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**SKILLS FOR PRODUCTIVITY:
POLICIES FOR VOCATIONAL AND TECHNICAL
EDUCATION AND TRAINING
IN
DEVELOPING COUNTRIES**

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**Education and Employment Division
Population and Human Resources Department
The World Bank**

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Preface

This paper has been written to improve World Bank support for vocational and technical education in developing countries. It is the second in a series of policy papers on different sub-sectors of education. The first addressed primary education, and future papers will deal with higher and secondary education.

The findings and conclusions of the paper are based on the evidence presented in Skills Training for Productivity: Vocational Education and Training in Developing Countries, a forthcoming book by John Middleton, Adrian Ziderman and Arvil Van Adams. The policy messages in the paper have been discussed with ministers and senior civil servants from labor, education, planning and finance ministries from 53 developing countries, and with representatives of multilateral and bilateral assistance agencies, at four international and regional meetings organized by the Economic Development Institute.

The paper focuses on the training of skilled workers and technicians by employers, by private training providers, and by governments in public vocational schools, labor training centers, and post-secondary technical institutions. Investment in these public sector institutions has been a significant part of the World Bank's education sector portfolio. Project-related training in other sectors is also an important source of World Bank training assistance, but it is not addressed here. It has been treated in some depth elsewhere, notably the 1987 Annual Operations Review: Education and Training.

The paper was prepared by John Middleton (Task Manager), Adrian Ziderman, and Arvil Van Adams under the general direction of Ann O. Hamilton, and the immediate supervision of Adriaan M. Verspoor. Research support was provided by Omporn Regel, Robin DePietro-Jurand, and Michel Welmond.

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EXECUTIVE SUMMARY

Developing countries need to improve productivity throughout the economy if they are to compete successfully in an era of rapid economic and technological change. This requires not only capital investment, but also a work force that has the flexibility to acquire new skills for new jobs as the structures of economies and occupations change. The level of competence of a country's skilled workers and technicians is centrally important to labor force flexibility and productivity. Skilled workers and technicians enhance the quality and efficiency of product development, production, and maintenance, and they supervise and train workers with lesser skills. They are found in the modern wage sector, in agriculture and in the small unregulated enterprises of the informal sector, both rural and urban.

The development of a skilled labor force makes an important contribution to development. The challenges are to use employer, private and public training capacity effectively to train workers for jobs that use their skills, and to do so efficiently, in developing economies increasingly influenced by technological change and open to international competition.

In principle, training in the private sector -- by private employers and in private training institutions -- is the most effective and efficient way to develop the skills of the work force. It also has the most direct impact on the productivity of the economy, if only because more people are at work than are enrolled in pre-employment training programs. In the best cases, employers train workers as quickly as possible for existing jobs. Costs are low compared to training before employment, and trained workers are placed automatically in jobs that use their skills. Larger employers often have the technology, and their supervisors have the expertise, to train in both traditional and newly emerging skills. Even the very small unregulated enterprises of the rural and urban informal sectors can provide the training needed for existing technologies and production practices. Private training institutions must function in the market place and be adept at changing enrollments and curricula to fit with the employment opportunities available for graduates. The costs and benefits of employer and private training are equitably shared by workers and employers. Workers contribute to costs by accepting lower wages during training and benefit through higher wages after training. Employers accept the lower output of trainees, pay the direct costs of training, and benefit in the form of higher firm productivity.

In practice, the extent and quality of private sector training is limited in varying degrees, depending on the nature of the economy and the level of development in a given country. Economic and social policies often distort the incentives to employers and workers to invest in skills development, leading to inaccurate decisions on the kind and amount of training needed. Moreover, individuals often have difficulty obtaining credit to finance their training, especially in longer programs where the costs and risks to returns are high. In the small and medium-sized firms that employ 60 to 80 percent of private sector workers in many developing countries, the capacity to train in the new skills

needed to raise productivity is often weak. In addition, training benefits society in ways that employers and workers do not capture directly, reducing their willingness to invest in skills.

These limitations require a continuing role for governments to ensure an adequate amount and quality of training. In low income countries especially, governments will need to continue to finance and provide skills training in the immediate future. But this should be an evolving role, one that seeks constantly to improve the capacity for training by employers and private providers. This is a long-term process, and it thus requires policies that compensate for the limits of the private sector during the transition period.

This paper proposes policies for using public resources to ensure that the skills needed are developed, and that equity objectives for the poor and the socially disadvantaged are effectively addressed. The keys to progress are strengthening primary and secondary education, encouraging private sector training, and improving public training.

Strengthening Primary and Secondary Education

Technological change is expanding the cognitive and theoretical knowledge required for productivity in skilled occupations, increasing the need for workers to have the foundation of basic competencies needed to make re-training effective. The most cost-effective use of public resources in improving the productivity and flexibility of the work force is thus in general education at primary and secondary levels. In addition to generating broad benefits to society, general education directly increases worker productivity and increases the access of the poor and socially disadvantaged groups to training and wage employment. In Peru, for example, workers with a complete secondary school education have a 50 percent greater chance of receiving in-service training than those with primary education alone. The recent policy paper on primary education argues that in many countries additional investment in primary education is of the highest priority to address the shortfalls in access and quality that jeopardize productivity and income-earning opportunities, especially for the poor. Training in specific skills is more effective when it builds on a strong foundation of general education. Primary and lower secondary education provide this foundation for many traditional crafts and trades.

In modern sector manufacturing and services, however, where the conceptual content of jobs is increasingly high, and manual skills correspondingly less important, the broad competencies gained through good quality academic secondary education are significant, not only to immediate productivity, but also to the ability to learn new skills over the course of a career. Most important of these are the abilities to communicate clearly in writing and to use mathematics and science skills to diagnose and solve problems. Secondary education also improves the productivity of the self-employed. In Ibadan, Nigeria, 70 percent of the proprietors of urban informal sector firms engaged in radio and TV repair have some secondary education, as compared to 17 percent of those in soap making.

The extra resources used in many countries to replace part of the academic curriculum with a few vocational courses would be better invested in improving learning achievement in the academic curriculum, or in increasing access. These "diversified" programs are no more effective than academic secondary education in

enabling graduates to enter wage or self-employment. The limited training delivered in diversified programs produces equally limited skills, and does not much change student aspirations for higher education and white-collar employment. But it takes the place of more preparation in basic competencies. And a few hundred hours of craft training do little to help youth establish their own enterprises, a task that is difficult enough for experienced adults.

Encouraging Private Sector Training

Private sector training can be expanded and improved by creating a favorable policy environment. Governments can achieve this by reducing distortions in incentives and establishing compensatory policies where incentives cannot be improved. Positive policies to stimulate and develop employer training, and to reduce regulation of private training institutions, can accelerate private sector response to a changing policy environment.

Creating a favorable policy environment. Economic and social policies -- such as high minimum wages, guaranteed public employment, and narrow skill differentials in publicly administered wage systems -- can distort the incentives provided to employers and individuals to invest in skills development, and the signals of skill needs to training providers. A careful assessment of the impact of these distortions on training efficiency should be an on-going feature of policy development. The process can be facilitated by strengthening the linkages between economic and human resource planning. Importantly, this assessment should be incorporated in the efforts of governments and assistance agencies to design economic adjustment policies, and in the country analysis that supports specific assistance for skills training.

However, for sound social or political reasons, it may not always be possible to change these policies. In addition, the impact of changes in incentives for private investment in training will take some time to take effect. Thus, compensatory measures may be needed as second-best and transitional options to adjust for the effects of continuing distortions. Compensatory measures may include, for example, exemption of apprentices from minimum wages, or partial public subsidies to compensate for artificially high training costs to employers and workers. Selective and partial interventions may also be needed where there are important social benefits of training.

Encouraging employer training Where employer training capacity is underdeveloped, governments can assist by providing employers with information on external training opportunities, as well as technical assistance for the training of trainers and the development of enterprise training policies and plans. When designed to offset specific market imperfections, reimbursement of the costs of training can have an important stimulus effect on firms' demand for training. In Singapore, for example, such programs have succeeded in establishing or expanding training in all firms with more than 5⁰ employees, and more than half of those employing 11-49 workers. However, reimbursement programs must be closely monitored to prevent firms from re-packaging already established training for reimbursement, resulting in windfall gains at public expense. Reimbursement programs should be considered a transitional device for building training capacity, not a permanent entitlement program.

Workers in rural areas and in the urban informal sector are increasingly well-educated, and thus better able to benefit from programs that seek to strengthen traditional apprenticeship. Options for governments include support for the provision of technical information, correspondence courses, textbooks and theory classes.

Governments can also contribute to the improvement of private training. In Korea, for example, the government has provided private technical junior colleges with loans on favorable terms for equipment purchase and staff development.

Reducing regulation of private training. Governments can encourage private provision of training by reducing barriers to entry into the training market, such as requirements for use of an official curriculum, and by allowing institutions to set tuition charges freely. However, continuing programs of accreditation and consumer information are needed to protect against exploitive practices.

Improving Effectiveness and Efficiency in Public Training

With strong support from international donor agencies, including the World Bank, developing country governments have built public training systems. Most public training is delivered before employment in vocational schools and labor training centers for skilled workers, and in post-secondary institutions for technicians. A major policy objective in many countries is to use this capacity more efficiently; this is especially true in low income countries where employer and private training is not yet well developed.

In many cases, the record of public training is not satisfactory, often because it has been expanded to address objectives other than compensating for weak private training. These include using pre-employment training to reduce youth unemployment, to create a reserve of skilled workers to attract new capital investment, or to divert youth from aspirations for higher education. In the absence of sustained growth in wage employment, such policies have led to too much public training and low levels of placement of trained workers in jobs that use their skills. Scarce public resources are wasted. Moreover, many countries find it difficult to provide adequate financing for these public institutions, resulting in low levels of training quality, and further reducing the impact of training on productivity. In Egypt, for example, in an effort to divert youth from higher education, the government enrolls more than half of upper secondary students in vocational schools. Open unemployment among graduates exceeds 35 percent. In Bangladesh, Togo and Cameroon less than half of public trainees find wage employment in their trade; social rates of return to vocational schooling in Bangladesh are negative.

Governments must be efficient in providing training. The record shows that public training can be cost-effective when it is capable of responding to market forces with good quality training that results in high placement rates, and costs are well managed. Ownership turns out to be less important than management practice. These factors explain social rates of return to public pre-employment training ranging from 12 to 25 percent in Botswana, Korea, Brazil and Colombia. Even where appropriate objectives are established, effectiveness can be improved by making training more responsive to market forces. Efficiency in the use of training resources can be improved by consolidation and better utilization of training capacity. Within the government, strong capacity for policy implementation is

needed not only to make these measures work, but also to manage the complex tasks of creating a more favorable policy environment for private training. Training finance needs to be diversified to increase the contributions of employers and workers to ensure the adequate and stable finance needed.

Choosing appropriate objectives. A first step toward more effective and efficient training is to focus publicly provided or subsidized training more clearly on areas where the presence of significant external social benefits, market imperfections, or weak employer and private training capacity reduce role of private sector training. For example, higher technical skills can be important to growth in economically strategic sectors or industries where technological change is rapid. The long duration of such courses, and the risk of losing workers with transferable skills, makes employers reluctant to provide this kind of training. The costs can also make it difficult for individuals to finance their own training, especially where they are unable to borrow for their education. The risk to individuals of a substantial investment in training for newly emerging or rapidly changing occupations is also high, further reducing incentives to invest. Government support for private technical education, for example in the form of scholarships, may thus be needed. Public provision is a reasonable transitional alternative where private training is not available.

Public pre-employment training of skilled workers in secondary vocational schools and labor training centers may also be justified when employer and private training capacity is weak. But such programs must be both effective and efficient, and in many cases this will require significant changes in institutional practices to improve responsiveness to market forces.

Training for workers displaced by economic restructuring is another case where external social benefits justify public intervention. Experience in OECD countries shows that training can help dislocated workers find new employment if other complementary elements are in place, including job creation programs, support for self-employment and small business development, effective labor market information systems and labor placement institutions, subsidization of the costs of worker relocation, and income support programs during re-training and job search. Effectiveness requires that training be linked to demonstrated job availability, or integrated with efforts to expand self-employment or to establish small businesses. Experience in developing countries, including Chile and Mexico, suggests that effectiveness is improved by decentralizing publicly subsidized training to local labor markets through competitive contracting for services from employers, private training providers, and public training institutions. Accountability can be improved by linking funding to placement outcomes. The high cost of these programs calls for special attention to the need for highly flexible training arrangements in order to minimize training duration.

Improving responsiveness of pre-employment training to market forces. Much public pre-employment training is isolated from market forces and rigidly administered. These factors contribute to low levels of job placement for graduates. Improving responsiveness requires action at both the national and institutional levels. At the national level (or state level in larger countries) the isolation of public training from the economy can be reduced through planning approaches that rely on labor market analysis, on monitoring of training costs and outcomes, and on information from employers in determining training supply. The responsiveness of public training institutions can be strengthened by exposing them

to market forces through policies that link financing to performance in placing graduates in employment. In addition, modern sector public training institutions can be encouraged to be entrepreneurial by selling training services to employers, generating revenue to improve training quality. This approach is well developed in a number of Latin American countries, where more than half of the business of public vocational training institutes is now in-service training and sale of technology and management consulting services to employers.

Experience in a number of countries, among them Jordan, Brazil, and China, shows that to respond effectively to market forces, institutions need to develop linkages with employers that improve the flow of information on training needs and on the impact of training on worker productivity. Institutional managers need the authority to adjust curricula and enrollments to respond to locally identified training needs and opportunities.

Using training resources efficiently. The quality of training is centrally important to improving productivity, and thus to the willingness of employers to hire trained persons. Good training costs more than general education. Adequate financing for qualified instructors and managers, instructional materials and maintenance is critically important to the quality of services. Experience shows, for example, that materials and maintenance costs run to 25-30 percent of the recurrent budgets of effective institutions. Costs can be contained, however, by curricula and instructional practices that permit efficient use of training facilities. These include "dual" systems that combine training off-the-job in basic skills and theory with supervised apprenticeship in employment, and competency-based modular curricula that enable trainees to enter and exit training based on acquired skills, facilitating intermittent study along with employment. Training centers not tied to rigid curriculum requirements of education ministries have been more successful in using these instructional approaches than ministry of education vocational schools.

Building capacity for policy implementation. Implementing responsive, market-oriented public training policy requires strong and sustainable institutional capacity. Training authorities governed by a Board with representatives of employers, worker organizations and government have been effective in this task. Given a degree of autonomy and adequate resources, training authorities can help create a favorable policy environment for private training, be effective in market-oriented planning, and achieve scale economies in professional curriculum development, testing, monitoring, and research and development services. An important function is the use of training funds to provide incentives to enable private and public training institutions to adjust to changing patterns of training needs, to provide training for the unemployed, and to provide training support for rural and urban informal sector employment generation programs. Well-paid and well-trained managers and professional staff are essential to success.

Diversifying Finance. Finance policy for training should ensure both the stability of funding needed to develop sustainable institutional capacity for policy implementation and the level of financing needed to improve training results. The recent World Bank primary education policy paper argued the need in many countries to increase public investments in that sub-sector, given the dominant importance of equity considerations and the presence of significant externalities. The claim on public resources for vocational education and training

is much less strong in most countries. A first objective, therefore, is to increase the contributions of employers and trainees. Direct cost-recovery from employers is the most efficient source of financing, either through employer sponsorship of trainees or through contracts for training services. Cost-recovery from trainees is an option where fees are charged for academic secondary or post-secondary education; otherwise, cost-recovery for vocational programs raises significant questions of parity. Income from sale of products and training services has provided an important source of revenue in a number of countries. Care must be taken, however, to strike a balance between training and production of goods to avoid exploitation of students, subsidized competition with private firms and negative impact on training quality.

Levies on employer payrolls have been a stable and effective source of training finance, especially for national training authorities and to support technical assistance and financing programs for the development of employer training. They have also increased employer interest in training. The risk of levy financing leading to inefficiency and top-heavy training bureaucracies can be minimized by channeling financing through national training authorities, periodically reviewing levy rates, varying levy rates across sectors and industries to reflect training costs, ensuring that funds are not used for other purposes, and using the resources to develop enterprise training. In general, payroll levies should be seen as another transitional mechanism, to be dismantled as training institutions get stronger and direct finance by trainees and employers is expanded.

Training as a Complement in Equity Strategies

Most of the poor in developing countries are found in rural areas and in the urban informal sector. Their principal asset is their labor, and improving their productivity and earnings is their main road out of poverty. Reform of policies to encourage economic and employment growth is the first step along this road for the poor, as well as for women and minorities. Improving levels of general education also helps by improving both productivity and access to training.

In the urban and rural informal sectors, traditional apprenticeship, appropriately strengthened, can be a major source of skills for the economically disadvantaged. Formal training programs can contribute if they are used as a complementary input in broader income-generation strategies. These strategies include reduction of regulatory barriers to self-employment and use of information on local markets, products, and the characteristics of clients in the design of broader programs. Training alone, especially when oriented to modern sector wage employment and trades tests, does not address these factors nor does it develop the range of skills needed for productive self employment in informal markets.

In the modern sector, public vocational education has not been an effective measure to reach the poor, who can ill-afford to be out of employment for several years. Moreover, in most developing countries secondary schools enroll a small proportion of the age group: in such circumstances, vocational schools become second-best options for academically well-qualified students who are not necessarily poor. In Thailand in 1979, for example, farmers and laborers comprised 88 percent of the labor force, but their children held less than 20 percent of the places in secondary vocational schools, the balance being occupied by the children of businessmen and government officials.

Additional progress for women can be achieved by reducing distortions caused by discrimination in employment, including not only laws and regulations, but also entrenched social attitudes among employers. Carefully targeted training in non-traditional skills can be effective in enabling women to enter higher paying occupations if prospective employers are involved in training design and in the selection of trainees.

International Assistance

Support for vocational education and training averaged forty percent annually of multilateral international assistance for education in the 1980s. With some notable exceptions, bilateral assistance agencies provide less support for vocational education and training than multilateral organizations. While this assistance has contributed to the establishment of (mainly) public pre-employment training capacity, it has reached a very small share of those seeking any form of education. Future assistance efforts will be more effective if they are better coordinated and more closely linked to government reform programs that are based on a thorough analysis of policies needed to improve the balance between private and public training.

Implications for the World Bank

The World Bank has been the largest single source of international financial support for skills training. Since the early 1980s, findings from World Bank evaluations have led to increasing investment in national institutional capacity and center-based training, and to significant reduction in support for diversified and vocational schooling. However, as discussed, vocational investments have not been part of a broader strategy to address policy issues, especially with respect to the rationales for public training and the encouragement of private training. Substantial improvement in the analytical and policy content of investment operations is needed.

Five actions will improve the quality of World Bank support for skills training. First, the economic analysis of training should be improved by addressing labor market issues and establishing clear economic rationales for public investments in pre-employment training based on market distortions, weak private training capacity or external social benefits to training. Second, investments in the quality of and access to academic secondary education should replace investments in pre-vocational courses. Third, training investments should address the policy changes needed to create a favorable economic climate for private training as well as direct measures to stimulate and improve training in the private sector. Fourth, investments should include measures to improve the effectiveness and efficiency of public training. Fifth, World Bank sector work and lending should support national plans for policy development, and encourage broadly-based coordination of donor support.

INTRODUCTION

1. A competent and flexible work force, one that can acquire new skills as economies change, is a necessary pre-requisite for economic and social development. Society benefits in the form of higher productivity and the capacity to adapt to changing economic circumstances and opportunities. Individuals benefit through higher earnings and enhanced mobility in seeking better employment opportunities. In the modern wage sector, skilled workers and technicians enhance the efficiency and quality of production and maintenance, facilitate the adaptation and use of new technologies, and supervise and train workers with lesser skills. In the rural and urban informal sectors, the acquisition of skills can increase worker productivity in self-employment and in small enterprises.

2. Workers use a wide range of general and specific skills. As the complexity and responsibilities of jobs increase, specific manual skills become less important than higher-order conceptual skills and theoretical knowledge. The content of vocational and technical curricula reflect this continuum. Initial training at the semi-skilled level gives heavy emphasis to specific manual skills. In post-secondary technical education, general theoretical and conceptual content receives more emphasis and can occupy more than half of the curriculum. The level of general education required for successful training also increases with the level of skills being taught. More broadly educated and trained workers are better prepared to learn new skills as production technologies change, and thus to move up the occupational ladder and increase their earnings over the course of a career.

3. Most middle-level skills are developed through work experience and training during employment, financed by enterprises and workers. Employer training can be highly efficient. But, much employer training, especially that in small firms, is restricted to informal on-the-job training in the skills needed for existing production technologies. This is the case for traditional apprenticeship that provides most of the skills used in the very small, unregulated firms of the rural and urban informal sectors in many countries. On the other hand, larger firms, and some smaller firms as well, train formally, and have the expertise and technology needed to develop new skills. Training costs are typically lower than those of pre-employment training in vocational schools and training centers, and the economic impact of employer training can be high. Research in an Indian factory found that employer training increased productivity by 7 percent. In Malaysia employers realize an average return of 20 percent on training investments.

4. Basic vocational and technical skills are developed before employment in secondary vocational schools, labor training centers, and post-secondary technical education institutions. Private vocational schools and training centers provide a substantial share of this initial training, often at high levels of quality, with the costs paid by trainees. There are private technical schools in Bangladesh, Honduras, and Thailand, for example, that are much in favor with employers and whose graduates easily find jobs. At the same time, publicly financed and provided pre-employment training, while not the major source of middle-level skills in most countries, is an important part of the national training system. In addition, governments train their own employees in ministerial or sectoral training organizations, and support or deliver a variety of specialized training programs to help the unemployed find jobs and to improve productivity and earnings in rural and urban self-employment.

5. Central issues in formulating training policy objectives and strategies are when and why governments should finance or provide training in vocational and technical skills, given the potential scale and efficiency of training by employers and private training institutions. There is no blanket rationale for public financing and provision of training. Rather, public resources will be used most efficiently when training policies are designed to overcome or to compensate for factors that constrain training in the private sector. These factors include distorted incentives for investment in training by individuals and firms, weak private sector training capacity, and the presence of external social benefits from training not captured by workers or employers. In addition, governments may subsidize selected training programs for equity reasons.

6. These factors require a continuing role for governments to ensure the provision of an adequate amount and quality of training. But this should be an evolving role, one that seeks to reduce limitations on private sector training. This is a long term process that requires policies that compensate for the constraints on the private sector.

7. Thus, in most countries, governments will continue to provide training, even though much expansion can come in the private sector. But public training must be both effective and efficient, and this will require improved responsiveness to market forces. Experience shows that public training can be effective and efficient where economic growth has been sustained, and where training is responsive to employment opportunities. For example, social rates of return to pre-employment training or vocational schooling in Brazil, Botswana, Korea and Thailand have been high -- from 12 to 25 percent. Decentralized job training programs have facilitated economic adjustment in Mexico and Chile. In India and Malawi programs that combine technical and business training with access to credit have enabled carefully selected adults to start small businesses.

8. But slow growth in wage employment and unresponsive training systems have often combined to produce unsatisfactory results for much public pre-employment vocational schooling and training. For example, in Bangladesh, Togo and Cameroon less than half of vocational secondary school graduates find wage employment in their trade, and social returns to such schooling are very low. In Bangladesh, social returns have been negative, due an oversupply of graduates, inadequate financing, and low student motivation for training and for skilled occupations.

9. This paper proposes policies that can help governments make the transition to a more dynamic and efficient use of public resources to ensure that the skills needed to meet the challenges of economic change are developed, and that equity objectives for the poor and the socially disadvantaged are effectively addressed. Progress can be made by strengthening basic and secondary education, encouraging private sector training, improving the effectiveness and efficiency of public training before employment and to facilitate economic change, and using training as a complementary input in programs designed to improve the incomes of the poor and socially disadvantaged. These policies have important implications for international assistance generally. Effective support from the World Bank will require substantial improvement in the analytical basis of investment operations, and heightened attention to broad policy issues.

I. THE CHALLENGE

1. SKILLS AND DEVELOPMENT

10. In an era of economic adjustment and change, development is increasingly a matter of managing the economy under conditions of uncertainty. Market signals and mechanisms, and economic management through incentives, are centrally important in allocating economic resources. In most countries, this market-based approach to development must be managed in conjunction with severe constraints on public resources. As a result, training institutions face pressures to increase their flexibility in responding to economic change. These pressures fall heavily on the private and public institutions that develop the skills needed to facilitate change and growth: as economies change, so too must vocational and technical education and training. Positive public policies are needed to encourage these changes.

Uncertainties in the Demand for Skills

11. Three macroeconomic factors are increasing the uncertainty regarding patterns of employment and skill needs in society among employers and training planners: demographic trends, policy changes that open economies to international trade and competition, and technological change. Successful population and economic policies are raising the prospect in some countries of labor shortages and rising wages, increasing the pressure on employers to acquire new production technologies to offset rising labor costs. More often, population growth has out-paced economic expansion, resulting in high levels of open unemployment and low productivity under-employment that pose significant social and economic problems.

12. Where opportunities for wage jobs are scarce, self-employment in the rural and urban informal sectors is an important source of earnings. In Asia and Latin America a quarter of all workers are found in non-agricultural self-employment; in many countries of Sub-Saharan Africa, the urban informal sector of very small unregulated enterprises accounts for as much as 60 percent of urban employment. Typically, more than half of this employment is unpaid work in family enterprises and in easy entry, low-skilled self-employment. Small, unregulated enterprises in the urban informal sector, however, often provide more productive, skill-intensive production, repair and construction services.

13. Movement away from policies that protect domestic industries towards outwardly-oriented trade policies is now well established in many developing countries. These policies shift the structure of production from goods and services primarily sold domestically to those that can find international markets. The need to compete increases pressures for efficiency and quality in production, and rapid changes in international trade relationships can lead to rapid decline and growth in different industries. When countries are heavily in debt, these economic adjustment policies are often accompanied by reductions in public employment, especially where inefficiency is high in public and para-statal organizations. The net result of these changes in the short term can be considerable dislocation of workers across industries and sectors of the economy, and significant changes in the patterns of skills required. Successful adjustment can lead to resumed economic expansion and improved employment chances, but the process is often slow and imperfect, and employment problems can persist.

14. The introduction of new production technologies has mixed effects on employment and skill needs. Information-based technologies, such as numerically-controlled machine tools, robots and computers can reduce the demand for workers skilled in traditional trades, while creating demand for relatively fewer workers with higher levels of skill. When economies are growing, the jobs lost can be balanced by opportunities created in other sectors and industries. But the workers dislocated by technological change must be re-trained for these new jobs. Many of these jobs require a higher level of cognitive and theoretical knowledge, and re-training can be difficult if workers lack the foundation of education needed for training to be effective.

Barriers to Efficient Response

15. The capacity of employers, private training organizations and public education and training systems to respond to changing needs in uncertain economic environments is often limited.

16. Employer training. The impact of employer training on productivity and equity can be limited by four factors. First, government interventions in labor markets can reduce the incentives to workers and employers to invest in skills development. The amount and quality of privately financed training is reduced, increasing the need for public financing to meet skill needs. Second, where management capacity is weak, training capacity is usually even weaker. This is a major constraint on training by small firms. In developing countries, more than a third of employment is in firms of less than 100 employees; in smaller countries, this proportion rises to 60 to 80 percent. In addition, small firms rely heavily on external training provision for new skills, and thus are hostages to the often-low quality of public and private training institutions. Third, even large employers are reluctant to invest in higher technical education, partly because of the cost of long programs, and partly because the more general and transferable nature of higher technical skills increases the risk of losing both the employee and the training investment. Fourth, the benefits of employer training to the disadvantaged are reduced by the tendency to hire and provide the most training for the best educated employees. These are less likely to be poor, or to be members of socially disadvantaged groups, who have less access to basic and secondary education.

17. Traditional apprenticeship in the unregulated enterprises of the rural and urban informal sectors is a highly efficient means of reproducing the skills of masters. However, it is weak in developing new skills, and access is often restricted by the availability of apprenticeship places and by social barriers that prevent women or minorities from entering certain trades.

18. Private training. If allowed to compete freely, profit-making schools and centers and non-governmental voluntary agencies can meet an important share of skill needs without public financing. However, private training is often too tightly regulated. Ceilings on tuition constrain income, preventing entry into occupational areas with high equipment and instructor costs. Regulations requiring private vocational schools to follow the public curriculum reduce flexibility. The net effect of tight regulation is to reduce the amount of training provided, especially in more technical occupations with high training costs.

19. Public training. Most publicly financed or provided training is delivered before employment. Responsiveness and efficiency have been hampered by rigid planning and management, weak linkages to employers, over-expansion of training systems, and inadequate financing. These constraints are especially binding when institutions are called upon to provide rapid re-training for dislocated workers.

20. (i) Rigid planning and management. Planning for skills supply is often driven by manpower requirements forecasts that do not take market forces into account, yielding inaccurate predictions of skill needs (See Box 1). At the same time, public institutions are shielded from private competition and accountability for employment outcomes is weak. And when public institutions try to enter training markets, they are often discouraged by regulations that restrict their ability to retain earned income, reducing incentives for entrepreneurial activities. Centrally determined and rigidly administered curricula prevent institutions from responding to locally identified training needs, and from reducing the duration of training to lower costs.

Box 1: Weaknesses of Manpower Requirements Forecasts

In occupations where demand is mainly determined by demographic factors and public employment policy, it is possible to estimate the volume of training needs in the medium term. Health technicians and agricultural extension workers are examples. But skill projections that are based on estimates of future growth in most sub-sectors of the economy have proved inaccurate, for four reasons. First, in open economies, skill needs are based on output projections, a difficult task in uncertain conditions. In command economies, they are based on growth targets that are often inaccurate. Second, the model assumes that only a given combination of skill levels will generate the target output, and thus that employers will replicate this combination. In fact, employers are sensitive to the price of labor with different skills, and will re-organize production to reduce skill content if it lowers production costs. Third, models assume that a specified type and level of education is needed for a particular job. In reality, individuals with different levels and types of education and training perform the same jobs at varying levels of productivity. Finally, there has often been an uncritical assumption that public training should meet projected skill gaps, regardless of costs and the existence of alternative, often private, options for skill acquisition.

21. (ii) Weak links to employment. In the modern sector, public training institutions have few incentives to establish working relationships with employers. Employers find little reason to cooperate with vocational schools and training centers that are unable to respond to their needs with good quality services. While the skills imparted by modern sector institutions can be broadly useful in rural and informal sector self-employment, the curricula are weak in preparing individuals for the market and product opportunities of non-wage employment. Successful entry into self-employment, and the establishment of small businesses, require much more than vocational skills -- access to capital and markets, and business management competence. But training can be useful if it is based on knowledge of local market conditions and skill requirements. Managers and instructors in institutions focused on training for wage employment, however, often lack this information, and the training provided is poorly linked to the realities of self-employment.

22. (iii) Over-expansion. Post-primary technical education and training has often simply been expanded beyond the capacity of the economy to provide jobs (See Box 2). Much of this expansion has been directed at problems of large scale youth unemployment. Under conditions of excess labor supply, however, vocational skills confer little advantage on new labor market entrants. Most entry-level jobs require few specific skills, and when they do, employers very often prefer to hire and train broadly and generally educated workers, who often have lower wage expectations.

Box 2: Labor Market Imbalances

Finding wage employment is difficult in countries where the modern sector of the economy is small and growing slowly, creating few new jobs relative to the numbers of young people entering the labor market with post-primary education or training. As shown in Box Table 1, the number of educated labor market entrants can exceed the number of jobs created by a wide margin. In larger or expanding economies, a better balance between education and employment has been achieved.

Box Table 1: Educated and Trained Labor Force Entrants and Jobs Created, Selected Countries - 1988

Country	Ratio of Educated Entrants to Jobs Created
Niger	*
Sri Lanka	*
Hungary	*
Colombia	*
Togo	12:1
Mexico	12:1
Zimbabwe	12:1
Benin	11:1
Chile	5:1
Turkey	3:1
Thailand	2:1

* Net reduction in wage employment.

Source: Middleton, Ziderman and Adams (forthcoming)

23. Expansion of vocational training in order to create a reserve of skilled workers to attract new investment is an unnecessarily risky investment for governments. Most of the vocational skills needed to operate a new enterprise can be developed quickly and more efficiently after investment plans are complete and skill requirements known. The exceptions are higher technical skills because of the longer training period required. The creation of complex sets of training agencies and institutions that often provide the same services has been an unfortunate legacy of successive expansion phases in a number of countries.

Coordination is difficult given lack of institutional accountability; consolidation to improve efficiency is even more challenging.

24. Expansion of public support for vocational schooling has also been justified on social grounds. One objective has been to change the aspirations of youth for higher education and white collar employment. Where skilled jobs can be found, this policy can be effective: Thailand is currently a case in point. But the policy is costly and unproductive when youth cannot find jobs that use their skills. Agricultural secondary education intended to keep youth in rural areas has been unsuccessful in the face of limited possibilities to enter into profitable farming and the pull of higher wage prospects in the modern and urban informal sectors. A second social objective of investments in vocational schooling has been to provide an "appropriate" form of education for academically less able students. But where secondary schools enroll only a fraction of the age cohort, all students admitted to any form of secondary education are academically capable. This is the case in most developing countries. In 1986, secondary enrollments in Africa, Asia, the Middle East/North Africa, and Latin America were 23, 40, 48 and 52 percent respectively of the relevant age cohort. Academically able students tracked to vocational schools see occupational training as a second-best choice. Their motivation to learn is often low, and their willingness to take up the trade for which they have been trained lower still.

25. (iv) Inadequate financing. Governments have had difficulty meeting the costs of vocational education and training, which can be two to three times higher than those of academic education because of small classes, high facility, equipment and instructional material costs, and the need to pay higher salaries for competent instructors. When these costs -- especially the non-salary costs -- are not met, training outcomes are inadequate and the employability of graduates reduced. In Peruvian cities, secondary vocational education contributes less to worker earnings than general secondary education. The resources needed to improve flexibility in responding to economic change cannot be found, particularly in countries where economic conditions lead to restrained public budgets. A vicious cycle is established, especially where systems have been overly expanded. Graduates have difficulty finding skilled employment, and falling training quality makes the search even more tenuous as employers lose confidence in the training system.

26. To overcome these constraints, governments need to have an explicit strategy for skills development which will usually include several elements: (i) strengthening basic and secondary education; (ii) encouraging private sector training; and (iii) improving the effectiveness and efficiency of public training.

II. POLICY OPTIONS

2. STRENGTHENING PRIMARY AND SECONDARY EDUCATION

27. Strengthening general education at primary and secondary levels is the first priority for public policies to improve the productivity and flexibility of the work force. In addition to generating broad benefits to society, general education directly increases worker mobility and productivity, and increases the access of the poor and socially disadvantaged groups to training and wage employment. In Peru, for example, workers with a complete secondary school education have a 50

percent greater chance of receiving in-service training than those with primary education alone. The 1990 World Bank policy paper, "Primary Education" summarizes the evidence on the contribution of education to development and emphasizes the importance of primary education as the foundation upon which further education and training can build. Training in specific skills is more effective when trainees have strong literacy, numeracy, and problem-solving skills. Primary and lower secondary education provide this foundation for many traditional crafts and trades. Primary education helps improve the productivity and incomes of the poor in rural areas.

28. Especially in modern sector manufacturing and services, where the conceptual content of jobs is already high and increasing further, the skills gained through good quality academic secondary education are important, not only to immediate productivity, but also to the ability to learn new skills over the course of a career. Secondary education also improves the productivity of the self-employed. In Ibadan, Nigeria, 70 percent of the proprietors of urban informal sector firms engaged in radio and TV repair have some secondary education, but only 17 percent of those in soap making. Possession of a secondary certificate has also been shown to improve the chances of obtaining wage employment for women.

29. In many nations, educators have sought to improve the contribution of secondary education to the employability of graduates by replacing some of the academic program with vocational courses to create "diversified" curricula. These courses typically occupy 20 percent or less of student course-work; often as little as six hours of vocational instruction is offered in a school week. Heavily supported by the World Bank and other assistance agencies in the 1970s, this weak form of vocational schooling has had generally disappointing outcomes. While diversified schools have a higher cost per student, they are not more effective than academic secondary education in enabling graduates to find wage jobs or work in the informal sector. There are three reasons. First, only low levels of vocational skills are developed, and they are acquired at the expense of the more general communication, science and mathematics skills that employers value. Second, they do not materially affect the post-school choices of students. Students can continue on to higher education, and their aspirations remain in that direction. Finally, most countries have been unable to afford the competent teachers, equipment and instructional materials needed to deliver the courses at an acceptable level of quality. Poor quality, in turn, confirms the suspicions of parents and students regarding the second-class status of vocational courses and skilled employment.

30. The additional resources used for diversified curricula are better invested in improving learning achievement in or access to academic secondary education. If the quality is good, academic secondary education can contribute substantially to individual productivity and the ability to benefit from further training by developing students' capacity to learn, to solve conceptual problems, and to communicate. Improving the quality of secondary education is an enormous challenge to most developing countries, and meeting this challenge would make a significant contribution to economic and social development. Improving student achievement in mathematics and science is especially important to understanding modern technologies and production processes.

31. There is increasing interest in "technology" education, which seeks to develop a more general understanding of applied science and mathematics in the context of technology and production, instead of developing occupationally-specific skills. These courses do not require investment in the costly workshops and equipment that training programs need to replicate the work environment. While technology education programs are too recent to have been evaluated, experimentation may be warranted. A major constraint on large-scale implementation would be the need for extensive teacher training.

3. ENCOURAGING PRIVATE SECTOR TRAINING

32. Private sector training can be expanded and improved by creating a favorable policy environment. To achieve this, governments can reduce distortions in incentives, and establish compensatory public policies for subsidizing or providing training to ease the transition and as second-best policies where, in the short-term, incentives cannot be improved. Positive policies to stimulate and develop employer training, and to reduce regulation of private training institutions, can accelerate private sector response to a changing policy environment.

Creating a favorable policy environment

33. Good labor market information is a prerequisite for the efficient functioning of labor markets and socially efficient investment in training. For example, scarce skills will command higher wages, creating incentives to individuals to invest in acquiring these skills. However, governments pursue social and economic goals through policy interventions that affect employment and relative wages, and thus distort the signals to individuals, employers and trainers as to the amount and type of training that society needs.

34. Distortions take a variety of forms. Policies that guarantee public employment artificially increase the demand for the formal education and training qualifications that are required for entry to public sector jobs. Excessive social security charges on wages raise the costs of labor generally, reducing both employment and training. Government interventions in setting wages can result in artificial prices for different skills that do not necessarily reflect their value in production. Policies that compress wage differentials for workers with different levels of skill will reduce incentives to acquire skills. High minimum wages make employers less willing to offer entry-level training that would be otherwise provided if appropriately lower "training wages" could be paid, enabling employers to shift the cost of training in transferable skills onto trainees. These policies shift individual demand for general skills training from employer-provided training to pre-employment training, usually at public expense. In many countries weak mechanisms for labor placement and inadequate labor market information systems compound the negative effects of policy distortions on the demand for training.

35. Distortions are greater in inward-focused economies than in export-oriented economies, because governments often intervene in labor and capital markets to protect domestic producers from external competition. These policies usually favor capital-intensive development, which has slowed overall employment growth in the modern sector and often reduced the demand for certain middle-level skills. In such cases, the major source of employment growth is provided by the informal

sector. Pre-employment skills training oriented to needs of the modern sector is often not appropriate for informal sector jobs, with the result that training efficiency, as reflected in training-related employment, is low.

36. Reducing distortions in incentives. An appropriate modification of the policies that create these distortions would improve the accuracy of signals of skill needs, increase private investment in training, and thus increase the efficiency of a nation's overall training effort. However, the impact of economic and social policies on signals and incentives to train is complex, and not always well understood. Better integration of economic and human resources policy analysis is needed if planners are to understand the wider costs and benefits of macroeconomic and social policies, as they impinge on training markets. The correction of policy-induced market imperfections may prove, on balance, to be socially undesirable, or politically unacceptable. In such cases, integration enables planners to design training policies to offset distorted signals and incentives.

37. Designing public training policies. Market imperfections represent one of four reasons for public intervention in training. The other reasons include capturing external benefits, offsetting weak private training capacity and improving equity. (See Figure 1).

Figure 1: Efficiency rationales for public training policy

Reason for State Intervention:	Training Finance	Training Provision	Complementary Policies*	
Market imperfections	A	N	P	Deal with source of market imperfections
External benefits of training	P	N	-	-
Weak private training capacity	N	A/P	P	Build private training capacity
Equity	A	N	P	Reduce subsidies to trainee peer groups. Introduce selective scholarships

Key: P = Preferred policy approach.

A = Acceptable (next best) approach.

N = Not justified.

* = Policies may not be feasible.

38. (i) Compensating for market distortions. Training subsidies may be required to compensate for distortions in market signals and incentives. For example, if governments wish to avoid the disincentive effects of minimum wage legislation, and repeal of this legislation is not feasible, some legislative compromise, such as exempting trainee wages from the minimum, may be possible. In the absence of such arrangements, subsidizing apprenticeship wages is a second-best measure. Social policy favoring narrow wage differentials between skilled

and unskilled workers reduces individual incentives to acquire skills. Then, building new schools and training capacity will result in wasted resources, unless subsidies reduce the private cost of training and increase the net benefits of skills development to individuals and enterprises. To the extent that employment in the modern sector is not growing because of distortions in factor prices encouraging capital-intensive development, the placement of graduates will suffer: potential trainees will have less incentive to enroll, and the capacity of the training system will be under-used. Adjusting training capacity downward would be warranted under these conditions, along with emphasis on training for the informal sector.

39. Individuals have difficulty borrowing in commercial financial markets to finance training: human capital is rarely accepted as collateral. The comparatively high levels of uncertainty associated with the returns to investment in training further reduce the bankability of skills development. The longer the training, the greater the costs and the higher the risk. These factors can lead to under-investment in training by individuals. Individual training loans address the problem of imperfect capital markets, but do little to reduce the risk factor, and can be difficult to administer. Other compensatory policies, such as subsidization of training costs, may thus be needed.

40. (ii) Capturing external benefits. Individuals and employers invest in training because they expect higher earnings, productivity or profits; they will not capture, and therefore do not take into account, any external benefits that may accrue from a better trained work force -- such as improved flexibility and competitiveness of the economy in responding to new economic opportunities. Thus, from society's point of view, they may not invest in enough training. The externality case is particularly persuasive for retraining dislocated workers. Society captures the largest share of the benefits of a more efficient economy, and subsidization of programs to offset the costs of labor mobility to workers is fully justified.

41. However, the relative importance of external benefits is typically lower for pre-employment training than for general education. Thus, in most cases, external benefits alone can justify only a very partial public subsidy of training to ensure an adequate supply of skills. On externality grounds, public subsidy of pre-employment training is most appropriate for broader skills that increase worker flexibility, and for skills that support specific public investment strategies, such as expansion of a particular industry. These conditions are most applicable for higher technical education, which incorporates a relatively greater amount of conceptual and theoretical content that improves worker flexibility.

42. (iii) Offsetting weak private training capacity. While market imperfections and external benefits can justify public financial support of training, they do not establish a rationale for government to provide the training. Government provision may be economically justified, however, where the training capacity of private enterprise is weak and where private training institutions are underdeveloped. This argument weakens as private and enterprise training capacity develops. When the public sector provides training it should be accompanied by attempts to strengthen and build employer and private training capacity.

43. (iv) Improving equity. Public subsidization of training, on equity grounds, for the poor, women and minorities may be justified when carefully targeted to ensure that only those in need benefit. However, blanket subsidization or public provision of pre-employment vocational schooling or training on the rationale that these programs generally serve the poor or underprivileged is likely to be both wasteful and inefficient. Where access to secondary education is low generally, a large proportion of the students in vocational programs are not poor. The issue in vocational education is then really one of parity with students receiving subsidized academic secondary education. The preferred policy is to reduce subsidies to both relatively privileged groups, but if this is not possible, subsidies equivalent to those provided to academic secondary education may be required for vocational programs.

44. Responding to varying economic contexts. The economic environments of training policy development vary widely, and this will require different patterns of transitional compensatory policies in different countries. The skill needs and incentives for private investment in training in outwardly-oriented industrializing countries, for example, will be different than those of largely agricultural societies, those with small modern sectors, and those with high levels of domestic protection. In the former case, technological change and the need to respond to international competition increase needs for higher technical skills, and market incentives for private and employer investment in training are more efficient. Private sector training can be more rapidly and effectively expanded. In the latter cases, modern sector employment is limited, a diverse set of training activities is needed for rural and informal sector employment, and employer and private training capacity is likely to be weak. Governments must take an active role through compensatory financing and provision of training, but the range of training needs, and the small scale of operation, will require high levels of flexibility in policy implementation, and great efficiency, given resource constraints and pressing needs to invest in basic education.

45. As development proceeds, governments can expect to face the need to modify training policies. With changes in economic policies patterns of incentives for private training will change as well. Economic growth will shift the patterns of skills needed in the economy. Private sector training capability will improve. This dynamic context for public training policy reinforces the need for a high level of integration between economic and training policy and planning processes to enable training to adjust to changing economic environments.

Strengthening Employer Training

46. There is a strong prima facie case for the cost-effectiveness of employer training in the modern sector, whether public or private. The match between skills demand and training supply is readily made. Firms play a central role in in-service training. Because most technological innovation enters developing countries through enterprises, the equipment and technical information needed to develop new skills is often found in firms. Informal learning on-the-job is central to employer training. A continuous process, it can be stimulated and intensified where enterprise personnel systems recognize and reward improved productivity. But learning on the job is often insufficient, and employers supplement it by training workers on entry through formal on-the-job training,

organized instructional programs provided by the firm or purchased from external training providers, and regulated apprenticeship.

47. Information about training opportunities and training programs in human resource management can help expand and improve the quality of training by private employers. Public subsidies for private employer training are likely to be most efficient when they are based on a clear economic justification. Market distortions may justify subsidization of trainee wages, or grants to offset training costs. Partial subsidies may also be justified where the general skills component of training is high, raising the risk of lost employer investment; such subsidies may in fact be most needed in highly competitive labor markets. When employer training expertise is weak, subsidies combined with information on training opportunities and technical assistance can stimulate training (See Box 3).

48. However, some larger firms may merely "re-package" their existing training to qualify for subsidies with no net increase in provision or training quality. Protection against re-packaging requires administrative control and monitoring, which may be costly where training is spread across many firms. If the procedures are too cumbersome, many firms will not participate. Tax exemptions primarily benefit large enterprises in the more dynamic parts of the economy and may represent a windfall gain to the firm and a needless expense for the government.

49. Reimbursement for training at external training institutes can be more easily monitored, and permits smaller firms to take advantage of scale economies in training costs. In general, the effectiveness of training subsidies can be improved by targeting them on new and improved training in designated occupations, and by flexible eligibility criteria that make it easy for firms to qualify programs of varying duration. This is especially important where subsidies are financed from payroll levies to enable firms of different sizes to obtain benefits in return for their levy contribution.

50. Subsidization of private employer training should be a transitional policy. As employer training capacity develops and market distortions ease, firms should be expected to finance their own training. Enterprise associations have been successful in establishing training operations in many countries and have been especially helpful in enabling small firms to achieve scale economies through cooperative training. Governments can assist in the establishment of these associations and training operations by offering technical assistance and start-up grants.

Box 3: Training Subsidies in Singapore

With a low rate of population growth and rapid industrial expansion, Singapore developed a strategy to improve productivity by raising the level of technology in production, reducing low-paid unskilled jobs and upgrading the skills of the work force. A government program for reimbursement of company training expenses, administered by the Economic Development Board, is a major component of the strategy.

The Skills Development Fund was established with a levy on the wages of unskilled workers to upgrade the work force through training grants to enterprises. The Training Grant scheme has been successful by most measures. By 1985 the Fund had awarded grants to 23,000 applicants. Training reached 240,000 workers, or 21% of the labor force. Most early impact was found in larger firms, but aggressive efforts to make small firms aware of external training courses and to provide support for industry associations has increased impact on smaller firms (Box Table 2).

Box Table 2: Profile of Successful Applicants, Singapore Skills Development Fund

Employment Size of Firm	FY 1986		FY 1988	
	Number of Companies	Percent Receiving Grants	Number of Companies	Percent Receiving Grants
10	50,405	2.2	60,536	8.0
11-49	9,862	22.8	10,287	53.0
50-99	1,183	66.4	1,319	100.0
100-199	603	87.0	616	100.0
200-499	367	99.7	358	100.0
500+	217	100.0	224	100.0

The steady growth in the use of the Fund can in part be attributed to an incremental strategy of implementation. In the first two years, efforts were focused on creating awareness of the Fund among employers, with ad hoc reimbursement of approved courses. In the second stage, priority was given to in-plant training, and reimbursement increased to 90% of costs as an additional incentive. The third stage encouraged the development of corporate training plans by paying grants in advance of expenses, reducing interest costs to firms. In the current stage, the focus is on smaller enterprises and training quality.

Sources: Pang and Salome (1987); Skills Development Fund (1989).

Improving traditional apprenticeship

51. Historically, in many parts of the world, small enterprises sold training as well as products. Apprentices paid masters a fee, in cash or in labor, in return for instruction in a trade. When demand for their product was low, masters made training a major activity. The tradition continues in North and West Africa, and to a lesser extent in Latin America. Through apprenticeship, individuals can acquire the broad range of practical and business skills necessary for self-employment. Rising levels of education among informal sector workers are

contributing to improved productivity. Untouched by minimum wage legislation and labor codes, apprentices finance their own training, a fact that is gaining significance in an era of limited public resources.

52. Traditional apprenticeship can have a positive impact on employment and earnings, and poor and rural individuals can benefit. However, masters mostly pass on their skills and knowledge to apprentices; they rarely create new knowledge. The absence of any formal instruction favors acquisition of practical skills vital to production, sales, and management, but limits theoretical understanding. Apprentices learn enough for commercial survival, but not enough for significant improvement in productivity. The impact of apprenticeships on the economy is limited by the number of masters willing to take on apprentices, and by the number of apprentices that masters are able to absorb effectively. Social customs can restrict access of women and minorities to certain, often more profitable, trades.

53. Great caution should be exercised in considering interventions into the traditional apprenticeship system. Left alone, the system meets the overwhelming share of training needs in the informal sector of many countries, at no cost to the government. Rising levels of education suggest that governments can improve the theoretical knowledge of masters and apprentices through correspondence courses, or perhaps by evening or weekend classes in public training institutes. Technical information services and vocational textbooks are further options. But these interventions must not upset the traditional master-apprentice relationship that is central to effectiveness.

Reducing Regulation of Private Training

54. Governments often overlook private training when they assess training capacity. In many countries, however, private schools and training centers, operated either as non-profit organizations or as for-profit firms ("proprietary" training), provide a large share of skill formation, often in dynamic skill markets (See Box 4). Most private vocational schools, colleges and training centers in developing countries offer courses in commercial and business occupations, for which capital costs are comparatively low, and instructors are in relatively abundant supply.

55. Private training has much to recommend it. The use of private training capacity can often be improved simply by taking private provision into account in planning for skills supply. Freedom from civil service salary regulations and ministry of education curriculum control gives private institutions more flexibility in responding to changing demands for skills. Where information about costs and training outcomes is available to consumers, private institutions are held accountable for price and quality in the market place. In practice, consumers often find it difficult to assess the quality of private training relative to its price, with the result that the quality of private training varies considerably. Some of it is undoubtedly low, with problems of deceptive advertising and exploitation. But many private technical schools, both proprietary and church or NGO-operated, produce superior students who are sought after by employers.

Box 4: Private Training Markets in Zimbabwe

With more than a million workers in wage employment, Zimbabwe has one of the largest markets for modern sector skills training in Sub-Saharan Africa. Growth in the sector has been constrained by macroeconomic factors, and employment growth has been slow, reducing the efficiency of public training. Only 1,000 apprentices could be placed in 1986 out of the 110,000 that applied. It has been difficult to pay the salaries needed to retain qualified instructors in technical colleges and the polytechnic. A rebate scheme operated by the Zimbabwe Manpower Development Fund (ZIMDEF) to encourage training by employers has yet to function smoothly. In 1987, only 77 firms received rebates, covering the training of 640 employees.

At the same time, a vibrant private training market has developed, driven by increasingly high levels of general education and traditions of self-improvement through education and training. Correspondence colleges enroll approximately 200,000 persons, of whom several thousand are enrolled in technical fields such as electronic engineering, and even more in commercial and banking fields, stimulated by reimbursement of fees to individuals by ZIMDEF and by employers. In addition, more than 40 private colleges offer general, commercial and some technical courses during the day and in the evening, enrolling several thousand working students willing to pay for their instruction. The colleges have also ventured into the in-service upgrading market, successfully offering intensive courses in specific business skills to more than 1000 persons employed in 350 firms. A range of private firms have entered the management training market, including training consulting and management firms, international accounting companies, and enterprises with excess training capacity.

The government polytechnic has also entered the private market, providing technical and engineering courses in the evenings for a fee. Enrolling 600-700 students at a time, these courses generate revenues sufficient to pay high salaries for well qualified part-time instructors and to earn a profit of 20 percent.

Source: K. King (1990)

56. Private schools flourish when labor markets reward private spending on training and when schools are free to operate with minimal regulation. Good private schools increase the exposure of public institutions to competitive forces, providing a stimulus for improved efficiency and quality. But private institutions are often subject to strict government regulations, the most onerous of which is control of prices. Ceilings on tuition fees restrict competition with subsidized public institutions, and prevent private schools from developing the resources needed to respond to newly emerging training needs. Regulation should be limited to protecting consumers through public information on the quality and stability of the proprietary training institutions, as well as the relevance of courses offered to labor market needs. A formal and continuing process of accreditation is a good way to establish minimal standards of quality. Associations of private schools can be encouraged to establish accreditation standards and requirements for public information as conditions of membership.

4. IMPROVING EFFECTIVENESS AND EFFICIENCY IN PUBLIC TRAINING

57. Governments must be effective and efficient in compensating for weaknesses in employer and private training. Much can be gained by choosing appropriate objectives. Planning needs to be better oriented to labor markets. Effectiveness

can be further improved by increasing the responsiveness of public training institutions to market forces, including job training for the unemployed. Efficiency in the use of training resources can be improved by better institutional and instructional practice. Strong institutional capacity for policy implementation is needed not only to make these measures effective, but also to manage the complex tasks of creating a more favorable policy environment for private training. Training finance needs to be diversified to increase the contributions of employers and workers to ensure the adequate and stable finance needed.

Improving market orientation in planning

58. Meeting the demand for skills training efficiently requires that planning systems identify and respond quickly to changing employment opportunities and skills demand. It is essential to develop accurate sources of information on skill needs and training capacity in enterprises and private training institutions, as well as in public agencies. Historically, fixed-coefficient manpower requirements forecasting has been the main planning method for skills training, but it is highly inaccurate and inflexible (Box 1). New approaches are needed. Patterns of economic change and growth must be interpreted to identify skills that require relatively extended periods of study and that will be strategically important to the economy in the medium term. Better monitoring of labor markets to identify incentives for training and shorter-term changes in skill demands, combined with evaluation of training costs and outcomes, is needed to improve management of the training to respond to short term training needs.

59. Higher technical skills are more likely to be strategically important to growth where economies are changing rapidly. A current example is the need for accounting technicians in Eastern European countries moving from command to market economies. The kinds and levels of skills likely to be needed depend on a nation's comparative advantage, recent record of growth in different industries, and strategies for economic expansion and technology development. Nations giving emphasis to growth in food processing will have different skill needs than those giving primary attention to expansion of heavy manufacturing, electronic assembly, or clothing manufacture.

60. Using information on placement and unemployment rates by skill levels, economic returns to different levels of training, current vacancy rates, and employer projections of employment needs, planners can identify skilled occupations where employment opportunities are likely to expand in the medium term. Expansion of training supply in these areas is warranted, often balanced by cutbacks in skill levels where demand has slowed -- and where there is no reason to anticipate dramatic upswings. This is essentially a process of informed judgement. Planning procedures of this nature have been established in Colombia and Brazil, and in Malaysia. To meet anticipated demand, first recourse should be to expanded employer and private training. Expansion of public training may be needed, but should generally be held well below anticipated demand for skills in recognition of the ability of employers and private trainers to meet any excess skill needs.

61. For skills that take less time to develop, planning should be focused on improving information for efficient management of training supply. Data on

vacancy rates, unemployment by skill level, and trends in wages and employment provide evidence of market flexibility and efficiency in adjusting to economic change. Analysis should identify labor market rigidities that impede flexibility and distort the signals to individuals and enterprises affecting skills development. Structural shifts in wages and employment suggest the demand for and supply of skills. Monitoring the costs and results of training complements labor-market analysis. Studies of graduate employment and wages by skill level, institutional capacity utilization rates, and application-admission ratios can produce useful information about the market demand for skills training. Cost and tracer studies can yield estimates of the social and private returns to alternative modes of training, strengthening the use of efficiency criteria in determining training supply. Small-scale surveys of enterprises in local labor markets can provide information on wage and earnings profiles for different types of skills and offer qualitative assessments of different kinds of skills training. Enterprises can also provide information on the effects of policy-induced barriers on employment and on other factors that influence the demand for specific skills.

62. Because the success of labor-market analysis depends on the availability of timely and accurate labor-market information, developing a labor-market information system is a high priority. It not only guides planning for training but also alerts policy makers to labor market inefficiencies, informs career counselling, and facilitates job placement.

63. More directly, simply building good linkages between training institutions and enterprises can improve the flow of information on skills demand and the success of training in meeting the skill standards of employers. Creating a permanent pipeline of market information on the demand for skills and their supply is crucial as a guide to improving training quality and efficiency. Among the more effective mechanisms are joint employer/school advisory and curriculum development committees, vocational guidance and placement activities, surveys of local employers, and training strategies that include periodic, supervised placement of trainees in work experience. Forging linkages with rural and informal sector employment requires the development of a base of information on clients, markets and product opportunities.

Improving market response in public training

64. The flexibility of public training systems needs to be substantially improved if they are to be respond efficiently to economic change. Flexibility is improved when training is separated from education, institutions specialize to meet the skill needs of different markets, training institutions have the authority needed to adjust training to local labor markets and are accountable for employment outcomes, and training quality is satisfactory. These are all characteristics of the most successful vocational training institutes in Latin America (See Box 5). The Latin American and other similar experiences demonstrate that management processes and structures rather than ownership are the key determinants of success.

65. Separating education and training. Education and training place different demands on systems, institutions, instructors and administrators. Both are essential to productivity, yet they are difficult to administer effectively within the same institutional framework. Training is more effective when delivered by

Box 5: The Latin American Model of Vocational Training

In 1987, vocational training institutes (VTIs) in twelve Latin American countries enrolled more than 3 million persons, equivalent to 37 percent of total secondary school enrollments in the same countries. VTIs are notable for dynamic relationships with employers, high-quality training, and responsiveness to rapidly changing and competitive environments.

VTIs are independent of formal education; they are financed by levies on enterprise payrolls; and they are governed by representatives of workers, employers and the state. Autonomy has facilitated flexibility in responding to the needs of employers; the stability of payroll tax financing has nurtured autonomy and training quality; and tripartite governance has strengthened accountability. VTIs specialize to serve specific sub-sectors and industries, such as textiles and petro-chemicals, often with financial support from industry associations.

VTIs have diversified services to meet changing needs. In-service upgrading training now accounts for two-thirds of enrollments. Training is delivered on the premises of employers; assistance is provided to develop the training capacity of large and smaller employers. Management consulting and support for the introduction and adaptation of new technologies is provided under contract.

The payroll tax financing scheme is changing. In Brazil employers can hold back portions of the levy to use in direct contracting for services, improving accountability. In Chile, the levy-based subsidy of the VTIs has been replaced by a system of competitive contracting for services from the public and private sectors. In Colombia, policy makers are considering the elimination of the payroll levy, and requiring the VTI to compete for public funding after 20 years of successful institutional development.

Source: CINTERFOR (1990).

institutions with a degree of autonomy and flexibility that is difficult to achieve in formal education systems. Clear separation of education and training provides advantages to both, enabling educators to concentrate on their essential mission, and trainers to develop the specialized technical and managerial capacity needed to link training more closely to the economy.

66. One way to separate training and education is to concentrate skills training in institutions run outside of the education ministry. This approach is most clearly needed in training skilled workers for wage or self-employment. Specialized technical schools oriented to wage employment can be run within the ministry of education, if bureaucratic procedures can be modified to give programs the flexibility needed. Another strategy for education ministries is to deliver vocational training intensively at the end of the secondary cycle. This will enable students to choose among occupations a year or less before they seek employment, when they are more mature and when they can choose an occupation knowing the current state of the labor market. In general, enabling students to choose a vocational course after completing the highest level of general education possible improves educational equity and student motivation alike.

67. Building linkages with employment. Responsiveness improves when training institutions develop specialized expertise for, and institutional linkages with, different skill markets. Of central importance is establishing effective

information linkages with employers as the basis for curriculum adjustment, staff development, enrollment planning, vocational guidance, and student placement.

68. Institutions located in particular industrial areas have a natural advantage in serving the area's industries. Specializing in clusters of related occupations, however, or in sectors of the economy, is also possible, depending largely on the size of markets and the capacity of individual institutions. Specialization is an option only when modern sector employment is large enough to create sufficient specialized demand. In smaller economies, institutions must serve several markets to generate the training business needed to achieve reasonable scale economies in their operations.

69. Specialization in higher technical skills that are needed in strategically important growth areas of the economy is an important role for selected post-secondary technical institutions. By definition, both the technology and training expertise for these skills are found primarily in industry. Dual training systems that take advantage of the capacity of schools and colleges to provide basic technical education courses, complemented by more specific training in enterprises, are an efficient means of using the expertise of firms.

70. Training skilled workers in core occupations that are in demand throughout the economy can be a viable role for vocational schools that have skill training as their principal objective. Examples include the occupations of secretary, book-keeper, motor mechanic, and maintenance electrician. To be effective, however, non-bureaucratic management processes must be established and schools must be able to hire qualified instructors, to monitor training outcomes, and adjust enrollments and courses as demand changes.

71. Close linkages with employment opportunities, including programs to support self-employment and small business development, are especially important in re-training dislocated workers. In addition, experience in developed countries shows that training is effective when integrated with other positive measures (See Box 6). The keys to responsiveness in re-training the unemployed are identification of local employment opportunities, cooperation with employers, and use of existing training capacity through competitive contracting. Accountability can be improved by linking funding to placement outcomes. An example of this approach is found in Chile, where the National Training and Employment Service (SENCE) uses a network of 400 authorized public and private training organizations to provide training services for unemployed adults and youth through a program of training grants and fellowships. Both trainees and opportunities for wage and self-employment are identified at the municipal level. In 1987, the program trained more than 9000 unemployed workers.

72. Whether or not developing countries can or should adopt these approaches depends on several factors, including the availability of skilled jobs and the capacity to finance expensive programs. In many cases, the costs of income maintenance programs and of developing the comprehensive labor market information and placement systems needed to link training with employment will be prohibitive. The institutional development required can be time consuming. However, large national programs are not the only approach to training to facilitate economic change. In Sierra Leone and Uruguay, for example, carefully focused NGO training programs have been successful in cooperating with employers to train and place th-

unemployed and to train workers for new occupations and positions whose jobs are threatened by restructuring within firms. Where labor supply greatly exceeds demand, these programs are likely to have only a marginal impact on total unemployment in the short run.

Box 6: Elements of Employment Programs

The benefits of successful employment training programs are gained only when re-trained workers are placed in employment. Experience in OECD countries shows that this requires job creation programs, labor market information, subsidization of the costs of worker relocation, and effective counseling and placement services. Income maintenance programs are essential during the transition period. Integrated programs are more effective where levels of education are high, and where there are few cultural or financial barriers to worker mobility. These active measures, together with retraining, can be expensive: in Sweden expenditures on positive labor market policies represent approximately two percent of GDP.

73. Increasing institutional authority and accountability. Effective response to employment opportunities will require a higher level of authority at the institutional (training center or technical school) level to respond to local employment opportunities and training needs. Specialized professional staff are needed to establish relations with employers, to develop curricula and in-service training for instructors, and to provide vocational counseling services. Accountability for results and use of resources can be improved by monitoring and inspection systems, and by building incentives for job placement and other indicators of outcomes into budget allocations. Local employer councils can be an important source of feedback on institutional performance. Consistently poor performance caused by imbalance in skill supply and demand is a signal for a review and modification of curricula and enrollment patterns.

74. Experience in a wide range of countries (for example Brazil, Colombia, and Jordan) shows that public training centers outside the education system have had more success than schools in becoming flexible and efficient. Not tied to rigid degree requirements, they have more freedom to develop courses of varying length, to minimize training duration, to offer evening courses, to provide training services to enterprises, and to use part-time instructors. Because of these advantages, centers should generally be chosen to expand public training of skilled workers. Their advantages also can enable them to provide productivity support to small and medium sized enterprises, to respond quickly to needs for work force re-training, and to provide training as a complement to new investment.

75. Improving training outcomes. Developing vocational and technical skills costs much more than general education, and inadequate budgets lead to inadequate outcomes. If skills are not developed, however, productivity will not increase, and the benefits to society and individuals will not materialize. Meeting the recurrent costs of paying well-qualified managers and instructors and providing up-to-date teaching materials and maintenance are the sine qua non of quality.

76. (i) Paying adequate salaries. Professional instructors with good technical and pedagogical skills are central to quality. Most countries have had difficulty paying salaries high enough to attract and retain such staff,

especially in occupations where demand from the private sector is high -- and where the need for training is the greatest. In Egypt, salaries are so low that vocational teachers must hold two or more jobs, often at schools that are distant from each other. Inadequate pay reduces the quality of teaching, and shows students how little society values the trade they are learning.

77. Rigid civil service salary regulations and constrained budgets erect significant barriers against better teaching. If the government cannot afford to pay market rates generally, it should at least let wages rise for instructors in those occupations that are in greatest demand, allowing for market scarcity in differentiated salary systems. Some success has been achieved by offering improved benefit packages, such as providing housing or, as in Korea, exemption from military service for vocational instructors. A further option is to use part-time instructors drawn from enterprises, a strategy that has been successful in several countries, including Mexico.

78. (ii) Ensuring availability of materials and maintenance. Textbooks, practice materials for workshops, and other instructional materials are essential to good training. Materials development for vocational training can be expensive because of the need for frequent revision and expansion in rapidly changing occupations. Materials for modern-sector occupations can be adapted from developed country models. In new and rapidly changing occupations, close cooperation with employers is needed to adapt existing materials. Training materials for self-employment generally must be developed to incorporate skills that are specific to local products and technologies, and that include business management skills that fit the local regulatory and market environment.

79. There is considerable interest in the potential of various educational technologies to overcome the lack of skilled instructors and to reduce per-student unit costs. Although experimentation to test cost-effectiveness is warranted, there are reasons to be cautious. Video-tape technology is being increasingly used as hardware costs fall and local software production becomes more feasible to demonstrate complex manipulation skills. However, more advanced technologies -- such as computer-aided instruction -- require high rates of use to become cost effective. In developed countries, this has been achieved only in large modern enterprises and in training institutions that deliver individualized instruction in highly flexible environments. However, in industrialized middle income countries, where these conditions exist, advanced technologies may provide a means of partially overcoming shortages of highly skilled instructors in technologically changing occupations.

80. Adequate maintenance of facilities and equipment is essential for good training. Inadequate budgets and lack of foreign exchange have combined with low levels of incentives to managers and instructors to reduce the quality of maintenance in many countries. Dual training systems that rely most heavily on the equipment of employers offer a practical way to minimize maintenance costs to training institutions. But where this is not possible, adequate funding and improved staff accountability can lead to improvement.

Improving instructional efficiency

81. Improving the flexibility of training in currently under-financed public institutions will be costly. Ways must be found to deliver instruction at lower cost. A first option in countries where public capacity is under-used is consolidation into fewer, better-quality institutions. Lower costs per training graduate can be achieved by reducing the duration of instruction and by improving the utilization of facilities and equipment.

82. Consolidation. Consolidation can be achieved by converting vocational schools to lower-cost general curricula or by turning schools over to organizations with the information and financial resources needed for effective operation -- such as enterprises, enterprise associations or NGOs. Consolidation is particularly attractive where the supply of skilled workers from poorly financed institutions greatly exceeds effective employment demand or where training institutions are too small to achieve scale economies.

83. Improving utilization of training capacity. Shorter, more intensive training periods are worthy of consideration because they reduce the opportunity costs to trainees of being in training instead of at work, and enable training institutions to achieve a higher rate of use of equipment, facilities, and expensive instructors. The same number of course hours provided on a part-time basis over three years in a vocational school can be delivered intensively in one year or less after school is completed. Training duration can be reduced as well through occupational analysis to distinguish the skills needed for entry into a given occupation from those best learned on-the-job.

84. Competency-based, modular curricula also increase efficiency by enabling trainees to exit and enter training based on acquired skills, and to maintain a record of achievement that facilitates intermittent study along with employment, including evening courses. Modularization is fundamental to individualized instruction, which permits enrollment and labor market entry at any time during the school year (See Box 7).

Building capacity for policy implementation

85. Implementing public training policy is a complex task that requires considerable professional and managerial capacity. To respond to the needs of the economy demands a degree of freedom from short-term bureaucratic control that is difficult to achieve in line ministries. National training authorities (NTAs) have been found to be effective in this respect in several countries. The structure of successful organizations varies considerably, but the key elements in effectiveness are governance that involves employers, worker organizations and government, adequate and stable financing, the ability to use resources flexibly, and a high level of professional capability. In addition to managing training institutions, NTAs can play key roles in monitoring labor markets and training costs and outcomes, in planning, in providing professional services, in establishing outcome standards, in organizing temporary training systems in response to worker dislocation, and in developing private training capacity.

Box 7: Individualized Instruction in the Eivaldo Lodi School

The Eivaldo Lodi School in Rio de Janeiro is one of the network of training centers operated by SENAI. Training is based on periodic analysis of market demand for skills and occupational analysis of different occupations in surrounding industries. Learning materials are organized into modules of work sheets and activities that combine theory and practice for a defined series of tasks. Student skills are evaluated after each module. The final stage of learning comprises a period of supervised training within enterprises.

Beginning in 1965, the Eivaldo Lodi School sought to address three problems by individualizing this methodology. First, the school wanted to be able to provide training to students entering with different skill levels and aptitudes. Second, it wanted a curriculum structure that would be highly flexible in the face of rapidly changing labor markets. Third, it wanted to reduce drop-out rates and the consequent cost of unused capacity.

This was accomplished by reducing the inter-dependence between modules. Students can enroll at any time during the year, and are tested for placement in the series of modules. They then complete modules at their own pace, and are tested for competency on completion. No lectures are provided; the role of the instructor is to provide guidance and testing. Because enrollments are determined by the number of places in workshops, students are admitted continuously as others complete their study or drop out.

These changes have reduced the time required to complete training by 45 - 75 percent, significantly increasing utilization rates. Faster completers increase utilization rates, while for slower students the system provides strong instructional support. The school operates year-round, with no holidays, matching the rhythm of the factory. Completers can enter the labor market throughout the year, and intake and output can be controlled continuously in response to information on student placement and employment opportunities.

Source: J. Oliveira and C. Castro (1988).

86. Training funds that enable NTAs to make grants (or loans) to training institutions in accordance with established criteria can provide an effective mechanism for adjusting training response to meet changing needs, facilitating flexible use of resources for curriculum adjustment, staff development, new equipment, and on occasion renovated or new facilities. Organizing training interventions to facilitate economic change often requires similar support. Experiments with new training approaches, such as by non-governmental organizations (NGOs) for the rural or urban informal sector, may also need government subsidies. Training funds managed by NTAs have proven useful in this regard in such countries as Singapore, Côte d'Ivoire, Chile, Mexico, and Malawi. Funding should be available to both public and private training providers. Accountability can be enforced through contracts and supervision. Broadly representative oversight of the fund (public and private sector, workers, NGOs) can help avoid problems in fund administration.

Diversifying finance

87. The principal objectives of training finance policy in developing countries should be to ensure both the stability of funding needed to develop sustainable institutional capacity and the level of financing needed to improve public

training. Government budgetary financing has often been inadequate for both objectives. The 1990 Primary Education policy paper stressed the need to increase public funding in many countries for primary education given the significant externalities and the important equity considerations associated with education at that level. The case for public support for vocational education and training is much less strong. Nonetheless, the external social benefits of training will often justify the role for government finance of at least such central activities as policy, planning and quality control, as well as for skills strategic to growth strategies. This support will often be limited and Governments should seek to diversify sources of financing for training because of budget constraints and in the interest of efficiency. The costs of training should be increasingly shouldered by the employers and workers who receive its benefits. Encouraging enterprises and private institutions to provide training would help move in this direction. Additional options include payroll levies on enterprises and direct cost-recovery from employers and trainees.

88. Payroll levies. In middle-income countries, payroll levies have provided a sheltered source of resources for training, offering a means of mobilizing funds otherwise unavailable to the public sector. They have proved to be a particularly useful device for building training institutions, especially national training agencies, and they have strengthened employer involvement. With some variation, there are basically two major types of levy schemes for financing training in developing countries, reflecting rather different objectives. First introduced in Brazil in the early 1940s, the Latin American model generates revenues to finance training provided by the public sector. The alternative is the levy-grant, or rebate, scheme that reimburses enterprises for the costs of training. It is the preferred form of payroll levy scheme in other continents.

89. Payroll taxes are widely believed to be borne by enterprises, but this may not be the case in fact. While this issue has not been examined empirically for developing countries, much of the incidence of payroll levies in industrialized countries falls on labor in the form of lower real wages. This is likely to be the case in developing countries as well. This fact suggests that workers finance their own in-service training, making payroll levies a form of benefit taxation. For younger workers, pre-employment training is financed before benefits are received, but paid for later. Payroll levies are an equitable means of financing training to the extent that the workers who pay benefit, instead of funds being diverted to other purposes.

90. While such schemes have proved popular and are largely successful, they are not free of criticism. They tend to raise the price of labor relative to capital. By encouraging a shift toward more capital-intensive techniques of production, they may inhibit employment growth. Such effects are unlikely to be pronounced, however, given the moderate tax rate levels (typically one to two percent) and the possibility of incidence shifting.

91. Payroll levies may constitute an over-sheltered source of funding, leading to unspent surpluses, inefficiencies, and top-heavy, bureaucratic administrations; alternatively, surpluses may lead to the use of payroll levy funds for purposes other than training, considerably weakening the benefits of imposing them. SENA, the Colombian national training authority, financed by a two percent payroll levy established in 1957, has built up surpluses in recent years,

encouraging the gradual expansion of training into other areas such as agriculture, construction and self-employment training, only loosely tied to the firms (and workers) that pay the levy.

92. To insure that the people who pay the levies receive the training benefits from them, the payroll levy system should be so designed that: (a) levies are subject to periodic review to guard against the accumulation of surpluses; (b) levies vary across sector and industry to reflect differing skill composition of the labor force and training needs; (c) training authorities do not venture into extraneous activities; (d) the training services and courses provided are broadly based to reflect the range of the industry's need; and (e) enterprise training is developed.

93. The desirability of using payroll taxes to finance training, compared to the other alternatives, is likely to be contingent upon the stage of a country's development. Low-income developing countries may have only limited access to broadly based taxes and tend to rely instead on trade taxes and specific excises. Where the financing options of governments are limited, payroll taxes remain attractive, though they may be difficult to implement. Mechanisms for tax collection may not be in place, and enterprises may resist imposition of the levy. Few lower-income countries resort to payroll levies to finance training. For countries in the lower-middle income range the payroll levy approach may be more attractive than alternative broadly-based taxes.

94. Cost recovery. Payroll levies should not be seen as a permanent solution to the problem of training finance. As national training institutions gain firmer footing, alternative sources of finance become feasible, and enterprises will become able to meet more of their own training needs. In this changing environment, reduction in the levy rate is appropriate. To the extent that public sector provision of training remains necessary, the training authority can be required to compete for budgetary resources with other government departments and agencies. Or to the extent that charging for its services becomes feasible, the authority could be required to operate on a cost-recovery basis.

95. Charging fees to trainees is another option. However, as noted before, in countries where secondary schooling is free, imposing fees for secondary vocational schooling would raise significant equity questions. It is less clear that this is the case for training provided outside of the formal school system. The flourishing market in proprietary training courses indicates that many individuals are investing in training themselves. Moreover, high private rates of return on training investment indicate that many individuals who receive subsidized training may be in a position to bear a larger share of the costs. These facts justify charging fees for training even though to do so would raise questions of parity with privileged secondary school students. Where market imperfections inhibit worker self-finance of training, exemption from fees for needy students is justified. More innovative measures to enable poor workers to meet training costs, such as state-backed loan schemes, should be examined, but these will rarely be administratively feasible.

96. Direct income generation is another source of revenue for training authorities and individual training centers. In Latin America, the broadening of the activities of vocational training institutes to include the sale of

consultancy and training services to public and private enterprises has provided an additional source of funding. The sale of goods produced by training centers offers a limited revenue source, as well as a useful market test of training quality. Though currently under-exploited, this source can be encouraged by relaxing government restrictions on the ability of public training institutions to retain earned income. In a number of countries, income generation is facilitated by the availability of "revolving funds" from which training centers can finance the purchase of materials used in production. A balance must be struck, however, between providing training and producing goods for sale.

5. TRAINING AS A COMPLEMENT IN EQUITY STRATEGIES

97. Most of the poor in developing countries are found in rural areas and in the urban informal sector. Their principal asset is their labor, and improving their productivity and earnings is the main road out of poverty. Reform of policies that discourage economic and employment growth, not training, is the first step along this road for the poor, as well as for women and minorities. Improving levels of general education helps. Training in the rural and urban informal sectors can improve the productivity of the poor if it is used as a complementary input in broader income generation strategies, but training alone has not been very effective. Improved access for women to higher productivity and earnings requires reduction of discrimination in employment and carefully targeted training that heavily involves employers.

98. Public pre-employment vocational schooling has not been an effective measure to reach the poor, who can ill-afford to be out of employment for several years. Moreover, in most developing countries secondary schools enroll a small proportion of the age group: in such circumstances, vocational schools become second-best options for academically well-qualified students who are not necessarily poor. In Thailand in 1979, for example, farmers and laborers comprised 88 percent of the labor force, but their children held less than 20 percent of the places in secondary vocational schools, the balance being occupied by the children of businessmen and government officials.

Improving levels of education

99. For the poor and disadvantaged, general education is the foundation of improved productivity and earnings. Extending and improving a country's general education increases the probability that workers will receive training from their employers. Access to pre-employment vocational education and training opportunities requires at least completion of the primary school curriculum, and more often completion of lower secondary school. Without competitive levels of education, individuals find it difficult to move out of marginal self-employment into wage jobs. Ensuring completion of the primary curriculum and expanding access to secondary education for women and the poor are high priorities. Nonformal basic education and literacy programs also provide steps towards further training.

Training for rural and urban self-employment

100. The viability of rural self-employment depends fundamentally on the purchasing power of rural consumers, and thus on the productivity and incomes of farmers. Farming, of course, is the predominant form of self-employment in developing countries. Basic education and agricultural extension are complementary in enabling farmers to acquire and apply new information and skills. Together, they are the most effective way to raise farmer skills, productivity and income, thus strengthening market opportunities for rural entrepreneurs.

101. Entrepreneurial economic activity provides a second source of income for many farm families; self-employment and very small enterprises provide the main source of income for others. As is the case with all small businesses, access to credit and raw materials, and the absence of restrictive regulation, are necessary for success. Skills are also important, and rural training programs that are closely adjusted to local markets and technologies can be effective in providing these skills (See Box 8). Cooperatives that include training within broader income-generation strategies can also be effective, especially in enabling women to increase their earnings.

Box 8: Training for Self-employment in Rural Areas

Training for rural self-employment succeeds when it is designed to fit with local employment opportunities and skill needs rather than those of urban wage employment. The Legruki Vocational Training School in Tanzania exemplifies this approach. It was established by the community with support from the Lutheran Church of Arusha, with the objective of enabling primary school leavers to enter self-employment. In the beginning, conventional training in carpentry and masonry was offered to enable students to pass national trades competency tests. However, evaluations showed that the orientation of the curriculum to modern sector wage employment did not adequately take into account the multiple skills and technologies required for success. Following a market survey in the local area and staff debate, the curriculum was revised to shift from single to multiple skills, build from local market opportunities, incorporate useful traditional skills, and increase the flexibility of course offerings. A tracer study which obtained information from about half of all graduates since 1980 found more than 90 percent employed. Of these, more than half were in self-employment in villages or in both villages and urban areas.

Sources: Ishumi (1988), Fowler (1990).

102. Much urban informal sector employment is in low-skilled occupations where entry is easy because of low capital requirements: petty trading and food preparation are good examples. Skills are most important to productivity in small enterprises engaged in manufacturing, repair and construction services. Again, access to markets, raw materials, credit, and management advice are the keys to successful businesses. Equally, removal of government regulatory constraints -- such as zoning and licensing regulations -- is often needed.

103. While governments do seek to provide training interventions for the informal sector, most skills are developed through other mechanisms. Primary education provides a crucially important base of general skills. Traditional apprenticeship provides most of the specific technical and business training needed in the

informal sector in many countries. Where wage jobs are hard to find, graduates of modern sector training institutions will flow to the informal sector, adapting their skills to different conditions, though often after a long period of waiting for higher-paying wage employment. These individuals are, of course, relatively privileged, and their entry into the informal sector may reduce opportunities for the very poor. Further, people frequently move between the formal and the informal sector. Many informal sector entrepreneurs build up skills and capital during wage employment.

104. Simply providing skill training for informal sector employment has been less effective than providing training as a complementary service in more complex programs that give clients access to credit and market advice. The most successful of these programs are aimed at facilitating the establishment or expansion of very small enterprises by carefully selected and comparatively well-educated entrepreneurs (See Box 9). The difficulty of replicating these programs, however, limits their overall impact on employment creation.

Box 9: Entrepreneurship Development in India

The Entrepreneurship Development Program (EDP) in the Gujarat State of India is one of the oldest and best known entrepreneurial development programs in the developing world. Since its inception as an innovative credit scheme in 1968, the EDP has evolved into a comprehensive package of services directed to developing entrepreneurial talent in all small-scale economic activities. Over 50 agencies in more than 20 states in India now run EDPs.

The EDP model rests on the assumption that not everybody can be an entrepreneur. Selection is made by a combination of screening, testing, and interviewing. Successful candidates then undertake a 90-day evening program if they have work experience or a six-week, full-time residential course if they do not. These courses cover such topics as achievement motivation, market environment, financing, product selection, marketing, skills development, management, production, procurement, personnel, legal system and letter writing. Trainees prepare project reports, go on field trips to selected industries, receive any necessary technical training in a local industry and receive intensive, one-to-one counselling. A trainer-motivator assists graduates in applying for loans, obtaining land and facilities and marketing their products.

In its first fourteen years of operation, nearly 8,000 new entrepreneurs have been trained and 3,000 new industrial enterprises, which employed three to five people, were established. Of 40 that have been surveyed, 80% have been profitable after five years of operation. Roughly, 60% of the trainees that go through the program start businesses. The cost per trainee is about \$200, and the cost for creating an enterprise in Gujarat is about \$350.

Source: V.G. Patel (1986).

105. Delivering effective training for the informal sector requires a great deal of expertise on the sector and those who work there. Institutions that specialize in the sector, or that can devote a substantial amount of resources to acquiring this expertise, have been most effective. Non-governmental organizations have been effective, and supporting their efforts through training funds provides a practical option that avoids further elaboration of the public training system.

Improving access to wage employment for women

106. The positive effects of economic growth on access to wage employment for women are seen in newly industrializing countries where rapid expansion of manufacturing and service industries and declining population growth rates are combining to raise the possibility of labor shortages. Under these conditions, training and employment opportunities for women increase. Much of the new employment for women is coming in electronics assembly industries and in services with low skill requirements, but access to wage employment of any kind is often a major improvement. Access to higher productivity wage employment can be further improved by reducing discrimination in employment and reducing the opportunity costs of training.

107. Attacking discrimination in employment. Legislative discrimination in employment remains a problem for women in some countries. These policies not only deny equitable access to earnings, but prevent a society from harnessing the talents of much of the labor force. More pervasive are customary barriers to the employment of women and members of minority groups in given occupations, often the more remunerative ones, due to an employer's mistaken belief that these individuals cannot perform productively, or will not be stable members of the work force. Women may also prefer certain traditional occupations. Deeply held social attitudes change slowly, of course, but progress can be made through programs that actively involve employers in the training and placement of such workers (See Box 10). Success not only helps the individual worker, but may establish a demonstration effect that counters current attitudes.

108. Reducing the opportunity costs of training. Few poor students can afford to be out of the work force for three- and four-year, full-time education and training programs needed for access to wage employment, even if the programs are tuition-free. Women are further handicapped by domestic and child-care responsibilities. The opportunity costs of training can be reduced by offering shorter, more intensive courses, providing training in evenings, and offering training in convenient locations. Low levels of literacy and numeracy skills may require compensatory general education programs. Considerable institutional flexibility is required, and NGOs have shown strengths in this regard. Government subsidy of NGO training for women is justifiable on equity grounds.

Box 10: Training Women in Non-traditional Skills

In a program begun in Morocco in 1979, women were placed in industrial training programs that, while in theory open to women, had attracted few candidates and accepted none. Recruitment announcements disseminated through newspapers, radio and schools explicitly called for female applicants. Guidance counseling and informal placement arrangements were established. Female instructors were recruited and trained. Female enrollments rose sharply and have been sustained. Job placement rates for women are higher than for men in the same occupations.

In Jamaica, a small-scale project to train women for the construction industry led to placement rates of more than 90 percent in such occupations as plumbing, carpentry, masonry, electrical installation and steelworking. Women's earnings increased, and employers were reported to be very pleased with their performance. A key to success was a commitment from employers to hire the women on a trial basis following interviews with candidates. Similar positive results were obtained in vocational schools in Chile in a project in that trained girls in chemical technology, computer programming, mechanics and electronics.

However, all projects have not been successful. In the Dominican Republic a program aimed at preparing women for non-traditional trades failed due to lack of an aggressive counseling program and low levels of staff commitment to training women for these occupations.

Sources: Lycette (1985); Kudat (1989); Borcelle (1985); White et. al. (1986).

III. IMPLICATIONS

6. INTERNATIONAL SUPPORT FOR VOCATIONAL EDUCATION AND TRAINING

109. International assistance to vocational and technical education and training in the 1980s averaged about US\$ 600 million annually, of which the World Bank provided 45 percent, bilateral agencies 30 percent, and other multilateral agencies 25 percent. This contrasts with an average of US\$ 180 million annually provided to support primary education. Support for vocational education and training has been concentrated on building pre-employment training at various levels and has served only a small share of all youth in schools or training institutions. The high costs of establishing vocational institutions have contributed to the volume of aid, especially when donors equip workshops with advanced and costly equipment. High expectations of governments and donors for broad economic and social benefits from vocational preparation have no doubt also played an important role, as has the visibility of building and equipping modern training institutions.

110. The large amount of international aid has contributed to the establishment of a base of training capacity in most countries, and to over-expansion in some. In the future, donor assistance will be more effective if it can be mobilized to support government programs for policy reform aimed at expansion of employer and private training, and improved use of existing public training capacity. This will in many countries require a very high level of coordination among donors.

7. IMPLICATIONS FOR THE WORLD BANK

111. The World Bank has been the largest single source of international financial support for vocational education and training. From 1963-76, about 40 percent of total Bank education lending was for vocational and technical education at the secondary and post-secondary levels. More than 20 percent of education lending during this period was for vocational and diversified secondary schools.

112. By the late 1970s, evaluations conducted by the World Bank's Operations Evaluation and Education and Training Departments began to raise doubts regarding the cost-effectiveness of vocational schooling, especially diversified schools. High costs, low levels of use of facilities, over-supply of graduates, and the difficulty of forecasting demand for skills were cited as constraints. Bank lending began to shift away from diversified schools toward center-based training and development of national training authorities. As a share of education sector lending, support for vocational projects declined to 30 percent in the period 1977-88 as lending for primary education increased. The absolute amount of support provided, however, rose as the sector expanded overall. Most of the decline came from the phasing out of support for diversified secondary schools. Support for agricultural education declined from 25 percent of all vocational lending to 13 percent over the same time period, and has fallen farther since. These shifts reflected a growing awareness in the Bank of the need to build institutional capacity and to find more efficient ways of providing training. During this period the Bank provided support to some of the more effective training systems in developing countries, among them the Vocational Training Corporation in Jordan and SENAI in Brazil.

113. Since the mid-1980s, the Bank has begun to emphasize responsiveness and quality in training for wage employment. Innovative projects that address the special training needs of small modern sectors and large informal sectors in Africa are currently being developed (See Box 11). Nevertheless, the analytical basis of vocational lending has remained comparatively weak. A recent review of the policy content of education sector investments shows that vocational projects have been least effective in addressing policy issues. Notable is the lack of attention to the economic rationales for public training and to the encouragement of private training. The pressing need for policy reform to ensure efficient skill development in response to economic change, calls for substantial improvements in the analytical and policy content of investment operations.

114. Five actions are needed to improve the quality of World Bank support for skills training. First, analysis of the economic context of training, including labor market issues, should be improved and used in the formulation of national macroeconomic strategies and the design of investment operations. Second, lending for pre-vocational courses should be replaced by programs to strengthen quality and access in academic secondary education. Third, lending should address the policy changes needed to create a favorable economic climate for private training as well as direct measures to stimulate and improve training in the private sector. Fourth, lending should include measures to improve the responsiveness and efficiency of public training. Fifth, World Bank lending should require the development of a longer term strategy for the evolution of the government's role in training, and encourage broadly-based coordination of donor support. These five actions are discussed further below.

Box 11: Vocational Training Policy Reform in Togo

In Togo, 73 percent of the labor force of 1.4 million work in agriculture, 21 percent in the urban informal sector, and six percent (76,000) in the modern wage sector. Economic policy reforms in the early and mid-1980s have opened the economy to international competition, reducing policy distortions and reversing a long period of negative growth. The economy is vulnerable to rapid changes in commodity prices, and the government is seeking to diversify the economy by expanding foreign investment in labor-intensive light manufacturing.

The public vocational and technical education system was developed in the 1970s to meet social objectives. Lower and upper secondary technical schools and vocational training centers managed by the Ministry of Technical Education and Vocational Training (MEFTP) enroll about 3,800 students. Private vocational schools and centers enroll 2,400 more. Traditional apprenticeship is well-established in the informal sector. The public system has been rigidly administered and inadequately financed, and both quality and efficiency have been low. Much private training is of low quality. The government has thus launched a significant program of training policy reform and institutional development to improve the responsiveness of public training to the economy, to improve training quality, and to strengthen employer and private training. The reform has three main elements:

- o Strengthening the capacity of the MEFTP for labor market monitoring and analysis, including the establishment of a Training and Employment Observatory to monitor employment opportunities and the effectiveness of training, and to publish the results regularly.
- o Training for managers and instructors using "twinning" arrangements with overseas training institutes.
- o Establishing a National Training Fund (NTF) administered by a private/public management committee to allocate financial resources to training projects and investments of employers and public and private training institutions that meet pre-determined criteria. Traditional apprentice masters will be eligible to apply to the NTF for skills upgrading grants.

In addition, cooperative dual training systems, using modular approaches to instruction, will be developed to strengthen cooperation between employers and public training institutions. Lower secondary vocational schools will be converted to Regional Training Centers (RTCs) and specialized in local training needs. They will be open on evenings and weekends to provide theory classes for informal sector masters and apprentices. The project is supported by an IDA credit from the World Bank (Credit 2174-TO).

Improving economic analysis for training

115. First, the design of economically sound training policies and investments requires improvements in analysis of the intricate inter-relationships between economic policy, training efficiency, and equitable access to employment. Also, integration of this analysis in the formulation of national macroeconomic strategies is essential. Public investment in pre-employment vocational schooling or training, and in higher technical education, should only be supported when sector work or project analysis provides clear justifications in terms of market distortions, weak private training capacity or social benefits to training. Key topics for economic analysis include:

- o the impact of economic adjustment on employment, and the prospects for job creation in different parts of the economy.

- o the impact of policy distortions on incentives for private sector investment in training.
- o the feasibility of dismantling economic policies that constrain employment growth and incentives for private investment in training.
- o the design of compensatory training policies where economic policies cannot be changed in the short term.
- o identification of the strategic skills with significant externalities based on an analysis of the demand for skills in sub-sectors or industries in the economy.

Strengthening primary and secondary education

116. Second, Bank lending should strengthen the quality and access in academic secondary education, rather than pre-vocational courses. Improving general education will increase worker flexibility. Promoting better access to secondary education for women and the poor will improve their chances for training and their ability to earn higher incomes. Policies for primary education development have been prescribed in the 1990 Primary Education policy paper. For secondary education, given a poor record of performance, the diversification of curricula by adding vocational courses should be avoided. The Bank can assist governments by:

- o financing curriculum reform and teacher training to strengthen applied mathematics and science education.
- o eliminating barriers to access by women and the poor.

Strengthening employer and private training

117. Third, Bank lending should address the policy environment for private training. Bank lending has only rarely and indirectly supported the development of training capacity in private enterprises or the proprietary training sector. Its support for the training capacity of public employers, however, has been substantial. Improved support to the private sector can be provided by:

- o including assessments of employer and private training capacity in investment analysis.
- o supporting appropriate systems for accreditation and inspection of private training institutions.
- o financing technical assistance programs that build professional training capacity in both public and private enterprises.

Improving effectiveness and efficiency of public training

118. Fourth, vocational lending operations should seek to improve the effectiveness and efficiency of public training by building institutional capacity, generating the

resources needed to improve outcomes, and improving instructional practices. Options to be considered are:

- o establishing or strengthening national training authorities by financing programs of staff development, the development of labor market and training monitoring and information systems.
- o establishing training funds as a source of targeted grant and loan assistance to employers and private and public training agencies to increase flexibility in responding to periodic training needs, such as to facilitate economic change.
- o consolidating small and under-used training facilities, financing the costs of conversion and staff re-training and re-deployment, rehabilitating smaller systems and supporting government efforts to turn over excess institutions to NGOs or the private training sector.
- o promoting quasi private sector management practices combining autonomy and accountability for the management of public training institutions.
- o giving priority to center-based training modes for skilled worker training, and supporting curriculum reforms that reduce training time and increase facilities use.
- o seeking government agreement to pay salaries adequate to attract and retain technically qualified instructors and to provide adequate financing for recurrent cost.

Providing long-term support

119. Fifth, Bank lending for vocational education and training has been most successful through long-term partnerships with governments that have lasted a decade or more. Such relationships permit the incremental development of policy and institutional capacity, and will be especially important in supporting government efforts to build a better balance of private and public training, and in encouraging coordinated support from donors. Bank operations should generally:

- o finance part of a longer-term investment and institutional development program that supports a clear strategy for an evolving government role in training.
- o seek to mobilize support from other international donors within an accepted policy framework.

120. Significant policy reforms may be supported by sub-sector loans that address key policy issues where institutions are reasonably well developed and can take on the task of policy formulation and implementation. Traditional investment loans and sector investment loans will be appropriate to support consolidation and restructuring where high levels of policy consensus exist, or for well-justified expansion of effective training systems.

SUMMARY OF OED FINDINGS

While a separate study evaluating World Bank supported vocational education and training projects has not been formally undertaken, cursory attempts at evaluation have been made by the World Bank's Operations Evaluation Department in their publication Annual Review of Project Performance Results. Annual Reviews from 1975 to 1989 were examined in order to determine general trends and outcomes of VET projects. During this time, almost all approved education projects contained a vocational or technical component.

The Annual Reviews show that since 1975 the World Bank's interest in education began a gradual shift away from financing education hardware towards financing education software. Most approved loans in the earlier reports generally supported hardware for existing schools, expanding institutions, or for providing additional institutions of a particular type with a proven track record.

Of the four education projects evaluated in the 1975 Annual Review three included technical components and all suffered from severe problems: high capital and operating costs, an insufficient number of qualified teachers, under-enrollment, and low government priority. Additionally, curricula were poorly designed and few, if any, links existed with the local labor market.

Beginning in the 1980's while some projects continued to focus on establishing or upgrading vocational and technical training, agricultural training and teacher training the bulk of the projects focused on curriculum reform and innovation, as well as the production of manpower.

Vocational and technical education were most common in countries at the mid level of development. The most successful projects had at least some of the following elements (Annual Review, 1987): a strong and continued demand among students and employers for the skills being taught, the presence of an existing and successful institution that was being expanded or upgraded, close integration between the schools and the communities being served, and the provision of equipment and facilities which were appropriate and could be maintained cost-effectively.

Evidence suggests that graduates of Bank financed technical training institutions have had problems finding employment after graduation for several reasons (Annual Review, 1988): shortcomings in the training system, temporary fluctuations in the demand for certain skills, a chronic oversupply of certain types of graduates, and inaccurate or incomplete initial manpower needs assessments. Evidence also suggests that while meant to be a terminal education, many VET graduates pursue some form of post-secondary education.

Non-formal education projects had the hardest time enrolling students. This was due to their non-formal status and because funding of these institutions does not fall under the responsibility of a particular Ministry. Non-formal education projects have demonstrated that the further removed a

project is from a "typical school" the greater the amount of preparation which must go into the design of the component.

Most of the projects reviewed during this time period included the introduction of a diversified curriculum. Courses such as woodwork, metalwork, home economics, and electronics were added to the traditional secondary education curriculum. These practical courses were meant to be pre-vocational and to make school more relevant to country needs. It was hoped that diversified schools would supply the labor market with readily employable manpower and provide graduates with the background necessary to acquire further advanced training either on the job or at school.

Several problems emerged with the thrust to diversity the curriculum: difficulties in recruiting qualified teachers due to poor salaries, under-enrollment in courses due to cultural biases against technical subjects, large proportions of graduates from technical schools and diversified schools continuing on to some form of tertiary education rather than entering the labor market, the offering of vocational options that were incompatible with the needs of the community, inappropriate and often non-existing links between the business community and the schools, and high recurrent costs per student.

While the objectives of diversifying the curriculum seemed to be justified, the Bank underestimated the cultural biases against this type of education as well as the difficulties involved in modifying curricula. It is becoming increasingly clear that the results of diversification have not been as positive as anticipated.

The Bank has learned two lessons: first, curriculum reform is a long term process best undertaken as a series of projects rather than as one large project, and second, the introduction of a diversified curriculum increases recurrent costs because courses are usually taught to half-full classrooms, have higher teacher salary costs, and have higher expenditures on consumable materials than general secondary schools.

Research Base

This report draws heavily on background papers, country studies, regional reviews and evaluations commissioned by the World Bank or carried out by World Bank staff. The research program benefited substantially from professional and financial support provided by the Deutsche Gesellschaft fur Technische Zusammenarbeit, the Inter-American Development Bank, the International Labor Office, the International Development Research Centre, and the OECD Development Centre.

Background Papers

Adams, Arvil and Antoine Schwartz. 1988. *Vocational Education and Economic Environments: Conflict or Convergence?*. Policy, Planning and Research Working Paper 70. World Bank, Population and Human Resources Department, Washington, D.C.

Benson, Charles. 1989. *Taxonomies of Skill Development: A Search for Criteria to Define the Relative Efficiency of Alternative Program of Occupational Training*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.

Carnoy, Martin. 1989. *The New Information Technology: International Diffusion and its Impact on Employment and Skills: A Review of the Literature*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.

Delaney, Jean. 1990. *Agricultural Education and Training: A Review*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.

Dougherty, Christopher. 1987. *The Cost-Effectiveness of National Training Systems in Developing Countries*. Policy, Planning and Research Working Paper 171. World Bank, Population and Human Resources Department, Washington, D.C.

Dougherty, Christopher and Jee-Peng Tan. 1990. *Financing Training: Issues and Options*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.

Fields, Gary. 1989. *Urban Labor Market Modeling and the Informal Sector*. World Bank and the OECD Development Centre. Education and Employment Background Paper 89/08. World Bank, Population and Human Resources Department, Washington, D.C.

Godfrey, Martin. 1990. *Planning for Vocational Education, Training and Employment: A Minimalist Approach*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.

Grieg, Frederick. 1989. *Enterprise Training in Developed and Developing Countries*. Education and Employment Background Paper 89/21. World Bank, Population and Human Resources Department, Washington, D.C.

- Herschbach, Dennis. 1989. *Improving Training Quality in Developing Countries: Toward Greater Instructional Efficiency*. Education and Employment Background Paper 89/09. World Bank, Population and Human Resources Department, Washington, D.C.
- Herschbach, Dennis. 1990. *National Training Agencies*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Katz, Eliakim and Adrian Ziderman. 1989. *General Training Under Conditions of Assymmetric Information*. Policy, Planning and Research Working Paper 217. World Bank, Population and Human Resources Department, Washington, D.C.
- King, Kenneth. 1989. *An Evaluation of Research and Policies on Informal Sector Employment in Developing Countries*. World Bank and the OECD Development Centre. Education and Employment Background Paper 89/12. World Bank, Population and Human Resources Department, Washington, D.C.
- McLaughlin, Stephen. 1989. *Skill Training for the Informal Sector: Analyzing the Success and Limitations of Support Programs*. World Bank and the OECD Development Centre. Education and Employment Background Paper 89/05. World Bank, Population and Human Resources Department, Washington, D.C.
- Middleton, John. 1988. *Changing Patterns in Vocational Education*. Policy, Planning and Research Working Paper 26. World Bank, Population and Human Resources Department, Washington, D.C.
- Mingat, Alain and Jee-Peng Tan. 1987. *The Economic Returns to Investment in Project-Related Training: Some Evidence From World Bank Projects*. Discussion Paper 57. World Bank, Education and Training Department, Washington, D.C.
- Schwartz, Antoine. 1986. *The Dual Vocational Training System in the Federal Republic of Germany*. Discussion Paper 36. World Bank, Education and Training Department, Washington, D.C.
- Schwartz, Antoine. 1988. *Profile of World Bank Investments in Vocational Education and Training*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Stahmer, Anna and others. 1988. *Uses and Costs of Educational Technology for Vocational Training: Current Research in Canada and the US with Implications for Developing Countries*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Tsang, Mun. 1990. *The Costs of Vocational Training*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Whalley, John and Adrian Ziderman. 1989. *Payroll Taxes for Financing Training in Developing Countries*. Policy, Planning and Research Working Paper 141. World Bank, Population and Human Resources Department, Washington, D.C.

Ziderman, Adrian. 1989(b). *Social Rates of Return to Manpower Training Programs: The Policy Context*. Education and Employment Background Paper 88/04. World Bank, Population and Human Resources Department, Washington, D.C.

Regional, Country and Evaluation Studies

Arriagada, Ana-Maria. 1989(a). *Occupational Training Among Peruvian Men*. Policy, Planning and Research Working Paper 207. World Bank, Population and Human Resources Department, Washington, D.C.

Arriagada, Ana-Maria. 1989(b). *The Effect of Job Training on Peruvian Women's Employment and Wages*. Policy, Planning and Research Working Paper 241. World Bank, Population and Human Resources Department, Washington, D.C.

CINTERFOR. 1990. *Regional Review of Vocational Training in Latin America*. A study supported by the World Bank, Deutsche Gesellschaft für Technische Zusammenarbeit, Inter-American Development Bank, International Labor Office, and International Development Research Centre. Centro Interamericano de Investigación y Documentación sobre la Formación Profesional, Montevideo, Uruguay. Processed.

Demsky, Terry. 1989. *Review of World Bank Investments in Vocational Education and Training for Commerce*. Education and Employment Background Paper 89/22. World Bank, Population and Human Resources Department, Washington, D.C.

Gittinger, J. Price. 1988. *Review of World Bank Investments in Vocational Education and Training for Agriculture*. World Bank, Population and Human Resources Department, Washington, D.C. Processed.

Grootaert, Christian. 1988. *Cote d'Ivoire's Vocational and Technical Education*. Policy, Planning and Research Working Paper 19. World Bank, Population and Human Resources Department, Washington, D.C.

Haddad, Wadi D. and Shanti Conly. 1987. *Diversified Secondary Curriculum Projects: A Review of World Bank Experience*. Discussion Paper 57. World Bank, Education and Training Department, Washington, D.C.

Haddad, Wadi, Gail Stevenson and Arvil Adams. 1987. *Youth Unemployment in the EMENA Region: An Issues Paper*. Discussion Paper 76. World Bank, Education and Training Department, Washington, D.C.

Horn, Robin and Emmanuel Jimenez. 1987. *Does In-service Training Affect Self-employed Earnings? The Colombian Case*. Discussion Paper 66. World Bank, Education and Training Department, Washington, D.C.

- King, Elizabeth M. 1989. *Does Education Pay in the Labor Market? The Labor Force Participation, Occupation and Earnings of Peruvian Women*. Livings Standards Measurement Studies Working Paper 67. World Bank, Population and Human Resources Department, Washington, D.C.
- King, Kenneth. 1989. *Education, Training and the Informal Sector: What Have We Learned in Africa?* World Bank and the OECD Development Centre. Education and Employment Background Paper 89/10. World Bank, Population and Human Resources Department, Washington, D.C.
- King, Kenneth. 1990. *In-service Training in Zimbabwe*. Education and Employment Background Paper 90/27. World Bank, Population and Human Resources Department, Washington, D.C.
- Lachaud, J.P. 1989. *The Urban Informal Sector and the Labor Market in Sub-Saharan Africa*. World Bank and the OECD Development Centre. World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Middleton, John and Terry Demsky. 1989. *Vocational Education and Training: A Review of World Bank Investments*. World Bank Discussion Paper 51, Washington, D.C.
- Middleton, John, Nipon Poapongsakorn, and others. 1989. *Vocational Training in a Changing Economy: The Case of Thailand*. A study supported by the World Bank and Deutsche Gesellschaft fur Technische Zusammenarbiel. World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Middleton, John, Se Ho Shin and others, 1990. *Vocational Education and Training in Korea*. A study supported by the World Bank and Deutsche Gesellschaft fur Technische Zusammenarbiel. World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Mingat, Alain. *L'Enseignement Technique Court au Niger: Une Evaluation par le Marche*. Country Department 5, Africa Region, World Bank, Washington, D.C., Processed.
- Moock, Peter and Rosemary Bellew. 1988. *Vocational and Technical Education in Peru*. Policy, Planning and Research Working Paper 87. World Bank, Population and Human Resources Department, Washington, D.C.
- Moock, Peter, Philip Musgrove, and Morton Stelcner. 1989. *Education and Earnings in Peru's Informal Nonfarm Family Enterprises*. Policy, Planning and Research Working Paper 236. World Bank, Population and Human Resources Department, Washington, D.C.
- Neuman, Shoshana and Adrian Ziderman. 1989. "Vocational Schools Can Be More Cost-effective Than Academic Schools: The Case of Israel" *Comparative Education*; 25,2: 151-163.

- Noah, Harold and John Middleton. *China's Vocational and Technical Training. Policy, Planning and Research Working Paper 18.* World Bank, Population and Human Resources Department, Washington, D.C.
- Paul, Jean-Jacques. 1989. *Technical Secondary Education in Togo and Cameroon: An Evaluation from the Labor Market Perspective.* World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- Rasera, Jean Bernard. 1989. *Post-Primary Education and Employment in Benin.* World Bank, Population and Human Resources Department, Washington, D.C. Processed.
- World Bank. 1986. *Regional Review of Alternative Modes of Vocational Training and Technical Education.* Education and Manpower Development Division, Europe, Middle East and North Africa Region. Discussion Paper 36. World Bank, Education and Training Department, Washington, D.C.
- , 1990. *Bangladesh Vocational and Technical Education Review.* A World Bank Country Study. World Bank, Washington, D.C.
- Ziderman, Adrian. 1988. *Israel's Vocational Training. Policy, Planning and Research Working Paper 25.* World Bank, Population and Human Resources Department, Washington, D.C.
- , 1989(a). *Vocational Secondary Schooling in Israel: A Study of Labor Market Outcomes.* Policy, Planning and Research Working Paper 142. World Bank, Population and Human Resources Department, Washington, D.C.
- , 1989(b). *Social Rates of Return to Manpower Training Programs: The Policy Context.* Education and Employment Background Paper 88/04. World Bank, Population and Human Resources Department, Washington, D.C.

Bibliography

- Adler, P. 1983. *Rethinking the Skill Requirements of New Technologies*. Working Paper HBS 84-27. Graduate School of Business Administration. Cambridge, Massachusetts: Harvard University.
- Aizenman, J. 1987. *Labor Markets and Choice of Technology in an Open Developing Economy*. Report DRD 232. World Bank, Washington, D.C.
- Alfthan, T. 1986. *Training for Technological Change: Some Policy Issues in Vocational Training for Advanced Technology*. Islamabad: International Labour Office, Asian and Pacific Skill Development Program.
- Arrigazzi, L. "Chile: Evaluating the expansion of a vocational training program." *Educational Cost Analysis in Action: Case Studies for Planners I*. Paris: UNESCO, International Institute for Educational Planning.
- Auerhan, J., S. Ramakrishnan, R. Romain, G. Stoikov, L. Tibarcio and P. Torres. 1985. *Institutional Development in Education and Training in Sub-Saharan African Countries*. Discussion Paper 22. World Bank, Education and Training Department, Washington, D.C.
- Barber, E. 1981. "General education versus special education for rural development." *Comparative Education Review* 25, 2:216-231.
- Behrman, J. and H. Wallender. 1976. *Transfers of Manufacturing Technology Within Multinational Enterprises*. Cambridge, Massachusetts: Ballinger Publishing.
- Bertrand, O. and T. Noyelle. 1986. *Changing Technology, Skills and Skill Formation in French, German, Japanese, Swedish and U.S. Financial Service Firms*. A Report to the Center for Educational Research and Innovation, Paris: OECD.
- Bishop, J. 1989. "Occupational training in high school: When does it pay off?" *Economics of Education Review* 8, 1:1-15.
- Bloom, E. and R. B. Freeman. 1986. "The effects of rapid growth on labor supply and employment in developing countries." *Population and Development Review* 12, 3:381-414.
- Blumenthal, I. and C. Benson. 1978. *Education Reform in the Soviet Union: Implications for Developing Countries*. Staff Working Paper 288. World Bank, Washington, D.C.
- Boomgard, J. J. 1989. *A.I.D. Microenterprise Stock-Taking: Synthesis Report*. Washington, D.C.: U.S. Agency for International Development, Center for Development Information and Evaluation, Bureau for Program and Policy Coordination.

- Borcelle, G. 1985. *Jobs for Women: A Plea for Equality of Opportunity, Technical Education, Vocational Training and Employment*. Paris: UNESCO.
- Borus, M. B. 1977. "A cost-effectiveness comparison of vocational training for youth in developing countries: A case study of four training modes in Israel." *Comparative Education Review* 21, 1:1-13.
- Bowland, D. 1988. *Coordination of Training Systems - Some Basic Issues*. Discussion Paper 25. Training Policies Branch. Geneva: ILO.
- Buschhaus, D. 1985. *Vocational Qualifications and Flexible Production as Demonstrated in the Industrial Metalworking and Electrical Engineering Occupations*. Berlin: Federal Institute for Vocational Education.
- Carr, M. 1981. *Developing Small-Scale Industries in India. An Integrated Approach*. London: Intermediate Technology Publications, Ltd.
- Carton, M., J. Maurer, H. Sudarsono and D. Widarti. 1987. *In-Service Training in Indonesia*. Indonesia: OECD Development Centre, National Institute of Economic and Social Research.
- Castro, C. 1975. "Academic education versus technical education: which is more general?" In T. J. LaBella, ed., *Educational Alternatives in Latin America: Social Change and Social Stratification*. Latin American Center for Publication. Los Angeles: University of California.
- _____. 1979. "Vocational education and training: Industrial labour in Brazil." *International Labour Review* 118, 5:617-629.
- _____. 1988. "The soul of vocational schools: Training as a religious experience." *International Review of Education* 34, (1988):195-206.
- _____. 1989a. *Understanding the Mosaic of Vocational and Technical Education Institutions?* Geneva: ILO. Mimeo.
- _____. 1989b. *Is Training Very Expensive?* Geneva: ILO. Mimeo.
- Chapman, D. and D. Windham. 1985. "Academic program 'failures' and the vocational school 'fallacy': policy issues in secondary education in Somalia." *International Journal of Educational Development* 5, 4:269-281.
- Charmes, J. 1987. *Etude de Cas Sur la Formation en Cours d'Emploi au Burundi*. Vienna: UNIDO.
- Charmes, J. and B. Salome. 1987. *In-service Training and the Development of Human Resources: Five Asian Experiences*. Paris: OECD Development Centre.
- Chin-Aleong, M. 1988. "Vocational secondary education in Trinidad and Tobago and related evaluation results." In J. Lauglo and K. Lillis, eds., *Vocationalizing Education*. Oxford: Pergamon Press.

- Chung, Y. P. 1989. *Educated Mis-employment: Earnings Effects of Being Employed in Unmatched Fields of Work for Vocational and Technical Education Graduates*. Hong Kong: School of Education, Chinese University of Hong Kong.
- Chung, Y. P. Forthcoming. "Economic returns to vocational and technical education in a fast growing economy: A case study of Hong Kong." *Economics of Education Review*.
- Clark, D. 1983. *How secondary graduates perform in the labor market: A study of Indonesia*. Staff Working Paper 615. World Bank, Washington, D.C.
- Cohen, S. I. 1985. "A cost-benefit analysis of industrial training." *Economics of Education Review* 4, 4:327-339.
- Corvalán, V. O. 1987. "Training for socially disadvantaged youth in Chile." In E. Fortuijn and W. Hoppers, eds., *Paving Pathways to Work: Comparative Perspectives on the Transition from School to Work*. CESO Paperback No. 2. The Hague: Center for the Study of Education in Developing Countries.
- Cotlear, D. 1986. *Farmer Education and Farm Efficiency in Peru: The Role of Schooling, Extension Services and Migration*. Discussion Paper 49. World Bank, Education and Training Department, Washington, D.C.
- Cuervo, A. 1985. *Employer-based Training in Panama*. Report Prepared for USAID. Washington, D.C.: Checchi and Company.
- Cumming, C. 1988. "The contribution of cost studies." In C. Cumming, M. Davis, K. Lillis and B. Nyagah, eds., *Practical Subjects in Kenyan Academic Secondary Schools: Background Papers*. Education Division Document No. 22. Stockholm: Swedish International Development Agency.
- Cumming, C. 1988. "Curriculum costs: Vocational subjects." In J. Lauglo and K. Lillis. *Vocationalizing Education*. Oxford: Pergamon Press.
- de Beyer, J. Forthcoming. "Enterprise training in Kenya and Tanzania." *Economics of Education Review*.
- Demery, L. and T. Addison. 1987. *The Alleviation of Poverty Under Structural Adjustment*. Washington, D.C.: The World Bank.
- Dodd, W. A. 1969. *Education for Self-Reliance in Tanzania*. New York: Columbia University.
- Eng Fong, P. and B. Salome. 1987. *In-Service Training and Industrial Restructuring in Singapore*. Paris: OECD Development Centre.
- Fallon, P. R. and L. A. Riveros. 1986. *Labor Market Institutions: An Across Country Analysis of Wage and Non-Wage Regulations*. Paper presented to the Conference on Adjustment in Labor Markets in LDCs to External Changes. World Bank, Development Research Department, Washington, D.C.

- Fallon, P. R. and L. A. Riveros. 1988. *Macroeconomic Adjustment and Labor Market Response*. Washington, D.C: World Bank. Mimeo.
- Fluitman, F. 1987. *Training in the Urban Informal Sector of Developing Countries: Some Recent Findings of Local Observers*. Vocational Training Branch Discussion Paper No. 6. Geneva: International Labour Office.
- Foster, P. J. 1965. "The vocational school fallacy in development planning." *Education and Economic Development*. Chicago: Aldine Publishing Company.
- Fowler, A. 1990. "After vocational training, what? A tracer study of graduates of Legruki VTS, Tanzania." *Education with Production* 7, 1:14-41.
- Frischtak, C. 1989. "Competition as a tool of LDC industrial policy." *Finance and Development* 26, 3:27-29.
- Fuller, W. F. 1976. "More evidence supporting the demise of pre-employment vocational trade training: A case study of a factory in India." *Comparative Education Review* 20, 1:30-41.
- German Foundation for International Development. 1989. *Vocational Training Strategies to Promote Employment and Self-Help in the Third World*. Mannheim.
- Godfrey, M. 1977. "Education, training and productivity: A Kenyan case study." *Comparative Education Review* 21, 1:29-35.
- _____. 1979. "Training in Kenya: Need versus effective demand." *Comparative Education* 15, 2:187-195.
- Haggblade, S., C. Liedholm and D. Mead. 1986. *The Effect of Policy and Policy Reforms on Non-agricultural Enterprises and Employment in Developing Countries*. Working Paper 27. Department of Agricultural Economics. East Lansing, Michigan: Michigan State University.
- Hallak, J. and F. Calloids. 1981. *Education, Training and the Traditional Sector*. Fundamentals of Educational Planning 31. Paris: UNESCO.
- Haveman, R. and D. Saks. 1985. "Transatlantic lessons for employment and training policy." *Industrial Relations* 24, 1:20-36.
- Herschbach, D. R. 1985. *Linking Training and Employment: An Emerging Perspective*. A report prepared for the United States Agency for International Development. Washington, D.C.: USAID.
- Herschbach, D. R and others. 1985. *Linking Training and Employment: A Case Study of Training Systems in Jordan*. A report prepared for the U.S. Agency for International Development. Washington, D.C.: Graduate School, U.S. Department of Agriculture.

Hinchliffe, K. Forthcoming. "The returns to vocational training in Botswana." *Economics of Education Review*.

Hong Kong Productivity Council. 1986. *In-service Training as a Means of Developing Human Resources in Hong Kong*. Paris: OECD Development Centre.

Inoue, K. 1985. *The Education and Training of Industrial Manpower in Japan*. Staff Working Paper 729. World Bank, Washington, D.C.

International Labour Office. 1972. *Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya*. Geneva: International Labour Office.

_____. 1984. *Industrial Training*. Evaluation Study 11. New York: UNDP.

_____. 1988. *Technological Change, Work Organization and Pay: Lessons From Asia*. Labor-Management Relations Series No. 68. Geneva: ILO.

_____. 1988. *Rural and Urban Training in Africa*. Geneva: ILO.

_____. 1990. *The Promotion of Self-employment*. Geneva: ILO.

Ishumi, A. 1988. "Vocational training as an educational and development strategy." *International Journal of Educational Development* 8, 3:163-174.

Jamison, D. and L. Lau. 1982. *Farmer Education and Farm Efficiency*. Baltimore: Johns Hopkins University Press.

Jennings, Z. 1987. "The effectiveness of programs linking education with productive work in the Commonwealth Caribbean." In E. Fortuijn and W. Hoppers, eds., *Paving Pathways to Work: Comparative Perspective on the Transition from School to Work*. CESO Paperback No. 2. The Hague: Center for the Study of Education in Developing Countries.

Jimenez, E. and B. Kugler. 1985. *Does SENA Matter? Some Preliminary Results on the Impact of Colombia's National Training System on Earnings*. Discussion Paper EDT2. World Bank, Washington, D.C.

Jimenez, M., B. Kugler and R. Horn. 1989. "National in-service training systems in Latin America: An economic evaluation of Colombia's SENA." *Economic Development and Cultural Change* 37, 3:595-610.

Kelly, T. F. and L. J. Kenneke. 1988. *Report of the External Evaluation Team: The Basic Skills Training Project (Jamaica)*. Boston: Education Development Center.

- Kim, S. K. 1987. *In-service Training as an Instrument for the Development of Human Resources in Korea*. Graduate Institute of Peace Studies and the OECD Development Centre. Seoul: Kyung Hee University.
- King, E. and M. Shifferaw. 1989. *Women's Participation in Vocational Education in LDCs: What Explains Cross-Country Differences?* World Bank, Education and Employment Division, Washington, D.C. Processed.
- King, K. 1977. *The African Artisan: Education and the Informal Sector in Kenya*. New York: Teachers College Press.
- _____. 1987. "Evaluating the context of diversified secondary education in Tanzania." In J. Lauglo and K. Lillis, eds., *Vocationalizing Education*. Oxford: Pergamon Press.
- _____. 1988. "The new politics of job training and work training in Africa." *International Journal of Educational Development* 8, 3:153-162.
- Komenan, A. 1987. *Education, Expérience et Salaries en Côte d'Ivoire: Une Analyse à Partir de l'Enquête de Main d'Oeuvre de 1984*. Discussion Paper EDT99. World Bank, Washington, D.C.
- Krueger, A. 1983. *Trade and Employment in Developing Countries, Volume 3: Synthesis and Conclusions*. Chicago: University of Chicago Press.
- Kudat, A. 1989. *Women's Participation in Human Settlements Management*. Washington, D.C.: Economic Development Institute, World Bank.
- Kukler, R. 1987. "A comparison between the Kenya National Youth Service and the Botswana Brigades. In E. Fortuijn and W. Hoppers, eds., *Paving Pathways to Work: Comparative Perspective on the Transition from School to Work*. CESO Paperback No. 2. The Hague: Center for the Study of Education in Developing Countries.
- Lauglo, J. 1985. *Practical Subjects in Kenyan Academic Secondary Schools: General Report*. Education Division Document No. 20. Stockholm: Swedish International Development Agency.
- _____. 1989. "Technical secondary students in Kenya: Origins, achievements and destinations." *Prospects* 19, 3:409-426.
- Lauglo, J. and A. Narman. 1988. "Diversified secondary education in Kenya." In J. Lauglo and K. Lillis, eds., *Vocationalizing Education*. Oxford: Pergamon Press.
- Lee, C. B. 1985. *Financing Technical Education in LDCs: Economic Implications from a Survey of Training Modes in the Republic of Korea*. Discussion Paper 6. World Bank, Education and Training Department, Washington, D.C.
- Lee, K. W. 1983. *Human Resources Planning in the Republic of Korea*. Staff Working Paper 554. World Bank, Washington, D.C.

- Levin, H. M. 1987. "Improving Productivity through Education and Technology." In G. Burke and R. Rumberger, eds., *The Future Impact of Technology on Work and Education*. New York: Falmer Press.
- Liedholm, C. and D. Mead. 1986. *Small Scale Enterprises in Developing Countries: A Review of the State of the Art*. MSU International Development Working Paper. East Lansing, Michigan: Michigan State University.
- Lycette, M. A. 1985. *The Industrial and Commercial Job Training for Women Project in Morocco*. Washington, D.C.: USAID.
- Mabawonku, A. F. 1979. *An Economic Evaluation of Apprenticeship Training in Western Nigeria Small-scale Industries*. African Rural Economy Paper 17. East Lansing, Michigan: Michigan State University.
- Machado, N. H. S and A. J. Romiszowski. 1979. "Developing a large-scale modularized training system for Brazilian telecommunications." In *Educational Technology and Developing Countries*. Nicholas Publishing Company.
- Maligi, S. 1987. "SLOIC: A Case Study From Sierra Leone." In E. Fortuijn and W. Hoppers, eds., *Paving Pathways to Work: Comparative Perspective on the Transition from School to Work*. CESO Paperback No. 2. The Hague: Center for the Study of Education in Developing Countries.
- Mangum, G. 1984. *On-The-Job Training in Small Business: The State of the Art*. Institute for Human Resource Management. Salt Lake City, Utah: University of Utah.
- Marsden, R. 1984. "Services for small firms: The roles of government programmes and market networks in Thailand." *International Labour Review* 123, 2:235-249.
- Mazumdar, D. 1976. "The urban informal sector." *World Development* 4, 8:655-679.
- _____. 1987. *Rural and Urban Labor Markets in Developing Countries: Analysis and Policy Implications*. The Economic Development Institute. Washington, D.C.: The World Bank.
- McLaughlin, S. 1979. *The Wayside Mechanic: An Analysis of Skill Acquisition in Ghana*. Amherst, Massachusetts: University of Massachusetts.
- Metcalf, D. H. 1985. *The Economics of Vocational Training: Past Evidence and Future Considerations*. Staff Working Paper 713. World Bank, Washington, D.C.

- Middleton J., A. Ziderman and A. V. Adams. Forthcoming. *Skills Training for Productivity: Vocational Education and Training in Developing Countries*. Washington, D.C.: World Bank. Processed.
- Min, W. Y and M. C. Tsang. Forthcoming. "Vocational education and productivity: A case study of the Beijing Auto Industry Company." *Economics of Education Review*..
- Ming, C. K. 1987. "Where are the trainees?" In E. Fortuijn and W. Hoppers, eds., *Paving Pathways to Work: Comparative Perspective on the Transition from School to Work*. CESO Paperback No. 2. The Hague: Center for the Study of Education in Developing Countries.
- Montrichard, R. 1987. "Beyond skills training. The work of servol in Trinidad." In E. Fortuijn and W. Hoppers, eds., *Paving Pathways to Work: Comparative Perspectives on the Transition From School to Work*. CESO Paperback No. 2. The Hague: Center for the Study of Education in Developing Countries.
- Moore, R. 1988. "Performance contracting: Some evidence of effectiveness." *International Journal of Educational Development* 8, 3:242-246.
- Narman, A. 1988a. *A Tracer Study of the Moshi Vocational Training Centre (MVTC), Tanzania*. University of Gothenburg, Sweden.
- _____. 1988b. "Technical secondary schools and the labour market: Some results from a tracer study in Kenya." *Comparative Education* 24, 1:19-35.
- National Assessment of Vocational Education. 1989. *Final Report*. Volume 1. Washington, D.C.: U.S. Department of Education.
- Noah, H. and M. Eckstein. 1988. "Business and industry involvement with education." In J. Lauglo and K. Lillis, eds., *Vocationalizing Education*. Oxford: Pergamon Press.
- Oliviera, J. and C. Castro. 1988. *Individualized Learning Systems for Vocational Technical Training: The SENAI System*. Economic Development Institute. Washington, D.C.: World Bank.
- O'Regan, F. and D. A. Hellinger. 1981. "Case studies: Africa." In F. Farbman, ed., *The PISCES Studies: Assisting the Smallest Economic Activities of the Urban Poor*. Washington, D.C.: U.S. Agency for International Development, Office of Urban Development, Bureau of Science and Technology.
- Ouh, Y. B. 1988. "An inquiry into factors affecting the behavioral patterns of Korean enterprises." *Korea Journal* March, 1988.
- Oxenham, J. 1988. "What Do Employers Want from Education?" In J. Lauglo and K. Lillis, eds., *Vocationalizing Education*. Oxford: Pergamon Press.

Patel, V. G. 1986. *The Indian Entrepreneurship Development Program and its Relevance to Developing Countries*. Washington, D.C.: World Bank Economic Development Institute.

Psacharopoulos, G. and W. Loxley. 1985. *Curriculum Diversification in Colombia and Tanzania: An Evaluation*. Baltimore: Johns Hopkins University Press.

Psacharopoulos, G. and A. Zabalza. 1984. *The Destination and Early Career Performance of Secondary School Graduates in Colombia: Findings from the 1987 cohort*. Staff Working Paper 653. World Bank, Washington, D.C.

Psacharopoulos, G. 1987. "To vocationalize or not to vocationalize? That is the curriculum question." *International Review of Education* 33, 1987:187-211.

Puryear, J. M. 1979. "Vocational training and earnings in Colombia: Does a SENA effect exist?" *Comparative Education Review* 23, 2:283-292.

Salmi, J. 1987. "New hope for unemployed youth? The vocational training reform in Morocco." In E. Fortuijn and W. Hoppers, eds., *Paving Pathways to Work: Comparative Perspectives on the Transition From School to Work*. CESO Paperback No. 2. The Hague: Center for the Study of Education in Developing Countries.

Salmi, J. 1989. *Issues in Strategic Planning for Vocational Education: Lessons of Experience from North Africa and the Middle East*. Paper presented at the VIIth World Congress of Comparative Education.

San, G. 1986. *The Status of Vocational Training in Taiwan and a Study on Factors Which Affect a Firm's Training Effort*. Washington, D.C.: World Bank. Processed.

Schiefelbein, E. and J. Farrell. 1982. *Eight Years of their Lives: Through Schooling to the Labour Market in Chile*. Ottawa: International Development Research Centre.

Sethuraman, S. V., ed. 1981. *The Urban Informal Sector in Developing Countries: Employment, Poverty and the Environment*. Geneva: International Labour Office.

_____. 1988. *The Informal Sector: A Review of Evidence from Selected Asian countries*. Geneva: ILO. mimeo.

Schio, F. 1987. *Étude de Cas sur la Formation en Cours d'Emploi en Côte d'Ivoire*. Vienna: UNIDO.

Skills Development Fund. 1989. *Singapore Skills Development Fund Annual Report 1987/88*. Singapore.

- Small Enterprise Education and Promotion Network. 1988. *Technical Assistance and Training: What Difference Does It Make? How Can It Be Done Effectively and Affordably?* New York.
- Squire, L. 1981. *Employment Policy in Developing Countries: A Survey of Issues and Evidence.* New York: Oxford University Press.
- Thompson, A. R. 1988. *Training for Teachers of Technical Subjects in Secondary Schools in Developing Countries.* Synthesis Report. Bristol: Bristol University School of Education.
- Turnham, D., B. Salome and A. Schwartz. 1990. *The Informal Sector Revisited.* Paris: OECD Development Centre.
- Urevbu, A. O. 1984. "Vocational education in Nigeria: A preliminary appraisal." *International Journal of Educational Development.* 4, 3: 223-229.
- UNESCO. 1987. *International Conference on the Development and Improvement of Technical and Vocational Education.* Final Report. Paris.
- USAID. 1986. *New Directions for Promoting Small and Medium-Scale Enterprise Development in Malawi: Constraints and Prospects for Growth.* Final Draft. Washington, D.C.: U.S. Agency for International Development.
- Waite, L. and S. Berryman. 1985. *Women in Nontraditional Occupations.* Santa Monica: Rand Corporation.
- Weisberg, A. 1983. "What research has to say about vocational education and the high schools." *Phi Delta Kappan* 64, 5:355-359.
- Welch, F. 1978. "The role of investments in human capital in agriculture." In T. W. Schultz, ed., *Distortions of Agricultural Incentives.* Bloomington, Indiana: Indiana University Press.
- World Bank. 1990. *Primary Education.* A World Bank Policy Paper. Washington, D.C: World Bank.
- Woodhall, M. 1972. "The use of cost-benefit analysis to compare the rates of return at different educational levels: Colombia." *Educational Cost Analysis in Action: Case Studies for Planners II.*
- Wright, C. 1988. "Curriculum diversification re-examined: A case study of Sierra Leone." In J. Lauglo and K. Lillis, eds., *Vocationalizing Education.* Oxford: Pergamon Press.
- Yunus, M. 1988. *Grameen Bank: Organization and Operations.* Paper for the World Bank/USAID Conference on Micro-enterprises in Development. June, 1988.
- Ziderman, A. 1989. "Training alternatives for youth: Results from longitudinal data." *Comparative Educational Review* 33, 2:243-255.

Zymelman, M. 1976. *The Economic Evaluation of Vocational Training Programs*.
Baltimore: The Johns Hopkins University Press.