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 Alfthan 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

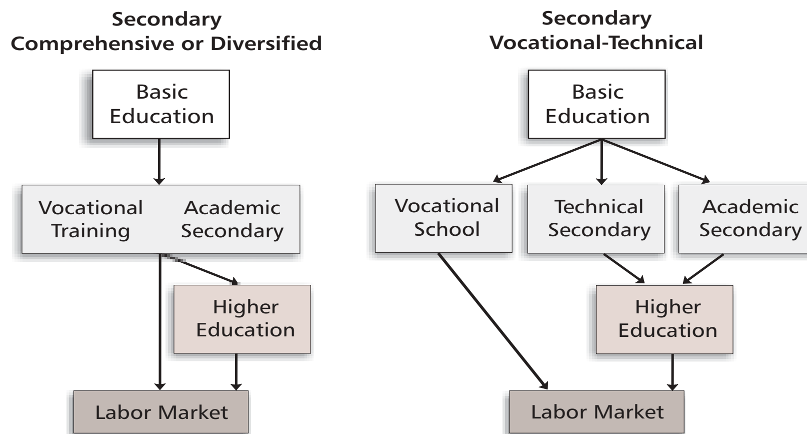
Vocational skills can be developed within secondary schools, typically called comprehensive or diversified secondary schools, as in the United States and Sweden (Figure 6). Students take practical courses according to their interest and aptitude in one single school attended by all students from a given 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

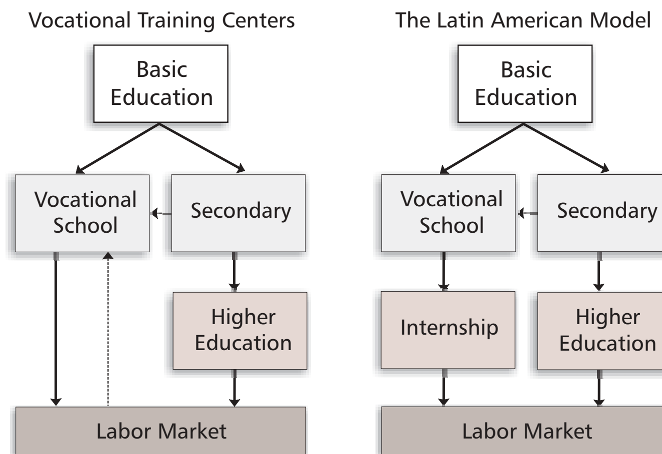
a. Vocational Training Institutes (or Technical Training Institutes)

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 countries[16] 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 Alfthan 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

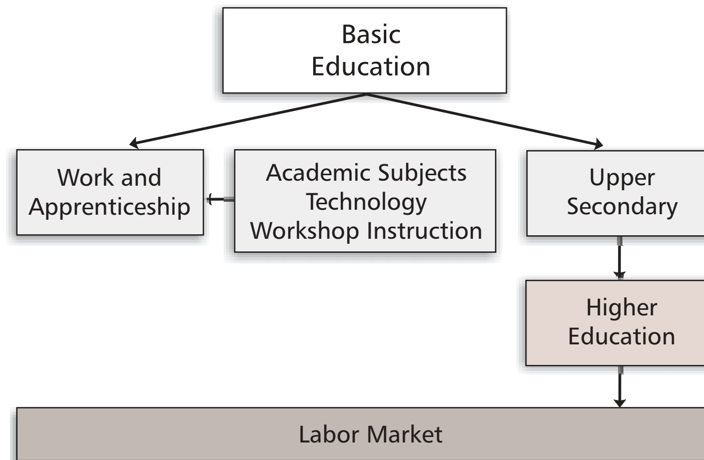
a. Training by Formal Sector Enterprises

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 Alfthan 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 Psacharopolous (1985), and more recently Lauglo et al. (2002).

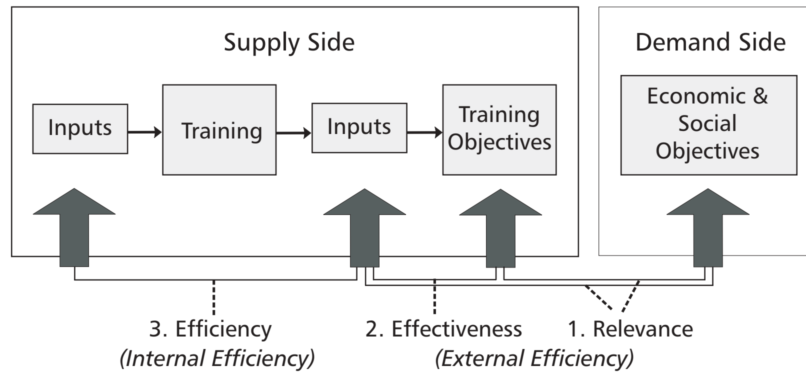
of adding vocational courses to academic secondary education unless secondary enrollment rates are a clear majority (at least two thirds of the age group), the country can afford the costs of sustaining the expensive training, and strong employment demand exists for graduates with such practical skills.

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 TEVT[18]

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).