

Improving Technical Education
and Vocational Training
Strategies for Asia

Asian Development Bank

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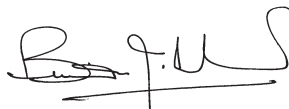
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FOREWORD

The Asian Development Bank (ADB) is committed to advancing the discussion on technical education and vocational training (TEVT) in Asia. ADB lent about \$59 million in 2004 on skills development in 4 countries (Cambodia, Nepal, Pakistan and Tuvalu). But many other middle-income countries in the region could benefit from strategies designed to link employment with demand for skills where public-private partnerships play an important role in providing training. **“Improving Technical Education and Vocational Training: Strategies for Asia”** is a Regional and Sustainable Development Department (RSDD) knowledge product that aims to assist education departments in developing member countries (DMCs) to better understand the need for human resource strategies and frameworks where labor market demand is continuously shifting. The report should help ADB staff to consider the many aspects of human resource strategies when planning projects designed to reduce poverty promote gender equity and encourage public-private participation. Finally, the report is aimed at providing some guidance to the international community’s support for DMC policy makers who recognize the value of human resources in national development.

Many thanks go to W. Loxley, Principal Education Specialist, who managed the in-house ADB workshop and the preparation of the book; R. Johanson, Consultant, who drafted the report; the many professional staff who attended the two-day workshop in October 2004 and contributed to lively debate; and M. V. Capulong, Senior Sector Officer, Regional Sustainable Agriculture and Natural Resources (RSAN) who prepared the edited document. We hope that the report provides insight and leads to wider acceptance of TEVT in education lending in Asia.



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ABBREVIATIONS

ADB	—	Asian Development Bank
CBT	—	competency-based training
DMC	—	developing member country
EBT	—	enterprise-based training
FDI	—	foreign direct investment
HREF	—	Human Resource Endowment Fund
ICT	—	information and communications technology
IT	—	information technology
LMI	—	labor market information
OJT	—	on-the-job training
PNG	—	Papua New Guinea
PRC	—	People's Republic of China
PTP	—	private training providers
R&D	—	research and development
TA	—	technical assistance
TEVT	—	technical education and vocational training
TTC	—	technical training center
VTC	—	vocational training center

NOTE

In this paper, "\$" refers to US dollars

EXECUTIVE SUMMARY

Governments, firms, individuals all seek to develop and operate in an environment with incentives that stimulate growth and national economic development. To create such an environment, governments must pursue macroeconomic policies that promote growth in investments and improved social infrastructure. Firms must operate in ways that maximize their efficiency to be competitive within the framework of incentives created by government. Individuals must take advantage of incentives that encourage them to upgrade education and skills that maximize their income, and supply skills in demand by firms. Failure of government, firms, and individuals to meet these objectives almost certainly dooms the national economy to low productivity, low wages, and low savings and investment, which benefit no one. Nations must work toward balancing growth in labor and capital, and toward adopting new technologies that complement their competitive advantages in the global economy. Understanding how stages of economic development shape labor force policies can offer insight into the formation of a well-educated and skilled population.

Clearly, policies that encourage investment as a means of adjusting the supply of education and training to demand represent the best approach for ensuring harmony in the education and training market. Asian policymakers need to understand the relationship between demand-driven education training and economic development.

This paper discusses the process of economic development, and the evolution of the structure of the labor market from dominance by the agriculture sector toward dominance by industry and service sectors. The need for investment in labor and capital to accommodate these changes is examined. Case studies of two Asian countries leading the current rush to develop manufacturing are highlighted. The following sections look at a typology of development and education and training requirements; the theoretical underpinnings of skills development, and issues and trends in technical education; the institutional architecture of skills, evaluation of recent ADB skills development projects, and implications for DMCs.

I

ECONOMICS 101: THE MACROECONOMIC SETTING FOR SKILLS DEVELOPMENT

Economic growth and development is all about raising productivity, wages, and profits in the right proportion to maximize savings and investment. When productivity is low, so too are wages, savings, and investment, which leads to still lower productivity. When productivity declines, wages fall along with new investment, leading to the proverbial “low skill-bad job” trap illustrated in Figure 1.

Figure 1: The Traditional Poverty Cycle

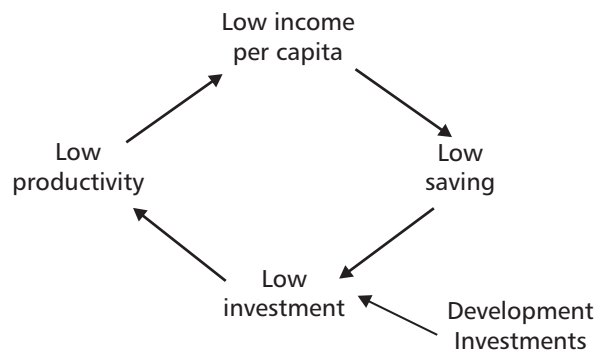


Figure 1 also illustrates the problem of kick-starting an economy and initiating the process of national development. The objective of governments should be to provide incentives for firms and individuals to invest physical and human resources in such a way as to escape this trap. To this end, macro-level policies enacted by governments should aim at sensible tariff structures and strategic alliances that capitalize on comparative advantages, at financial markets that encourage

investments, and at strengthening the rule of law, particularly property rights. When policies complement each other and operate in the same direction, there is scope for real change. To further support such change, governments also need to examine carefully the mix of education and skills of their citizens to ensure sufficient supply of high quality and equitably distributed human capital.

Starting from a position of unskilled and unpaid rural farm labor, policies must aim to increase the productivity of farmers and thereby increase agricultural productivity. If successful, household income and nutrition are raised, allowing greater investments in children's education and health, as well as off-farm migration. Growing urban populations require policies that support productive manufacturing, including that for export. Technology imports start at a modest level, such as assembly, and move up the value-added chain. Rising incomes lead to household spending on education and health, as well as savings that contribute to investment in physical capital. As savings and investment levels rise, so too does domestic production of goods and services.

The strategy to escape poverty is to invest in social sectors that require large gains in health and education before per capita incomes can be raised. This is followed by investments in agricultural productivity (often through improved technology), core infrastructure, manufacturing (via the private sector), and policies favoring equity and environmental concerns. Taken together, increases in savings, government revenues, organizational efficiency, and agricultural and manufacturing productivity all work to push investments above thresholds needed for self-sustaining growth. This is the story told in Figure 1 when the word "low" is replaced by "higher."

In some Asian countries, this process has been carried forward following a similar broad path. First, biases against agriculture and rural society combined with capital-intensive investments sparked widening inequality. Eventually, export promotion offset negative incentives from import protection, including labor-intensive policies. Finally, with wider globalization, increased capital investment has been complemented by greater access to technology. Hong Kong, China, Malaysia, Republic of Korea, Singapore, and Taipei, China stressed rapid growth in worker output that brought rapid growth in

the incomes of both the salaried and self-employed together with a swift influx of rural labor into higher productivity employment in industry and services. Over time, these so-called Asian Tigers invested in both physical and human capital. Strong export orientation reduced economic rents and labor policy did not favor privileged groups. Many of the Central Asian economies, on the other hand, opted for centrally-planned economies and supported wages—a policy dictated more by strategy than demand. This led to resource misallocations and a lack of technical dynamism that contributed to a backward service sector. Other countries on the Mekong and in South Asia tried inward-oriented development paths, such as protectionism, that led to slow growth in labor demand, especially in industries dependent on local markets. Learning from these experiences, it becomes clear that policy choices have implications for economic development. Governments, firms, and individuals all have a role to play in ensuring that nations choose wisely a national course of action that simultaneously raises labor productivity, wages, savings, and investment.

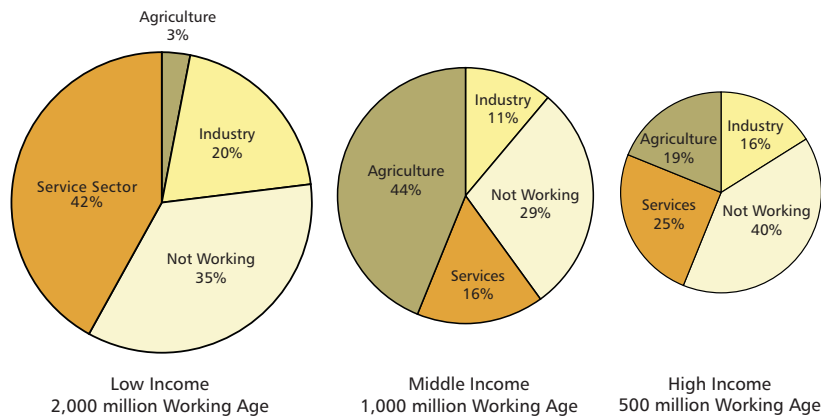
A. LABOR MARKET STRUCTURES

Worldwide, labor market trends have shifted in expected patterns as countries developed economically over the past 50 years. Analysis reveals that generally, workers aged 15 to 60 have options to work in agriculture, manufacturing and industry, or in service sectors as salaried, self-employed, or unpaid labor. Alternatively, they can remain unemployed by choice or otherwise.

Figure 2 displays the percentage of workforce participation by sector for the low, middle, and upper income countries of the world. The data is adapted from the World Bank 1995 *World Development Report*, but the pattern remains the same today. A significant point is that the poorest countries have four times the number of workers as high-income countries, while middle-income countries have twice the workforce of high-income countries. In the poorest countries, most work is in the agriculture sector, where wages often are low or in kind as unpaid labor. Jobs are largely outside the formal sector, and pay is low and work is physical. Most workers must take work at any cost as

unemployment is not an option for either the old or the young. In middle-income countries, there is a steady shift of workers from the agriculture sector to the higher value-added manufacturing and industry sector. Additionally, the service sector begins to expand once incomes start to rise. Again, unemployment is not an option even in middle-income countries given the lack of social protection mechanisms. Finally, as countries become highly developed economically, employment in the agriculture sector declines to less than 3% of the workforce, and the danger arises that manufacturing will be outsourced as low value-added industries are abandoned for smaller, high value-added manufacturing. Meanwhile, the service sector widens and deepens dramatically as the demand for varied goods and services multiples. Open unemployment can be considerable as social welfare systems expand to meet demand.

Figure 2: National Labor Market Profiles by Sector and Country Income



Source: World Bank. 1995. World Development Report: Workers in an Integrating World. Washington D.C., p. 10.

Low and middle-income countries account for about 80% of the world workforce, yet they account for only 50% of the world's skilled workers (high school and above). Likewise, their share of the total capital stock is only 13% of the world total. At present, capital and technology flow across borders far easier than labor. Middle-income countries thus need to raise workforce skill levels and accumulate more capital before specializing in manufacturing, since manufacturing depends heavily on skill acquisition and capital investment.

Sector and labor patterns in Asian countries follow those just discussed. Some countries, like many found in South Asia, are still making the shift out of agriculture. The middle-income countries, such as those in Central Asia and Southeast Asia, are striving to build a manufacturing base. Over the next 20 years, Asia is likely to see numerous countries come on line with low-cost manufacturing that can compete in the production of low-end export goods and services. Some of the advanced countries of Asia find themselves upscaling their manufacturing sector to pursue niche areas, while developing a high-end service sector (Hertel, T. and F. Zhai, 2004).

At the micro level, the shift of workers off farms to more urban and formal sector activities involves a complicated process of moving from an unorganized labor structure to a more organized one, where workers enter the wage economy and self employment. Depending on many factors, individuals often have to break out of highly segmented markets that discriminate against the uneducated, women, minorities, and other disadvantaged groups. Here it is important to note that in societies where many have no education, even some primary schooling has economic value, as noted in numerous rate-of-return studies showing that primary school completion pays big dividends in the poorest societies.

B. LABOR AND CAPITAL INPUTS

Labor and capital are two major factors in generating growth and productivity in every nation. Poor countries usually have a surplus of labor, but often of low quality.¹ Consequently, it is important to continuously upgrade education and training. The sooner countries begin this process, the better off their workers will be in the future. As countries develop, the supply of capital increases and can be substituted for labor-intensive strategies. As emphasized earlier, governments should try to avoid any imbalance between the supply and demand of capital and labor by reasonably proportioned investments in physical capital and human capital that maximize productivity. An over-emphasis on capital (profit-led) investments will curtail consumption, while an over-emphasis on labor (wage-led) investments will limit capital investment. Both profit-led and wage-led strategies will reduce growth because less than optimal increases in wages and profits will limit savings and future investment.

The general process of labor and capital investment trade-off is well documented. During economic booms, labor demand increases and unemployment falls. Wages then rise faster than the economy and leads to a fall in profits. Investment declines and economic growth stalls or declines, whereupon unemployment rises, wages fall, and profitability is restored, leading to reinvestment. The cycle is self-generating. But judicious investments in capital and labor allow greater productivity, which in turn leads to higher wages and savings that, along with higher profits, stimulate investment. The difficulty is finding the right combination of investment in labor and capital that allows the economy to grow fastest without generating too much unemployment or too much spare production capacity. Governments aim to choose, over time, the right policies that, taken together, pull the economy in the direction of an environment conducive to development. Fine-tuning investments in capital and labor is essential to this strategy.

¹ The experience of industrial countries suggests that the accumulation of physical capital is an important source of growth in the early stages of development. After relatively high capital intensity is reached, technological progress tends to become dominant (Agenor, 2000).

Investments in labor can be made in several ways. For example, countries can gradually but consistently upgrade their active labor force through general education, on-the-job training programs, and the whole set of forces contributing to a more experienced and productively employed workforce. In effect, a process of learning by doing transforms workers—they become more productive. Thus, by upgrading education and training, the productivity of the individual worker is increased. Countries can also invest heavily in physical capital, so workers can be more productive due to better equipment and machines. Finally, countries can improve institutional mechanisms through efficiency and capacity development to ensure that investments in labor and capital become more effective (C.F. Felipe, 2004).

Investments in education and training are investments in human capital. When these investments are combined with new technologies resulting from capital investments, powerful mechanisms come into play to accelerate growth and productivity, leading to higher wages, savings, and investment for future growth. Technological change spurs new practices with profound effects on industries, occupations, employment relations, skill requirements, wages, organization of work, and human resource practices. It is clear that to exploit comparative advantage in the use of new technologies, a strong local skill base, infrastructure, and an effective regulatory framework are needed. Basic skills are essential to exploit opportunities for technological change. Policies that encourage investment in human resources can play an important role in development, since technological change requires richer cognitive content in education and training. Such policies should be complemented by policies that help reduce skills bottlenecks and improve the functioning of labor markets (S. Lall, 1999).

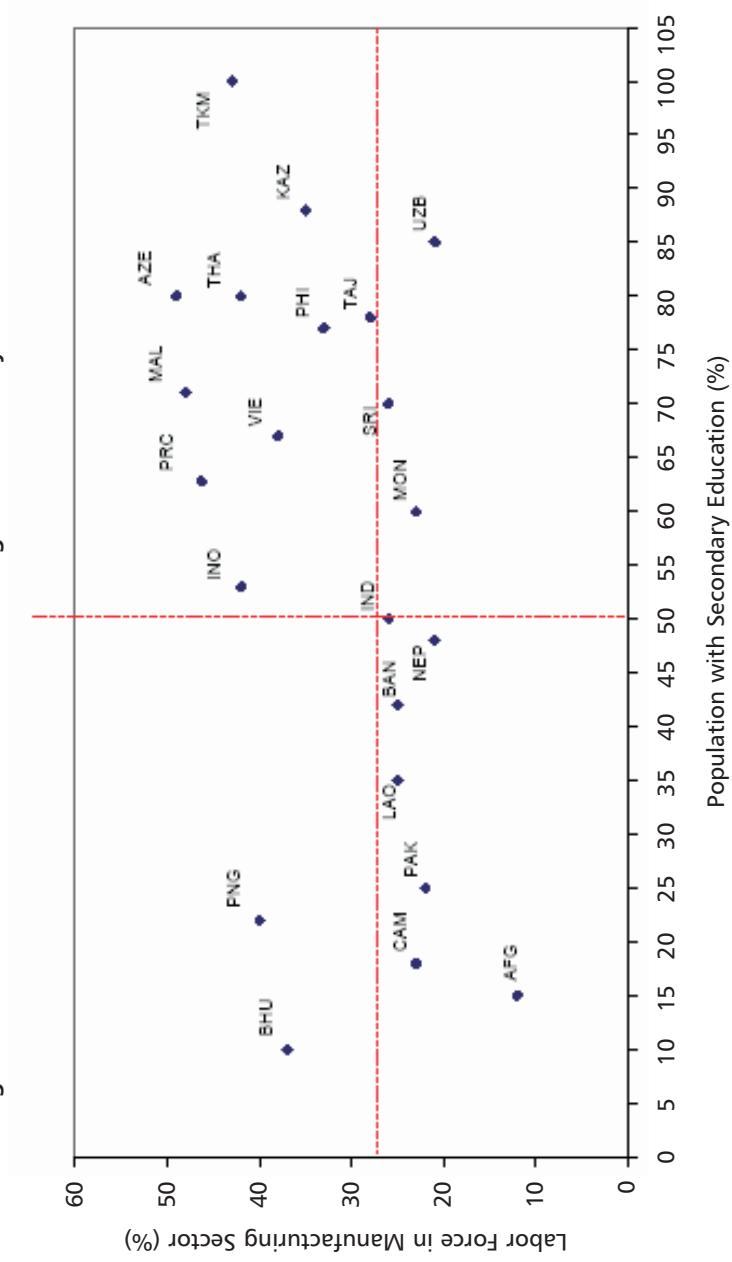
As Asia transforms itself over the coming decades, there likely will be steady progression of countries reaching that critical threshold of development, where the supply of low-cost labor is of sufficient supply and quality to manufacture low-cost products, with the potential for producing higher quality and more sophisticated goods and services. Currently, the leading wave of such countries in Asia are those where participation in the manufacturing sector exceeds 25% of

the labor force, and more than 50% of the population possess a secondary education (Figure 3, upper right quadrant). These countries have reached a level where investments in both physical and human capital are sufficient to solidify middle-income status. As the skill levels of agriculture, manufacturing, and service jobs in these countries broaden and deepen, however, they will be forced to expand relevant and useful education and training to the general population. If they do not keep pace with such requirements for change, they will not sustain momentum in the creation of high-value work. For these governments, it is critical to carefully analyze supply and demand for labor in the context of changing technologies and global competition. The numerous articles in journals and magazines that discuss the impact on national job markets of outsourcing and new technologies only scratch the surface in documenting the massive shift of labor taking place worldwide. Countries that do not take steps to properly position their stocks of human capital will fall behind in the race for sustainable national development.

There are Asian countries with labor force participation in the manufacturing sector below 25% and less than 50% of the population with a secondary education. Once these countries slowly work their way to threshold levels for entering middle-income status, they will be able to take advantage of their higher levels of national development and draw on advanced strategies for education and skills training. Even now, these countries can begin to develop the strong programs in technical education and vocational training needed for such labor market development.

As countries in the region continue to develop at varying rates of growth, it will become vital to carefully monitor growth impacts on human capital, labor force changes, and overall factor productivity. Failure to monitor trends will almost certainly place workforces at risk. Policies that speed liberalization and integration can improve efficiency in resource allocation, but must be properly planned and executed. For the newly emerging nations in the region, policies are needed to shift factors of production to more skill- and capital-intensive activities. For middle income countries in the region with relatively well-educated workforces, enhanced flexibility, combined with increased efforts to upgrade human capital through education

Figure 3. Percent Labor Force in Manufacturing and Secondary School Enrollment



Source: Asian Development Bank. 2004. *Key Indicators 2004*. Manila.

and training, will help them move up the value—added curve and capitalize on those opportunities afforded by a larger and more dynamic global economy. All countries will benefit from policies that encourage a faster growing world economy. All policies will in some way support investments in workers' training and skills upgrading. This paper looks into the micro-policy framework of changing education and training policies for low and middle-income countries.

The remainder of the paper looks closely at the relation between stages of economic development and education and training, and the necessity of investments in basic skills to exploit opportunities for technological change. The relationship between issues and policies that countries need to foster as they proceed through the development cycle is given particular attention. After examining theory and practice, recent ADB projects in technical education and vocational training (TEVT) are reviewed. Finally, some lessons learned and recommendations are offered to Asian Development Bank (ADB) and developing member countries (DMCs) with respect to strengthening strategies to boost the Asian human resource base.

II

STAGES OF ECONOMIC DEVELOPMENT AND CORRESPONDING EDUCATION AND TRAINING REQUIREMENTS

There is broad correlation between the major stages of economic growth and priorities for education and training systems, as shown in the matrix in Table 1. It should be noted that the different stages are not self-contained, but overlap. In fact, country economies are usually mixed, combining various stages of economic development. A good example is India, with subsistence agriculture, a large urban informal sector, and low-cost manufacturing, together with high value-added enterprises and even some enclaves of a knowledge-based economy.

All countries start as agrarian, low-income countries, where the economic challenge is to increase agricultural productivity, develop cash crops, and provide better marketing infrastructure—such as transport and electrification. During this stage of development, educational priorities move to universal basic education as quickly as possible, and to provision of non-formal skills training to raise incomes and reduce poverty. Once this process is underway, countries progress through the three stages of economic growth discussed below.

A. FACTOR-DRIVEN GROWTH

In countries at this stage of economic development, such as the People's Republic of China (PRC), India, and Sri Lanka, the primary sector is often predominant, with the focus on extraction of natural resources. The main economic challenges are to get factor markets functioning properly so as to utilize land, labor, and capital properly. Full employment is a principal objective as employment in the agriculture sector declines. Manufacturing is characterized by labor-

intensive activities leading to low value-added production. Competitiveness derives from the low cost of production, of which low wages are a key factor, and the ease of access to external markets. Policy efforts aim in particular to keep labor costs in check.

Development at this stage does not require massive investment in TEVT. “High levels of education and training are not required for the production of low value-added goods and services (Ashton and Green 1996, 32).” Priorities for education and training are universal basic education, low-level vocational skills development, and inculcation of disciplined work habits. A small but strong capacity in basic training also is an important priority. Establishment of a training authority, with employer participation, would be appropriate to respond effectively to the different markets for training (Middleton et al. 1993, 266).

Even advanced industrial countries may pursue a low-skills approach. In the shorter term it is quite possible for a high-skill, high-wage sector to co-exist with low-wage, low-skill sectors.

There is little doubt that there are companies...where competitive strategies based on high-quality production and high value added mean that a more flexible, autonomous and highly skilled workforce is regarded as an essential prerequisite for success. There are a great many other employers pursuing market strategies based on the production of low-quality, low-cost goods and services using Taylorist methods of work organization who are more likely to want a cheap, relatively low-skilled workforce of people who do what they are told... Many employers viewed training for (plastics) process operators as a waste of time because the skill requirements of the job were so limited (Booth and Snower 1996, 310, 311—312).

Finegold (1998) first put forward the concept of a “low skills equilibrium” in describing the British economy in the late 1980s:

... under certain conditions it can be perfectly rational for a company manager to pursue a low-skills strategy. Under market pressure to produce short-term results, unable to find the means to cooperate productively with other businesses or with workers, experiencing difficulty in recruiting well-educated young workers, managers are likely to opt for low levels of training. At the same time, individuals hemmed in by short-term constraints, lack of security and limited marginal returns to studying hard at school, rationally opt for low levels of participation in education and training. The outcome of the game played by the company and its actual or prospective workforce is a low-skill equilibrium (as summarized in Ashton and Green 1996, 31).

It is unlikely, however, that advanced countries can maintain or increase their standards of living over the long term using this approach. In general, the high skills, “high-tech” route is probably the only one that advanced, high-wage economies can sustain in the long term.

B. INVESTMENT-DRIVEN GROWTH

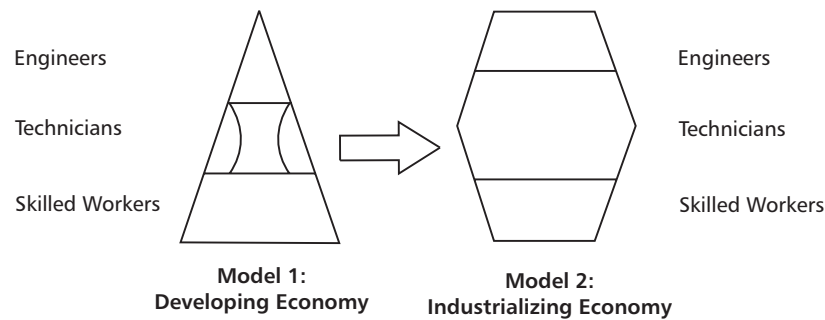
The secondary sector is predominant in countries at this stage of economic development, such as Malaysia and the Republic of Korea. The chief economic challenges are to (i) attract foreign direct investment (FDI) and imported technology to exploit land, labor, and capital resources; (ii) develop flexible labor markets (easy entry-easy exit.); and (iii) link the national economy with the global economy. The economy is characterized by export manufacturing and outsourced service exports. Production concentrates on high value-added goods and services. Competitiveness is based mainly on high-quality, technologically advanced, flexible production using imported technology. “High performing” companies burgeon.

The importance of education and training in the current era of international competition applies mainly to goods with high value-added. “To compete in these markets...the evidence for the importance of high levels of education and training is overwhelming (Ashton and

Green 1996, 32).” Economic growth at this stage witnesses an acceleration of demand for skills—particularly at the higher levels—and a corresponding decline in demand for unskilled or low-skilled production workers and craftsman. As stated in the project document for a recent ADB TEVT project in Nepal:²

...the present public training output ratio for technicians and crafts-level workers is 1:50. The classical ratio of engineer, technician and skilled workers for a developing economy is about 1:5:25. Presently, this is far from being met and the present skills of the available labor force are not ready to move forward to an industrializing economy without first achieving skill-based competitiveness. Figure [4] (below) illustrates the manpower structure of a developing economy like Sri Lanka, which is aiming to move to an industrializing economy to catch up with neighboring Southeast Asian countries, i.e. Singapore, Malaysia, and Thailand.

Figure 4: Workforce Structure Model



Source: Association of Canadian Community Colleges. 2004. Sri Lanka: Proposed Human Resource Investment Project. Project Preparation Technical Assistance Report for named project, ADB, Manila, p. 39.

² ADB. 2004a. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Nepal for the Skills for Employment Project*. Manila. (April 2004 draft)

Table 1: The Role of Education and Training in Different Stages of Development

Development Stage	Characteristics of Economic Production	Key Economic Challenges	Education, Training Requirements
1. Low income Factor-driven, resource-based growth	Natural resource extraction, labor-intensive assembly, and manufacturing. Primary sector is dominant. Low value-added production, e.g. commodities or relatively simple products of long-standardized technology designed elsewhere. Competitiveness mainly on price basis owing to low wages and low-cost production. Highly sensitive to world economic cycles, commodity price trends, and exchange rate fluctuations	Economic growth is determined primarily by the mobilization of primary factors of production: land, primary commodities and unskilled labor. Government role is to get factor markets working properly by providing overall political and macro-economic stability, as well as a sufficiently free market with minimal distortions to utilize effectively primary commodities and unskilled labor.	Basic education, low-level skills, disciplined work habits, and policies to control wage increases.
2. Middle income Investment-driven growth	Concentration on manufacturing and outsourced service exports. Production of high value-added goods and services. Secondary sector is dominant. High-performing companies. Imported technology. Competition based mainly on efficiency in producing standard products. High quality technologically advanced, flexible production becomes more important, but technology and designs are still largely imported.	Attract foreign direct investment and imported technology through licensing and joint ventures. Link the national economy with international production systems and the global economy. Government priorities are to improve physical infrastructure (ports, telecommunications, roads) and regulatory arrangements to permit integration with global markets, and policies to facilitate flexible labor markets (easy entry-easy exit).	Universal secondary education, deepening of vocational and technical education, particularly at post-secondary technician levels—i.e. the “diamond” instead of the “pyramid” in Figure 1. Up-skill the labor force through life-long learning to retool and update skills. Broaden skills to include teamwork, communications, problem-solving, etc.
3. High Income Innovation-driven growth	Knowledge-based economy. Innovative products and services at the global technology frontier. Self-generation of technological innovation. Competitiveness is critically linked to high rates of social learning (especially science-based learning) and the ability to rapidly shift to new technologies. Tertiary sector is dominant.	Generate high rate of innovation through public and private investment in R&D, higher education, and improved capital markets and regulatory systems that support start-up of high technology enterprises. Adaptation and commercialization of new technologies	Well developed higher education—especially in science and engineering specializations, high rates of social learning—especially science-based learning, and dynamic R&D sector linking higher education programs and innovating firms. Firms invest heavily in continual training and upgrading their workforces.

R&D = research and development, TEVT = technical education and vocational training.
Source: Adapted from Schwab, Porter and Sachs (2002).

Priorities for education and training at this stage are universal secondary education,¹ deepening of vocational and technical education—particularly at post-secondary technician levels, and enhancing labor force skills through life-long learning to retool and update skills. Abilities in language, mathematics, and science become increasingly important prerequisites for the preparation of skilled workers. With advancing technology, workers are increasingly required to read and understand blueprints and operational manuals for complex and expensive machines and instruments. Workers must have basic literacy and numeracy skills in order to master the complex and sophisticated skills of modern trade and technical occupations. Consequently, universal secondary education becomes important. Technician training, particularly at post-secondary levels, also becomes a priority to supply the burgeoning requirements for middle category skilled workers (in the middle of the “diamond” of Figure 1). In terms of content, skills development would be broadened to include such topics as teamwork, communications, and problem solving. Substantial enterprise-based learning would be a requirement (Ashton and Green 1996, 24). As distortions ease, efforts should be made to enhance enterprise-based training (EBT)—especially for small and medium enterprises—and private training provision. The central training authority should be strengthened and given control of allocation of funds. A payroll levy may be both feasible and capable of providing stable funding for skills development. Finally, management capacity should be developed at institutional levels with a view to devolution of responsibilities and stronger links to accountability (Middleton et al. 1993, 257).

This stage a country’s development also can be characterized as a “high skills approach,” and is the opposite of the low-skills equilibrium at the previous level.

¹ One of the reasons that Thailand ran into economic difficulties in the mid-to-late-1990s, apart from the financial crisis, was the failure to move quickly enough to universal secondary education. This limited its ability to move up the economic value chain (ILO 1998a, 125).

An alternative, high skill equilibrium can be found where it is in the interests of the company to make use of productive techniques that require high skills to provide the necessary training and rewards for workers with the right attitudes and education, and it is in the interests of workers to undertake the necessary investments in themselves... Finegold suggests three main conditions for a high skills equilibrium. First there should be an environment in which long term planning is facilitated and short-term attitudes discouraged. Second, there needs to be an atmosphere conducive to elements of cooperation and consensus among employers and between employers and workers even in the context of overall competition. Such an atmosphere could be fostered by corporatist institutions with reasonably centralized bargaining arrangements. Third, industry must have an export orientation so that exposure to very low wage competition from other countries rules out low-wage forms of competition at home (Ashton and Green 1996, 31).

C. INNOVATION-DRIVEN GROWTH

The tertiary sector is dominant in countries at this stage of development, such as Singapore. The main economic challenge at this stage is to generate a high rate of innovation, adaptation, and commercialization of new technologies, thus producing innovative products and services at the global technology frontier. At the upper end, this is the knowledge-based economy that generates technological innovation.

Priorities for education and training at this stage are highly developed education—especially in sciences and technical education in engineering specializations, high rates of science-based learning in general education, and a dynamic research and development (R&D) sector linking higher education programs and innovative firms. In view of the strong employment demand for skills, the largest share of occupation-specific training at this stage can be provided privately, either within enterprises or through trainee-financed private training providers.

D. TRANSITION ECONOMIES

Countries moving from command to market economies, such as the Central Asian Republics of the former Soviet Union, Viet Nam, and PRC, constitute a special case in the above typology. The transition to a market economy, and its implications for education and training, are summarized in Table 2.

Table 2: Transition Economies and Education and Training

Development Stage	Characteristics of Economic Production	Key Economic Challenges	Education, Training Requirements
Special case: Transition economies (from command to market economy)	Shift away from highly specialized manufacturing. Development of small and medium service- oriented enterprises. Development of new markets, including exports. Establishment of a labor market.	Price liberalization and reduction in subsidies. Fiscal and tax reforms, including broadening the tax base. Financial sector and banking reforms. Establishing favorable legal and regulatory framework for enterprise growth and development.	Reorientation and inclusion of market-oriented subjects. De-specialization of course offerings and consolidation of skills training. Adult retraining for those displaced by structural adjustments. Active labor market policies to facilitate labor mobility across sectors. Development of private training markets; "semi-privatization" of public training.

Source: Adapted from Schwab, Porter and Sachs (2002).

The main economic priorities in the transition from a command to market economy are price liberalization and reduction in subsidies; fiscal and tax reforms, including broadening the tax base; financial sector and banking reforms; and establishment of a favorable legal and regulatory framework for enterprise growth and development. Restructuring the economy typically requires a major shift away from

highly specialized manufacturing, and the development of small and medium service-oriented enterprises. New markets need to be developed, particularly for exports. Establishment of a labor market also has to be a priority to, among other things, address the massive shedding of labor that industrial restructuring entails. This would involve the introduction of active labor market policies to facilitate labor mobility across sectors.

Typically TEVT in command economies was overly specialized, with training institutions linked almost exclusively to one large enterprise, and trainees prepared for highly specific jobs in that enterprise. TEVT also enrolled the vast majority of youth at the intermediate level. In view of these characteristics, priorities for TEVT reform include (i) consolidation of institutions and reduction in enrollments, (ii) de-specialization of previously narrow program offerings, and (iii) reorientation of content to include market-oriented subjects. Enrollment rates in TEVT generally have plummeted throughout the transition world reflecting an extreme mismatch between the skills taught and the needs of the labor market. Adult retraining would be a priority for those displaced by structural adjustment. Other priorities would be to develop private training markets and to make public training institutions accountable for costs and output performance (See also ILO 1998a, 78—80).

E. TECHNOLOGY AND HUMAN RESOURCE REQUIREMENTS

The stages of technological development, like those of economic development, are linked with changes in human resource requirements.

Human resources driven economies obtain their stimulus for growth from advances in technology. The process requires receiving, assimilating, and adapting technology that already exists... This compels central attention to be given to education, which is the critical variable in determining the environment for technology (Behrman 1990, 3).

The environment for technology should facilitate its passage through four stages of absorption:

- (i) **Learning-by doing** – requiring only basic education, with technology not easily transferable.
- (ii) **Learning-by-adapting** – requiring technical and vocational training, at least by shop floor technicians, and possibly by managers and engineers, with the skills transferable.
- (iii) **Learning-by-design** – requiring much more technical skill, and therefore academic disciplines and advanced study to translate specific requirements into operative systems.
- (iv) **Learning by innovation** – requiring creativity, education in basic science, and advanced degrees in engineering and science.

F CASE STUDIES: THE REPUBLIC OF KOREA AND SINGAPORE

The Republic of Korea and Singapore case studies summarized below in Table 3 illustrate the main elements shown in the Table 1 matrix—how these countries went through the various stages of development, and the types of education and training assigned priority overtime.

Several common threads can be seen in the approaches of both countries. Both countries first emphasized the establishment of a wide base of educated people through universal basic education and adult education. University expansion was carefully managed, controlled and deferred until the later stages (1980s and beyond). Vocational education and training were relatively unimportant in the first phases of industrialization, when light industry that was highly labor intensive had only a limited need for skilled workers; but the bases for strong systems of vocational training were established at this stage (Caillods 1994, 247). TEVT became a top priority in the advanced industrialization phase. Both countries paid considerable attention to

upgrading workers on the job. Singapore introduced multiple programs and generally succeeded, such that the programs were phased down as the target groups were covered. Both introduced training levies to stimulate enterprise interest in worker training. The early objective of skill training was to produce flexible and multi-skilled workers. At a more advanced stage of industrialization, the focus of on-the-job training—at least in Singapore—shifted from quantitative objectives (upgrading more workers) to building capacities within enterprises. The objective was to make enterprises learning organizations and to deepen worker skills (e.g. skills to address and solve unforeseen problems). Higher technical education became important only in later industrial stages, particularly as the countries moved to higher value-added products and services. Science and engineering fields were then emphasized (see ILO 1998a, 122—126).

G. CONCLUSIONS

The above typology suggests that levels of economic development roughly corresponded to certain levels of development of education and training. In the first stages, (subsistence and factor-driven growth) basic education and adult education are priorities, with the gradual development of a basic skills formation system for skilled blue-collar workers. Higher education is limited. At the investment stage, universal secondary education, worker upgrading, and technician training became priorities as the importance of skilled workers declines. In the final stage, characterized by innovation-driven growth, higher education becomes the priority, along with research and development. The typology also suggests that during each stage, the base for the next stage must be prepared.

Table 3: Stages of Development of Education and Training in Singapore and the Republic of Korea

Stage	Singapore	Republic of Korea
1 Import Substitution	1960—1965 Integrated basic education for nation-building	1945—1960 Universal primary education and adult literacy
2 Export-Oriented Industrialization (low-cost assembly and light industrial manufacturing)	1965—1975 <ul style="list-style-type: none"> • Basic education through middle school • Establishment of single national training authority (VITB) • Initiation of Technical Education 	1960s <ul style="list-style-type: none"> • Expansion of basic education up to middle school • Initial establishment of public vocational high schools • Creation of 2-year junior colleges • Creation of vocational training institutes for non-formal skills development under MOL
3	Mid-1970s to mid-1980s—2 nd Industrial Revolution (move to higher value-added) <ul style="list-style-type: none"> • Vocational stream added to secondary • Establishment of Joint bi-lateral Technical Institutes • Establishment of Singapore Technical Institute • Major push to enhance workers' skills (BEST, WISE, MOST, COSEC) • Establishment of Skills Development Fund—initially to upgrade workers 	1970s—Heavy Industrialization <ul style="list-style-type: none"> • Major push to increase proportion of secondary students in vocational high schools • Emphasis on engineering and science in junior colleges; excess demand for higher education channeled through open and correspondence universities • Law enacted stipulating quotas for EBT, later converted to training levy

4

- 1990s—Present (“The Next Lap”)
- Reworking curricula of general education to ensure basic skills needed for advanced industrial society (patterned after Japan and Germany)
 - Emphasis on production of intermediate level technical skills
 - JITCs become multinational in outlook
 - OJT-BEST, MOST phased down. Emphasis placed on building work-based learning and skills deepening. Training grants introduced, with German-style apprenticeship training
 - Higher education emphasized, especially science and engineering (polytechnics)
 - Attempts to expand university-based R&D
- 1980s (Liberalization—move into higher value added production and increasingly sophisticated technology)
- Continued pressure by government to increase proportion of secondary students in vocational high schools, but enrollments declined
 - Emphasis placed on post-secondary technical courses and advanced training, especially in science and technology (Calloids, 248).
 - Levy system expanded to encourage OJT
 - Attempt (failed) to introduce German-style apprenticeship system
 - Rapid expansion of higher education (18%/year in 1st half of 1980s)
 - Future strategies:
 - ◆ Diversify higher education
 - ◆ Allow vocational high school graduates access to higher education
 - ◆ Decentralize to stimulate innovation and responsiveness to niche markets
 - ◆ Expand R&D

BEST = Basic Education for Skill Training, COSEC = Core Skills for Effectiveness and Change, EBT = enterprise-based training, JITC = joint industrial training centers, MOL = Ministry of Labor, MOST = Modular Skills Training, OJT = on-the-job training, R&D = research and development, VITB = Vocational and Industrial Training Board, WISE = Worker Improvement through Secondary Education.

III

THEORETICAL UNDERPINNINGS

A. THE RATIONALE FOR SKILLS DEVELOPMENT²

Skills development, and by extension skills formation systems, are important because of their contributions to individual and company incomes, and to national productivity. Enhanced skills enable individuals to be more productive and generate higher incomes. Workforce skills make enterprises more productive and profitable, and help national economies raise production and create wealth. “Vocational education and training are indispensable instruments for improving labor mobility, adaptability and productivity, thus contributing to enhancing firms’ competitiveness and redressing labor market imbalances (Caillods 1994, 241).”

1. Productivity

When people acquire skills they make themselves more productive, able to produce more output and income for a given amount of time and effort. This applies both to wage employment and self-employment. Moreover, when people acquire skills, they typically make those around them more productive. Since most work is teamwork, the productivity of one worker generally depends on the productivity of others. The more training a worker has—on or off the job, the more a worker can learn from others about doing a job effectively, and the more productively can workers interact in production, innovation, distribution, and sales (Booth and Snower 1996, 1; Ashton and Green 1996, 17).

² Some of this section is adapted from Johanson (2003).

2. Complementarities between Capital and Skills

Human capital is found to be a significant determinant of the amount of physical capital investment in an economy. “A higher level of human capital enables machinery and plant to be used more efficiently, raising the rate of return on investments (Ashton et al. 1999, 8).” “When labor and capital are complements, deficient investment in human capital...reduces the productivity of physical capital and thereby leads to deficient investment in physical capital and insufficient economic growth (Booth and Snower 1996, 6).”

The economic literature, as reviewed by O’Conner and Lunati (1999), suggests that a more educated labor force can raise the returns to investment in physical capital—i.e. that skills and capital are complementary. For example, Mincer notes the general tendency for skills demands to rise with development as a result of capital accumulation.³ In Barro, the stock of human capital affects growth principally through physical capital investment, with the two types of capital being complementary.⁴ The variation in investment rates in physical capital across countries is partly a function of absorptive capacity, which in turn depends on availability of human capital and other institutional factors. The rate of return on investment in physical capital would appear to be a positive function of the supply of human capital; where the latter is scarce, the former is low, and so too is the incentive to invest. If so, raising levels of educational attainment should, *ceteris paribus*, increase returns to physical capital and thereby boost investment

³ Mincer, J. 1995. Economic Development, Growth of Human Capital and Dynamics of the Wage Structure. *Journal of Economic Growth* I, March, pp. 29—48. Cited in David O’Connor and Maria Rosa Lunati, *Economic Opening and the Demand for Skills in Developing Countries: A Review of Theory and Evidence* (Paris: Organisation for Economic Co-operation and Development [OECD], Development Centre), p. 26.

⁴ Barro, R.J. 1991. Economic Growth in a Cross Section of Countries. *Quarterly Journal of Economics* CVI, pp. 363—394. Referenced in David O’Connor and Maria Rosa Lunati, *Economic Opening and the Demand for Skills in Developing Countries: A Review of Theory and Evidence* (Paris: OECD, Development Centre), p. 2.

rates. Benhabib and Spiegel found a significant positive association between the stock of human capital and productivity growth.⁵

Investment in physical capital, particularly capital equipment, is an important determinant of growth. Capital-skill complementarities largely reflect the skills required to master technologies in newly acquired capital equipment (O’Conner and Lunati 1999, 27). Specifically, more educated people are needed to operate higher-cost capital equipment incorporating sophisticated technology. In addition, use of expensive machinery means greater costs of machine down time, and hence a higher return to preventive maintenance technicians (O’Conner and Lunati 1999, 21). It can be argued that globalization raises capital flows from developed to developing countries. This means that, even without technology imports, capital output ratios in developing countries would rise and, given the complementarities between capital and skill, this would raise the relative demand for skilled labor (Mayer 2000, 25).

3. Technological Change

The acceleration of technical change in recent decades has been complemented by greater numbers of workers with higher skills. “Without a workforce that is continuously acquiring new skills, it would be difficult to reap most of the returns from technological progress (Booth and Snower 1996, 1).” When technologies are changing rapidly, necessitating a high rate of labor turnover across industries and occupations, adaptability is crucial to keeping labor and capital employed and maintaining competitiveness. When people acquire skills, they commonly also make themselves more adaptable (Booth and Snower 1996, 1). The advancement of knowledge and innovation, and the diffusion of new methods of production are aided by higher levels of education and training (Ashton et al. 1999, 8).

Technological change has shifted demand toward higher skills in the labor force (World Bank 2002, 78). New technologies are

⁵ Benhabib, J. and M. M. Spiegel. 1994. The Role of Human Capital in Economic Development: Evidence from Aggregate Cross Country Data. *Journal of Monetary Economics* 34, pp. 143—173. Referenced in David O’Connor and Maria Rosa Lunati, *Economic Opening and the Demand for Skills in Developing Countries: A Review of Theory and Evidence* (Paris: OECD, Development Centre), p. 27.

knowledge and skill intensive, and there is a need to train people to work with those technologies (IMF 2001, 3). As with capital-skill complementarity, complementarities also exist between technology and skills. The stock of human capital appears to be positively correlated with technological dynamism. The introduction of new technologies in lower income countries implies a reallocation of labor from low to high productivity activities, the latter being generally both more capital and skill intensive. This means that increased technology imports are likely to be accompanied by a rising ratio of capital to labor, and by demand for skilled labor (Mayer 2000, 23).

The mastery of a technology is like a skill that needs to be learned, normally at the organization or team level. Effective learning-by-doing depends on the level of education and skills possessed by the workforce, with interactive skills of particular importance in fostering teamwork. What accounts for rapid growth is the combination of education (and acquired skills) with technologies employed in organizations well designed to exploit them.⁶

Endogenous growth theory considers that the main reasons for poverty are gaps in the endowment of knowledge, and in the limited capability of developing countries to absorb new knowledge. The latter implies that development policy should concentrate on the interaction between technology and skills with a view to facilitating the reduction of the knowledge gap (Mayer 2000, 1).

Globalization can ignite a “virtuous circle” of technology upgrading and skill accumulation in technological late comers.

Technological improvements in backward countries are closely interrelated with their educational attainment: skill supply influences the amount and degree of sophistication of technology which can be adopted and used efficiently, while in turn the amount and sophistication of newly introduced technology impacts on the demand for skills (Mayer 2000, 2).

⁶ Nelson, R.R. 1994. What Has Been the Matter with Neo-Classical Growth Theory? In *The Economics of Growth and Technical Change: Technologies, Nations, Agents*, edited by Silverberg and Soete. Aldershot: Edward Elgar. Cited in David O'Connor and Maria Rosa Lunati, *Economic Opening and the Demand for Skills in Developing Countries: A Review of Theory and Evidence* (Paris: OECD, Development Centre), pp. 27–28.

One growing aspect of technology, information and communications technology (ICT), is perhaps the most important of any technological revolution in the past two centuries. The new technologies have led to the introduction of a wide range of new products, sharp declines in transaction costs, and vastly improved economic efficiency. Surveys on the introduction of new information technologies have found a strong association between the use of the new technologies and the rise of skill and educational requirements (ILO 1998a, 37—38; ILO 2000, para. 14).

Information exchange is an integral, but often overlooked, aspect of globalization. Knowledge about production methods, management techniques, export markets, and economic policies is available through ICT at very low cost. It represents a highly valuable resource for developing countries (IMF 2000, 5). But while Internet technology is not particularly expensive or capital intensive, it is human capital intensive.

4. Changes in Work Organization

Demand for and effective use of skills within an enterprise depends on the ways that work is organized (Booth and Snower 1996, 328). As noted by the ILO in “The Social Impact of Globalization,” the progressive adoption of new techniques of work organization is among the key factors behind globalization (ILO n.d., 15). Enterprises traditionally organized work according to a tight division of labor and narrowly specialized jobs under close control of supervisors. These traditional management systems are based on the assumption that breaking each task into its most elementary components was the most efficient way of organizing the production of standardized goods for a mass market. Traditional (Taylorist or Fordist) forms of work organization minimized the skills and training required of most employees for job performance. However, increased competition and the introduction of ICT have prompted many firms to make fundamental changes in their internal organization and work practices. These include changes in factory layout, flow of production, quality assurance, and use of inventory. There is no one model of such transformation, but collectively, reorganized firms are called “high performance enterprises”

(ILO 1998a, 41—43). High performance enterprises base their competitiveness not just on production cost, but also on incremental improvements in the quality of goods or services produced.

The changes in work practices and organization in high performance enterprises have profound implications for the skills required of employees because skill demands are derived from the way work is organized. Work teams in high performance enterprises typically incorporate devolution of decision making, self-management, multi-skilling, job rotation, and cross training.⁷ These methods confer greater flexibility on the organization, but can only work if employees possess technical skills in addition those normally required in a traditional organization (Ashton and Sung 2002, 83). In the high performance workplace, workers also must possess the cognitive and diagnostic skills necessary to perform a broad range of frequently changing tasks (Howell 2000, 6). Additionally, such workers must acquire social and problems-solving skills required for management of production. This generates the demand for learning to become a continuous process (Ashton and Sung 2002, 73). For example, the introduction of job rotation and multi-skilling increases the range of tasks and technical skills required by employees. The use of teamwork and self-managed teams means that workers must develop better communication and decision-making skills (Ashton and Sung 2002, 3).

Learning and training are necessary, but insufficient, conditions for improved performance and productivity at the enterprise level. For training and workplace learning to be effective, they must be “bundled” together with other organizational and work practices, such as regular performance appraisals, profit-related bonuses, information on business plans and performance targets, and regular feedback on performance (Ashton and Sung 2002, 12).

Evidence from studies suggests that considerable restructuring toward new forms of work organization has also taken place in developing countries (ILO 1998a, 44). Because new forms of work organization require greater responsibility and greater skills from the workforce, low skill levels in developing countries impede their

⁷ Multi-skilling involves upgrading jobs through the addition of new skills. It promotes greater workforce flexibility and productivity by creating a better-trained and more competent workforce.

introduction. Firms introducing new forms of work organization in developing countries, like their advanced country counterparts, typically invest heavily in further training of their workforce. The rise in investment in EBT has also been linked to the influence of the global standards of multinational corporations (ILO 1998a, 46).

All three factors—globalization, technological change, and changes in work organization—are closely linked. “The new information technology, by reducing the cost and increasing the speed of communication, has played a major role in globalizing production and financial markets; in turn, globalization, by intensifying competition, has spurred technological diffusion and the adoption of new forms of work organization (ILO 1998a, 33).”

5. Trade Openness, Competition, and Foreign Direct Investment

Globalization places a premium on skills. With globalization, skill resources, rather than the traditional resource base, determine the competitiveness of regions (Shankar and Shah 2001, 1). Openness causes a shift in the demand for skills through induced capital spending and technological change. Globalization raises capital flows, which in turn raise demand for skilled labor (Mayer 2000, 23). The stock of human capital serves to attract investment in physical capital, notably through foreign direct investment.⁸ Skill resources attract foreign direct investment. The existence of effective education and training systems in a country are likely to attract investment in manufacturing. Thus, a well organized education system and a more educated labor force can act to attract globalized financial capital.⁹ Alternately, lack of human capital may deter foreign investment in a country since physical capital tends to go to areas where human capital is abundant (O’Conner and Lunati 1999, 22).

⁸ Lucas, R. E. 1990. Why Doesn’t Capital Flow from Rich to Poor Countries? *AER Papers and Proceedings*, LXXX, p. 92—96. Cited in David O’Connor and Maria Rosa Lunati, *Economic Opening and the Demand for Skills in Developing Countries: A Review of Theory and Evidence* (Paris: OECD, Development Centre), p. 27.

⁹ See the case of the information technology software industry in India (ILO 1998a, 128—129).

Openness does seem to stimulate investment in physical capital. If human capital and physical capital are complements, the higher investment-to-GDP ratio in open economies would tend to increase their demand for skilled labor without a corresponding increase of supply. This could explain the tendency for relative wages of skilled workers to rise with economic openness. Given capital-skill and technology-skill complementarities, this suggests that the more open economies should experience a more rapid growth in demand for skilled workers than closed economies (O'Conner and Lunati 1999, 28—29).

Even with increased economic openness, not all lower-income countries have achieved rising technology imports or seen increased demand for skills. Nor will skills resources alone suffice to spur development. This is evident in the previously centrally-planned economies of the former Soviet Union, where high levels of labor force education were not associated with technological dynamism (O'Conner and Lunati 1999, 28). Skills development should be a coherent and integrated part of comprehensive economic, labor market, and social policies and programs that promote economic and employment growth (ILO 2000, para. 4). Also important are an effective legal and regulatory framework, low hidden transaction costs (e.g. corruption), and encouraging labor market conditions (O'Conner and Lunati 1999). Adoption of new ideas and technologies and increased demand for skills is a function of a number of domestic conditions, of which the stock of human capital is only one.

Further, growth in technology imports and skill levels of the domestic labor force must go hand in hand (Mayer 2000, 27). One without the other is insufficient.

The coordination of such efforts is critical because investment in human capital alone will lead to diminishing returns of skill accumulation while increased technology transfer alone is unlikely to be enduring and might have negative developmental effects from rising income inequality... The lesson from the East Asian experience was that rapid industrialization and skill accumulation were achieved by expansion of the education system in conjunction with a step-by-step upgrading of the skill intensity of economic activities (Mayer 2000, 27).

Experience of East Asia shows that the availability of skills cannot catalyze growth by itself, but that lack of skills can seriously constrain growth (ILO 1998a, 132).

Thus, as emphasized by Theodore Schultz, education and training enhance labor market flexibility to respond to structural changes in the economy.¹⁰ Countries with skills can adjust more effectively to the challenges of globalization because enterprises are more flexible and better able to absorb new technologies. The skill level and quality of the workforce will thus increasingly provide the cutting edge to successful competition in the global economy (ILO 1998a, 201, 203). In short:

...the twin forces of global integration and technical change have rendered education and training of paramount importance in the competitive process. The central issue for discussion in each and every industrialized country is therefore taken to be the manner in which the education and training system can be improved and skills raised (Ashton and Green 1996, 3).

B. THE CONSEQUENCES OF SKILLS DEFICITS

1. Effect of Skill Shortages on Productivity and Wages

First, skill shortages add to the cost of employing skilled workers since a firm must wait longer than usual to fill its vacancies. This may lead firms to substitute unskilled for skilled labor, thereby reducing productivity. Secondly, skill shortages improve the skilled workers' outside options, making it more difficult for firms to induce them to work hard... This problem could also give rise to inflation...(Booth and Snower 1996, 8, 147).

¹⁰ Schultz, T. W. 1963. *The Economic Value of Education*. New York: Columbia University Press. Referenced in David O'Connor and Maria Rosa Lunati, *Economic Opening and the Demand for Skills in Developing Countries: A Review of Theory and Evidence* (Paris: OECD, Development Centre), p. 26.

In general, integration with global markets raises the returns to education and skills (World Bank 2002, 19). Thus globalization has helped increase the relative returns to higher education because of the relatively higher demand for skills (Carnoy 1999, 37). A systematic analysis of the relationship between openness indicators and returns to education confirms that globalization does increase the wage gap between skilled and unskilled workers, at least in the short run. Based on data from more than three hundred studies on the returns to education in developing countries, an extra 1% of GDP in foreign direct investment raises the premium associated with an additional year of education by almost 0.8 percentage points. This is equivalent to increasing the wage gap between a college-educated person and a worker with primary education by roughly 10 percentage points (Rama 2003, 11). These effects will be offset over time by an increase in the supply of educated workers.

Thus, an increase in the demand for skilled workers as a result of trade openness, technological change, and changes in work organization can translate into greater income inequalities where skills are in short supply (ILO 1998a, 48—51).

Increased wage premiums for skills are not necessarily a bad thing. A rising wage differential provides greater incentives to individuals to invest in education and skills development, and thus supports the virtuous circle of technology and skill upgrading from the supply side of skill accumulation (Mayer 2000, 25).

2. Skills and Product Quality

A particularly interesting consequence of deficient training may lie in the composition of goods produced in the country. Specifically, a lack of skilled workers may adversely affect product quality.

When products of high quality require highly trained workers to produce them, economies can get stuck in a vicious cycle in which firms produce goods of low quality because there are few trained workers and workers acquire little training because few high-quality goods are produced... [This is the] 'low skill-bad job trap'... The predominant strategic choices made by employers in any country reflect the extent to which a skilled workforce is available (or easily developed). But they also affect the supply of skills by signaling to individuals the value of investment in vocational training and education (Booth and Snower 1996, 8–9).

3. Effect of Skills Gaps on Export Performance

Skill shortages can also affect export performance. The United Kingdom (UK) and Germany have comparative advantage in the same type of sophisticated manufactured goods. The UK's skill deficiencies (in craft and technician skills) tend to be evidenced as a lower volume of exports: the bigger the skills gap in any sector, the worse the UK's export performance relative to Germany's. "Reduced competitiveness would show up in the form of falling world market share, rising import penetration in the home market or increasing trade deficits with the more successful countries (Booth and Snower 1996, 199, 226)." The less skilled is a country's workforce, the greater the tendency to produce non-traded commodities (such as services), rather than traded ones (such as manufactured goods), because non-traded commodities are often more shielded from competition. This results in a relatively poor export performance (Booth and Snower 1996, 10).

C. THEORIES OF SKILLS FORMATION

1. Free Market, or Neoclassical Approach

Essentially, human capital theory regards education or training as investments with future material payoffs, analogous to investments in physical capital. Human capital theory links the stock of skills with the outputs of the productive system, whereby human capital input

shares equal status with physical capital inputs (Ashton and Green 1996, 14—15). The theory has its roots in Adam Smith:

When any expensive machine is erected, the extraordinary work to be performed by it ... will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labor and time to any of those employments, which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work, which he learns to perform, it must be expected, over and above the usual wages of common labor, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital... The difference between the wages of skilled labor and those of common labor is founded upon this principle.¹¹

The theory was expanded by G. Becker (1964) in the individualistic framework of neoclassical economics. As with other commodities, the neoclassical approach to education and training sees the market as the most efficient framework for determining supply and demand (Ashton et al. 1999, 8). Individuals and firms respond to investment incentives, calculating costs and discounted future income benefits. An individual will undergo additional education or training when the likely future earnings sufficiently offset the present costs of training. If skills are scarce and wages are high, individuals have an incentive to undergo and finance their training. Similarly, an enterprise will invest in training workers to the extent that their future productivity with the firm will likely offset the costs.

One of Becker's main contributions was the distinction between general and firm-specific training. General training is that which is portable, i.e. can be carried to other employers for higher wages and benefits. Specific training is that which can be used only in the

¹¹ Smith, Adam. 1888. *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: Longman & Co. Quoted in David Ashton and Frances Green, *Education, Training and the Global Economy* (Cheltenham: Edward Elgar), p. 14. Ironically, at the time Smith was writing, the system of production did not require the majority of the workforce to be literate. The detailed in-plant division of labor, which he so eloquently advocated, rendered most jobs unskilled and cheap, while he viewed apprenticeships as outdated hindrances to trade (Ashton and Green 1996, 14).

enterprise offering the training. The division of the costs and benefits of training between firms and employees depends, given competitive labor markets and full information, on the degree to which general or job-specific skills are being produced. General training will be funded by employees since they reap the benefits. Firm-specific training will be financed by employers since they receive the benefits. Thus, in a free market environment, investment in training will take care of itself without government intervention. In fact, government training programs are unnecessary, even harmful, since they divert resources from consumption and investment in physical capital. If government intervenes in training, it should be to make markets function more efficiently—e.g. by eliminating price controls, promoting the flow of information, and encouraging competition (Booth and Snower 1996, 2, 4).

However, an important gap may develop between private returns and social returns. Insufficient investment in education or training nationwide may occur in a free market environment, and investment may be less than is socially optimal for a variety of reasons— usually called “market failures.”

- (i) Externalities may occur—i.e. the benefits of investment in training may be captured by parties other than the individual or training firm. First, most training within firms is general rather than specific, i.e. the skills can be used in at least some other firms. For example, most apprenticeship training in the German dual system is in fact general, and useable in an array of other companies (Acemoglu and Pishke 1998). The receiving employer obtains the benefits of these transferable skills. When firms “poach” trained workers from other companies, the firm that hires the trained worker reaps the benefits of training, in terms of increased productivity. This common phenomenon explains why firms may be reluctant to train workers. In short, externalities derived from transferable training lead to suboptimal levels of training.
- (ii) Labor market rigidities may reduce the incentives of workers to invest in their own training. A common example

is artificially compressed wage scales that provide little financial reason to upgrade one's skills.¹² Unions or minimum wage legislation may raise wages above their market level, thus distorting the returns to training. Another instance is when employers exhibit low demand for skilled labor (Booth and Snower 1996, 329—330). An additional case is when pay and status are not linked to the attainment of qualifications, as in Britain, so they provide little incentive for British employees to seek further training. In this case, the failure of young people to pursue training is rational; it does not provide sufficient benefits (Booth and Snower 1996, 315).

- (iii) Lack of information may be another cause of underinvestment in education or training. The absence of information about the benefits of education means that households do not wish to invest in the training of their members (Ashton et al. 1999, 11).
- (iv) Capital market failure. The lack of access to financing (e.g. for borrowing) to finance education and training will prevent individuals from investing in upgrading their skills.

In addition, weak training capacity of enterprises may mean that firms cannot perform their role.

For all these reasons, within the framework of neoclassical economics, there is a case for state intervention to regulate, stimulate, and subsidize the provision of vocational education and training (Ashton and Green 1996, 17).

¹² Some observers have attributed Sweden's poor economic growth during the 1980s and 1990s to the small wage differentials accorded educational/training qualifications in the 1970s and 1980s. They provided little incentive for individuals to invest in their own learning and training.

The single most important point to keep in mind is that it is naïve to suppose that wherever the market fails, the government can be relied upon to put it right... Only if the cost of market failure outweighs the cost of potential government failure can a case be made for public provision or regulation of training... There is no reason to expect the state always to be a more efficient provider of training than private sector firms are. Firms' skill requirements are highly idiosyncratic; government officials cannot be expected to know the millions of needed aptitudes, let alone provide them. The appropriate response to these problems may be state finance, without state provision, of training (Booth and Snower 1996, 10—11).

Thus, it is important to distinguish between government *financing* to correct market imperfections, and government *provision* of training. The only case in which government provision of training would be justified in the neoclassical approach would be as a second-best (and temporary) measure to compensate for inadequate training capacity in the private sector (Middleton et al. 1993, 105—118; Ziderman 2003, 39—45).

2. Human Capital Theory

Human capital theory received support in the late 1980s through a wave of endogenous or “new growth” theories that focus on increasing returns to investment, including human capital. Human capital is viewed as an endogenous factor that drives growth through multiple channels. In this theory, human capital causes externalities. The average level of human capital in a community impacts favorably on the productivity of a typical worker, in addition to his or her own endowment of human capital (Lucas 1988). Human capital is a key input for both the use and production of ideas. For developing countries, not on the technological frontier, large initial stocks of human capital enable them to adapt to new ideas readily and acquire technological capability. Endogenous growth theorists thus claim that “...the main engine of growth is the accumulation of human capital...and the main source of differences in living standards among nations is differences in human capital (Lucas 1993, 290, as referenced in ILO 1998a, 119).

IV

ISSUES AND TRENDS IN SKILLS DEVELOPMENT

A number of basic questions seem pertinent for training systems in general and for TEVT in Asia in particular:

- How can supply and demand be balanced? How can demand-responsive training be created? How can flexibility be built into training systems?
- What role should government play in skills development? When is government support for training justified?
- What role can private training provision play?
- What can be done to stimulate EBT?
- What role can training play in reducing unemployment? In particular, what approaches are recommended to address youth unemployment?
- What can be done when there are not enough wage jobs to go around? What role can training play to improve incomes in the informal sector? What can be learned from previous experiences with training in the informal sector?
- How can financial transfer mechanisms be used to make training more effective and efficient?
- What can be done to facilitate sustainable systems of skills formation?

A. BALANCING SUPPLY AND DEMAND: HOW CAN DEMAND-LED, FLEXIBLE SYSTEMS BE CREATED FOR SKILLS FORMATION?

The fundamental issue in skills development is how best to balance the supply of skills with demands in the labor market. If the demand is unsatisfied, skills bottlenecks impede growth and

development. If the supply is not absorbed, unemployment and waste of scarce resources ensue (Johanson and Adams 2004, 17—18). What steps can be taken to establish a *demand-led* system of TEVT? First, one has to be clear about “demand.” Whose demand? This usually means demand by employers, or demand by the labor market. The first requirement to be “demand-led” is to have some idea of the demand for skills.

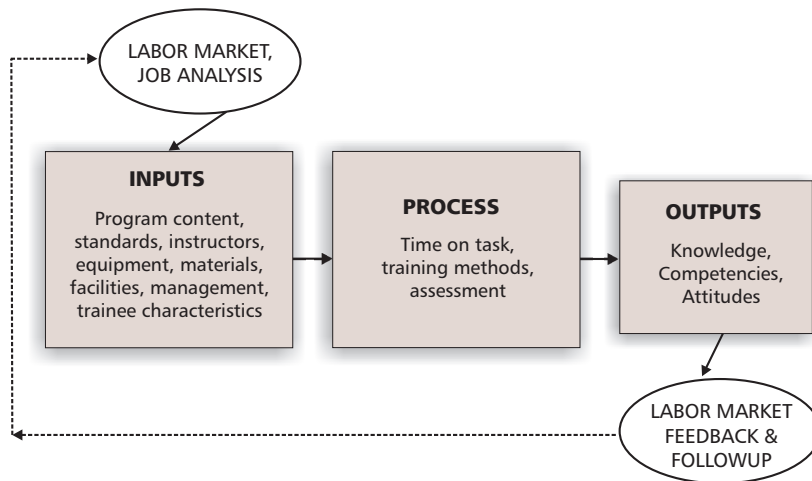
What should *not* be done is to repeat the mistakes of the manpower planning approach of the 1960s and 1970s. At that time, medium to long-term projections were made of occupational demand as a basis for decisions about training supply. There was inadequate appreciation of how economic uncertainty, technological change, and the nature of business cycles made it hazardous to forecast future labor and skill requirements. The forecasts proved almost universally unreliable, and the method was abandoned (Middleton et al. 1993, 136—139).

The following methods can be used instead to identify skills in demand:

- (i) participation by employers in articulating which skills are in demand;
- (ii) establishment of capacity to analyze market trends in terms of job creation and absorption, wage levels, waiting times for employment, etc. (see first “oval” in Figure 2, below);
- (iii) tracer studies on the labor market outcomes of graduates over time, so that adjustments can be made in training supply (last “oval” in Figure 5); and
- (iv) efficient dissemination of information to the public about employment trends.

In other cases, demand for training by potential trainees is taken as a proxy for market demand. If information about market demand is distributed widely, trainees will gravitate toward the occupations most in demand and where wages reflect scarcities, thus automatically adjusting supply upward to meet demand. Trainee demand, however, is a blunt instrument for gauging the strength of demand in the market

Figure 5: Steps in the Training Process



Source: Adapted from Johanson and Adams (2004), 58.

in most countries. Labor market information is generally not widely available. Strong demand for enrollment in TEVT institutions may merely reflect scarcity of places in general education and the belief that additional qualifications automatically enhance employment opportunities.

Other factors support the adjustment of supply to demand:

- The most important is linkages with employers, i.e. the extent to which employers are actually involved in advising and directing skills development. Employer advice is important, but the degree of their authority over decisions and direction in the training system is even more important. The most effective forms of employer participation confer some authority on employers to direct training systems.
- Another important factor in adjustment is the type of training system administration. Centralized systems, if they are competent and forward looking, can link training with industrial policy and direct adjustments. Such

centralized systems, however, tend to be exceptions. Alternatively, decentralization—or delegation of authority from the center to the training institutions—can provide incentives to link training outputs to local market demands.

- Allocation of training funds based on market performance is another means to facilitate adjustment of supply with demand. Managers of training institutions need incentives to break out of a supply-led mode. Owners and managers of private training providers often have strong financial incentives to adjust their course offerings to the demands of the market. Since their income derives mainly or exclusively from fees, they must be able to show good performance in graduate employment as a selling point to attract new trainees.

Building *flexibility* into skills provision can also facilitate rapid adjustments to markets. One of the reasons that the manpower planning approach failed is that prediction of skill requirements over the medium to long term has proved to be difficult—even impossible. Employers themselves often do not know their hiring requirements 3 to 6 months in advance. This puts a premium on flexibility. Perhaps the chief means to build in system flexibility is to delay vocational choices and defer specialization until the later stages of training, when immediate market demands become clearer. A corollary would be to favor short-term over long-term training. This is a reason why school-based systems of training tend to be inflexible. Similarly, movement from time-based qualifications to modular training or competency-based training (CBT) enhances flexibility in training provision. Any mechanism that facilitates the shifting of resources also enhances flexibility. This may mean hiring staff on (short-term) contracts, or leasing rather than purchasing equipment where feasible, thus minimizing fixed assets, such as expensive buildings. Devolution of decision-making authority on training programs can also engender flexibility.

**B. ROLE OF GOVERNMENT IN SKILLS PROVISION:
WHEN IS GOVERNMENT SUPPORT JUSTIFIED?**

Government *financing* of training programs differs significantly from government *provision* of training. In many cases government financing may be justified—as in cases of market failure, or for equity purposes. Government provision of training, on the other hand, can only be justified in limited circumstances—such as when capacity is lacking for private provision, or government provision can be demonstrated to be the most effective and efficient means. Table 4 below shows the various cases, and the best and alternative policy responses.

In sum, the appropriate role of government in training is to let private training markets work where they function well, and where they do not, to engage the public sector. On this basis, the state is likely to maintain a continuing role in training in most countries. However, the economic rationale for public provision of training is considerably weaker than public financing of training (Ziderman 2003, 44). Public provision is acceptable only when it is efficient, effective, and market responsive, and mainly when private training provision is weak.

**C. WHAT CAN BE DONE TO ENHANCE THE
CONTRIBUTION OF PRIVATE TRAINING
PROVISION?**

Nongovernment trainers, for-profit and nonprofit, are a significant and growing part of TEVT. Building this capacity brings new private investment into training, broadens access, and reduces pressure on public spending for skills development. Nongovernment trainers have several advantages over public training. They are noted for their concern about efficiency (resulting in lower costs), their close linkages with the labor market, and their attention to female enrollments. However, private training also has its limitations. Variance in quality is the single most important issue. The for-profit sector focuses on skill clusters (e.g. secretarial/business, computers, languages) that require relatively low capital investment. Many

Table 4: Policy Options for Public Intervention in Training Markets

Reason for Intervention	Policy Options		
	State Subsidy of Training	State Provision of Training	Complementary Policies
Externalities ^a	P	N	None
Property rights (employer fear of poaching) ^b	A	N	Levy-grant schemes
Market imperfections	A	N	Deal with sources of market imperfections ^c
Inadequate enterprise training	A	N	Build up enterprise training capacity; levy-grant schemes
Weak private training provision	N	A/P	Build up private training capacity
Parity (of vocational trainees with peer group, e.g. in secondary education)	A	N	Reduce subsidies to trainees' peer group, together with introduction of selective scholarships
Disadvantaged groups	P	N	Targeted training subsidies; employment creation; income redistribution

P = preferred, A = acceptable (second best approach), N = not justified.

^a "Positive externalities exist when the benefits of training that accrue to society exceed the private benefits realized by trainees and firms. Thus, from a societal perspective, the decisions of trainees and firms will lead to a shortfall of spending on training. For example, the shortages of a particular skill might inhibit the development of a new industry that is strategic for growth (Ziderman 2003, 40)."

^b "Poaching imposed costs on firms that train because of the loss of newly trained workers to poaching firms. Training firms will then cut their training efforts or offer training that is narrow and not readily transferable... The result is a general under-provision of trained workers (Ziderman 2003, 42)."

^c Policy may not be feasible.

Source: Ziderman (2003), 41. See also Behman (1990).

depend on the public sector for part-time instructors. Most private training is located in urban centers and is not available to those living in rural communities. Fees tend to exclude marginalized groups. However, nonprofit providers, including religious institutions, can serve valuable social objectives in reaching vulnerable and disadvantaged groups (Johanson and Adams 2004, 180—183 and chapter 4).

Ensuring that the regulatory framework does not erect unreasonable barriers to entry or expansion can enhance the provision of private training. Positive incentives can also be provided, such as access to public in-service training programs for managers and instructors, partial subsidies, tax credits, and loan guarantees.

D. HOW CAN ENTERPRISE-BASED TRAINING BE STIMULATED?

Enterprises may under-train staff for a variety of reasons, including fear of poaching, an uncompetitive production environment, and lack of company foresight. Yet enterprise training is highly important in raising the skills and competencies of the workforce. Both the Republic of Korea and Singapore (Table 3) concentrated early and continuously on upgrading the skills of the workforce. How can EBT be stimulated? The three most widely used methods are direct public subsidies, training grants within a levy-grant system,¹⁵ and company tax concessions. Some observations on each of these methods are provided below.

- General training subsidies, e.g. subsidizing wages of apprentices, may result in more EBT. However, the burden of cost falls on public budgets.

¹⁵ Earmarked levies on enterprise payroll. Two types of levies exist: (i) revenue-generation schemes, where levy proceeds are used to finance training provided by public sector institutions (the Latin American model), and (ii) levy-grant schemes aimed at encouraging training investment by firms themselves. In effect, the levy-grant system redistributes funds from non-training companies to those that provide training to their workers. The three types of levy-grant systems are cost-reimbursement, cost redistribution, and levy exemption (Ziderman 2003, 91—92).

- Levy-grant systems, in contrast, are not publicly financed. The costs are met by enterprises (or shifted to workers). This has facilitated a more systematic, structured approach to enterprise training in many countries. However, care must be taken to avoid excessive administrative costs in levy-grant schemes. They may also bias training toward more formal and externally provided training, away from training on the job. Another risk is the “repackaging effect:” the adaptation and documentation of existing training provision to comply with eligibility requirements. Finally, the effect of the incentives may be temporary. In Asia, selected countries use levy systems: Malaysia, Singapore, Republic of Korea, Fiji Islands, and Taipei, China.
- Company tax concessions have not been favored worldwide. Tax concessions require a well developed and broadly based system of corporate taxation. The cost burden falls largely on public budgets in the form of reduced revenues. Firms often do not respond to the tax incentives because of excessive administrative costs or insufficient profits to benefit from the exemptions (Ziderman 2003,151—152).

E. WHAT ROLE CAN TRAINING PLAY IN REDUCING UNEMPLOYMENT, ESPECIALLY AMONG YOUTH?

Governments often launch massive crash training schemes for youth in response to concerns about socially unacceptably high rates of unemployment, and the socially dysfunctional behavior this can spawn. However, the record of success of such schemes has not been good.

Providing vocational...training is often posited as a cure for the large-scale unemployment of young people that is a widespread and persistent social and economic problem in developing countries. The logic assumes that young people cannot find employment because they do not possess the specialized skills required either by employers or for successful self-employment. Occupational training would therefore enable some significant proportion to achieve employment... Training as a solution to youth unemployment has not proven viable for two reasons. First, in the absence of job opportunities, the acquisition of labor market skills does not lead to enhanced employment; vocational education and training, alone, does not provide jobs. Second, even where an expanding modern sector does offer employment opportunities, most entry-level jobs do not require significant formal training before employment. The principal causes of youth unemployment are demographic and macroeconomic, not lack of skills (Middleton et al. 1993, 54—55).

The basic problem with youth training is that it is essentially supply driven. However, increasing the supply of trained people does not create employment. Prudence demands that training for unemployment pay particular attention to addressing market needs.

Two types of training programs for the unemployed have had some success. The first is retraining workers displaced by structural adjustment, such as the downsizing of companies to make them more competitive in response to tariff reductions. The best retraining programs provide retraining along with job search skills to employees while they are still attached to the enterprise (Leigh 1992). Two youth training schemes in Latin America have also claimed some success—Chile Joven and Proyecto Joven in Argentina. What sets these schemes apart from typical youth unemployment programs is the inclusion of internships as an essential part of the training program, and competitive bidding for training contracts by interested training providers in both the public and private sector. Additional financial incentives are provided to contractors for results, i.e. for trainees who actually find employment. Initial evaluations showed that about 60% of the young people found a job at the end of the program, compared to less than 40% for unemployed people not in the program (Castro

¹⁴ See Johanson and Adams (2004), Chapter 6, “Building Skills for the Informal Economy.”

and Verdisco 1998, Castro 1999, ILO 1998a, 181). Both countries, it should be noted, have highly developed, modern economies with substantial wage employment. The approach may be less applicable to countries at lower stages of development.

F. WHAT ROLE CAN TRAINING PLAY TO IMPROVE INCOMES IN THE INFORMAL SECTOR?

In view of the growing proportion of people working in the informal economy in low-income countries, these countries must adopt strategies for training for self-employment and improving the productivity of the informal sector. What can training do to improve incomes and reduce poverty for those working in the informal sector?¹⁶ Training, by itself, is not sufficient to raise incomes for those in the informal sector. Other interventions are often crucial—credit, marketing support, and business advice. Skills development is nevertheless an essential instrument in enabling the self-employed to generate income. Skills training in the informal sector is needed to enhance the productivity of informal sector activities, to improve the quality of its products and services, and thus to raise incomes of those working in the sector. Technical skills are crucial to diversifying product ranges and avoiding saturation of conventional informal sector markets. The breadth of tasks that need to be performed distinguishes skills requirements in the informal sector from formal wage employment. Self-employed persons in the informal sector usually need to complete specific jobs by themselves, from beginning to end. They must perform a full range of business functions from initial market surveys through cost and quality control, financing, and marketing.

Training providers can target three groups in the informal sector:

- (i) mastercrafts persons and those already operating micro businesses, such as small manufacturing workshops,
- (ii) trainees preparing to start their own businesses, and

¹⁴ See Johanson and Adams (2004), Chapter 6, “Building Skills for the Informal Economy.”

(iii) individuals undertaking income generating activities.

It is always risky to start new employment activities, so the best approach appears to be to work with existing enterprises. In particular, the best form of training for the informal sector appears to be support for traditional apprenticeship, thereby improving the productivity of the master, the enterprise, and the skills of apprentices working under the supervision of the master (Fluitman 1989). Conversely, the most difficult approach is to seek to generate self-employment for youth. Success often hinges on analysis of labor market opportunities and training follow-up, including credit, marketing, and business counseling. The promotion of income-generating activities is particularly relevant for rural areas. This requires transfer of practical knowledge about production techniques, raw materials, tools and equipment, and product design. This does not necessarily amount to a real skills training course, but requires activities such as pre-credit technical orientation, demonstrations of applications, skills transfer, and business counseling (Johanson and Adams 2004, 145).

G. WHAT ROLE CAN FINANCIAL MECHANISMS PLAY IN IMPROVING TRAINING?

Methods of allocating resources to training are powerful means to help training systems become more market-responsive and efficient. *Training funds* afford an opportunity to level the playing field for all providers by procuring training on a competitive basis. This encourages cost-effective delivery. An expansion of *cost sharing* increases consumer interest in the quality of training, as well as demand for training relevance and cost-effectiveness. Empowerment of consumers with training *vouchers* can lead to an expansion of training supply from different provider groups, more choice for trainees, increased relevance, and reductions in cost from competition.¹⁵ The use of *budgeting norms* and *performance criteria*

¹⁵ However, vouchers have proved to be complex to implement and control financially where low administrative capacity is an issue.

shows promise for improving training outcomes, and is especially relevant to shaping incentives and accountability for state-sponsored training. Norms for financing can be established using inputs, such as trainees enrolled; outputs, such as course completions; and outcomes, such as job placements. Allocation mechanisms for procuring training services vary in complexity and administrative requirements and need to be tailored to local circumstances. Combinations of the above norms could be feasible in most Asian settings, provided that reliable measurement criteria and adequate information systems are developed, results are reported candidly, and the political will exists to resist vested interests that may lose from their application (Johanson and Adams 2004, pp. 10—11 and Chapter 7).

H. HOW CAN SYSTEMS OF SKILLS FORMATION BE MADE FINANCIALLY SUSTAINABLE?

Achieving financial sustainability in TEVT projects is problematic. Each of the various possible sources for sustained financing has its limitation. Trainees, to the extent the clients are drawn from low-income groups, cannot afford to contribute much, if anything, to the cost of training. Still, some contributions by trainees (perhaps in labor or in-kind) are important for effectiveness as well as for raising revenues. Full cost recovery, however, is unlikely. Training institutions may also raise revenue by producing and selling goods and services on the market, or by renting facilities. “Training-cum-production” can lend a practical orientation to training provided it does not crowd out time for instruction. In addition, training institutions can seek to market their services to new clientele for full cost recovery. However, public institutions may lack incentives to mobilize resources if they are not permitted to keep the revenue they generate. In any event, experience shows that sale of products and services usually does not account for more than a quarter of operating costs. Student loans, another means for cost recovery, usually are not an option for vocational training. They may be an option for higher levels of technical education and training at the post-secondary level. Then the level of effective subsidy in the loans—taking into account

actual vs. real rates of interest, repayment rates, and costs of administration—must be compared with outright grants to determine whether it is worth making loans.

Two types of training do provide scope for full cost recovery: training for enterprises, and private training provision. Public training institutions can often charge full costs for upgrading workers from industry. And private training typically is self-financing through tuition payments. To the extent that private training is encouraged, the overall system of skills development becomes more sustainable. Overall, however, most training will continue to depend on public subsidies for sustainability, but this does not necessarily mean public provision of training.

V

THE INSTITUTIONAL ARCHITECTURE OF SKILLS FORMATION SYSTEMS

A. TYPES OF SKILLS FORMATION SYSTEMS

Many avenues exist to develop work-related knowledge, skills, and attitudes. In fact, the state of training around the world shows a “bewildering mosaic of schools, training institutions, enterprise training and apprenticeship programs. As time passes variety increases (Castro and Altham 2000, 15).” Many different ways also exist for classifying the basic systems and types of skills formation. Perhaps the clearest way is to define the systems according training location. One can distinguish three main types of skills formation systems based on where the training takes place: in *schools* as part of the formal education system; in non-formal *training centers* outside the school system; and within *enterprises*. These can be further subdivided to illustrate six main national systems of skills development, as discussed below.

1. School-Based Vocational Education and Training

a. *Comprehensive High Schools, or Diversified Secondary Education*

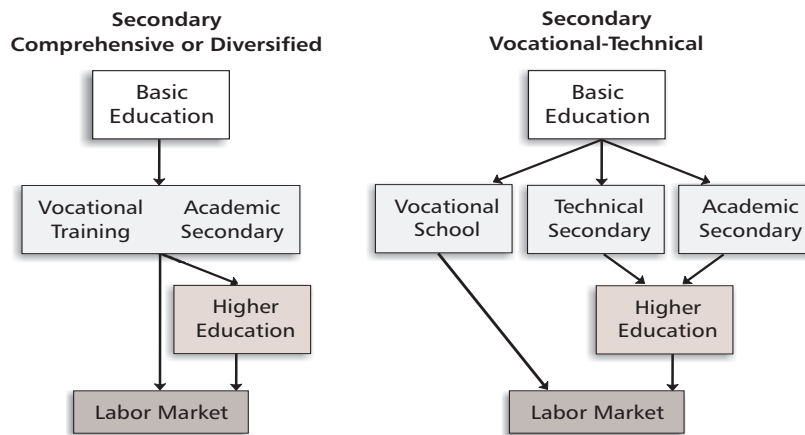
Vocational skills can be developed within secondary schools, typically called comprehensive or diversified secondary schools, as in the United States and Sweden (Figure 6). Students take practical courses according to their interest and aptitude in one single school attended by all students from a given geographical area, regardless of their career interests. The advantage of this system is that all students

are together until the end of secondary school (Castro and Alfthan 2000, 21). This model has considerable appeal in developing countries. The reasoning goes something like this: School leavers need skills in the labor market to be productive and earn incomes. The general school curriculum does not provide sufficient occupational skills, and many graduates are unemployed. Therefore, the school curriculum should be changed to add vocational preparation so that graduates can function better in the labor market. As seen below, despite its appeal, this rationale has rarely delivered the promised benefits in practice.

b. Vocational and Technical Schools

The predominant skills development model found in many low-income countries is school-based. In the French model, vocational education takes place mainly in vocational or technical schools at the secondary level. These institutions run parallel to academic schools that prepare students for higher education (Figure 6). In France, after the age of 13 students are tracked into different types of schools. They may attend vocational schools for 2 or 3 years and earn a Vocational Proficiency Certificate or Vocational Education Certificate; a Vocational Baccalaureate may be earned after another 2 more years. These schools serve two purposes: to prepare youth to work in skilled jobs, and to cater to students that do not want to pursue long academic studies (Calloids 1994, 242). A variant is the technical school (*lycee technique*), which combines academic study with technology. The main difference of these from vocational schools is the greater attention to academic subjects, and the less attention to specialized subjects. Graduates are usually destined for supervisory roles in factories or for highly skilled occupations, e.g. electronics and drafting. Two of the main drawbacks of vocational and technical schools are curricular rigidity and distance from labor markets. However, there are several cases of success with this approach in Asian countries where industrialization has been rapid, such as in the Republic of Korea and in Taipei, China (Castro and Alfthan 2000, 19—20).

Figure 6: School-Based Types of Vocational Training



Source: Castro and Alfthan (2000), pp. 19, 21.

2. Non-Formal Training Centers

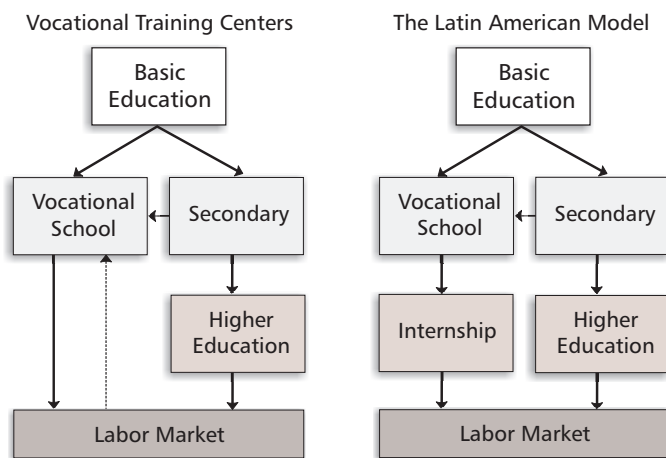
a. Vocational Training Institutes (or Technical Training Institutes)

These are typically operated by ministries of labor or community development, and are outside the school system (Figure 7). Training is thus provided for youth who have completed their formal education, and certificates, if conferred, are not recognized as from of the formal school system. The training can be variable in length—from modular courses, to short duration courses, to courses lasting even 2-to-3 years. These training centers have the advantage of being focused on one purpose—training for work, and in theory can modify the content of training programs more quickly than schools in response to changes in the labor market. The clientele also may be more serious about training, having completed their formal education and having reduced aspirations for moving up the educational ladder.

b. The Latin American Model

Training in most Latin American countries¹⁶ is based at training centers, and are designed for both working adults and young school leavers (Figure 7). The various training centers are run, independently of the education system, by autonomous training agencies that maintain close links with industry through strong representation of employers on their governing bodies. Also significant is their financing, which is based on a payroll tax (about 1%) paid by employers. These organizational features have enabled them to provide high quality training and respond dynamically and flexibly to changing demands of the labor market (Calloids 1994, 248—249). The systems are separate from academic schools, thereby sheltering training for trades from the prejudices against manual occupations and the attractions of higher education. The training levy provides financial stability and a long-range planning horizon. Their financial and institutional arrangements have allowed the institutions to survive economic crises and fend off political interference. However, it has also allowed some to become heavily bureaucratic (Castro and Alftan 2000, 25—26; see also ILO 1998, 71—73).

Figure 7: Center-Based Types of Vocational Training



¹⁶ The main exceptions are Argentina and Mexico, which use vocational schools within the education system.

3. Enterprise-Based Training or Informal Training

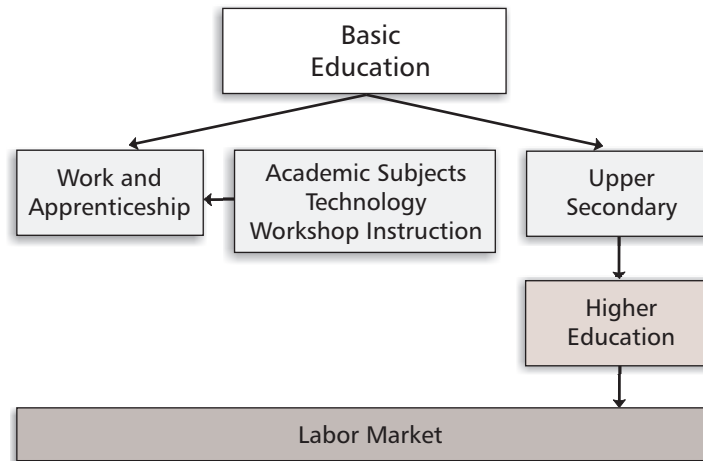
a. *Training by Formal Sector Enterprises*

i. The German Model

Apprenticeship systems developed in Europe from the Middle Ages through occupational guilds. The apprentice offers labor to a master craftsperson in exchange for a small wage and on-the-job training. Because of its direct links with the labor market, the apprenticeship approach has proved to be quite efficient at transferring skills, especially when technology is stable or changing slowly. It is also largely self-financing and does not rely on public financing. At its most sophisticated, it has become complex and structured, as in Germany.

The German system of skills training, the famous “dual apprenticeship system,” combines two basic models: center-based training and enterprise-based training (Figure 8). The system is based on a longstanding tradition of apprenticeship that is firmly rooted in German corporate culture. Theoretical training is provided about one day per week by public vocational training centers, and practical training is provided in-enterprise about four days per week. Apprentices sign an employment contract with an enterprise, which gives them on average three-and-a-half years of formal training under the supervision of a certified master. Apprentices receive an allowance fixed by collective agreement for each branch of training. Graduates receive a nationally recognized diploma. Almost 70% of school leavers in Germany go through the dual system, with very low dropout rates. The diploma provides access to continuing training at more advanced levels, such as for a technician certificate (Calloids 1994, 245). For all its strengths, the system has been criticized for overspecialization—although considerable consolidation took place in the 1980s and 1990s, insufficient theoretical training, and cumbersome procedures in revising training curricula. Still, the dual system is widely supported by all social sectors. This system is particularly difficult to reproduce in other cultures. It requires high prestige for manual occupations as well as close coordination among employers’ associations, labor unions, and public administration (Castro and Alftan 2000, 23; Calloids 1994, 246).

Figure 8: The German Dual Apprenticeship System



Source: Castro and Alfthan (2000), p. 24.

ii. The Japanese Model

Large enterprises the world over offer training to their workers, ranging from short introductory courses for workers joining the firm to full-fledged university degrees. If the firm cannot find the required skills in the market, enterprises train employees in the needed skills. Japan, however, stands apart from other countries in EBT. Independent vocational tracks exist in regular schools, but the hallmark of the Japanese system of skills formation is training by large corporations. The preparation for work that sets Japan apart from other nations is the lavish provision of in-service training throughout the life of the worker. Courses beyond the immediate and specific needs of workers are offered, creating a work force that is dedicated, disciplined, flexible, and versatile. In-plant training is consistent with the lifetime employment commitment of large firms. Such a system requires low labor mobility. However, small and medium-sized firms cannot offer such abundant training to their workers, and thus depend on school-based training (Castro and Alfthan 2000, 26; see also ILO 1998, 73).

b. Traditional (unregulated) Apprenticeship Training

Unregulated apprenticeship training has evolved in the informal sector in many countries over decades. In fact, in many countries it may be the predominant form of training (e.g. in Sub-Saharan Africa and the Indian sub-continent). Typically, a written or oral agreement is concluded between a master craftsman working in the informal economy and parents or guardians, with the objective of the apprentice acquiring a set of relevant, practical skills. Sometimes the master receives a training fee, or the apprentice must earn the training in exchange for work or reduced wages. Training consists primarily of observing and imitating the master. The apprenticeship may last for several years and is product specific. Traditional apprenticeship has several advantages over conventional training methods, but also has disadvantages. It is practical in orientation, self-regulating, and self-financing. It caters to individuals who lack the educational requirements for formal training, serves important target groups (rural populations and urban poor), and is generally cost-effective. Its disadvantages include gender bias (females rarely participate), exclusion of applicants from very poor households, perpetuation of traditional technologies, and a lack of standards and quality assurance (Johanson and Adams 2004, 129—135).

4. Overview

Most national systems of skills development are a mix of the above types of training. In addition to its vocational schools, for example, France has structured apprenticeship programs as well as training within enterprises. Japan has vocational schools in addition to EBT. In many Asian countries, such as Pakistan, Bangladesh, Thailand, Indonesia, and the Republic of Korea, non-formal vocational training is provided by ministries of education, while ministries of labor operate vocational schools.

Which system of skills provision is the most effective? A review by the World Bank concluded that all types of skills training could be effective, given sufficient employment demand. However, center-based training and EBT tended to be more cost-effective.

Overall, any mode of training for industrial and commercial occupations can be cost-effective when the institution is well linked to employers, adequately financed, efficiently organized and sufficiently autonomous to adjust the size and content of courses to meet the quantitative and qualitative dimensions of employment demand. At the same time, enterprise training and skills training centers have been shown to be more cost-effective than vocational schooling (Middleton et al. 1993, 49).

Singapore, for example, opted for a system of skills formation entirely outside the system of formal education by placing initial and continuing training under an independent (state controlled) authority, the Vocational and Industrial Training Board. This approach was based on the assumption that a training scheme outside the educational system offered a more flexible and quicker means of meeting the changing needs arising from the country's industrial development (Caillods 1994, 248).

The exception to the World Bank conclusion (that all types of delivery systems can be effective under the right conditions) was diversified secondary education, where some occupational skills are added to an otherwise academic curriculum. Despite the implicit appeal of the argument for diversification, diversified secondary education has failed in many countries for several reasons: lack of clear objectives; the low status of vocational courses; and the lack of trained instructors, equipment, and consumable supplies.¹⁷ It is an expensive form of secondary education because of the need for dedicated facilities, specific equipment, and specialized training for teachers. In most cases, this type of curriculum did not give graduates any advantage in the labor market. It also proved difficult to implement in most countries. Sri Lanka, for example, attempted three different types of diversification since independence, all with disappointing results (Middleton et al. 1993, 50—51). The Marshall Islands is moving away from comprehensive high schools based on the US system because of lack of the financial resources, instructors, and equipment for quality training, and because of the isolation of the schools from industry. The implication is that countries should be careful about adopting policies

¹⁷ Loxley and Psacharopoulos (1985), and more recently Lauglo et al. (2002).

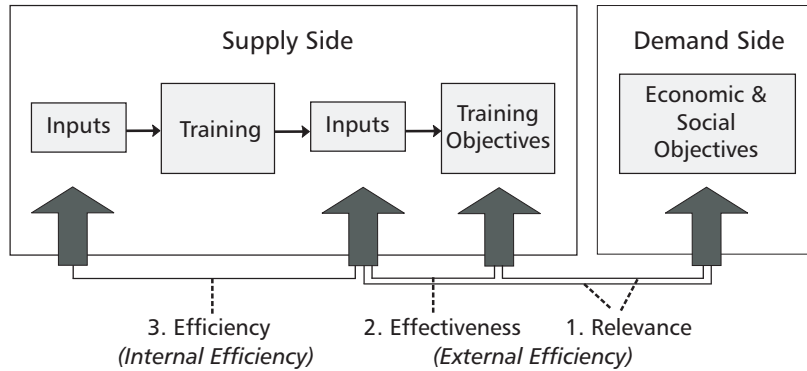
of adding vocational courses to academic secondary education unless secondary enrollment rates are a clear majority (at least two thirds of the age group), the country can afford the costs of sustaining the expensive training, and strong employment demand exists for graduates with such practical skills.

What needs to be kept in view is that skills formation systems have often evolved over decades, even centuries, and reflect the institutional and social structures in which they operate. This applies especially to the German “dual” system. Many countries have attempted to transplant the dual system, but most have failed. The Republic of Korea failed in its attempt to install the dual system, reportedly because its institutional infrastructure differed from that of Germany, and because of the highly bureaucratic nature of the scheme. Such examples serve as a warning against simplistic policy borrowing in the field of education and training (Ashton and Green 1996, 39).

B. FRAMEWORK FOR ANALYSIS OF TEVT SYSTEMS

The diagram in Figure 9 below illustrates a simple, yet powerful, framework for identification and analysis of problems in TEVT (or in general education). It focuses the analysis on three broad questions: To what extent is the system producing results *relevant* to economic and social needs? To what extent is it *effective* in achieving its objectives? To what extent is it *efficient* in the use of resources? Almost all other questions can be subsumed under one of these three questions.

Figure 9: Analytical Framework for TEVT



Source: Author's conception. (See Johanson and Adams 2004, 65, 69–71; and Johanson 1985, i–3).

“Relevance” is the extent to which the objectives and outputs of a training system meet a country’s economic and social requirements. More narrowly, this refers to the “external efficiency” of a training system. “Effectiveness” is the extent to which the outputs of a training system meet its objectives. This includes two important sub-topics: the *quality* of training, and *management* effectiveness. “Efficiency” is the relationship between inputs and outputs.

The questions differ in importance. It is crucial to address the questions in the right sequence. Analysis should start with relevance, (1) above. If a system is not relevant, it matters little whether it is effective or efficient. Similarly, if a training system is relevant but ineffective in meeting its training objectives, then it does not matter much how efficient it is in using resources. The answers to these questions, of course, will be differences of degree, not absolutes.

C. EVALUATION OF TEVT SYSTEMS

1. Relevance

a. Economic Relevance

Close linkage with the labor market is the single most important economic requirement for a training system. Adjusting outputs to market demands, quantitatively and qualitatively, is the single most important challenge. Labor market demands change. These changes have to be detected and factored into adjustments in training supply. In other words, training systems have to be flexible and responsive. In contrast, many Asian training systems tend to be rigid and isolated from the market, continuing to churn out graduates with the same skills year after year regardless of their employment prospects.

TEVT systems suffer often from obsolescence, insularity, and improper orientation. Two factors help explain the tendency of TEVT institutions to become supply driven: expensive plant and specialized staff. TEVT, properly done, requires adequate buildings and, often, costly equipment. Investment in the necessary facilities and equipment carries with it an inherent tendency toward rigidity. Large and dedicated investments in industrial trades, given limited resources, constrain the introduction of new training courses in response to market changes. Managers of training institutions naturally want to use available facilities, and may continue training in the same fields year in and year out, without adequate feedback, beyond the absorptive capacity of the market. In addition, specialized training staffs tend to be hired on long-term or permanent contracts, and cannot easily teach new trades.

Centrally determined examinations reinforce the isolation of formal TEVT from labor market requirements. Isolation is not the fault of the examinations per se, but the exams become outdated and poorly correlated with market demands in many cases. Training for central examinations also makes the application of curricula inflexible at the local level. It is difficult to adapt training content to local labor market needs if those needs are not reflected in the central examination. TEVT also tends to be certificate led rather than labor market led. Trainees

and parents want certificates, which they view as marketable for employment. This perpetuates demand for training programs that may not have relevance in the market place. Centralized structures make it difficult for TEVT to change in response to changing market requirements. Training institutes may seek to be responsive to industry locally, but can be tied to national curricula that have not evolved with industry. Moreover, training systems typically lack information about the performance of their graduates in the labor market due to the lack of tracer studies.

Formal TEVT in many cases fails to deliver skills for existing jobs. The traditional notion underlying both education and training in Asia, as elsewhere, is that employment refers to wage employment. However, wage employment may apply to only a fraction of the labor force (e.g. in Papua New Guinea, South Asia, and the Federated States of Micronesia). Formal TEVT typically fails to provide appropriate training for the informal sector.

b. Social Relevance, or Equity

Equitable access to skills development is a critical problem in many Asian countries, especially gender equity. Females tend to be seriously underrepresented in technical and vocational education, in part a reflection of gender-biased division of labor in the labor market as a whole. Girls who enter TEVT tend to choose occupational streams that lead to jobs typically occupied by women, such as hairdressing, secretarial work, health care, garment manufacture, and home economics. Generally lower levels of educational attainment, and the lack of access to skills development, restrict women to low-skilled occupations.

Inequity also comes in economic and geographical forms. Children of farmers and those in rural areas are highly disadvantaged in gaining access to formal skills development. Training supply tends to favor the modern wage and urban sectors at the expense of the agriculture and informal sectors.

2. Effectiveness of Training

Effectiveness, or quality, of training is defined as the achievement of training objectives. Training systems often lack standards, or standards benchmarked to international norms, by which to measure quality. Quality can be compromised by an array of factors, many of which stem from lack of financing or budget cuts. These include: poorly trained and motivated instructors; instructors with insufficient work experience in industry; instructors absent owing to HIV/AIDS morbidity; inadequate or poorly maintained equipment; insufficient training materials and supplies; poorly designed content (e.g. time-based rather than based on acquisition of the intended skills and competencies); failure to assess trainee performance through periodic examinations; and poor management of the training process. Budget cuts can lead to “de-capitalization” of training, where most of funds are concentrated in teacher salaries to the detriment of needed equipment and supplies. Training quality depends, in addition, on another very important input: the “trainability” of the trainee—i.e. the educational level, literacy, and numeracy skills of the trainee.

3. Internal Efficiency

TEVT is typically expensive—anywhere from two to as much as fourteen times as expensive as an equivalent amount of general education. Smaller class sizes and capital intensity (equipment) account for the differences. Still, in many countries, TEVT is more expensive than it need be because of inefficient use of resources. Unit costs and costs per successful graduate rise with trainee dropout and underutilization of facilities. In some countries the annual dropout rate averages between 10—20%. Only a fraction of the original entrants complete the course of training successfully. Most training tends to be center-based in purpose-built facilities for long periods. Training programs based on time spent rather than on skills acquired also waste resources by keeping trainees enrolled longer than necessary.

D. TRENDS AND INNOVATIONS IN TEVT¹⁸

Many countries in Asia have undergone major programs of structural adjustment. These programs have included liberalization of capital, product, and labor markets, and promotion of competition in the economy. They are expected to change skills demanded by enterprises and the economy. New technology, competition, and export orientation will generate the need for genuine managerial skills and entrepreneurship, as opposed to administrative skills to run state enterprises. Also needed will be teamwork skills and marketing skills, as well as trainability and adaptability to continuous change. Training, thus, can be an instrument to facilitate economic adjustment and transition to higher stages of development.

How are Asian training systems adapting to the new economic challenges brought about by adjustment, liberalization, and competition? In many respects, public training systems have experienced difficulties in responding to the changing economic environment because of isolation from market forces, rigid centralization, and limited institutional autonomy. TEVT systems tend to be certificate-led rather than employment-led. Sharply curtailed public budgets for training and severe decapitalization have limited the capacity of training systems to respond flexibly to changed economic circumstances. Can public training systems be reformed? The answer is not clear, but some examples exist of comprehensive training reforms in such countries as Chile, South Africa, and Australia. Reforms in these countries were built on principles of reduced public involvement in training provision, partnership in governance, and increased reliance on market mechanisms.

These system-wide reforms indicate some of the key aspects of change in training systems. First, there is a clear trend toward establishing national coordination or consultative bodies to govern training systems. Experience shows that the most effective national training agencies are vested with real authority and have adequate

¹⁸ This section summarizes the main findings of a two-year study of TEVT by the World Bank, with special reference to Sub-Saharan Africa (Johanson and Adams 2004).

representation by employers. Second, an emerging consensus favors increased autonomy for training institutions. Third, innovations in training delivery include conversion of training institutions from narrow pre-employment courses into multipurpose services that include continuing adult vocational training. ICT also holds promise to support the expanded delivery of training at lower costs through distance teaching. The promise is largely unrealized as yet, however, pending improvements in infrastructure, content, and delivery systems. Fourth, some countries are moving toward national qualifications systems as a means to raise occupational standards and facilitate labor mobility. However, implementation of NQFs borrowed from advanced countries may be too costly or difficult for most countries in Asia. Instead, CBT may be more feasible.

Numerous reforms are also taking place in training finance. One set of reforms seeks to mobilize non-public resources for skills development. These resources include: payroll levies on employers; increased tuition and other fees paid by enterprises or trainees and their families; production and sale of goods and services by training institutions; community support and donations; and, indirectly, the expansion of nongovernment provision. Supplementary financing is not expected to replace public financing completely, or even mostly, particularly where equity issues exist. What is important is building a financing strategy that combines these sources to create a mix of public and private financing for skills development. Another set of financial reforms deals with transfer mechanisms. Financial allocation mechanisms can be powerful means to make training systems more market-responsive and efficient. Mechanisms like training funds, vouchers, budget performance criteria, and levy-grant systems can provide incentives for improving quality, cost-effectiveness, and relevance of training. Allocation mechanisms for procuring training services vary in complexity and administrative requirements, and therefore need to be tailored to local circumstances.

Private (i.e. nongovernment) training provision has been underappreciated as a source for skills development. In many cases, private training provision eclipses training supplied by public sources. The nongovernment training sector is highly diverse and includes nongovernment organizations, religious-based providers, and

for-profit trainers. The limited information available suggests that nongovernment providers are more responsive to markets, and reflect lower instructor cost and more intensive use of facilities. For-profit trainers tend to be well attuned to the market, and often provide a substantial amount of training for women in traditional areas of employment. They also tend, however, to be located in urban centers, and to focus on a narrow range of commercial skills that are relatively inexpensive to produce. Nongovernment organizations and religious institutions serve a wider array of social objectives in reaching the disadvantaged, but tend to be less well connected with markets and employment. The variance in quality of training offered is high among nongovernment providers, but government capacity to regulate providers is weak in many Asian countries, and over-regulation can erect barriers to entry.

Asian enterprises also constitute an important component of supply in training markets. EBT is largely self-financing, self-regulating, and cost-effective. It occurs without much government assistance. The economic benefits of this training are substantial in wage growth and value-added per worker. Worker training can raise productivity significantly at the enterprise level. Analyses also show that workers benefit from training through substantial wage premiums. However, the benefits of such training are not equally distributed. As elsewhere, larger enterprises train more than smaller ones, and enterprises that produce for export and that are foreign-owned train at higher rates than others. Access to training offered is selective and, if not compensated for in other ways, can lead to higher income inequality.

The informal economy is not commonly regarded as being affected by exposure to world markets, but increasing trade openness has directly impacted the informal sector. For example, reduction in tariffs on importing second-hand clothing can result in undercutting small-scale tailoring businesses. Moreover, people pushed into the informal economy from downsized or failed enterprises have saturated the micro- and small-enterprise sector in some cases.

The informal sector is where most non-farm poor work, and where investments in skills development along with other complementary inputs—access to secure workplaces, credit, and

technology—can play an important role in poverty reduction, particularly for women and vulnerable groups. Traditional apprenticeship training is often the most important means of training in the informal sector, such as in South Asia.¹⁹ Traditional apprenticeship training is self-financing, self-regulating, and cost-effective, but perpetuates traditional technologies and lacks standards and quality assurance. Support for the training of master craftspersons can enhance the quality of the training they offer while opening up their awareness of new technologies. In addition to raising productivity and incomes, training interventions can have an added benefit in micro and small enterprises by acting as an entry point for upgrading the technology of enterprises. Interventions need to target niche markets with growth prospects, and avoid saturated trades and markets. The latter are unlikely to yield benefits for training. Donors have been active supporters of skills development in the informal sector and have shown that enterprises in the informal sector can be upgraded. Implementing these interventions on a larger scale and sustaining them, however, remains a challenge.

Except at the high end of the informal sector, strengthening skills development in the informal sector does not ensure the transition of Asian countries from competitiveness based on abundant manual labor to skill-based competitiveness. An increased focus on skills development for the informal sector should not detract from ensuring a reasonable amount of high-quality training for the modern sector.

In sum, the training market in Asia, as elsewhere, is highly segmented. State-sponsored training, nongovernment training, and EBT, to a large extent, have different clients as well as unique strengths and limitations. The reliance on any one of these providers alone is likely to leave gaps in the provision of training.

¹⁹ Pakistan is the world's largest exporter of surgical instruments. "The success of this sector is explained by simple technology and skills, an elaborate system of subcontracting among the large and small units and a thriving market for their products. The small enterprises possess a pool of skills and metal-working knowledge which, though limited, allows them to shift from one product to another... The main system of skill diffusion is through informal apprenticeship with the 'ustaad'—or master craftsman—transferring skills to young apprentices," complemented by interaction with the large firms. (ILO 1998a, 167—168).

VI

EVALUATION OF RECENT ADB PROJECTS IN SKILLS DEVELOPMENT

Six ADB TEVT projects are reviewed below, including three under implementation, two recently approved, and one in the final stages of formulation. These projects are located mostly in low-income countries: Maldives,²⁰ Marshall Islands,²¹ Nepal,²² Pakistan (Balochistan),²³ Papua New Guinea (PNG),²⁴ and Sri Lanka.²⁵ The following desk review focused on information about the design of these six projects as contained in project documentation produced for approval by the ADB Board of Directors. Project implementation is not evaluated. It is thus possible, even likely, that many of the questions here raised are answered in other project documents. The number of cases examined is too narrow to provide a basis for generalization about all ADB TEVT projects. What follows should thus be viewed as observations, questions, and hypotheses, not as pronouncements.

The projects are reviewed according to the following topics, in sequence: strategic choices; links with employment; training delivery and private training provision; administrative mechanisms; financing and financial mechanisms; sustainability; complexity; and analytical bases.

²⁰ Employment Skills Training Project: project cost \$7.5 million, approved in 2003.

²¹ Skills Training and Vocational Education Project: project cost \$9.1 million, approved in 2000.

²² Skills for Employment Project: project cost \$25 million, approved in 2004.

²³ Restructuring of the Technical Education and Vocational Training System Project: project cost \$22.9 million, approved in 2004.

²⁴ Employment-Oriented Skills Development Project: project cost \$39 million, approved in 1999.

²⁵ Human Resource Investment Project: under formulation.

A. STRATEGIC CHOICES

1. Economic Appropriateness

To what extent are the main thrusts of the projects appropriate to the type of economies in which they are placed? Generally, the projects reviewed are well suited to the stage of economic development and major economic/social priorities of the host countries. Table 5 shows the distribution.

Table 5: Main Economic Emphasis of ADB Training Projects

Mainly Training for Modern-sector (wage) Employment	Mainly Training for the Informal Economy
Maldives	Marshall Islands
Pakistan ^a	Nepal ^b
Sri Lanka	Papua New Guinea

^a Includes some training for livelihood and income generating skills.

^b Includes training for wage employment abroad.

Three of the six projects (Nepal, PNG, and Marshall Islands) aim mainly at training for the informal sector in terms of self-employment, income generation, and livelihood skills. These strategies appear well suited to the largely informal economies of the project countries. In Nepal, for example, 85% of the labor force is in the informal sector (self-employed), as is 75—90% in PNG. The Pakistan project also includes a training component for the informal sector, i.e. development of livelihood skills in rural areas with delivery through NGOs. This makes sense, but the modus operandi does not appear to be well worked out and the scale of assistance is not quantified.

Three of the six projects are essentially training for modern sector employment (Maldives, Pakistan, and Sri Lanka). In the Maldives project, the aims are to attract more people into the labor force and to reduce dependence on foreign workers, particularly

foreign skilled workers. In this context the project includes efforts to make working conditions more attractive. One aspect of the project rationale, however, is puzzling. While seeking increased labor force participation, the project does not seem to concentrate on the main cause of low participation—low female participation, and the fact that this may be culturally determined. Analysis of the constraints and strategies to increased female participation appears to be lacking.

The Pakistan project includes middle-level skills training as well as technician training. Several observations can be made:

- The amount of attention given to polytechnics may be questioned for Baluchistan. An ADB impact evaluation study of ADB TEVT projects noted “...most of the needs based on discussions with industry leaders are for lower-level personnel—operators and skilled workers. This has not been the major area of expertise of the polytechnics (ADB 1999, 22).”
- The poverty reduction objectives²⁶ of the project may be questioned when the clients of the main project institutions tend not to come from the poorest segments of the population.
- The project also has social objectives, including gender development. Some 80% of new polytechnics will be for women, but only 27% of total project beneficiaries are expected to be female.

The Sri Lanka project focuses exclusively on technician level training. This priority seems well justified in view of the country’s “relatively fast-growing and modernizing manufacturing sector” and the government’s strategy to move into higher value-added products (ADB 1999). On the other hand, the project’s avowed poverty-reduction objectives²⁷ appear incompatible with a technician training project.

²⁶ “Contribute to poverty reduction by enhancing competitiveness of TEVT and employability of its graduates in line with emerging market needs...(ADB 2004b).”

²⁷ “Poverty reduction, easing unemployment especially for unemployed youth, by enhancing labor and industrial productivity and competitiveness of the economy...(ADB 2003c).”

2. Quality vs. Equity

An ADB impact evaluation study of ADB TEVT projects in 1999 observed that training quality was being ignored because of undue attention to establishing training opportunities for disadvantaged segments of the population:

The corollary role of providing access to educational opportunities for the economically and intellectually disadvantaged appears to have been given more emphasis. Thus, it was common to see...the TEVT systems turning out a multitude of graduates from a menu of training programs regardless of quality and the demands of industry... Such arrangements cannot continue in the face of the accelerating globalization of trade. The increasingly intense competitive environment in both the domestic and the export markets will require industries to exploit every possible source of competitive advantage. A major one undoubtedly is the quality of technical personnel. TEVT can be a source of competitive advantage for industry. This is not a new role; in fact, it is simply making good the role traditionally assigned to it. But it entails some major adjustments. To be truly a source of competitive advantage for industry, it may be necessary to overhaul the entire delivery system to achieve a minimum level of quality and then invest in a number of key institutions to produce a cadre of highly specialized personnel. A paradigm shift is thus needed; from a predominately "safety net" orientation to a "source of competitive advantage" orientation, but without necessarily discarding the former (ADB 1999, 20—21).

This recommendation accords with the findings of the major World Bank study of skills development in 1990. It concluded that social objectives in training were rarely achieved without a strong economic foundation (Middleton et al. 1993, 51—53).

What is the relative weight given in ADB projects to expansion (for equity purposes) and quality? All six of the projects had increasing access as an objective, mainly for disadvantaged groups. All projects also had quality improvement as an explicit or implicit objective. Two projects, those in Pakistan and Sri Lanka, aim at improving the quality

of skills training as a means toward enhanced global competitiveness. The Pakistan project does not attempt major expansion of enrollments, but emphasizes quality. In this respect, it conforms with recommendations in the ADB impact evaluation study. Not much can be concluded from the analysis here. The important point is that training must be directed at employment possibilities—wage or self-employment—for it to be effective. Training expansion, just to give greater access to vulnerable groups without attention to labor market absorption, is likely to lead to frustration and failure.

B. LINKS WITH INDUSTRY AND EMPLOYERS

The most important requirement for successful systems of skills development is close links with industry and employers. Employers know best what skills are needed in the economy. The ADB impact evaluation study notes this as a major issue in past projects.

This is one of the weakest aspects of the TEVT program in all the developing member countries (DMCs)... The experiences of the DMCs in this study highlight the importance of strong linkages with industry. Operating virtually in isolation from industry, the polytechnics of Pakistan and the TCs of PNG and Sri Lanka have deprived themselves of valuable inputs... These include not only opportunities for industry exposure of students and teachers alike, but also the built-in feedback mechanism on the type, level and quality of personnel needed (ADB 1999, 18, 24).

The ADB Study also notes that

One must...take into consideration the observed reluctance of school management to involve industry in running schools. In most cases, the reason is that the school management... feels “uncomfortable” dealing with industry. Other school officials are simply overzealous in protecting their turf (ADB 1999, 25).

All three projects focused on the modern sector included measures to increase linkages between industry and training. The Maldives project will establish Employment Sector Councils (ESCs) in three priority sectors: tourism, fisheries and agriculture, and transport. The Pakistan project will establish district advisory committees and strengthen the capacity of institutional management committees. The Sri Lanka project will develop industrial advisory councils in key sectors.

Will these measures suffice? It is not likely. Employer advisory councils frequently fail. Business people are busy and may not have time to participate. Representatives of employer associations may themselves occupy essentially bureaucratic posts and be isolated from enterprise developments. The trainers may not accept employer advice, and the employers may therefore lose interest. The project documentation does not present any evidence that alternatives have been considered. One alternative would be to give the employer councils more authority over decisions, even the actual direction of training systems and institutions. Collaboration among the social partners in national training authorities often serves this purpose. More analysis of the experiences (and failures) of previous advisory councils is called for in project preparation. For example, industrial advisory committees have not worked previously in Pakistan, yet the report presents no analysis for these failings or a clear strategy to avoid past problems. What *incentives* do employers have to participate in advising or managing the training institutions? Even if there are incentives, is it feasible (in terms of the opportunity cost of their time) to do so? Are there efficient (time saving) ways to ensure their participation and inputs?

Training for the informal sector presents a different conundrum. No employers' organizations exist since the informal economy overwhelmingly entails self-employment. What to do? First, the existence of any *informal sector associations* (of master craftspeople) might be explored. If they do, it could be determined whether they could contribute to the overall direction of skills training in the sector. Second, considerable time and attention could be devoted to *market analysis*—i.e. identification of occupations likely to generate productive self-employment. This could start with identification of

export markets, and vertical lines of production down to the informal sector producer (Johanson 2002, II, 39). Or it could involve analysis of local markets for products and services likely to be in demand (Johanson and Adams 2004, 60). Establishment of local capabilities to perform such market analyses should be given high priority in informal sector projects. Third, rigorous and systematic *evaluations of the outcomes and impact* of training should be done for the informal sector. Tracer studies are indispensable to proper functioning of training systems in general and for informal sector training, which addresses mainly local markets that can easily become saturated.

Fortunately, there appears to be some attention to these requirements in the projects reviewed. The Marshall Islands project includes the provision for labor market research, including a tracer study on the livelihood skills program. What is not clear is how this research program would be institutionalized and sustained. Rather than conduct one or two tracer studies, most would agree that it is more important to develop the local capacity to do these tracer studies routinely and continuously. The PNG project includes training needs analysis in preparation of competitive proposals. In Nepal, communities would identify project training needs, as well as the national Council for TEVT. These are steps in the right direction, but it cannot be determined from available documentation whether they are sufficient.

For success in entrepreneurship programs, post-training support is essential in such areas as access to credit, marketing services, and continuing business advice. This is illustrated by the Training for Rural Youth for Self-Employment undertaken by the Government of India. The project aimed to provide technical and entrepreneurial skills to rural youth from low-income families for self-employment. It involved training either with an institution or a master craftsman, followed by assistance from the Integrated Rural Development Program to acquire productive income-generating assets. Over 1.5 million youth were trained during 1992—1993, of whom about one third became self-employed, 15% became wage earners, and half remained unemployed. An evaluation concluded that the project had not achieved its objective because of the inappropriateness of the skills imparted and the lack of assistance from the IRDP in setting up businesses (ILO 1998a, 175).

Several of the ADB informal sector projects provide evidence of concern for post-training support services. The Marshall Islands project includes the provision of basic tools and materials for participants "...after training to ensure that skills learned are available for personal or commercial use (ADB 2000)." The same project also provides for some marketing of products from women's training. The PNG project includes post-training support as an integral part of training proposals and training contracts. The Pakistan project alludes to facilitation of access to credit and the introduction of entrepreneurship courses. The important point here is that entrepreneurship training and marketing support should be designed and preferably managed by people with business experience and skills, not by civil servants, bureaucrats, and trainers. It is not clear in these projects whether the design calls for involvement of people with business skills.

C. TRAINING DELIVERY AND PRIVATE TRAINING PROVISION

1. Delivery

An interesting feature of the set of reviewed projects was the *emphasis on short-term training*, as opposed to 2 or 3-year pre-service training programs typical of traditional vocational training. By its nature, training for informal sector occupations must be short term, as the participants cannot afford the opportunity costs of longer-term training. The Nepal and PNG projects stress the short-term nature of the skills to be provided and its immediate application to income generation or self-employment. The livelihood skills training in the Marshall Islands also inevitably will be short in duration. Even the Sri Lanka project, which concentrates on long-term technician training, intends to introduce part-time learning programs for employed workers.

Another feature of the delivery systems is the development of modular training and CBT. CBT stresses the outcomes of training in knowledge and skills acquired, rather than time spent in training. Three projects included the development of CBT: those in Pakistan,

Maldives, and the Marshall Islands. What is not clear from the documents is whether the requirements for successful application of CBT have been analyzed fully and taken into account in the project design. Trainees, parents, and employers familiar with traditional paper qualifications may resist the shift to CBT. Moreover, CBT puts instructors under intense pressure to perform. CBT exposes instructor performance through more frequent examinations (at the end of each module, instead of the end of each year or course of instruction). Sufficient resources must be set aside for instructor re-training. Moreover, CBT—with its stress on acquisition of skill competencies—typically requires the provision of additional essential equipment. It is difficult to see how the Maldives project can finance these requirements when only 3% of the project budget is allocated to equipment, and only US\$330,000 to the development of the CBT modules themselves. One also wonders about converting some, but not all, courses to CBT, an approach adopted in the Pakistan project. This could lead to an unstable tension between tradition time-based courses and the modular CBT.

One of the features of skills development is that government is simply not able to undertake all necessary tasks. Most training takes place in the private sector, within the workplace, precisely where it is difficult for national systems of skills development to stimulate more and better training. Unfortunately, not many of the ADB projects attempted to increase or improve EBT, perhaps because this is a difficult challenge. Similarly, none supported the introduction or expansion of training levies. However, there were exceptions. The Sri Lanka project makes a serious effort to upgrade training for workers in industry, and includes a corporate program for in-industry technician graduate training and employee upgrading. The Marshall Island project allows for some upgrading of worker skills in project-supported centers. Other projects appear to do little in this regard, including that in Pakistan. Providing training services and upgrading for employees would be a concrete way to strengthen employer interest and participation in skills development.

2. Private Training Providers²⁸

From the results of the study...the private TEVT institutions appear to be the more efficient providers. Would it not be cheaper for the Government to meet most of the excess social demand by simply encouraging private sector institutions to increase their share in the provision of TEVT (ADB 1999, 23).

Four of the six projects reviewed support private training providers (PTPs). In the Maldives, PTPs are eligible for support in building training capacity (programs, management, instructors) and to deliver training financed by the project. Similarly, in Nepal, PTPs would be eligible to compete for contracts to deliver training, and are allowed to participate in the design of programs. The PNG project shows extensive and exemplary analysis of nongovernment training provision, including categorization and evaluation of the strengths and weakness of different types of nongovernment provision. Training financed by the project will be delivered not only by government vocational training centers (VTCs), but by church organizations, NGOs, and for-profit training providers. The proposed Sri Lanka project explicitly provides for the expansion and improvement of training capacity among private providers. In no case, however, was there any evidence of analysis of the main regulatory and other constraints faced by PTPs. Such analysis is essential in designing effective strategies for intervention. Some government regulation of PTPs is necessary, but regulation can go to extremes and stifle growth of this important means of training provision (see James 1991, and Johanson and Adams 2004, Chapter 4). It was particularly disappointing to see little attention to the role of PTPs in the Pakistan project. If government is to reduce its role in training—which could be desirable on both effectiveness and efficiency grounds, ways must be found to stimulate the development of PTPs. A major opportunity may have been deferred or missed.

²⁸ The term “private training providers” is used here in its broadest sense, i.e. all training outside the government. It includes for-profit training providers, church, NGO, and CBO-sponsored training. It does not include EBT.

D. ADMINISTRATIVE MECHANISMS

The ADB projects employ a wide array of administrative mechanisms. In this regard the available documentation was not clear about how and by whom the training programs will actually be developed (Marshall Islands, Nepal), the criteria and procedures by which funds will be allocated to competing proposals for training delivery (livelihood training in Pakistan), or the development of necessary administrative capacities (the Maldivian Network of Employment Training; capacity to manage the Skills Development Trust Fund in PNG).

None of the projects supports the development of an overall training authority, even though such organizations have proved effective elsewhere. Nepal comes the closest, with the strengthening of the National Council for TEVT, but this Council would not have executive authority over policy or the direction of skills development.

Several of the projects (Maldives, Marshall Islands, Pakistan) call for establishment of labor market information (LMI) systems of various types, and educational management information systems—a commonly called for measure. However, one wonders whether the difficulties of establishing effective labor market information systems have been analyzed and appreciated. The World Bank review of TEVT projects in Africa concluded that while LMI systems were a good idea, they hardly ever worked in practice (Johanson 2002, Johanson and Adams 2004, 57—59). Several reasons account for this: the difficulties of institution building, recruiting trained analysts, and collaborating across organizational lines. It is also unclear whether there was any analysis of the experiences with the substantial assistance provided by ADB and other donors to create EMISs. What are the specific obstacles and constraints to be overcome? Presumably if these interventions had been successful, continued financing for their establishment in new projects would not be necessary.

Decentralization, or more precisely, devolution of authority to training institutions, can be an important means of increasing accountability, mobilizing resources, and linking training with local labor markets. Two of the reviewed projects seek to do this. The Sri Lanka project seeks to devolve authority to ten selected Colleges of

Technology, and provides substantial assistance for management development. The Pakistan project also includes gradual devolution toward autonomy of TEVT institutions. Capacity for this transition is to be developed through management staff development programs. Other than this, however, the Pakistan project presents no evidence of analysis of the requirements of devolution in terms of legislation, regulations, government and provincial policies, re-definition of job descriptions, parental views, and the development of new financial accounting systems.

One outstanding innovation being proposed in the Sri Lanka project is the establishment of a voluntary National Association of Training Providers. The government would devolve authority for registration and accreditation of technician training to this Association. However, it is not stated what administrative capacity the Association would need to build in order to carry out its functions, or how it will be established.

E. FINANCING AND FINANCIAL MECHANISMS

1. Financing and Cost Recovery

A cursory look at the financing plans for the projects shows several novel approaches. The projects in the Maldives, PNG, and Nepal all allocate funds mainly for training, not for physical infrastructure. Project funds thus pay for the delivery of skills directly, rather than indirectly through capacity-building measures. The PNG project is exemplary for its attention to cost recovery and financial issues.

Still, one wonders whether allocations in some projects are adequate to finance implementation of various improvements and reforms. Mention has already been made of the cost implications for equipment and development of CBT in the Maldives project. Are sufficient funds allocated to the all-important functions of industry linkages and labor market analysis (including tracer studies)? The establishment of the Human Resource Endowment Fund (HREF) in Sri Lanka is a major undertaking, and the allocation for technical assistance for such a complex enterprise may be inadequate.

2. Financial Mechanisms

Financial transfer mechanisms can have a powerful impact on training relevance, effectiveness, and efficiency. Several innovations in this direction are included in these projects.

- Two projects (PNG and Sri Lanka) employ *training funds* as the mechanism for mobilizing and allocating funds. The World Bank review found that training funds generally were effective in stimulating cost-effectiveness in training provision (Johanson 2002). Training funds allocate finance to different priorities across wide areas, and help to stimulate grass roots interest through preparation of competitive proposals. Establishment and operation of funds is not a simple matter, however, and may need to be supported by a series of projects in order for institutionalization to take root.
- Several projects (Nepal, PNG, Sri Lanka) include *competition* as a basis for allocation of funds. Competition, especially if PTPs are allowed to participate, can have a beneficial impact on the quality and cost of services.
- Two projects also attempt to move to *performance-based budgeting*. The Pakistan project will provide incentives to institutions that produce the best results, and will support a move to an incentive-based budget system. However, there appears to have been no analysis of problems with current financial management of TEVT institutions, and the feasibility—overcoming obstacles and constraints—of moving to a new budgeting system, including its compatibility with existing government regulations and procedures. The Sri Lanka project also proposes to move to an incentive-based budgeting system, without apparent analysis of existing budget systems. The allocated three months of international technical assistance may be inadequate to design such a system.
- Normative financing is another financial transfer mechanism that can be used to realize efficiencies and

better use of resources. None of the projects under review utilize this mechanism.

F. SUSTAINABILITY

Apart from industry linkages, sustainability probably constitutes the most significant issue for ADB TEVT projects. In the projects under review, the most attention to financial sustainability was given in the PNG project. Considerable thought was given to making the training fund sustainable by mobilizing additional resources from government and non-government sources, and by limiting the annual outlay to 10% of the fund's capital plus returns on investment. The Nepal and Sri Lanka projects do not appear to have addressed yet the issue of sustainability. The Marshall Islands project found the project interventions to be sustainable largely because of expected continuing financial support from the US. The issue of financial sustainability was deferred in the Maldives project, until completion of a study on financing mechanisms. The Pakistan project was especially weak on this issue, even though sustainability was identified as a problem in past ADB projects in that country. A loan covenant has merely been added:

The provincial government was requested to earmark adequate recurrent budgets to support project activities and provide assurance to give highest priorities to provide adequate recurrent budgets to the project institutions and facilities (ADB 2004b, p.27).

It is not clear how this differs from previous (failed) project assurances on financing. There appears to be no strategy here to wean public institutions off public financing. As stated in the ADB study, "Based on experience, loan covenants requiring the DMC to provide adequate funding after project completion were not enough to ensure sustainability (ADB 1999, 24)." The projects should give more serious attention to the various alternatives contributing to financial sustainability.

G. COMPLEXITY

The feasibility of any project depends on the relationship between its complexity and implementation capacity. According to this criterion, some of the projects here reviewed may be in for trouble. The Pakistan project, in particular, is highly ambitious in scope. It deals with formal sector training, informal sector training, public training, nongovernment training, competency based training, reform of budget systems, introduction of training-cum-production, and even more. It attempts to reform the examination system, which is highly conflicted in Pakistan, without apparent analysis of likely obstacles and constraints. In addition, it attempts to install an equivalency and certification system, such as those found in Organisation for Economic Co-operation and Development countries. In short, it adopts many good ideas and innovations, but simply tries to do too much. Its coverage is too broad. No priorities are apparent. As a result, it probably exceeds available implementation capacity. The Sri Lanka project suffers from some of the same problems, but to a much lesser extent, and has the advantage of being focused on one level of training (for technicians).

H. ANALYTICAL BASIS

Several references were made above to inadequate analysis of proposed project interventions. One shortcoming found common in the projects was the lack of analysis of regulatory and other constraints to development of nongovernment training provision. This suggests that the analytical basis of several of the projects was incomplete. Additional analytical shortcomings in four of the projects are outlined below.

- (i) **Marshall Islands project.** Why did the earlier successful skills training courses provided by the Women's Division in the Department of Vocational Training fail to be maintained? What lessons can be drawn from this experience for the community outreach programs?

(ii) **Pakistan project.**

- The rationale is rooted in government plans for industrialization and TEVT expansion, but presents no analysis of past performance in these two areas.
- There is inadequate analysis of the different problems of polytechnics, technical training centers (TTCs), and VTCs. No consideration is given to merging TTCs and VTCs under an independent organization.
- No evidence is provided for the effectiveness of local Learning Resource Centers found in libraries or apprentice shops, or how they would ensure productive usage.
- The concept of “production-cum-service centers” may be questioned. The private sector is supposed to help, but with what incentives? Often these centers compete with private business. Also, who is supposed to manage them independently as business units? Public sector bureaucrats cannot do this.

(iii) **PNG project.** No analysis is provided of why coordination mechanisms have failed in the past, and how current proposals address the reasons for those failures.

(iv) **Sri Lanka project.**

- No background is provided on precursors to the proposed Human Resource Endowment Fund (HREF) in Sri Lanka. Is the Fund already established under Sri Lankan law? Are other similar funds in operation, and if so, how do they relate to the proposal? The project preparation report notes that most employers are not yet committed to workforce upgrading for productivity enhancement, and the current Skills Development Fund is not effective. One may question whether the structure, operation, and financing of this latter Fund has been analyzed for lessons for the proposed HREF.
- The description of the HREF Employee Training Programs, under Corporate Programs, refers to the

corporate tax levy, but no prior explanation is given of the levy, its purposes, operations, and implementation.

- Establishment of Industry Sector Councils is probably a good idea, but the membership, functions, and relationships would need to be developed carefully. Study tours to other countries (e.g. South Africa, Australia and New Zealand) would be useful. Also, failures in other countries should be studied (e.g. in the United Kingdom). The key questions are: what authority would the Councils have and what incentives would industry members have to join and participate over the long run?

VII

IMPLICATIONS FOR ADB AND DMCS

A. LESSONS FROM ADB PROJECTS

In view of the fact that **linkages with industry** is the single most important factor in training success, ADB should devote increased attention to (a) analysis of the causes of past failures in establishing linkages between industry and skill provision; (b) incentives for employers to participate in advising or directing TEVT; and (c) consideration of transferring authority to employers for the direction and management of skills training.

Labor market analysis and tracer studies are indispensable for proper direction and feedback to training systems in general, but are especially vital for informal sector training, which addresses mainly local markets that can easily become saturated. Special attention should be given to needs analysis and follow-up evaluation of the impact in ADB informal sector training projects. This should be stressed particularly in skills development projects—i.e. the “ovals” in Figure 2 should receive more emphasis in order to better balance the attention given to the “inputs” box.

Entrepreneurship training, marketing, and business support should be designed and, preferably, managed by people with successful business experience and skills, not by civil servants or bureaucrats, or even trainers without business experience. This seems to be a neglected aspect of ADB projects.

Competency-based training promises several advantages over time-based qualifications, and CBT has been included in several Bank projects. However, care should be taken to analyze and address the requirements for success, including sufficient development, instructor training, revision of examinations, equipment, and public awareness campaigns for trainees and employers.

Stimulation of **enterprise-based training** is important, but also difficult. Not many ADB projects have tackled this challenging task. Consequently, an important means of skills development is being neglected.

Private training provision is important—in some countries more important than public training. Most ADB projects reviewed supported development of nongovernment provision. However, none analyzed the constraints and obstacles to growth and improvement of private training provision, including regulatory constraints.

The establishment or strengthening of **national (or sectoral) training authorities** should be given more attention in ADB projects. When based on partnership with social partners, these have proved effective in some countries in involving employers more deeply in steering training systems, and in linking supply better with emerging labor market demands (ILO 2000, para. 19).

Labor market information systems can be instrumental in revealing labor market trends and helping training systems to adjust to changing needs. However, care should be taken in supporting establishment of LMI systems. They have proved very difficult to make successful. Design of and investments in LMI systems should be preceded by a careful analysis of their operational problems and constraints in third world countries.

The **devolution of authority** from centralized control to skill training institutions frees the latter to respond more quickly to local market demands, and promises benefits in terms of resource mobilization and self-sufficiency. Two of the reviewed projects support administrative devolution. However, such devolution must be designed carefully based on considerable prior analysis of the prevailing administrative and regulatory framework, and of the requirements for success.

The use of innovative **financial transfer mechanisms** should be and has been incorporated in several ADB projects. The innovations, such as performance-based budgeting, should be based on an analysis of the full requirements for success. Training funds can be a powerful means to stimulate relevance, equity, flexibility, and efficiency in training systems. The use of *training funds* can spur flexible reallocation of training resources to high priority economic

activities and clientele, and stimulate competition between public and private training providers. Successful institutionalization may require support over a series of projects. ADB should consider greater use of training funds in its projects. The fund established in the PNG project should be evaluated; if found to be successful, it may provide a model for adaptation and application elsewhere.

Financial sustainability is a difficult challenge for training projects. Except for the PNG project, analysis of sustainability appears to have been superficial in the projects reviewed. More emphasis should be given to analyses of sustainability. At the same time, it is important to be realistic. Publicly supported training projects with equity objectives that cater to disadvantaged groups will not be able to achieve full cost recovery. Instead, partial recovery may be achieved through some cost sharing (in cash or in kind), and sale of goods and services produced by training centers. A higher level of cost recovery may be realized in training provision in urban settings. Full cost recovery is usually reserved for two types of training: EBT, where costs can be borne in full by enterprises, and private training, where tuition and other fees usually cover most if not all costs. Support for these two types of training, therefore, can help support financial sustainability for skills provision overall.

Projects that attempt to do too much, or introduce too many sweeping reforms, such as the project in Pakistan, are likely to exceed national implementation capacity.

When proposing measures where similar actions failed previously, ADB should analyze carefully the causes of failure and generate alternative possible solutions for evaluation. This is in keeping with a broad theme of this review, that adequate in-depth analysis of past experience and of the requirements for successful implementation of innovations is an essential basis for informed project design.

B. REFORM OF TRAINING SYSTEMS

Investment in reform can make public training systems more responsive to the changing economic requirements in countries

resulting from openness and globalization. Some priorities for such reforms are outlined below.

The **role of government** in skills provision should be more sharply defined. Governments in East Asia (Singapore, Republic of Korea) succeeded not only in stimulating the supply of skills, but also in anticipating and generating demand for skills. This requires extraordinary foresight and collaboration between economic planners and skills providers. These conditions do not obtain in other countries, where unwieldy, supply-led systems predominate. The role of government should become *more strategic*, moving away from a preoccupation with training provision to concentrate on the following priorities:

- (i) fostering the growth and development of nongovernment training providers through partnerships;
- (ii) promoting social equity in training markets;
- (iii) filling gaps where nongovernment providers fail to respond—e.g. reaching the informal sector, and promoting strategic growth areas and skills; and
- (iv) facilitating market functions not ordinarily performed by the private sector, such as policy development, setting standards, training instructors, development and dissemination of market information, and monitoring and evaluation of outcomes.

The introduction of **normative financing** in training can accomplish greater accountability and output productivity.

Establishment of **national qualification frameworks and CBT**, where possible, will facilitate labor mobility and cost-effective use of training resources.

Nongovernment training institutions and enterprises probably account for the main part of regional capacity for skills development, and should be part of any reform dialogue. Efforts must be made to:

- (i) recognize and encourage nongovernment training provision, fostering a “level playing field” to stimulate greater competitiveness with the public sector;

- (ii) facilitate the contributions of formal sector enterprises to worker training through provision of financial and material (e.g. instructor training) incentives;
- (iii) encourage employer associations and trade unions to provide training for their members (ILO 2000, para. 18); and
- (iv) increase worker productivity through training services for upscale informal sector enterprises, especially those engaged in manufacturing for niche markets, such as export markets.

Reforms of training systems, as with educational expansion, necessarily take time. As Brown pointed out, “skill formation policies cannot be delivered just-in-time (Brown et al. 2001, 237).” In many countries the reform process has taken a decade or more to reach full implementation.

C. CONCLUSION

The analysis and recommendations of the ADB technical education and vocational training projects lead back full circle to the original issues mentioned at the beginning of the paper. Governments, firms, and individuals must plan strategies to fill emerging gaps between existing education and skills levels of the populations and the need for new skills and training arising from advances in technology, capital accumulation and expansion of the labor market. This is especially true for countries entering middle-income status where stocks of human capital must keep up with capital investments in new technologies linked especially to manufacturing and service sectors. Countries that fail to develop action plans to implement cost effective education and training for citizens will risk jeopardizing long term effectiveness in successfully competing in the global economy. Most countries cannot afford to lose out to neighboring countries and their citizens are not likely to take kindly to such inaction. Reasonable social investments borrowed through loans today are not likely to be squandered, if they help the next generation successfully compete in the global economy.

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