industries Commission (KVIC) has 51 training centres, including 12 village industry training centers.
 - Prime Minister's Rozgar Yojana provides wage employment and self-employment to educated unemployed youths aged between 18 and 35 years.
 - The Bharatiya Yuva Shakti Trust (BYST) aims to help unemployed or under-employed youths aged 18-35 years to set up or develop their own businesses.
 - Entrepreneurship Development Centres/Institutes provide training in different fields based on the resource endowment of the area.
 - The National Renewal Fund (NRF) provides assistance to cover the cost of retraining and redeployment of employees arising from modernisation, technology upgradation and industrial restructuring.

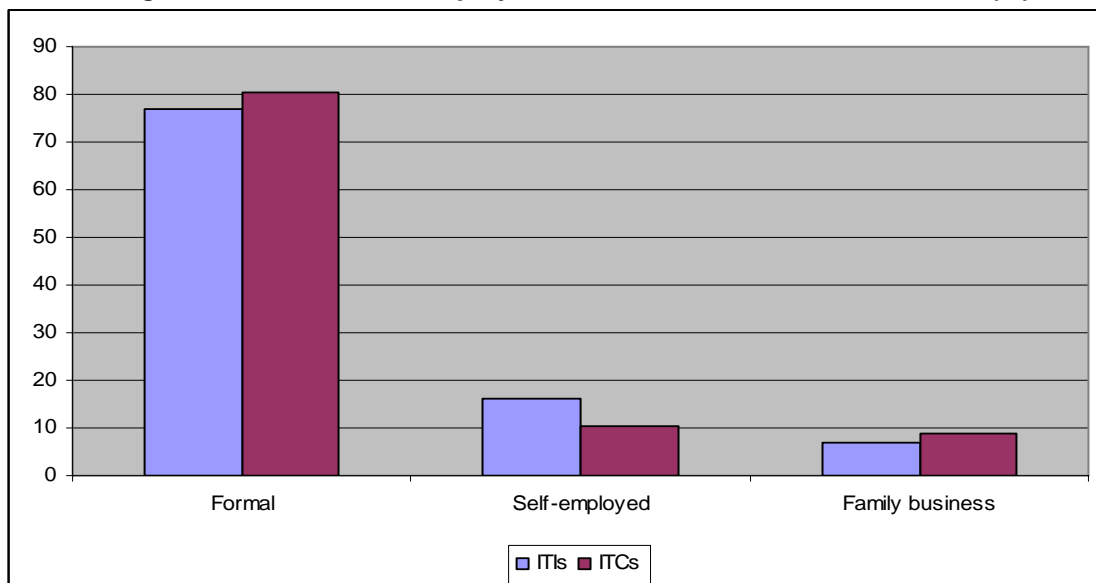
³¹ Prospectus of the National Institute of Open Schooling,

- The Ministry of Agriculture’s Krishi Vigyan Kendra’s (KVK) impart training to farmers, farm women, rural youth and grass roots level extension workers in broad based agricultural production systems.

II. Outcomes and Issues

98. **While a majority of the labor force is employed in the informal sector, the current programs at the central and state levels are quite inadequate to meet the training needs of the large workforce in the informal sector.** Many workers in the unorganized economy have never been to school let alone to vocational training institutions. The formal training system, because of its entry requirements and geographical mapping, is not designed to offer skills to low-educated people and particularly not to those in the rural non-farm sector. But neither are there other providers to fill the gap. Most workers continue to learn trades on the job through informal apprenticeships at their place of work from other low-skilled craft people.
99. **Public training institutions play a limited role in producing skills for the informal sector.** While one of the mandates of ITIs is to train workers for the informal sector, evidence shows this is rarely the case. The share of ITI graduates who entered self-employment or became employers was on the average 12 per cent of all the graduates in a year while only around 5 per cent of ITC graduates joined the unorganized economy. Interviews with staff and graduates of training institutes also support the assumption that this role has been very limited. Data from Maharashtra (Figure 4.1) support these findings. – of Of the ITI and ITC graduates who are employed, less than 20 percent are self-employed or work in family businesses. These data correspond well to the findings of a study of 880 small businesses conducted in District Muktsar in the State of Punjab. This study revealed that the share of ITI graduates in mechanical and electrical trades in those micro enterprises was less than eight percent. No graduates were found in any other small businesses. The main reason is that running a small business requires much more than simply possessing a particular occupational skill. It requires the ability to run a small business, which requires a person to be multi-skilled. This sort of ability is not taught in the formal training centers.

Figure 4.1: Sector-wise Employment of ITI Graduates in Maharashtra (%)



Source: ILO (2003)

100. **Traditional apprenticeships, the predominant form of training for the informal sector, have significant weaknesses.** More young people acquire competence through traditional (informal) apprenticeships than would be possible through the formal education system. Although data for India are not available, figures for other countries with a similarly sized informal sector suggest it could amount to anywhere between 50 to 70 percent of employees in micro-enterprises. Informal apprenticeships have advantages-- they provide trainees with flexible and dynamic skills; are self-regulating; cost the government virtually nothing; and do not require much initial skill or experience from the apprentice, except only a willingness to be trained by agreement with a willing master, often a relative. They also have important limitations. They are based on traditional technologies and ideas from previous generations and the quality of training is only as good as the skills of the master and the master's willingness and ability to pass on those skills. The theoretical aspect of learning is weak or absent; only the simplest skills are learnt, resulting in low quality products. Apprentices often lack exposure to modern training systems and technologies as well as the innovative aspect of learning. The range of skills tends to be narrow, limited to a particular product or phase in production; these skills may easily become outdated in fast changing labor markets.

III. Potential Options

101. **The training needs of informal sector operators are diverse.** What distinguishes the sector from formal wage employment is the breadth of tasks that need to be performed. Self-employed workers in the informal sector usually need to complete specific jobs by themselves, from beginning to end. They must perform a variety of functions—initial market surveys, cost and quality control, financing, and marketing (see Table 4.1). Technical and business skills are critical in enhancing productivity and quality of goods and services produced. Improving skills will strengthen the ability to compete. Technical skills and other types of support (access to credit, technology, markets, and information) are imperative.

Table 4.1: Skill Requirements in the Informal Sector

Skill Area	Training Needs
Technical	<ul style="list-style-type: none"> • General upgrading of technical skills used in trade • Improved knowledge of materials utilized in trade • Practical ways to cut down on waste of materials • Basic reading of designs and drawings • Repair of own equipment • Additional skills required for new product designs • More advanced equipment, and improved technologies • Basic knowledge of industrial production techniques
Management	<ul style="list-style-type: none"> • Costing and pricing and related aspects of financial administration • Various aspects of marketing, including carrying out rudimentary market research • Customer relations, including setting up a customer data base • Division of labor in the workshop and personnel management • Input stock planning • Quality control • Workshop layout • Legal and fiscal regulations
Literacy and Numeracy	<ul style="list-style-type: none"> • Low educational attainments limit trainability and consequent skills

Skill Area	Training Needs
	achievements. Studies on the training needs of operators in the informal sector reveal a need for functional language.
Others	<ul style="list-style-type: none"> • Knowledge of recent technological developments in the trades • Teaching skills: improvement in the teaching skills of master crafts persons, to increase the effectiveness of the training. Apart from the naturally gifted, masters typically know little about effective training methods for (young) adults. • Cooperative work: why and how to work together, informally or as a trade association. This would include the role of groups in micro and small enterprise development, structures and processes of an association, group dynamics, etc.

Source: Johanson and Van Adams (2004)

102. **Reorienting public training institutions to meet the needs of the informal economy would not seem to be the solution.** Public institutions would find it difficult to make the changes and serve both the formal and informal sectors with the same skill and experience. It would require a major investment to upgrade facilities and equipment, to develop and retain new staff, and design curricula and materials to provide the package of skills that have been described above. Such improvements will require resources significantly in excess of current public subsidies. Increased training fees would not generate a great deal of income in view of the poor benefits of past training and constraints on family incomes for the target groups.

Box 4.2: Bangladesh: Underprivileged Children’s Education Program (UCEP)

Underprivileged Children’s Education Program (UCEP), established in the early 1970s, seeks to raise the living standards of poor urban children and their families. It focuses on the target group of working street children and aims to provides them with skills to enhance their employability in the local labor market, often in the informal sector.

UCEP is conducted in 30 general schools for non-formal basic education working on three shifts per day in four major cities of Bangladesh. Total enrollments are about 20,000. Skill training is given in three training institutions working on two shifts each, training a total of 1,400 trainees. UCEP has extraordinarily high completion and employment rates for its graduates, both averaging about 95 percent.

UCEP’s program can be divided into three stages.

- The first stage is accelerated non-formal basic education starting at age 10 or 11. About half the graduates from the non-formal basic education program are admitted into vocational training.
- The second stage consists of fundamental skills training which may vary in length from six months to two years.
- The third stage is placement in employment, and follow-up on the job.

Factors that have contributed to making UCEP successful include:

- Providing students with a solid base of general education;
- Focusing on the proper target group, i.e., those with “blue collar working aspirations”, those who intend to enter the labor force after training as semi-skilled workers;
- Continuous linkages with industry, which ensure that trainees are trained in the knowledge, skills and attitudes sought by employers, and also that employers are aware of the competencies of UCEP graduates;
- Focus on acquisition of skills and competencies through highly structured, supervised individual “hands-on” instruction (rather than being driven by credentials and certificates); and
- Rigorous follow-up of each graduate in terms of employment, earnings and performance on the job.

Source: World Bank (2001)

103. **Locally based non-government training providers are often more effective in providing services that meet the needs of the informal economy.** In India, as in many other countries, non-government providers are much more active in training in the informal sector. Even though anecdotal evidence on the impact of these programs is positive, they have been rarely evaluated. However, there are positive examples where such initiatives have been successful – such as Bangladesh’s Underprivileged Children’s Education Program (UCEP) program which has met with success in providing children with a combination of good general and vocational skills which has enabled them to be employed in the labor market (see Box 4.2).
104. **The governments can however act as facilitators.** A recent study of training for the informal sector in Africa concluded that the public sector had no comparative advantage in providing basic skills training (see Box 4.3). On the contrary, non-public providers pick up innovative training approaches much more quickly and need less support. Instead of delivering training themselves, governments could focus on creating an environment to support non-public providers through: (i) establishing a policy framework (regulations and incentives); (ii) supporting curriculum development, training of trainers, and competency-based skills testing; (iii) stimulating investment through tax incentives or financial support so as to increase the capacity and the quality of training; and (iv) revising apprenticeship acts that are outdated and contain regulations that hamper enterprise-based training.

Box 4.3: Training for the Informal Sector in Sub-Saharan Africa

Many parts of Sub-Saharan Africa have the same difficulty as many parts of India, a dominant rural population and a highly informal economy. A World Bank report that reviewed the experience of countries in the region did not find simple answers. It wrote, “the emergence of training markets with diverse sources of supply and ready demand remains in the distance. Developing these markets is possible, however, and can be facilitated by governments.”

The report found a number of features that should be taken into account when governments seek to facilitate training for an informal economy:

- Demand for training among micro and small enterprises in the informal sector is likely to be low and need developing in order to demonstrate the benefits of skills development.
- Informal sector associations can help to raise awareness of skills shortages among members, as well as addressing other shared needs. Lack of literacy is likely to be an issue for skills development in the informal sector. There are successful examples of programs that combine learning for livelihoods with literacy training.
- Training for the informal sector differs from the formal sector in its preference for merging technical skills with business management skills and in delivering courses with a flexible schedule.
- Training must have immediate application, since the poor cannot afford long periods of training before seeing a payoff. Evaluating competencies achieved through training is important to ensure quality.
- Except at the high end of the informal sector, skills development does not guarantee a transition from abundant manual labor to skill-based competitiveness. An increased focus on developing skills for the informal sector should not detract from ensuring a reasonable amount of high-quality training for the modern sector.

Source: Johanson and Van Adams (2004)

105. **One successful approach has been Mexico’s Integral Quality and Modernization Program (CIMO).** Conditions in Mexico are similar to India – 99 percent of firms are small

and medium sized enterprises employ close to 70 percent of the workforce. This example shows that partnerships between the public and private sector to provide training and a whole range of support services can be effective to enhance the productivity of the informal sector (Box 4.4). It is very important to emphasize here that CIMO has been successful not only because the government facilitates the provision of training to small and medium sized enterprises, but also because enterprises are provided assistance with an integrated package of services - including information on how to run a successful business, technology, new production processes, quality control techniques, and marketing.

Box 4.4: Mexico: A Proactive Approach to Small and Medium-Size Enterprise Support

The Integral Quality and Modernization Program (CIMO – now renamed as PAC), established in 1988, has been effective in reaching small and medium-size enterprises and assisting them to upgrade worker skills, improve quality, and raise productivity. Set up as a pilot project to provide subsidized training, CIMO evolved when it became apparent that lack of training was only one factor contributing to low productivity. By 2000, CIMO was providing a package of training and industrial extension services to over 80,000 enterprises each year and training 200,000 employees. Private sector interest has grown. More than 300 business associations now participate in CIMO, up from 72 in 1988.

All states and the Federal District of Mexico have at least one CIMO unit, each staffed by 3 or 4 promoters. Most units are housed in business associations that contribute office and support infrastructure. The promoters organize workshops on training and technical assistance services, identify potential local and regional training suppliers and consulting agents, and actively seek out enterprises to deliver assistance on a cost-sharing basis. They work with enterprises to conduct an initial evaluation of the firm, as the basis for training programs and other consulting assistance. CIMO is expanding in two directions—assisting enterprises with specific sectoral needs, and providing an integrated package of services, including information on technology, new production processes, quality control techniques, and marketing as well as subsidized training.

Evaluations found that CIMO has been effective in improving the performance of targeted companies. Compared to a control group, CIMO firms increased investments in worker training, had higher rates of capacity utilization, and were more likely to adopt quality control practices. These improved outcomes were associated with increased productivity. Evaluations found CIMO-PAC to be a cost-effective way of assisting small and medium-size enterprises. Other performance indicators were: (a) increased profitability, sales and capacity utilization, (b) wage and employment growth, and (c) reduced labor turnover, absenteeism, and rejection rates for products. The most dramatic impacts were among micro and small firms.

Source: Tan et al (2004)

106. **Although it is not easy to improve the quality of informal apprenticeships, there are successful examples of this through public-private partnerships.** The strategy revolves around traditional form of training, by upgrading the technical and management skills of the masters as well as their skills in pedagogy. Traditional apprenticeships should be linked with specialized training providers or master craftsmen, – with the government acting as facilitator. Another example was Kenya’s Jua Kali project where vouchers were distributed to informal sector entrepreneurs to purchase training (Box 4.5)

Box 4.5: Training for the Informal Sector- The Jua Kali Experience

The *Jua Kali* (informal sector) project, funded by IDA, was aimed at providing skills and technology upgrading for about 25,000 informal sector manufacturing workers; to increase the access of informal sector entrepreneurs to services; and to improve the policy and institutional environment by removing restrictive laws and policies.

A key feature of the project is a voucher program intended to introduce consumer choice, enabling informal sector operators to purchase the training they want wherever they want. Intermediaries—allocation agencies—were selected by competitive tender to market, allocate, and redeem vouchers in a decentralized way throughout Kenya. Allocation agencies received a fee equal to 3 percent of the value of vouchers issued. Vouchers could be used for any kind of training from any registered training provider.

Over the course of the project, about 700 training providers became prequalified for providing training. By early 2001, some 18,000 training vouchers had been issued. The impact of the project, evaluated through two tracer studies, has been highly positive for the beneficiaries. Employment among the graduates had increased by 50 percent compared with employment before training, and the income of surviving enterprises had also increased by 50 percent. According to anecdotal evidence, some participants who received a voucher for basic training have paid the full cost of more advanced training.

One unexpected outcome of the voucher training program was the emergence of a new kind of training provider—the skilled master craftsman. The strong preference of *Jua Kali* workers for appropriate, accessible training by master craftsmen was revealed in the first phase of the project: 85 percent of all vouchers went to pay for the services of master craftsmen, and only 15 percent went to private and public training institutions.

Some important lessons include: (a) The use of a voucher mechanism enabled the project to stimulate demand for training, technology, and management and marketing consultation among micro and small enterprises. A supply response has been generated and a training market established to address the needs of micro enterprises; (b) An unexpected impact of the voucher training program was the emergence of skilled craftsmen as the leading providers of training. Entrepreneurs preferred the training services of master craftsmen in the informal sector to training in formal institutions. The training by master craftsmen was usually well adapted to entrepreneurs' need for short, practical training. These training providers were previously invisible to agencies that wished to pay for training directly; and (c) Implementation experience underscores the importance of appropriate management arrangements—a project for the private sector is best managed by the private sector with government best playing a facilitating role.

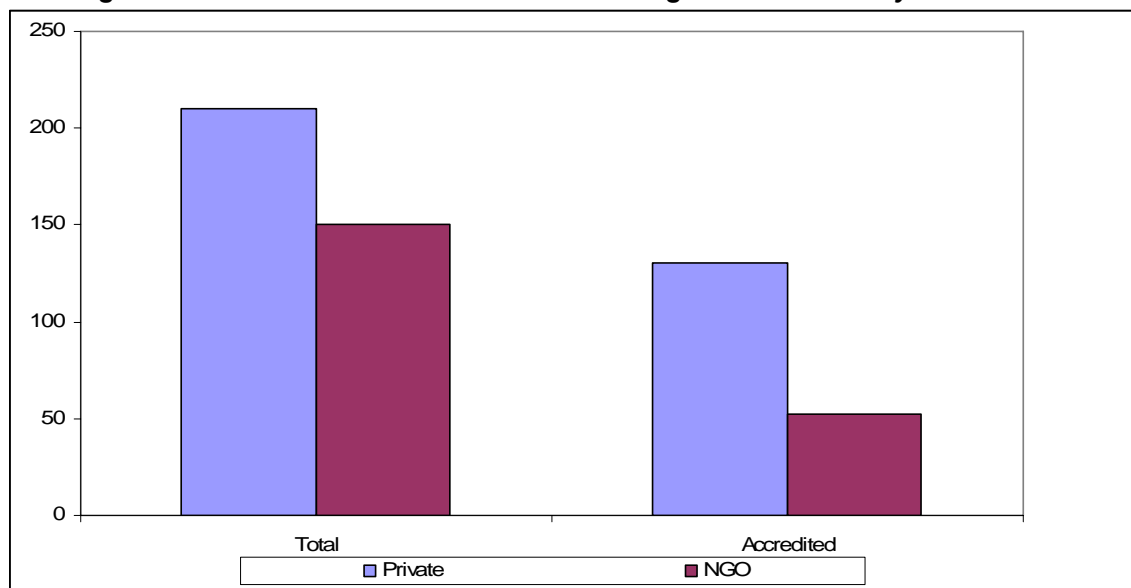
Source: Johanson and Van Adams (2004)

5. PRIVATE PROVISION OF PRE-EMPLOYMENT TRAINING

I. Description

107. **Many private or NGO-administered institutions provide vocational training.** Some of these are well known, being accredited as ITCs and operating under ITI guidelines. But many others fall outside this ambit. Too little is known about them to be definitive about their size and activities although they are usually assumed to be relatively small compared to ITIs and ITCs. They are said mainly to offer short non-formal and non-standard courses, focussing on a few types of skills and occupations, typically associated with information technology. Little is known about the quality of their training.
108. **A study was conducted in 2003 to gain some information about these providers.** The study, conducted by EdCIL, covered training facilities in eight States.³² Providers were identified by local consultants who garnered lists by consulting with state agencies, reviewing websites, word of mouth, and local advertisements. Smaller providers – small shop front and household operations – are almost certainly excluded, and the survey covered only the more significant providers in each of the States.

Figure 5.1: Number of Private and NGO Training Providers Surveyed in 8 States



Source: EdCIL (2005)

109. **At face value, the study would suggest, apart from ITCs, that India has a small non-public training market.** It found only 364 providers—212 privately owned and 152 managed by NGOs (Figure 5.1). Over 60 percent of the private providers and about 40 percent of the NGO providers were accredited by a variety of government agencies. Between them, the providers surveyed offered about 50,000 places. This is a relatively small proportion as compared to those offered by either ITIs or ITCs in these eight states - while 35 percent of all institutions in these states were in the private sector they enrolled 22 percent of

³² Assam, Gujarat, Haryana, Kerala, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal. The institutions covered did not include ITCs.

students. Although there are significant inter-state differences, these 8 states in the survey did cover almost half the country's population. A straightforward extrapolation should not be grossly misleading; it would imply that anywhere between 800,000-1,000,000 individuals are enrolled in these types of non-public training institutions nationally.³³

110. **There is a segmentation in trades offered by private providers as compared to those offered by ITIs and ITCs.** Unlike in ITIs/ITCs, a majority of students enrol in non-engineering and IT-related trades (Table 5.1). Only about 15 percent were enrolled in engineering-related trades, compared to over 80 percent in ITIs and ITCs. This is similar in other countries where private providers are more prevalent in 'soft' sectors. It should be noted that although the proportion of private institutions engaged in engineering related trades is relatively low, it is still higher than in many other developing countries, implying the private sector is willing and able to provide training in 'hard' sectors.

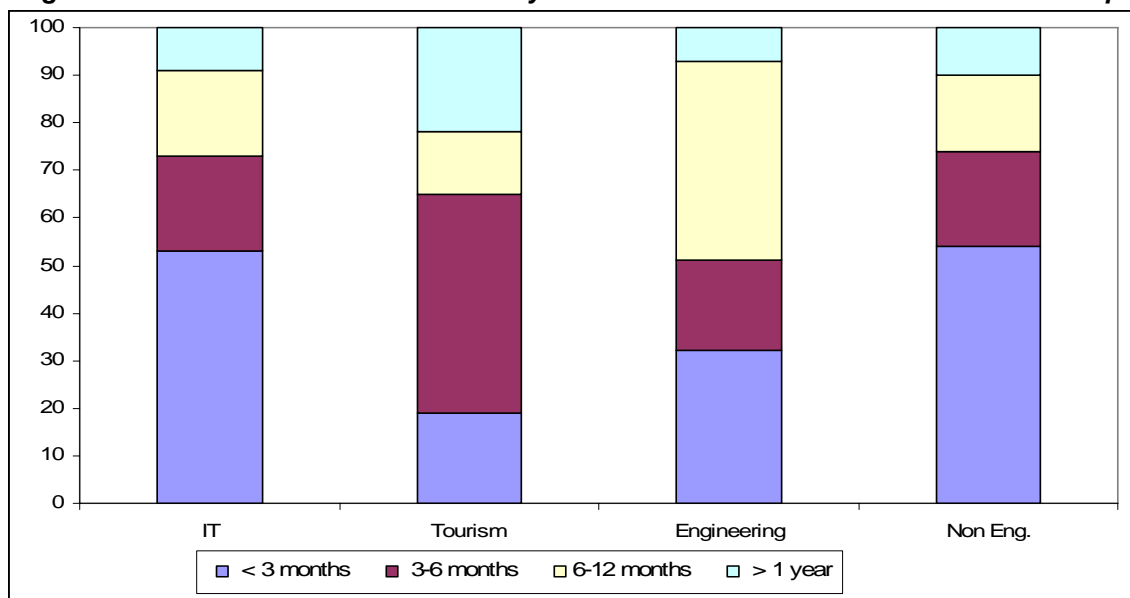
Table 5.1: Enrollment Percentages by Trade Groups in Non-public Training Institutions

Trade	Private	NGO	Total
IT related Trade	50.8	12.0	36.3
Tourism and Travel	1.5	1.5	1.5
Engineering related Trades	13.1	12.5	12.9
Non-Engineering Trades	34.7	74.0	49.3
Total Number of Students	32,072	19,104	51,176

111. **The average duration of courses is shorter than in the ITIs and ITCs and the student:teacher ratios are significantly higher.** While the average duration of courses in ITIs is about two years, close to 90 percent of students in private or NGO institutions are in courses shorter than one year– with about 40 percent enrolled in courses shorter than three months (Figure 5.2). Furthermore, about 45 percent of students are enrolled in part-time courses. Because most non-government institutions operate 'for-profit', it is not surprising that student:teacher ratios are significantly higher in private institutions. Although the average student:teacher ratios in ITIs is around 10:1, it is about 25:1 for institutions in the private non-profit sector.

³³ There is also likely to be a significant number of students enrolled in smaller training institutions, almost none of which are accredited. However, it is not possible to estimate their numbers.

Figure 5.2: Enrollement Distribution of by Duration of Courses for Various Trade Groups



Source: EdCIL (2005)

112. **While some institutions receive funds from the government, most are financed through fees.** Although institutions are reluctant to release details about their revenues, close to two-thirds of the institutions and almost 90 percent of private institutions reported that they charged fees. About 20 percent (mainly in the NGO sector) are dependent on the government as a major source of revenue. However, almost no institutions reported receiving resources from private industry – implying limited interaction with the private sector. There is also very limited evidence available regarding the unit costs of private institutions and how they compare with costs in public institutions.

II. Outcomes and Issues

113. **Private training centers appear to suffer from similar problems with quality as do public providers and links with industry are relatively weak.** Institutions reported (apparently based on subjective assessments) that only just over 50 percent of their graduates found employment within six months after leaving the centers. Like the ILO report (2003) on ITIs and ITCs, the EdCIL survey (2005) found that institutions had limited interaction with industry. Only a third of them reported sending students to industry for practical training and less than 10 percent involved industry in designing courses. Industrial experts were teaching as adjunct faculty in less than one-sixth of the institutions. Although this interaction with industry is more than that by the government institutions, it is still quite minimal.
114. **It is interesting to note that employed workers derive productivity benefits from participating in private training.** The result on productivity gains for companies that send their workers to private training institutions for short-term skill upgrading will be discussed in the next chapter. It is likely that this is happening because the training courses are specifically tailored to the needs of the particular employer, and training institutions are aware that companies can take their business elsewhere if the training is not upgrading worker skills.

115. **More attention needs to be paid to inputs if there are to be quality improvements among private providers.** Private providers put more emphasis on inputs than public institutions but it is still inadequate. A comparative study of a small sample of ITIs and ITCs illustrates this (Table 5.2). Although ITCs spend a much lower proportion of their resources on salaries than ITIs – which could imply that they use their resources more efficiently – the reality is that they are understaffed, with teachers who lack experience (only 30 percent have at least five years experience as against 80 percent in ITIs) or training (25 percent versus 74 percent respectively). Furthermore, while ITCs spend a greater proportion of resources on teaching learning materials and maintaining facilities than ITIs, expenditure on these items is still low.

Table 5.2: Percentage Expenditure on Different Inputs in ITIs and ITCs

Inputs	ITIs	ITCs
<i>Salaries...</i>		
Teaching staff	65.8	47.4
Non-teaching staff	26.3	13.8
Utilities	2.8	8.2
Maintenance	0.2	3.8
Teaching/Learning Materials	4.8	9.6

Source: DGE&T (various years)

116. **Private institutions reported lack of access to resources as a constraint.** Many private providers identified the lack of access to credit, and financing of initial investments in the private training center as key constraints to setting up new training centers, and in upgrading the existing ones. This was identified as a key reason underlying the reluctance of the private sector in providing training in the ‘hard’ sectors.
117. **The private sector also cited excessive government regulations as a major concern.** While the level of regulations are not uniform across states, in many cases private providers complain about excessive government bureaucracy in the registration of training institutions, as well as in accreditation and certification of courses provided by them. In order to get around this, many institutions often end up being unaccredited.
118. **A significant proportion of institutions is unaccredited.** The study concluded that a major reason for the poor quality of private training was the persistence of what the report termed ‘fly-by-night’ unaccredited institutions—close to 50 percent of the sampled private sector and NGO institutions in the eight states were unaccredited. However, it is not clear if this is a major factor in the poor quality – outcomes for students in ITCs (by definition, all fully accredited) were not appreciably better than the outcomes in the unaccredited institutions.

III. Encouraging Private Provision of Training

119. **Non-governmental training provision is growing.** Many state governments are trying to encourage private training providers while still “protecting” consumers from high prices and malpractices. International experience suggests that to do this successfully:
- **Laws must be clear and lenient.** Constraints on setting-up training institutions should be removed. In Chile, streamlining the legal requirements governing private training providers led to the rapid growth of unsubsidized private training (see Box 5.1). In India, requirements for setting up recognized private training institutions vary from state to state, so it is difficult to generalize – but keeping procedures simple will ensure a

vigorous private sector response (see Box 5.2 for procedures to be followed to set up and accredit a training institution).

- **Employment growth should lead the demand for private training.** Technical training is said to be costly to set-up, causing private entrepreneurs to shy away; on the other hand, training for commercial fields (e.g., languages and secretarial skills) is said to be cheaper and more willingly supplied by private providers. But international experience shows that when private providers are not discouraged by stringent laws, rapid industrial growth can lead to a strong private supply of technical training. In the Czech Republic, where manufacturing employment has grown rapidly since 1993, all new technical training programs are privately provided. Even in India, while the private sector is more heavily engaged in training in commercial areas, an increasing number of private providers (up to 15 percent currently) is now providing technical training.

Box 5.1: Private Training in Chile: The Importance of Transparent Legislation

Chile has reformed the financing and regulatory mechanisms for its post-secondary education and training institutions since the early 1980s. Previously, post-secondary education had been provided by eight universities that were allocated a third of the total education budget. Private institutions could not offer post-secondary technical programs. A 1980 law established minimum requirements for setting up post-secondary institutions, and proposals were dealt with on a case-by-case basis until 1988. In the nine years following the reforms, the number of universities grew from 8 to 34, the number of professional institutes from 0 to 41, and the number of technical training centers from 0 to 133. In the year following further relaxation of regulations to approve institutions, there was a further rapid expansion of numbers.

Number of Post-secondary Institutions, Selected Years 1980-90

<i>Institutions</i>	<i>1980</i>	<i>1986</i>	<i>1989</i>	<i>1990</i>
Total No. of Universities	8	20	34	60
No. of Universities without public funds	0	3	14	40
Total No. of Professional institutes	0	24	41	82
No. of Professional institutes without public funds	0	17	38	80
Total No. of Training centers	0	86	133	168
No. of centers without public funds	0	86	133	168

Source: Cox-Edwards (2000)

Box 5.2: Procedure for Starting and Accrediting a New Private Training Institute

While each state may follow a somewhat different procedure, the steps described below are fairly uniform across states. In the best case scenario, it takes about a year to receive clearance to start a training institution and receive NCVT affiliation.

1. State Director In-charge of the Craftsmen Training Scheme notifies in the leading newspapers of the State to receive applications in a prescribed pro-forma from the agency seeking permission to start a training institute.
2. The Management of the Institute makes all the necessary arrangements and provides necessary documentation regarding infrastructural facilities for the proposed trades. An institute seeking affiliation has to supply the information regarding infrastructure and instructor available in the institute to the State Director.
3. The State Director scrutinizes the applications to judge their authenticity and financial soundness
4. The State Director verifies the availability of necessary infrastructure and availability of instructors at the institute and if the institute is found a fit case for considering for affiliation, may constitute a Standing Committee and get the Institute inspected.
5. The Standing Committee ensures the availability of the following: (a) site plan and building drawing indicating various sections, workshops, etc.; and (b) the space earmarked for each trade both already affiliated and proposed for affiliation at the institute.
6. The State Director dealing with Craftsman Training Scheme in consultation with coordinating officers of DGE&T for the region prepares a Joint Action Plan for affiliation inspections of institute. Only the retired Class-I Gazetted Technical Officers from DGE&T are nominated as DGE&T representative on the Standing Committee's Inspection Team.
7. The Inspection Team after verifying available infrastructural facilities and the arrangements made for starting training recommends affiliation for the deserving trades /units to the Standing Committee
8. The Standing Committee after verifying the Inspection Team Report forwards it to DGE&T
9. The inspection report is scrutinized in the DGE&T, for ascertaining compliance of procedure, and thereafter, passed on to the Secretary of NCVT.
10. The Secretary of NCVT, after scrutinizing the report, obtains approval for deserving trade/units from the Sub-Committee of the NCVT dealing with affiliation, before conveying the decision to DGE&T and the concerned State Director.
11. In order to ensure that standards of training as prescribed by the NCVT are maintained, periodic follow up inspection of permanently affiliated Institute/Trades is carried out by respective State Directorates, Standing Committees or officials of DGE&T.

All new trades to be started in an affiliated institute require the prior approval of the concerned State Director In-charge of Training. A Standing Committee inspection will be required for this purpose, on the basis of a comprehensive proposal submitted by the institution distinctly stating that the facilities provided are appropriate for the new trades or additional units.

120. Unplanned public provision should not be allowed to crowd out private supply.

Policy decisions should not be based on an incomplete picture of private supply. The experience of Indonesia, which is otherwise remarkable in that it has had a rapid growth of private VET supply, illustrates this. Originally, only high cost training (e.g., for technicians and mechanical operators) was provided by the government. But budgetary pressures owing to erratic and declining external funding forced public centers into low cost areas (e.g., commercial programs) already well catered by fee-charging private centers. Subsidized government centers ended up crowding out private providers, who naturally relied more on student fees than government transfers. The state of Penang in Malaysia, adopted a different tactic. Recognizing that the government could not provide cost-effective training to school leavers on its own, it teamed up with employer associations to support private providers to deliver demand driven training that responded to the needs of employers (Box 5.3).

121. **There is no evidence to support the view that training quality and outcomes can be improved through the compulsory registration of non-government providers.**

Disseminating relevant information (for example, type of training provided, fees, and particularly the dropout and completion rates of different providers) can be more effective. The objective should not be to convert unregistered non-public training providers into a formalized “parallel training system” by stipulating standards for training facilities, equipment, programs, testing, etc. This makes it less attractive for masters to provide training and for low-income apprentices to attend. In Indonesia, which does not have an accreditation scheme, two-thirds of secondary and post secondary technical-vocational enrollment is in private institutes. Regulations in the Czech Republic stipulate that private providers must be accredited only if they intend to apply for public subsidies. In Russia, accreditation is necessary only if the provider wishes to award certificates recognized by the government. The experience of these countries - which span a broad economic and institutional spectrum, shows that a government-organized system of accreditation is neither necessary nor sufficient for a balanced private system of training.

Box 5.3: Industry-Government Cooperation: the Penang Skills Development Centre

The Penang Skills Development Centre (PSDC) is a joint company training centre established with government support. It has evolved to become a full private further education institution providing certificate and diploma level training. The Malaysian Government invests in the Centre and uses it to carry out public training programs. It demonstrates the potential of private educational institutions being used for public training purposes where these are not viable in themselves as private commercial undertakings, and without creating the facilities in the public sector.

PSDC, with more than 100 member companies, runs both standardized and customized programs. It charges at cost and is basically self-financing. Companies can recoup the expenditure from the Human Resource Development Fund, a ‘training fund’ financed by a 1% levy on payrolls.

The initiative for PSDC came from the Penang State Government. The State provided the land and buildings. The founder members included large multinational companies with training traditions of their own. Members donate equipment, laboratories, training modules and trainers. They have access to shared training facilities without having to duplicate with their own in-house capability. SMEs enjoy technology transfer from and can benchmark their standards against multinationals. Multinationals, in turn, receive better support services. Vendors donate equipment to familiarize the company workforce with their products and promote sales.

While still a joint-training centre, the PSDC has taken on institutional functions to provide training for school-leavers and has moved to become a professional training entity in its own right.

None of this is to say that the PSDC is easily replicated. Eleven other Malaysian States (out of 13) have launched similar centers, with varying success. As usual, the success of this sort of enterprise depends on a number of circumstances, most importantly the people initiating and managing the process. Centers like PSDC cannot be imposed; they need to grow in already fertile ground.

Source: Pillay (2005)

122. The government has an important role to play in providing information on the quality of private training and in financing training. While the government cannot control the training provided by private trainers, as mentioned earlier, it can provide potential students with information on the type of training available through private providers and an indication of the effectiveness of that training. The government can also ensure that private (or public) training is of good quality, through selectively financing training, conditional on providers meeting some performance criteria.

6. IN-SERVICE TRAINING³⁴

I. The Extent of In-service Training

123. In-service training in India has not received much attention by policymakers. However, data from the India: Investment Climate and Manufacturing survey conducted by the World Bank and the Confederation of Indian Industry (CII) throws light on practices in the manufacturing sector (see Box 6.1 for a description of the survey).

Box 6.1: Investment Climate Surveys (ICS)

The World Bank has fielded Investment Climate Surveys in over 40 developing countries. To ensure comparability across countries, the sampling frame is based on the distribution of private firms in each country, by sector, size, numbers of employees, and location. Each ICS includes information on firm size (number of employees, sales and assets); years in operation; sales, debt and growth performance; sources of finance; and a mix of qualitative and quantitative assessments by employers of the business environment in the country, including indicators of governance, predictability of economic policy, the judicial system, access to finance, and general constraints to business operations.

Many ICS also include questions relating to workforce skills. Detailed information is collected on enterprise innovation, research and development, use of new technologies, the education and skills of workers, wages and productivity.

The India ICS is uniquely suited for two reasons. First, the survey asked employers detailed questions about their workforce and training practices; these data, together with information on different enterprise attributes and production, allows one to examine not only which Indian employers provide in-service training to their workforce, how much, who they train, and where they get training but also what are the outcomes of such training investments. Second, similar ICS have been fielded by the World Bank and country governments in many developing countries globally, so that the training practices of Indian firms and the outcomes from such investments in workforce skills can be compared to that of similar enterprises in other countries.

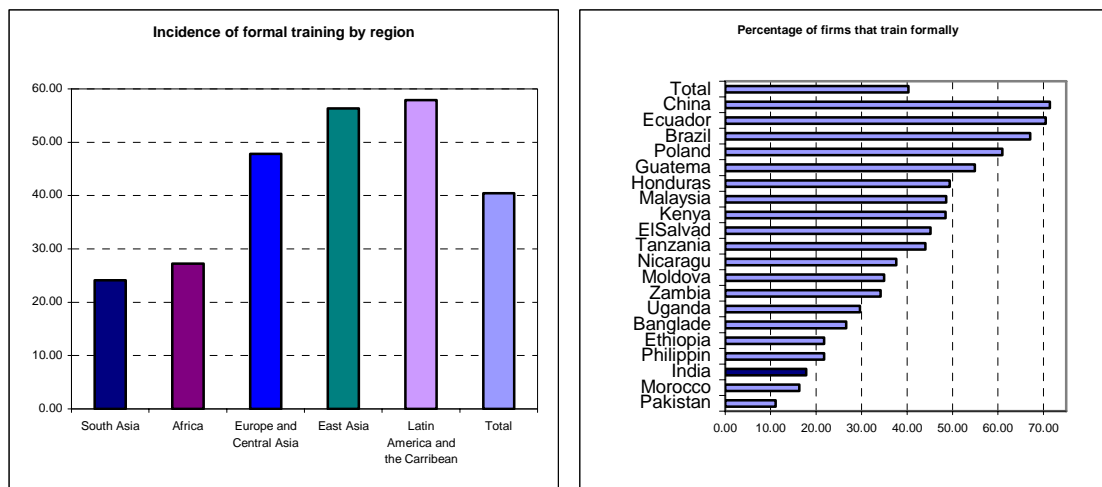
The sample for the current study was over 1800 micro (1-15 workers), small (16-100), medium (101-250) and large (250+) enterprises. 13 key manufacturing industries were sampled. To ensure comparability of the ICS across countries, a sampling frame is used based on the distribution of private firms in each country, by sector, size, numbers of employees, and location.

Source: World Bank (2004)

124. **No more than 17 percent of manufacturing establishments in India provide in-service formal training.** This is less than half the average for Europe, East Asia and Latin America (Figure 6.1). The training deficit is even more pronounced when India is compared to individual countries in East Asia (the right panel of Figure 6.1), such as Malaysia (training levels are easily three times higher) and China (four times higher).

³⁴ This section is based on Tan and Savchenko (2005).

Figure 6.1: Incidence of Formal Training – Regional Averages and Country Means

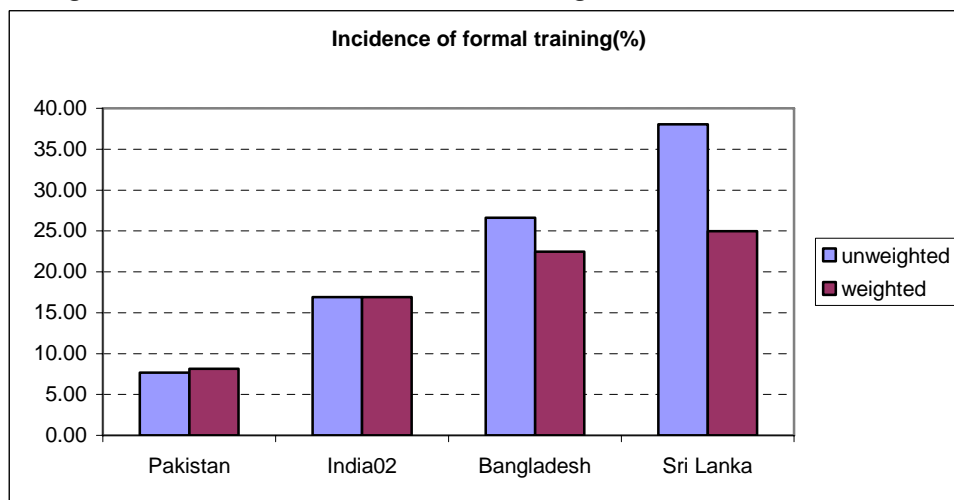


Source: Tan and Savchenko (2005)

125. In-service training in India is also lower than in other countries in its own region.

Figure 6.2 compares India, Pakistan, Bangladesh and Sri Lanka, presenting estimates with and without adjustments to reflect differences in the firm size distribution of ICS samples across countries. The unweighted estimates show that, on average, Indian firms are less likely to train than firms in Bangladesh (27 percent) and Sri Lanka (38 percent). Even when the data for other countries are weighted to have the same size distribution as India, the low relative ranking of India remains unchanged although the training gaps are reduced.

Figure 6.2: Incidence of In-Service Training in South Asian Countries



Source: Tan and Savchenko (2005)

126. The incidence of formal in-service training rises with firm size, from 6 percent for micro-enterprises to 56 percent for large enterprises (Table 6.1). This is a common finding in all countries for which data are available, and probably reflects size-related differences in access to finance, scale economies in training provision, education levels of workers, managerial capabilities and use of new technologies. Although enterprises rely on

both in-house training and external training providers, in-house programs are more common (23 percent) than external programs (14 percent). This is consistent with the notion that general education and workforce skills need to be complemented by training tailored to the production and technological requirements of individual enterprises. Finally, although public institutions are an important source of in-service training, enterprises also rely on private providers. In fact, they are cited more often (31 percent) as external providers than either vocational education and training schools (24 percent) or government institutions (18 percent). This holds for all firm sizes other than micro-enterprises, which are more likely to use public providers.

127. **No more than 7 percent of employees received training in a given year.** Table 6.1 shows that the proportion of workers in India being trained is especially low among micro and small firms where fewer than 4 percent of employees have received training. In medium and large firms, the figure rises to around 17 percent for managers and professionals, and about 11 percent for less-skilled groups. These estimates appear low compared to countries in South Asia or East Asia. The level of in-service training in Sri Lanka may be twice as high. In Malaysia, it was estimated that 22 percent of workers received in-service formal training in 1994; and 24 percent of managers, 32 percent of technicians and between 13 and 16 percent of production workers received formal in-house training.

Table 6.1: Incidence and Sources of Formal Training among Indian Enterprises, 2002

Firm Size	Incidence of Formal Training			Sources of External Training (Conditional on training)				
	Any training	In-house training	External training	Univ.	VET school	Govt. training institute	Private training institute	Partner firms
	- percentages -							
Micro	6	6	2	0	19	9	6	0
Small	16	19	10	4	16	17	26	4
Medium	35	29	20	9	35	29	38	11
Large	56	41	31	7	33	20	48	9
Total	17	23	14	5	24	18	31	6

Source: Tan and Savchenko (2005)

Note: Micro firms have 15 or fewer workers, small firms have 16 to 100 workers, medium firms have 101 to 250 workers and large firms have more than 250 workers.

128. **There are distinct differences between industry sectors in their propensity to offer formal in-service training.** Table 6.2 based on a survey of 1827 industries in India shows that industries whose training levels are below average for India include textiles, garments, leather products, food processing, automobile parts and metal products. Industries whose training levels are above the average include chemicals, pharmaceuticals, machine tools, electrical white goods, electronic products and software. With the possible exception of the sugar industry, these could be considered more technologically sophisticated than the low-training group of industries.

Table 6.2: Incidence of In-Service Training by Industry Groups, 2002

Industries with below average training			Industries with above average training		
Industry	Number of firms	% of industries providing formal training	Industry	Number of firms	% of industries providing formal training
Leather products	65	6	Chemicals	191	18
Garments	260	8	Electronics products	132	19
Metal products	100	10	Electrical white goods	150	20
Auto components	254	15	Machine tools	63	27
Textiles	228	17	Sugar	17	29
Food processing	175	17	Pharmaceuticals	189	30
			Software	3	33

Source: Tan and Savchenko (2005)

129. **Firms that have no R&D capacity and that are not involved in exporting, have a poor track record in-service training.** Table 6.3 shows that firms that export and firms that have R&D capacity are significantly more likely to provide formal in-service training. This conforms to international experience. Conversely, of course, firms that have no R&D capacity and are not export-oriented do relatively little formal in-service training. Comparing Table 6.3 to Table 6.1, which shows the overall incidence of training, would suggest that these types of firms predominate in India.

Table 6.3: Incidence of In-Service Training , of R&D Staff and , Export Orientation by Firm Size, 2002

Firm size	R&D staff		Export	
	No.	% of firms providing formal in-service training	No.	% of firms providing formal in-service training
Micro	6	11	6	11
Small	13	29	14	20
Medium	30	41	24	40
Large	51	62	43	62

Source: Tan and Savchenko (2005)

130. **There is a wide variation in the incidence of formal in-service training among the States.** Only 11 percent of firms provide training in West Bengal, Punjab and Uttar Pradesh compared to 27 percent in Andhra Pradesh and Karnataka. A World Bank study (2004) used ICS data to categorize the 12 states surveyed according to their investment climates. Of the eight states classified as “high IC states”, six attract virtually all foreign direct investment in India and are referred to as “high FDI states”.³⁵ Generally, the incidence of in-service training in “high IC” or “high FDI” is strikingly higher (21 and 25 percent respectively) than in other states (10 percent and 8 percent respectively) (See Table 6.4).

³⁵ The “high IC” states are Maharashtra, Delhi, Gujarat, Andhra Pradesh, Karnataka, Punjab, Tamil Nadu, and Haryana; the first six are also classified as “high FDI” states.

Table 6.4: Incidence of In-service Training among States by Investment Climate and Foreign Direct Investment

Classification of States	Any formal training	formal in-house training	formal external training
	- percentages -		
<i>Foreign Direct Investment (FDI) inflows</i>			
Low FDI states	8	5	3
High FDI states	25	19	11
<i>Quality of the Investment Climate (IC)</i>			
Low IC states	10	6	4
High IC states	21	16	9

Source: Tan and Savchenko (2005)

131. **Unionized firms in India are also more likely to provide training.** This is consistent with the findings of other training studies in both industrialized and developing countries.³⁶ Government ownership of firm equity is positively associated with training, but foreign ownership is not.³⁷ Firms that report frequent power outages (a variable that may capture other constraints to business operations) are also less likely to provide training (see Annex D for results of probit regression on training).
132. **There appears to be no relationship between the average years of schooling of a firm’s workforce and in-service training.** This is somewhat contrary to evidence from other developing countries, including Pakistan and Bangladesh. Educated workers are assumed to be more productive in performing given tasks and more adept at critically evaluating new information and learning from it. In other countries, educated workers benefit more from training than less educated workers. A related hypothesis - that more educated managers are more likely to implement in-service training - was also not found to apply in India. In fact, the educational attainment of general managers was negatively related to the probability of in-service training.

II. Outcomes and Issues

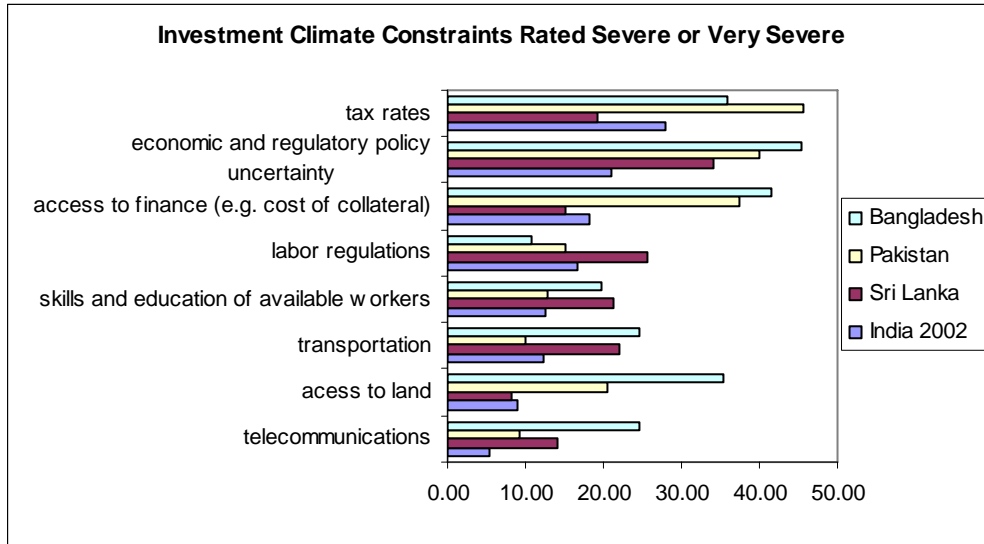
(a) Factors Affecting the Likelihood of In-service Training

133. **Indian employers appear more preoccupied with other constraints than with the skills of their workers.** Figure 6.3 shows that Indian employers rank four other constraints as more important than “skills and education of available workers”. The top three constraints are “tax rates”, “policy uncertainty”, and “access to finance”. In fact, other countries also rank these three constraints highly but a higher proportion of employers in Bangladesh and Sri Lanka (especially) identify education and skills as a constraint than Indian employers. Malaysian employers, facing labor and skills shortages, rank skills availability as the top constraint.

³⁶ In theory, unions are thought to reduce the likelihood of training by negotiating higher levels of wages and reducing the ability of employers to lower wages to finance specific training through a training wage. However, when statistically significant union effects on training are found by empirical studies, they are invariably positive as in the India sample.

³⁷ The absence of a positive association may be interpreted to mean that there is no effect of foreign ownership on training independent of export orientation and R&D, two activities which are common among most foreign-owned companies.

Figure 6.3: Investment Climate Constraints in South Asia



Source: Tan and Savchenko (2005)

134. **International experience suggests there are three main reasons for employers not training workers.** The reasons, identified from the World Business Environment Survey are: (a) firms use “mature” technology that does not require workers to be trained; (b) firms cannot afford to train; and (c) skilled workers can be easily hired from elsewhere (see Figure 6.4). These reasons apply generally but are specifically cited by firms in the South Asian region.

Figure 6.4: Reasons for Not Providing In-Service Training



Source: Batra and Stone (2004) using data from World Business Environment Survey.

135. **For all types of Indian firms, it would appear that employers’ pay policies reward formal pre-employment education and training, but not the later acquisition of skills.** Information from the ICS indicates that in-service training actually had very little if any impact on wages. There was a slight positive effect on wages from external training but it

was not statistically significant. Nor was there any difference in impact depending on whether firms had R&D capacity or were export-oriented.

136. **External training appears to have a positive and statistically significant effect on productivity.** Whether or not a firm provides any formal training is not significantly associated with firm-level productivity (Table 6.5). However, there is a positive effect on productivity (statistically significant) from external training. This appears to be driven largely by training from private providers (the productivity impact of private sector training is about 43 percent). Training from public sector providers has no discernible impact on productivity. These results seem indicative of weak training capabilities of both the companies themselves and public sector training institutions (also see Annex D for a more detailed model specification).

Table 6.5: Productivity and Wage Effects of Training

Explanatory variables:	Production function model			Wage model		
	Log(VA)	Log(VA)	Log(VA)	Log(W)	Log(W)	Log(W)
Years of education	0.058 (5.82)	0.058 (5.77)	0.058 (5.78)	0.069 (3.69)	0.068 (3.61)	0.067 (3.57)
Any formal training	0.145 (1.66)			-0.116 (-0.90)		
In-house training		0.055 (0.52)	0.065 (0.60)		-0.195 (-1.54)	-0.144 (-1.45)
External training		0.363 (2.76)			0.353 (1.38)	
Private sector training			0.429 (2.44)			0.210 (0.58)
Public sector training			0.083 (0.50)			0.203 (0.81)

Source: Tan and Savchenko (2005)

137. **The positive effect of external training on productivity applies only to firms that either exported or conducted R&D.** This could explain the greater propensity to train among firms facing international competition or engaged in innovative activities and using new technologies.

III. Potential Options

138. **Before anything else, under-investment in in-service training requires policies that improve the business environment in general.** Improving the investment climate in India should, of itself, create incentives for the private sector to invest in physical and human capital. Private sector demand for training would be increased by policies to improve access to new technologies and to funding for investments in technology upgrading and upgrading worker skills.
139. **Strengthening the in-house training capabilities of Indian firms should be a priority for policymakers.** Public institutions have typically focused on pre-employment training in basic skills and may have little capacity to provide, on demand, the kinds of tailored training programs that firms want and that private providers can deliver. Given the limited capacity of public institutions, private providers - firms themselves, industry associations, buyers and

equipment suppliers, and private training institutes - are an important means of expanding the resources available for workforce skills development.

140. **Market failures diminish employer incentives to train and the appropriate policy response depends on the nature of the failure.** International experience suggests that there are three market failures that constrain training, particularly among small firms: (a) the high cost of training; (b) lack of adequate information; and (c) high turnover of skilled workers. The first can be addressed by financial sector reforms that improve access to funding for all kinds of investments, including training. The appropriate policy response to the second is to disseminate widely the evidence of the productivity benefits of training, best practices in training know-how, and information about the availability, offerings and cost of services from different public and private sector training providers. The problem of high turnover (or “poaching” of skilled workers by other employers) requires collective action. The Human Resource Development Fund of Malaysia is an example of a training policy that has successfully increased training among firms.
141. **Consideration could be given to employer-targeted training policies to remedy the under-investment in in-service training.** Apart from the payroll levy and matching grants schemes discussed earlier, programs used elsewhere include: (a) training levy rebate schemes, where firms are partially reimbursed for approved training out of payroll levies; (b) levy exemption schemes where employers are exempt from levy payments provided they spend a given percentage of their payroll on training; and (c) tax incentives for approved training paid out of general revenues. These and other options for financing vocational education and training are discussed in the next section.

7. FINANCING VOCATIONAL EDUCATION AND TRAINING

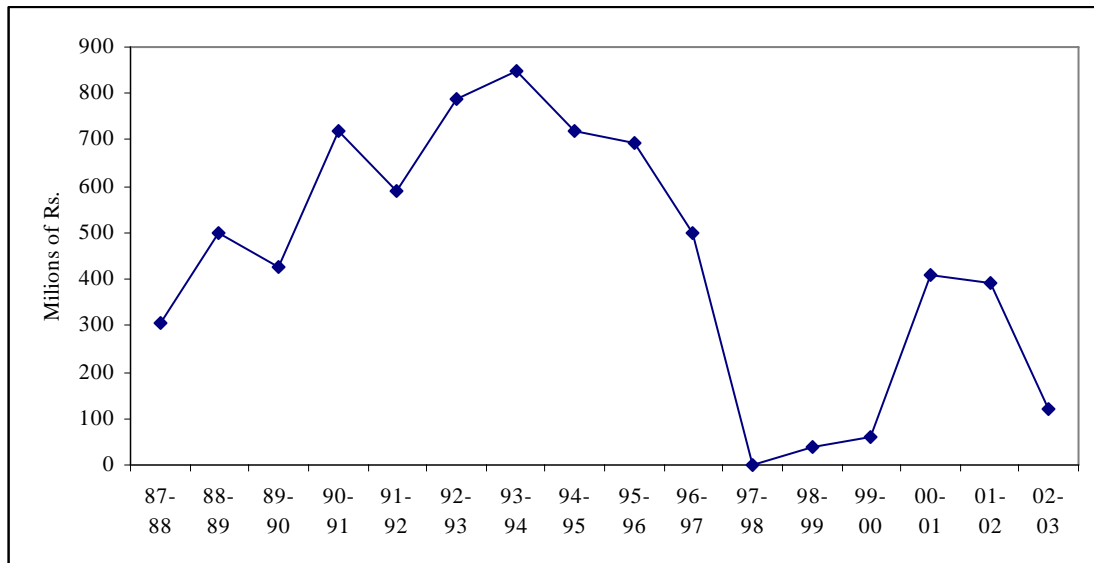
I. Description

142. **It is difficult to obtain data on the public financing of vocational education and training.** State level finance data on vocational education are usually reported together with data on general secondary education, while finance data on vocational training are reported together with data on other training. Disaggregation of the financing data is extremely difficult. In addition, vocational education and vocational training do not fall under the ambit of ministries for education and labor in many states and comparability of data across agencies is difficult.

Financing for Vocational Education

143. **Funding for vocational education is shared between the central and the state governments.** The Central Government provides all the funds for 11 components – such as textbook development, workshops, resource person training and curriculum development workshops. It meets 75 percent of the cost of vocational school staff (state governments the remainder), and 50 percent of the cost of operating the vocational wings of the state directorates of education, district vocational wings, provision of raw materials, and field visits by students. The state governments bear the cost of examinations and vocational guidance.

Figure 7.1: Central Plan Expenditure on Vocational Secondary Education³⁸



Source: *Project Implementation Plan of National Program on Vocational Education & Training (TVET); 2003, Department of Secondary & Higher Education, MHRD*

144. **The Central Government support for vocational education in schools has a chequered history.**³⁹ It has been and remains uncertain (see Figure 7.1). It began in 1977 but lasted only a year. It re-started in 1988 when the GoI introduced the Centrally Sponsored

³⁸ These figures are in nominal Rupees.

³⁹ The data used in this section are taken from a report of the Department of Secondary & Higher Education, Ministry of Human Resource Development: *Project Implementation Plan of National Programme on Vocational Education & Training (TVET); 2003*

Scheme of Vocationalization of Secondary Education (CSSVSE) to finance vocational education in Grades 11 and 12. The GoI provided annual grants to the States and Territories. There has been considerable variation between States in the level of grants made under the 7th, 8th and 9th Plans, with two thirds of all grants going to only six States. Part of this is due to the fact that funds were only made available when States applied for them.

145. **Although the overall expenditure on vocational education is low, its unit cost is significantly higher than that of general secondary education.** The last year for which data on the cost of vocational education were available is 1995/6. At that time, the unit cost of vocational education was 60 percent higher than the unit cost (per student enrolled) of general secondary education.⁴⁰ Assuming that the ratio of costs of vocational to general secondary education has not changed, and based on available data for unit costs of general secondary education for 2002/3, Table 7.1 estimates the total public expenditure on vocational education in 2002-03. According to this the public expenditure on vocational education would have been around Rs 1,800 million (around \$40 million). Less than 10 percent of this would be in the form of central government grants.⁴¹ Recurrent expenditure (mostly salaries and wages) amounts to almost 95% of total costs.

Table 7.1: Cost of Vocational Education in States, 2002-03

States	Enrollment	Cost of Voc. Ed. (as a % of General Sec.)	Unit Costs (Rs.)	Costs (Rs. Mill.)		
				State Expenditure	Central Grant	Total
Andhra Pradesh	35,280	1.4	3,200	113	13	126
Assam	3,780	0.4	3,298	13	3	15
Bihar	4,200	0.4	3,242	14	4	17
Gujarat	33,600	1.9	3,858	130	15	145
Haryana	13,440	1.5	3,390	46	7	52
Himachal Pradesh	2,520	0.7	4,000	10	1	11
Jammu & Kashmir	1,680	0.5	3,715	6	2	8
Karnataka	30,240	1.5	4,827	146	9	155
Kerala	36,120	2.3	5,541	200	13	213
Madhya Pradesh	10,080	0.7	3,238	33	8	41
Maharashtra	132,300	2.9	3,455	457	33	490
Orissa	6,300	0.5	6,255	39	5	45
Punjab	14,280	1.6	4,733	68	5	73
Rajasthan	10,500	0.7	3,913	41	7	49
Tamil Nadu	77,700	2.9	3,200	249	7	256
Uttar Pradesh	31,920	0.9	3,302	105	15	120
West Bengal	7,980	0.4	3,224	26	..	26
Total	451,920	1.61	3,863	1,694	148	1,842

Source: Author's Calculations

⁴⁰ There is significant variation across states. For example the ratio of the unit cost of vocational education to general secondary education was 3.5 in Haryana and 2.9 in Bihar.

⁴¹ These data are for the 16 major states which had a relatively significant vocational education sector.

Financing Vocational Training

146. **The States bear the cost of public vocational training.** Although information is still difficult to obtain information can be extrapolated from partial data available from several states (see Table 7.2). While the data reported below does not cover all institutions in the states listed in the table, we use it to extrapolate data to the national level. We have used two estimates of unit costs – the first is simply the average of unit costs for the states for which we have data. In this case the annual unit costs come to about Rs. 20,747. For the second estimate, we exclude the outliers – the state with the lowest and highest unit costs. In that case, the unit cost is about Rs. 25,414. Using these numbers as the lower and upper bounds, the total annual public expenditure on vocational training is estimated to be between R. 8-10 billion (\$180-225 million). The main reason for this large expenditure is the relatively high unit cost of vocational training even compared to vocational education. Salaries constitute almost 90 percent of the total expenditure.

Table 7.2: Cost of Vocational Training in ITIs (2004)

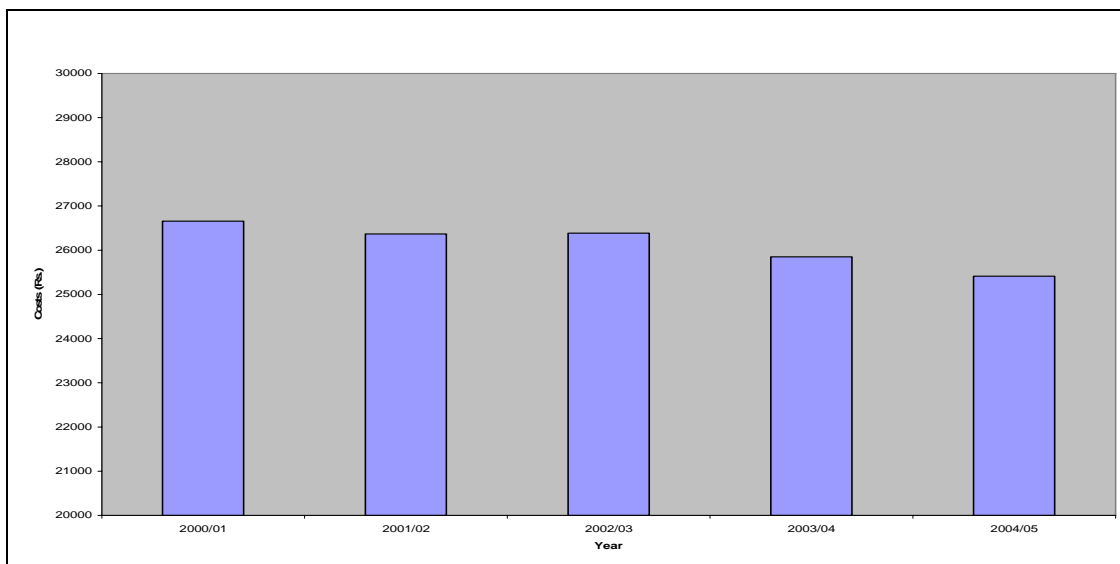
State	No. of Institutions	No. of Students	Total Costs (Rs. Mill.)	Unit Costs (Rs.)
Andhra Pradesh	83	19683	310.02	15750
Arunachal Pradesh	3	298	12.07	40503
Assam	24	2432	92.20	37910
Bihar	28	2057	98.04	47661
Chandigarh	1	473	14.57	30796
Chhatisgarh	61	6969	153.60	22040
Delhi	16	7879	262.72	33344
Goa	10	1937	84.41	43577
Gujarat	133	56974	671.71	11790
Jammu and Kashmir	37	3300	128.84	39042
Madhya Pradesh	140	19527	337.18	17267
Orissa	24	5182	89.08	17190
Punjab	94	11909	357.61	30028
Tamil Nadu	57	11987	432.80	36106
Union Territories				
West Bengal	28	4856	184.07	37906
For all states	741	156514	3247.19	20747
Excluding outliers⁴²	580	97483	2477.44	25414

Source: Author's Calculations

147. **While these costs are relatively high, they have not been increasing over time.** This is somewhat good news. As shown in Figure 7.2 – the annual unit costs (based on the information provided for the states listed in Table 7.1 above) do not seem to have increased over time. If anything, the trend is towards a slight reduction in unit costs.

⁴² The outliers being excluded are the two states with the highest unit costs (Bihar) and lowest unit costs (Gujarat).

Figure 7.2: Annual Real Unit Cost of Vocational Training (in 2004/05 Rs.)



148. **There are few data on public expenditure for other forms of vocational training.** It is not possible to compute the costs of training in the community polytechnics, open schools, or on apprenticeships. Data are available on expenditures for the JSS scheme – in 2002/3 Rs. 250 million (about \$5 million) was spent on training students under the JSS.

2. Outcomes and Issues

149. **Public funding for vocational education and training is ad hoc.** Public financing for vocational education and vocational training is not based on any funding formula. Although the resources available to the states are limited, no state seems to follow a transparent funding formula in funding vocational education or training. Once an institution begins to receive funding, subsequent funds are guaranteed irrespective of the institution's performance. The same levels of finance are allocated to poorly performing institutions with high drop-out rates as to those that maintain a high quality of teaching and performance.
150. **The funding model used by the states is largely ineffective.** Training providers have insufficient interest in their financial state of affairs. Student fees are retained by the respective governments and providers have no financial incentive to meet labor market needs, a common failing of supply-driven models of VET. As the report has already discussed, the proposal to upgrade 500 ITIs by establishing Centers of Excellence (COEs) is a good example of an attempt to devolve accountability and management to local boards (the Institutional Management Committees). The States have been asked to contribute to the capital cost of upgrading the COEs; but unless they come to grips with guaranteeing recurrent costs to a devolved system, the centers are unlikely to be sustainable.
151. **Although unit costs are high, expenditure on critical inputs remains low.** Unit costs of vocational education are roughly 60 percent higher than that of general secondary education, while those of pre-employment vocational training are 5 to 6 times higher. Because funds are limited and because the majority of the funds have to be spent on salaries, resources available for other items are extremely low. Evidence from states suggests, for

example, that allocation for training materials in ITIs is less than \$1/student month, making it extremely difficult to deliver reasonable training. Teacher training and development, maintenance of buildings and equipment and any realistic interaction with industry are also severely constrained.

152. **Funding is narrowly focused on publicly provided training.** With state training authorities focused on providing training through the public sector, almost no attention is paid to using financing as an innovative means to encourage either good quality public training, private training or as a way of providing incentives to enterprises to train their workers. States are losing a valuable opportunity to leverage their limited training financial ng resources

3. Potential Solutions

153. **Adequate finance, effectively spent, is always a major issue for VET but there are signposts from international experience.** For many public sector training providers, inadequate funds are the main problem but there is far more to it than that. Simply making available more funds is not enough. A number of points that have come out of international experience should guide government policies in this regard (Box 7.1). The extent to which these points can be achieved varies a great deal from place to place and not all of them can be achieved quickly. To the extent that a system falls short of these goals, it will be deficient.

Box 7.1: Conditions for Success of Financing Vocational Education and Training

- Funds should be used to develop demand-driven systems and should avoid perpetuating supply-driven models.
- Funds should be stable and sustainable.
- The basis for allocating funds to institutions or to systems should be transparent and widely known and understood.
- A wide range of training providers should be allowed to compete for funds.
- Funds raised from sources other than the government should not be diverted to government revenues and spent for other purposes.
- Funds should be administered by industry-managed bodies. Employers, through their associations and individually, should be involved in making decisions about the allocation of funds at all levels.
- Responsibility – including the freedom to make financial decisions - and accountability for operations should be devolved to the lowest level practicable.

154. **While the government remains a major financier of pre-employment training, emerging skill needs need innovative solutions.** The public training system still constitutes an important provider and financier of pre-employment training in India, with courses at public training institutes, either provided free or at purely nominal fees. This simple financing framework has become inadequate to meet the skill development needs in a rapidly globalizing economy and it has become important to consider how financing can also foster increased in-service training among enterprises, greater private provision of training, as well as greater cost-sharing with beneficiaries. This is as a result of a number of emerging trends including: (a) an increasing tendency to market failure, with firms under-investing in skill development of their workforce, to the detriment of productivity growth; (b) ongoing technological change, structural adjustment policies, new and changing patterns of trade and competition, and globalization have combined to create the need for a much more flexible and responsive training system; and (c) increasingly, limited public sector budgets have

seriously constrained the ability of the states to provide adequate and stable funding to the public training sector. Given this, in this section we discuss two sets of issues: (a) how to best mobilize resources for training; and (b) how to allocate resources most effectively to arrive at the desired objectives.

(a) Mobilizing Resources

(i) Cost sharing among beneficiaries of VET

155. **All beneficiaries of VET should bear some of the cost of training.** There are three groups of beneficiaries: government, employers and trainees/students. Government contribution to the cost of VET comes through its budgets. Some increases could be justified. But it is also important to consider extending cost sharing to the other two beneficiaries.

Students/trainees as beneficiaries

156. **In India, raising significant resources through fees in public institutions is not a common practice – consideration should be given to changing this.** For the present, students pay fees that amount to less than five percent of course costs. Notably higher amounts should be considered. Realistic fees could, of course, shut out those who are unable to pay—the poor, minorities, and rural populations. Targeted programs, say scholarships or reduced subsidized fees, could be needed to offset any negative impact on these groups. Having said that, it should also be pointed out that international experience shows that even poor people will pay fees *provided* they can see the benefits.

Box 7.2: Equity Implications of User Fees

The positive financial benefits from cost-recovery through user fees need to be weighed against the potentially adverse effects on equity. Here the tradeoff is clear. Higher, realistic fees may exclude from training those who cannot afford to pay, while low fees may not contribute enough for the provider to recover costs. Negative impacts on access to training opportunities for the poor, minorities, rural populations, and other disadvantaged groups are likely to ensue.

Governments can offset the adverse impact of fees on equity by using some of the savings realized from fee income to provide targeted scholarships to low income groups.³ Theoretically, at least, increased fees could lead to increased equity of access because with the savings the government can afford to finance the enrollment of more low-income students. This, of course, presupposes that the relatively well-off students are willing to pay fees – they will only do so if they perceive the quality of education being provided is good and that they are likely to find employment after graduation.

The equity implications of charging fees underscore the widely recognized need to introduce subsidies targeted to at-risk groups, in the form of scholarships and fee discounts. The challenge will lie in developing appropriate mechanisms which will effectively target the poor.

Source: Johanson and Van Adams (2004)

157. **Training institutions, including those in the public sector, should have freedom to set fees.** This would encourage providers to develop a more dynamic, even aggressive, approach to exploiting the potential of the local environment. An institution's policy on fees is more than a device for cost recovery and cost sharing; it provides a mechanism for varying fees across courses and target groups and can be a tool for developing an open, demand-oriented system of training.

Employers as beneficiaries

158. **Employers already bear some of the costs through their own in-service training but the results are poor; a levy scheme could be warranted.** The discussion in the previous section shows that although some companies probably excel (for example, some of those involved in exporting goods and services), the majority have a poor track record. Overcoming market failure is a reasonable justification for introducing payroll levies. Over 30 countries have introduced them, with rates varying from 0.5 to 3 percent of payroll. In Brazil and Turkey, levies finance the public training system to provide pre-employment and in-service training courses. In Singapore, Korea and South Africa, and Malaysia (Boxes 7.3 and 7.4), levies provide firms with grants in proportion to the level of training that their employees undergo.

Box 7.3: Singapore's Skills Development Fund

The instrument used to promote firm-based training has been the Skills Development Fund (SDF). This was a levy, launched in 1979 and transferred to the Workforce Development Agency (WDA) on its formation in 2003. All employers, including public sector enterprises are required to contribute to the levy. The basic principle is to stimulate the employer to train its workers by reimbursing part or all of the training expenses from the Fund.

The Singapore practice is not to restrict fund support only to contributing companies. Whosoever undertakes training, according to the set criteria, may apply for re-imburement. Companies not training find themselves losing out, and losing their workers.

The SDF is funded by a levy of 1% on the wages of all employees earning S\$2,000 a month or less. Training grants are made based on the following criteria: (a) employer need to demonstrate the need for training employees; (b) grants may be utilized for direct training costs, e.g. fees for external training, or for establishing training infrastructure including employment of trainers; (c) there must be cost sharing - grants range from 30-70% of training costs; and (d) the trainee must be an employee of the firm.

The present policy is to increase training for the service sectors, for SMEs, for the less educated and less skilled, and for older workers. The WDA has, since taking over, placed emphasis on training for certifiable skills.

The Fund has been responsible for massive growth in company training. In the financial year 2003, SDF had cumulatively reached 100% of all companies with 10 and more workers, and 41% of those with less than 10 workers. The 578,271 training places created represented a ratio of one out of every four workers. Total company investment in training reached the target of 4% of payroll some years ago.

Source: Pillay (2005)

Box 7.4: The Malaysian HRDF Experience

The HRDF, a levy reimbursement scheme, was established in 1992. The Human Resource Development Act created the Human Resource Development Council, with representatives from the private sector and from responsible government agencies, and a secretariat to administer the scheme. Under HRDF, employers pay a payroll contribution of one percent and are eligible to claim a portion of allowable training expenditures up to the limit of their total levy for any given year. The reimbursement rates vary by sector and type of training. The HRDF is considered to be one of the most well-run schemes administratively, and is extremely efficient in reimbursing claims and making application procedures easy to comply with. To date, a total of 3,304 companies have registered with the HRDF.

Evaluation of HRDF. A survey of 1450 firms eligible to participate in the HRDF found that 402 firms (27.7 percent) were not registered with the HRDF. Of those registered, another 34.5 percent reported that they did not claim reimbursements under HRDF. Small firms (with 50 to 100 workers) are more likely to be non-compliant (49 percent) than large firms (8 percent). These data also revealed wide variations across sub-sectors in the take-up of the HRDF scheme. The highest take-up rates of the scheme were in professional and scientific instruments, general machinery, electric machinery, and ceramics and glass. Sub-sectors with low take-up rates were food, beverages and tobacco, textiles and apparel, and wood products and furniture.

Comparing the training experiences of two groups of firms, those registered with the HRDF and those who were eligible but chose not to register, provides some answers to whether HRDF has resulted in an increase in training among firms. In principle, the registered group would have increased incentives to train so as to recover their payroll levy contributions, while the non-registered group would not have the same incentives. The results show that HRDF has increased training modestly - 49 percent of the registered companies said that they had increased training and 39 percent firms said that their training had remained the same. In contrast, of the eligible firms not registered with the HRDF, 27 percent said that their training had increased while 47 percent firms said that their training had remained unchanged. Regression analysis showed that while HRDF did not have any impact on increasing training among small firms, it did have a role in increasing training among medium and large firms.

Who are these non-claimant firms and why are they not training? Only 6.1 percent of these non-claimants do no training. The majority of firms not claiming (54.1 percent) are those that only provide informal on-the-job training. Thus, about 60 percent of these firms are not eligible to claim for reimbursements because they either do not provide training or only train informally. The remaining 40 percent report that they provide formal training, yet do not claim reimbursements for expenditures.

Empirical analysis showed that firms least likely to claim from HRDF are small firms and firms providing no training or only informal training. Important factors that employers cite as inhibiting their training are: the limited resources available for training, the use of mature technology with low skill requirements, the adequacy of skills provided by schools, and the availability of skilled workers who can be hired from other firms.

Source: Tan and Gill (2000), Pillay (2005)

159. **International evidence shows that although levy schemes have a positive impact by increasing training by enterprises, they do have problems.** Levies have been inequitable; large employers have benefited more than small or medium-size employers. Employer reactions to the schemes have been mixed. Most firms, especially on smaller businesses, feel that a levy is simply another unjustifiable tax. Even in Malaysia, where such schemes are relatively successful, the takeup rate among small firms is relatively low (Box 7.3). There are

also problems in administering the funds (Box 7.5). It would be likely that if such a system is not well-designed, such problems can also occur in India.

Box 7.5: International Experience with Payroll Levies Used to Finance Training

International experience with payroll levies suggests the following factors must be borne in mind:

- *Employers buy-in for any schemes is crucial.* For a scheme to be successful, governments should ensure that employers are consulted at an early stage and are involved in designing, implementing and evaluating the fund.
- *Funds collected must be earmarked for training.* In some countries, funds are co-mingled with general revenues and used for other purposes.
- *Administrative efficiency and transparency is critical.* High compliance is essential. There should be an effective collection mechanism. Claims should be processed and reimbursed efficiently. Procedures for disbursing funds should be clear and transparent (the Singapore Skills Development Fund and the Malaysian scheme are examples). However, all schemes have significant non-compliance--over one-third of employers in Malaysia do not comply mainly because they find the regulations burdensome. In countries with poor administrative capacity, non-compliance can be especially high, particularly among small businesses.
- *Schemes should not crowd out non-governmental providers.* Crowding out has been observed in some countries, especially where revenues are directly channeled, if only partly, to public training institutions. Government and non-government providers should compete on a level playing field for funds. Competition should increase the effectiveness and efficiency of public institutions. The government should ensure quality control among all training providers. Only providers (including public providers) of good quality and relevant training should be able to access funds.

Source: Canagarajah, Dar and Murphy (2003)

160. **An alternative is to use matching grants schemes, which can help to develop a training culture although, by themselves, they will not expand the training market.** The most successful matching grant schemes are demand-driven, implemented by the private sector, and aim to create sustained training markets. Chile and Mauritius report positive results by using private agents to administer their schemes. An increased investment in training has been matched by a reduction in enterprise failure. A side benefit has been the development of a network of industry management training consultants who are available to enterprises that want to invest in enterprise-based training. Singapore has a program to build up its stock of industry trainers, and Japan's Industrial and Vocational Training Association has trained over 30,000 industry trainers in the past 30 years. It is important to generate training capacity in enterprises and increase the propensity for workers to undertake training. Grants should not be restricted to state-run training institutions. Funds should strengthen and diversify the supply of training and stimulate demand. Strong training cultures have been established in Japan, Korea, and Singapore, much of Europe, and, judging by the levels of in-company training, Brazil and Chile. In Japan, most managers have a training function and regularly engage workers in informal training. The Basic Law for Vocational Training in Korea encourages in-company training. Matching grant schemes can also link educational and human resource development policies. The Singapore Skills Development Fund was designed and successively modified to provide incentives for enterprises to increase the skill and pay level of their workers.

(ii) Generating income

161. **Income generated from the sale of production and service activities of trainees can constitute a useful form of additional institutional income.** Income may be derived as a by-product of the training process itself. But it is possible, more purposefully, to utilize available skills and facilities to produce output for sale in the local market; indeed, exposure to local markets may lead to more relevant, market oriented training. Here the issue is one of maintaining a healthy balance between these two activities. As more weight is given to instruction, the income potential from production declines; alternatively, quality of training will suffer as emphasis is placed on production rather than instruction. The proportion of recurrent expenses that can be covered by production sales will vary considerably from case to case. The scope for income generating from production will depend on numerous local factors, including the nature of the product, local demand conditions and potential market competition. If an acceptable balance is maintained between training quality and production for sale, the scope for cost recovery may be fairly limited, usually accounting for only a few percent of recurrent expenditure. In some exceptional cases, however, it can contribute a considerable proportion of total costs. Training institutions may also generate income from the sale of services, including the renting out of underused facilities and providing consulting services to local enterprises.
162. **As with training fee policy, institutions will have little incentive to generate income from production if this income does not contribute to institutional budgets.** This will be the case where the revenues collected are not fed back into the institutional budgetary allocations and end up accruing to general government revenues. Institutional fee charging and income generation objectives can be furthered through decentralization of control over public sector providers and greater institutional autonomy. It is only in this more liberal context that the full potential of cost sharing and income generation is likely to be forthcoming.

(b) Allocating Resources

163. **Irrespective of the source or volume of funds, a better method for allocating them is needed. A Training Fund could be an important vehicle for doing this.** There are many examples of Training Funds. A Fund unifies and augments public funding and allocates resources in line with national policies and priorities. Its main purpose is to move systems from supply-driven to demand-driven models – for that reason it should include even government contributions. Institutions are not *given* funds but are required to apply for them, ideally in a competitive field. This is best managed by the sort of national training coordination body discussed in Chapter III.
164. **Because they can be used in a variety of ways, Training Funds should be sustainable.** They can be used to provide: (a) budgets to institutions training for workers for the formal sector; (b) incentives to formal sector enterprises to train their workers through some kind of levy grant scheme; (c) training courses for the unemployed and other disadvantaged groups; and (d) training for micro-enterprises and the informal sector. Sustainability cannot be achieved if funds are diverted to general government revenues, rather than being used strictly for the purposes of providing training specified above. Sustainability has also proved difficult in some countries where training funds were launched externally, by donors, and the source inevitably dried up.
165. **Even if a Training Fund is not established, some of the principles behind its operation should still apply to the allocation of funds.** Instead of transferring resources to

institutions on an ad hoc basis, public resources could be transferred on the basis of input or output criteria. Institutions could be financed according to the estimated cost of inputs; for example by using norms such as the number of trainees enrolled or number of classes. However, although this is better than ad hoc funding, it does not overcome the inherent weaknesses of direct allocation: (i) the lack of incentives for quality assurance or efficiency (funding formulas based on average costs can actually promote expansion of institutions); and (ii) the lack of incentives to close the gap between training and employment needs.

166. **Performance-based funding rewards performance and pays on results.** Institutions that meet targets are rewarded; those that do not are penalized. *Output* targets can be defined in absolute terms (e.g. number of course completions, pass rates on examinations) or in relative terms (e.g. years to completion). *Outcome* targets measure the success of training providers in meeting labor market needs (e.g. job placement within a reasonable time). The key for both type of targets is to define transparent and easily measurable criteria that are easily collected but not easily manipulated. This can be difficult. Outcomes, for example, are not easily measured. Training providers also resort to “creaming” - screening out less promising candidates - so as to maximize results. Performance-based funding can also lead to instability, particularly in times of weak economic activity. Output-based funding may not be successful by itself. In some countries, a composite funding formula is used, combining both inputs and outputs/outcomes.

167. **A further way to allocate resources is to issue vouchers directly to beneficiaries.** Vouchers allow trainees to purchase their own training, which can help to develop the demand side of the market. They can stimulate competition among providers, leading to better quality or lower cost. Institutions could become more responsive to student demands (a proxy for market demand). However, management and cash flow systems have to be designed carefully. Some compensation must be offered to cover marketing and distributing vouchers. Vouchers can also play a role in specific contexts – e.g. funding training in the informal sector in order to build demand-driven markets for informal training over the long term.

168. **Whether funding happens through direct allocation mechanisms or is channeled through Training Funds managed by National Training Authorities, a key element should be competition for funds.** Competition for funds, between public and private providers, is key to ensure improved institutional performance. Funding needs to be linked to some measures of input or output criteria, and recognized public and private providers should be allowed to compete for these resources. International evidence is by and large positive in this regard – competition for resources leads to a reduction in costs for training among competing institutions while also leading to positive labor market outcomes (see Box 7.6).

Box 7.6: Competition for Funds – the Joven Experience

A successful example of competition for public resources is the Joven experience in Chile and Argentina. In an effort to fight youth unemployment in vulnerable groups, Chile and Argentina have offered youth training programs (the 'Joven' programs). These programs offer a mixture of classroom formation and practical experience in firms. What is interesting about these programs is that they are closely oriented to labor demand with training institutions guaranteeing that a certain proportion of the students will be employed after completion of training. Public and private institutions compete for the contracts to train individuals, and training institutions are chosen on the basis of training costs and the track record of training institutions in placing graduates.

Evidence shows that these programs have generated a very vibrant training market with competent public and private training firms able to find the market niches and win the competitively bid contracts while the less effective training institutions do not capture any resources from this program.

However, even as this example shows that training is not a panacea. While impacts are positive for these programs, they are not huge – again showing that training programs cannot correct for the problem of poor quality education.

Source: IADB (2005); de Moura Castro and Verdisco (2000)

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ANNEXES

ANNEX A: VOCATIONAL TRAINING UNDER VARIOUS MINISTRIES

There are some 17 ministries/departments which provide and finance vocational education and training programs. Their total annual training capacity is around three million students, with a wide variation between programs offered by different Ministries in terms of scope, target groups, curriculum, duration, and testing and certification. In many cases, various courses are offered in an ad-hoc manner and are need-based.

There are six ministries/departments offering programs which are targeted at those who leave grade 8. These programs are usually between 1-3 years duration, with a prescribed standard curriculum and examinations. The total annual training capacity is about 2.7 million – mainly in the Ministry of Human Resource Development and the Ministry of Labor and Employment.

Annual Training Capacity of Departments/Ministries Catering to Grade 8 (and above) Leavers (2003)

Ministry/Department	Estimated Annual Training Capacity
Ministry of Health and Family Welfare	200,000
MHRD	
Vocationalization of Secondary Education	846,000
Apprenticeship Training	20,000
Open School	7,000
Department of Information Technology	75,000
Ministry of Labor	
Apprenticeship Training Scheme	158,000
Craftsment Training Scheme	740,000
Other Schemes	7,000
Department of Small Scale Industries	20,000
Department of Tourism	11,000
Ministry of Agriculture (KVKs)	650,000
Total	2,700,000

ANNEX B: CENTRAL APPRENTICESHIP COUNCIL

1. Central Apprenticeship Council

The CAC advises the Government on policies and prescribes standards in respect of the Apprenticeship Training Scheme (ATS). It has 66 members as follows:

Chairman: Minister of State for Labour
Deputy Chairman: Deputy Minister for Education, MHRD
Secretary: Director of Apprenticeship Training, DGET, MoLE
Members: in table

<p style="text-align: center;">9 Representatives of State-owned Enterprises</p> Coal India Limited Bharat Heavy Electrical Ltd Steel Authority of India Limited Indian Farmers Fertilizer Cooperative Limited Indian Oil Corporation India Tourism Development Corporation Standing Conference of Public Enterprises Madhya Pradesh State Electricity Board Tamil Nadu State Road Transport Corporation	<p style="text-align: center;">9 Representatives of Private Employers</p> 2 x Confederation of Indian Industry 2 x All India Organisation of Employers All India Manufacturers Organisation Federation of Small Scale Industry Employers' Federation of India Motor Industries Company Limited (MICO)
<p style="text-align: center;">9 Representatives of Central Government</p> Ministry of Communication Planning Commission Ministry of Defense Department of Electronics Ministry of Railways Ministry of Industry Ministry of Surface Transport Secretary, Ministry of Labour & Employment Additional Secretary, Ministry of Labour & Employment	<p style="text-align: center;">9 Experts / Specialists</p> Nominee of Institute of Applied Manpower & Research Nominee of Hind Mazdoor Sabha Nominee of Indian National Trade Union Congress Nominee of Centre of Indian Trade Union Nominee of All India Trade Union Congress Nominee of Bhartiya Mazdoor Sangh Sh. Mulayam Singh Thakur. Retired Professor & Head of Department, Rishi Nagar, Ujjain (M.P) National Institute of Information Technology (NIIT)
<p style="text-align: center;">Representatives: All India Council for Technical Education</p> 2 x All India Council for Technical Education	<p style="text-align: center;">Representatives: State Boards of Apprenticeship Training</p> Kanpur, Northern Region Mumbai, Western Region Kolkata, Eastern Region Chennai, Southern Region
<p>22 State Apprenticeship Advisors</p>	
Andhra Pradesh Assam Bihar Dadar and Nagar Haveli Delhi (Capital Territory) Goa Gujarat Haryana Himachal Pradesh Jammu and Kashmir Karnataka	Kerala Manipur Madhya Pradesh Maharashtra Nagaland Orissa Punjab Rajasthan Tamil Nadu Uttar Pradesh West Bengal

ANNEX C: INFORMAL SECTOR TRAINING SCHEMES IN INDIA

Ministry of Rural Areas and Employment

The Ministry administers a number of schemes for the rural poor aimed at creating opportunities to secure a minimum level of sustained employment and income. Schemes include the Jawahar Rozgar Yojana (JRY), Employment Assurance Scheme, Integrated Rural Development Programme (IRDP), Programme for Development of Women and Children in Rural Areas (DWCRA), and the Training of Rural Youth for Self-employment (TRYSEM). With the exception of DWCRA and TRYSEM, which are described below, the other schemes do not have much of a training component.

- *DWCRA*: Introduced in 1982-83, as a sub-scheme of the Integrated Rural Development program, DWCRA aims at developing income-generating skills and promoting activities among poor women in rural areas, subsequently improving their social and economic status. The basic unit under this scheme is a group of 10-15 poor women (though the size may be smaller in different areas). The program is implemented by the District Rural Development Agencies. Any economic activity suited to groups of women in line with their skills, aptitudes and local conditions can be taken up under the scheme. NGOs are also involved in implementing the program and are supported by the Council for Advancement of People's Action and Rural Technology (CAPART), an organization set up under the Ministry to coordinate the development work of voluntary agencies in India. According to official estimates, about 350,000 women had benefited from this scheme up to April 1998. However, due to poor backward and forward linkages, lack of spontaneous financial support and selection of non-viable activities, several groups of beneficiaries are no longer supported.
- *TRYSEM*: Established in 1979, the TRYSEM aims to develop technical and entrepreneurial skills among rural youth (aged from 18 to 35) from families below the poverty line to enable them to take up income-generating activities. Training is based on the needs of the area and is provided at ITIs, community polytechnics, extension training centres, Krishi Vigyan Kendras, khadi and village industry boards, state institutes of rural development and institutions run by voluntary agencies. Trainees receive a stipend during their training, which is normally for six months. Financial assistance is also provided to the training institutions and master craftsmen. Over 4 million youths had been trained under TRYSEM up to March 1998. However, the TRYSEM is weakly linked to the overall strategy of self-employment. Training is generally not related to the capacity or aptitude of trainees and is unrelated to the demand for particular skills.

Training under the Department of Women and Child Development

The Department has three key training activities:

- *STEP*: Since its inception, STEP (Support to Training and Employment Programmes) for women has approved 51 projects assisted over 250,000 women and youth.
- *NORAD-assisted program*: Under this program, training is provided to women and school dropouts to assist them with developing employment cum income-generation-production units. Training is in selected non-traditional trades such as electronics, watch-manufacturing and assembly, printing and binding, handlooms, weaving and spinning, garment making, beauty culture, typing and shorthand. The program provides financial assistance to the grantee organization for renting sheds required for training-cum-

production purposes, meeting training cost, payment of stipend to trainees, and the purchase of machinery and necessary equipment, dormitory facilities and day care centers.

- Scheme of condensed courses of education and vocational training program for women: This scheme, started by the Central Social Welfare Board and revised in 1990-91, provides educational opportunities to needy women to enable them to acquire the qualifications and appropriate skills needed to make them eligible for identifiable remunerative work. Voluntary organizations are given grants to impart training to needy women in the 15+ age group in different vocations, providing them opportunities for employment and self-employment.

Training provided under the Khadi and Village Industries Commission (KVIC)

The KVIC has 51 training centres comprising 12 multidisciplinary training centres, 12 *Khadi Gramodyog Vidyalayas*, 24 village industries training centres and three state board training centres. In addition, there are 10 training-cum-production centres, which are owned by private companies. At present, training is provided in 120 courses, of which about 100 courses relate to only about 25 industries and the remaining 20 courses relate to various sponsored and special programmes. Training is given in nine broad areas: artisan's courses; general management; salesmanship; marketing management; entrepreneurship development; supervisory courses; textile chemistry; accountancy; and refresher courses. In the period from 1990/91 to 1995/96, a total of 52,377 persons were trained in KVIC training centres.

Training provided under KVIC has not been much of a success. A study of 1997, undertaken by the Institute of Applied Manpower Research (IAMR), shows that apart from not being employment-oriented, the training did not appear to encourage self-employment among rural youth. The study observed that some of the courses were outdated and the quality of training was poor. The certificates awarded by the KVIC were not recognised by employers, other than the KVIC itself. The existing training capacity was not fully utilised and the infra-structural support available in training centres was inadequate as most of them were not equipped with modern equipment. Only a quarter of the existing teaching staff was qualified to teach. Another striking observation brought out by the study was the complete absence of linkages between KVIC and other institutions such as the Department of Rural Development, small-scale industries and community polytechnics, which offered similar courses to rural youth.

Prime Minister's Rozgar Yojana

Launched in October 1993, the Prime Minister's Rozgar Yojana (PMRY) aims to provide wage employment and self-employment to educated unemployed youths aged between 18 and 35 years. The scheme envisages compulsory training for entrepreneurs for a period of 15 to 20 working days for the industrial sector after a loan is approved. The scheme is targeted to provide assistance to 220,000 educated youths during the year 1999-2000. An evaluation of the program (IAMR, 2000) revealed that it generates employment for about 2.4 persons per firm. The employment generation potential is found to be higher in industrial units (3.5 persons) than in the services (2.2 persons) and trade (1.9 persons) sectors. Training has been useful for an overwhelming majority of the beneficiaries (81 per cent). Many more youth seek assistance under the PMRY. However, almost half of the total applications are rejected by the taskforce committees of the District Industry Centres (DICs). The most important reason behind these rejections is inadequate technical skills. Therefore, the need for more training facilities is being increasingly felt by the youth before setting out on their ventures. Also there is a lack of publicity

campaigns on the various aspects of PMRY like eligibility, fund availability, skills required and markets. As a result, there is little awareness among youth about the scheme.

Bharatiya Yuva Shakti Trust

Bharatiya Yuva Shakti Trust set up in April 1990 with the support of the Confederation of Indian Industry, aims to help unemployed or under-employed youth in the age group 18-35 years to set up or develop their own businesses. Their support takes various forms such as donations, sponsorship of events, professional assistance and mentoring on a purely voluntary basis. The trust provides each beneficiary with a mentor, on a one-to-one basis in the *gurushishya* tradition, according to which the teacher not only teaches but guides and helps develop the disciple. The mentor gives professional advice, maintains regular contact with the business, monitors progress, helps in addressing the problems of the assisted economic units and in developing them. Since its inception, this scheme has helped over 450 business units employing more than 1,540 people in Delhi, Haryana, Chennai, Hyderabad and Pune.

Entrepreneurship Development Centres/Institutes

Entrepreneurship development centres provide training in different fields based on the resource endowment of their local area. The centres prepare sector profiles for sectors where micro-enterprises are predominant such as textiles and garments, agro-based food processing, automobile, mechanical, electrical, chemical industries, paper and printing, forest and animal based service enterprises, and leather-based industries, etc.. They provide small business management training and run training programmes for wage employment. As a result, a large base of training and R&D has been created in the public and private sectors.

Training under the National Renewal Fund (NRF)

In 1992, in the wake of the Structural Adjustment Programme (SAP), the Government of India launched the National Renewal Fund (NRF) as a social safety net to provide: (a) assistance to cover the cost of retraining and redeployment of employees arising from modernisation, technology upgrading and industrial restructuring; (b) funds, where necessary, for compensating of employees affected by restructuring or closure of public and private sector industrial units; and (c) funds for employment generation schemes in both the organised and unorganised sectors in order to provide a social safety net for those affected by the consequences of industrial restructuring.

The idea of the scheme was that beneficiaries would set up small enterprises (especially self-employment) with the capital that they obtained, thereby taking care of their own needs and, eventually, contributing to the growth of the economy. Employees Assistance Centres (EACs) were set up under the NRF for retraining and redeployment of redundant workers. In order to assess the training needs of redundant workers, the EACs make a quick survey with a view to obtaining broad information necessary for framing an annual action plan to retrain workers. The survey collects information on the size of the target group, training facilities available in the vicinity and costs, and possible avenues for self- and wage employment. It attempts to provide skill profiles of eligible workers and their preference for either wage or self-employment or counselling. The survey is also required to project possible vacancies in different categories of vocations. Surveys were conducted on the prescribed lines by almost all the EACs, which identified appropriate training institutions by collecting information through formal questionnaires and visits where necessary. Feedback is also collected from the trainees. EACs further help in redeployment by liaising with prospective employers. They assist those who

prefer to set up their own ventures. Despite variations in training methodologies, by and large, most of the training institutions follow a logical approach to gathering information, developing action plans, undertaking systematic surveys, counselling, and identifying public and private training resources. They conduct follow-ups and consultations with beneficiaries as well as the employers' associations and trade unions. The NRF experience in retraining redundant workers, however, has not been successful. As of the end of August 1998, an estimated 118,509 persons had retired under the voluntary retirement scheme from public sector undertakings. Only a quarter of those who chose the voluntary retirement scheme were retrained, and only 7 per cent of those retrained were redeployed. It is surprising that out of the total expenditure of Rs.2.2 billions, only one per cent was spent on retraining and the remaining amount was used to finance voluntary retirement (Chandra, 1999).

ANNEX D: IN-SERVICE TRAINING

Correlates of In-Service Training in India

The importance of these (and other) training correlates can be investigated within a regression framework using a probit model. The advantage of regression analysis over tabular information is that the independent effects of each variable (or set of variables) can be analyzed holding constant the effects of other hypothesized correlates. The probit model estimates the probability of in-service training by regressing the “any formal training” variable on a set of explanatory variables, including measures of firm size, exports, technology level, public sector or foreign ownership, workforce characteristics such as education, unionization status, the firm’s perceptions of constraints to its operations, and the state’s investment climate performance. The model specifications and results of the regression analysis are reported in Table E.1 below.

Table D.1: Probit Estimates of In-Service Training Provision
(z-statistics in parentheses)

Dependent variable: Explanatory variables	Probability of Any Formal Training			
	1	2	3	4
Small	0.58 (5.02)	0.58 (5.05)	0.62 (6.46)	0.59 (6.27)
Medium	0.88 (5.10)	0.87 (5.04)	1.13 (7.86)	1.15 (8.10)
Large	1.40 (7.25)	1.37 (7.10)	1.74 (12.38)	1.78 (12.80)
Years of education of workers	0.02 (0.99)	0.02 (0.99)		
Age of the firm	0.00 (0.14)	0.00 (0.04)		
Union status	0.22 (1.71)	0.23 (1.71)		
Export dummy	0.33 (3.04)	0.31 (2.83)		
R&D dummy	0.27 (2.61)	0.27 (2.58)		
Foreign ownership dummy	0.29 (1.19)	0.32 (1.30)		
Government ownership	0.53 (2.06)	0.54 (2.09)		
Proportion of females	0.19 (0.68)	(0.18) (0.64)		
General manager education	-0.51 (-3.13)	-0.51 (-3.17)		
Financial obstacles		0.02 (0.21)		
Labor obstacles		0.08 (0.70)		
Macro policy obstacles		-0.05 (-0.51)		
Power outages		-0.01 (-2.15)		
High FDI states			0.67 (7.27)	
High IC states				0.41

Dependent variable: Explanatory variables	Probability of Any Formal Training			
	1	2	3	4
Intercept	-1.60 (-4.18)	-1.53 (-3.96)	-2.53 (-14.75)	(4.28) -2.35 (-13.77)
Included controls for:				
Missing values	Yes	Yes		
City dummy variables	Yes	Yes		
Industry	Yes	Yes	Yes	Yes
R-square	0.22	0.23	0.19	0.17
Number of observations	1426	1426	1426	1426

The probit regression analysis confirmed the importance of some of these key correlates of in-service training provision, but also highlighted the role of several other factors. First, bearing out the results reported in earlier tables, the likelihood of in-service training is higher in larger firms, firms that engage in R&D, and firms that export in international markets, results that are statistically significant at the 1 percent level. Second, firms located in states identified as being “high IC” or “high FDI” are also more likely to train their workers than firms in other states. Third, several other factors also emerged as being important correlates of training. Unionized firms are more likely to provide training, a result consistent with the findings of other training studies in both industrialized and developing countries.⁴³ Government ownership of firm equity is positively associated with training, but foreign ownership is not.⁴⁴ Firms that report frequent power outages (a variable that may capture other constraints to business operations) are also less likely to provide training to their employees.

Finally, the analysis found no relationship between the average years of schooling attainment of the firm’s workforce and in-service training provision. The empirical evidence from many developing countries is that both forms of skills – education attainment of the workforce and post-school training – tend to be highly correlated.⁴⁵ Educated workers are not only more productive in performing given tasks, but are thought to be more adept at critically evaluating new information and learning from it; as better learners, educated workers benefit more from training than less educated workers. Similar analyses using the Pakistan and Bangladesh ICS indicated that, unlike India, in-service training provision was strongly correlated with the mean educational attainment of firms’ workers. A related hypothesis—that more educated managers know the benefits of training and are thus more likely to implement in-service training—also found no empirical support. On the contrary, the educational attainment of general managers was negatively related to the probability of training provision in the firm. Both anomalous results bear further study.

⁴³ In theory, unions are thought to reduce the likelihood of training by negotiating higher levels of wages and reducing the ability of employers to lower wages to finance specific training through a training wage. However, when statistically significant union effects on training are found by empirical studies, they are invariably positive as in the India sample (see Lillard and Tan 1992; Tan et al 1992; Tan and Batra 1995).

⁴⁴ The absence of a positive association may be interpreted to mean that there is no effect of foreign ownership on training independent of export orientation and R&D, two activities which are common among most foreign-owned companies.

⁴⁵ See Tan and Batra 1995 for estimates on the education-training relationship from five developing countries in East Asia and Latin America; Tan 2000 and World Bank (1997, 2005) for related training analyses for Malaysia.

Productivity and Wage Outcomes of Training

Provision of in-service training only makes sense if employers' investments in the training and skills-upgrading of employees yield positive returns in the form of higher productivity and profits. In making these investment decisions, employers also need to decide where to get this training, and who should get this training. An important consideration will be what types of training yields the highest impact on the bottom line, and which workers will benefit most from the training. If training yields positive impacts on productivity, employers also need to determine whether, or how much, to share productivity gains from training with workers in the form of higher wages. This calculus will depend on how transferable skills gained from training are to other potential employers (see Becker 1976; Tan 1980; Acemoglu 1998).

To address these questions, the productivity and wage effects of training were analyzed using the India ICS data. The analyses of the India ICS data can yield insights into whether in-service training is a profitable investment, and provide a check on why the incidence of in-service training in India is so low.⁴⁶ If formal training is found to be associated with higher firm-level productivity, the question is which source of training (in-house company programs, or external training from public or private providers) has the largest impact on productivity? Answers to this question have ramifications not only for employers—what kinds of training to sponsor—but also for policymakers interested in where the policy focus should be in reforming education and training policy.

The productivity and wage outcomes of training required different regression models and sample sizes. For the productivity analysis, a production function approach is used.⁴⁷ The dependent variable—the logarithm of value added per worker—is regressed on the logarithms of capital (book value of physical plant and equipment assets), alternative measure of training (in-house programs, and training from public or private sector providers), and a vector of control variables for worker attributes (mean years of education) and industry. For the wage analysis, a wage model is estimated on the pooled sample of occupations in each firm that had usable occupation-specific information on training, wages, and number of workers.⁴⁸ In the wage model, the logarithm of wages per worker is regressed on the training variables, and a vector of control variables for occupation, worker attributes (years of education and tenure, proportion of female workers), firm size, export and R&D indicators, unionization, and industry.

Table E.2 reports selected results on the productivity and wage effects of training from the production function and wage analyses. Before turning to the training results, some parameters estimated by these models are noteworthy. First, the estimated production function parameters of

⁴⁶ Cross-sectional studies have found a strong positive association between in-service training and productivity and wage levels of firms (Tan and Batra 1995; Batra and Stone 2004). Panel studies, based on longitudinal firm surveys that elicited repeated information on the training practices of the same firms, have also found evidence that training, especially when it is repeated, leads to higher productivity growth and wages (see Dearden, Reed and Van Reenen 2000 for Britain; Tan 2000 for Malaysia; Tan and Lopez-Acevedo 2003 for Mexico).

⁴⁷ Production functions are economic models used to measure the average relationships between output and the inputs used to produce that output, such as capital, equipment, labor, intermediate inputs and raw materials, and energy. Production functions are estimated in logarithmic form so that the estimated parameters can be interpreted as elasticities. Some studies use a gross output measure, whereas others (including this one) rely on a value-added specification because of lack of information on input deflators.

⁴⁸ This strategy was necessitated by a problem with missing wage information, which resulted in reduced sample sizes. Pooling together non-missing occupation-specific data from all firms (and controlling for the common within-firm variance of occupational information) yielded a sample size of 3,076 observations.

capital and labor coefficient are positive and statistically significant, and resemble those estimated for many other countries. Second, consistent with the belief that education raises productivity, the results from both production function and wage models indicate that increased educational attainment of the firm's workforce of one year is associated with higher levels of firm-level productivity of about 6 percent, as well as increased wages of 7 percent, results that are statistically significant at the 1 percent level.

The aggregate training measure, an indicator variable for whether the firm provides any formal training, is not significantly associated either with firm-level productivity or wages. When the model distinguishes between in-house and all external sources of training, no evidence is found for in-house training programs having any effects on productivity or wages; only external training has a positive and statistically significant effect on productivity of about 36 percent. The wage effects of external training are also positive but this relationship is not statistically significant. When external sources of training are further differentiated between public sector (universities, VET schools and government training institutes) and private sector providers (private training institutes and partner firms), Table E.2 indicates that the previous positive productivity result for external training is driven largely by training from private sector providers. The productivity impact of private sector training is about 43 percent, which is statistically significant, whereas training from public sector providers has no discernible impacts on productivity. These results are indicative of weak training capabilities of companies and public sector training institutions.

The production function and wage models were also estimated separately for two groups of firms—those that either exported or engaged in R&D, and those that neither exported nor had any R&D. The motive was – to test whether training had differential productivity and wage impacts among those firms shown earlier to have higher training propensity, and those that did little or no training. The results show that the productivity effects of external private sector training are positive and statistically significant only for the group of firms that either exported or conducted R&D. This result would explain the greater propensity to train among firms facing international competition abroad, or engaged in innovative activities and using new technologies, and diminished incentives to train among domestic-oriented and low-technology firms. The wage effects of training never attained statistical significance in either group. It appears that employers' pay policies reward formal pre-employment education and training, but not in-service acquisition of skills.

Table D.2: Productivity and Wage Effects of Training
(z-statistics in parentheses)

Dependent variable: Explanatory variables:	Production function model			Wage model		
	Log(VA)	Log(VA)	Log(VA)	Log(W)	Log(W)	Log(W)
Log capital	0.216 (14.35)	0.214 (14.27)	0.213 (14.17)			
Log labor	0.85 (27.27)	0.841 (26.89)	0.84 (26.75)			
Years of education	0.058 (5.82)	0.058 (5.77)	0.058 (5.78)	0.069 (3.69)	0.068 (3.61)	0.067 (3.57)
Any formal training	0.145 (1.66)			-0.116 (-0.90)		
In-house training		0.055 (0.52)	0.065 (0.60)		-0.195 (-1.54)	-0.144 (-1.45)
External training		0.363 (2.76)			0.353 (1.38)	
Private sector training			0.429 (2.44)			0.210 (0.58)
Public sector training			0.083 (0.50)			0.203 (0.81)
Intercept	11.255 (49.91)	11.283 (50.11)	11.294 (50.08)	2.501 (11.02)	2.506 (11.05)	2.512 (11.03)
Indicator variables:						
Missing values	Yes	Yes	Yes	Yes	Yes	Yes
Occupations				Yes	Yes	Yes
Worker demographics				Yes	Yes	Yes
Firm size				Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.662	0.663	0.664	0.317	0.322	0.324
Number of observations	1790	1790	1790	3076	3076	3076